The rise (and suggested demise) of occupation-based models of practice

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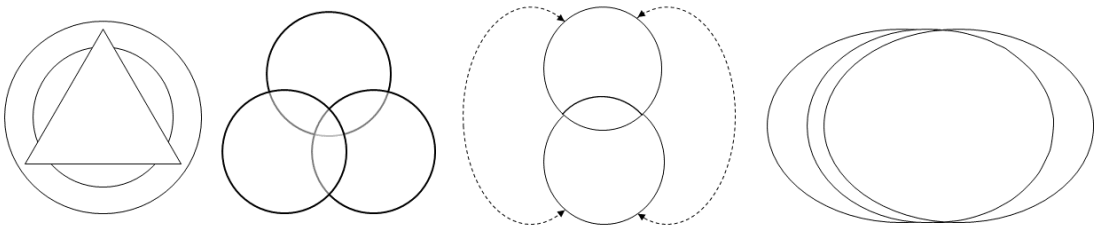

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Abstract

The diagrammatic models used to represent occupation-based theories are common entities in occupational therapy, with at least six English versions in existence. Each one of these models seeks to represent and explain the same dynamic relationship between a person in an environment engaged in an occupation, drawing on many sources of knowledge to do so. Some of the important contributing knowledge sources to occupation-based models come from mathematics, physics, psychology and systems theory. General systems theory brought models into occupational therapy's line of sight as early as the 1960s, with an explosion of specific model making in the late 1970s and 1980s. Since then occupation-based models seem to have taken on a hegemonic presence and act as an unquestioned reference point for practice.

This thesis approaches the models from two angles, namely a historic and a semiotic perspective. The history of the development of two predominant occupation-based models, the 'Canadian Model of Occupational Performance and Engagement' and the 'Model of Human Occupation' is examined in relation to important contextual influences starting from the 1800s. The history of ideas methodology underpinning this examination reveals that people were increasingly categorised and practice became systematic and controlled. It is argued that the historical influences, the model making processes and how they are represented moved the profession into a scientific and abstract realm that neglected important elements of a person's involvement in their every-day way of being with the world. The increased scientification and abstraction neglected the ontological perspective, the nature of being a human in the world.

Semiotics, the study of signs and symbols is used to explain these two models and their production. The Model of Human Occupation is further considered in relation to systems theory, given its situatedness in this perspective. Semiotics explains what the model, as a standalone object, communicates and means, and takes a critical perspective on conceptual model building in occupational therapy. To illustrate how the occupation-based models fail to account for the richness that an ontological perspective could bring to practice, an example from the experiences of one man, after a stroke, is applied to each model.

This thesis concludes by presenting a Heideggerian phenomenological interpretation of the story of the person in the case study. I mount an argument that the strength of the ontological perspective be restored to its central place in occupational therapy and that diagrammatic models that hold the profession to outdated modes of thinking need to be abandoned.

Contents

Abstract 1
List of Figures 7
List of Tables 9
Attestation of Authorship 10
Candidate contributions to co-authored work 11
Acknowledgements 13
Chapter 1 Introduction 1
Introduction 1
Professional and personal contexts 3
The impetus and the spotlight shifts in the study 5
Previous research into occupation-based models 6
Publications describing the development of: 7
Assessments derived from a specific model as applied to practice 8
Use of models in: 8
Research and ongoing development of models 8
Conceptual discussions or disagreements on: 8
Critique of models for their: 9
Definition of some key words 9
Models 10
Occupation-based models 10
Semiotics 11
The ontic and ontological 11
Research boundaries 12
Overview of the thesis 13
Chapter Two – Methodology 14
Chapter Three and Four – Contextual history 14
Chapter Five – Contributions from other fields 14
Chapter Six – Semiotics 15
Introducing Tom 15
Chapter Seven and Eight – The occupation-based models 15
Chapter Nine – The ontological perspective 16
Chapter Ten – Conclusions 16
Chapter 2 Methodology 17
Introduction 17
The making of meaning and the making of meaningful reality: Epistemology and Ontology 18
Epistemology 18
Ontology 20
Theoretical perspectives 22
Alternatives considered: Method in the madness 23

History of ideas 24
Model analysis 24
Ontological perspectives 25
Methodology 26
History of ideas + context 26
The historical method 28
Gathering historical data 28
Describing historical data 30
The phenomenological method 31
Trustworthiness 32
The text-context conundrum or language and present-ism 33
The lens I brought to the research 34
Limitations 34
Summary 35
Chapter 3 Societal and contextual history: Academic views of the frayed edges of sanity, rationality and humanity 36
Introduction 36
1800-1840s: Person as amoral or irrational 38
Practice as mechanical: Recovering reason through lashings and cures 40
1840s-1880s: Person as rational + human 43
Practice as education toward morality and occupation as labour and amusement 46
1880s-1900: Person as powerless, dehumanised and classified 50
Practice as diagnosis and transformation through arts and crafts 52
1900-WWI: Person as warehoused and commodified 54
Practice as achieving potential: Everybody doing something 59
Conclusion 63
Chapter 4 Societal and contextual history: Turning art into science across the 1900s ... 65
Introduction 65
1914-1945: Person as a cog, commodity and useable 66
Practice as observed and useful to the economy 72
1945–1960s: Person as a category with capacity 76
Practice as rationally quantified: Crafts versus science 79
1960s- : Person as homogenised, independent and universal 84
Practice as rationally quantified through other knowledge bases 88
Conclusion 90
Chapter 5 Contributions from other fields 92
Introduction 92
A brief history in European mathematics 93
Greek mathematics 93
Medieval to Renaissance mathematics 94
Eighteenth to nineteenth century mathematics: The beginnings of conceptual modelling 95

The maths behind the circles and lines: A contrived relationship or rhetorical mathematics in occupational therapy 96
Taxonomies: A description of set theory applied to the occupation-based models 97
Application of set theory 99
The crossover: Maths and psychology 105
Psychology 105
Psychology and maths 106
Physics, psychology and maths 107
The crossover: General systems theory 113
Conclusion 116
Chapter 6 Semiotics: Mirrors of a practice reality 118
Introduction 118
Semiotics: The theory of information carrying entities 119
An outline of semiotics 119
The making of a symbol 122
World-to-mind path: Model/diagram making and error possibilities 125
Mind-to-world path: The interpreter of the model/diagram 130
Conclusion 134
Introducing Tom 136
Chapter 7 The Canadian Model of Occupational Performance and Engagement 138
Introduction 138
The Canadian Occupational Therapy Association 139
The Human Occupations Model (Reed and Sanderson, 1983) 141
The Canadian Association for Occupational Therapists Guidelines for Client Centred Practice (1991) 147
Canadian Model of Occupational Performance (1997) 152
The Canadian Model of Occupational Performance and Engagement (CMOP-E 2007; 2013) 154
Conclusion 159
An assessment of Tom using CMOP-E 161
Assessment of Tom using CMOP-E headings 161
Occupation 161
Person 161
Environment 162
Spirituality 164
Speculative assessment based on current information: 164
Chapter 8 The Model of Human Occupation 165
Introduction 165
The model development: Person is a system 166
A model of human occupation 1980: The proposal 169
The model and systems theory 171
System boundaries and environmental feedback 171
Adaptation: The parts do not predict the behaviour of the whole 173

Applying some systems terms to the MoHO 175
The importance of environmental influences 177
The model: Versions four and five 180
Press and affordance 187
Conclusion 189
An assessment of Tom using the MoHO 191
Assessment of Tom using MoHO headings 191
Volition 191
Habituation 191
Performance capacity 192
Environment 192
Other 192
Speculative assessment based on current information: 193
Chapter 9 Ontological views: Practice as lived 194
Introduction 194
The ontic, ontological and phenomenology 195
Searching for the ontological 198
Encounters with the world 204
Transitional interpretation: The structure of world 205
Phenomenal world 211
A conversation with Tom 217
Conclusion 217
Chapter 10 Conclusion: Tying the threads together to make it matter 218
Introduction 218
Summary of findings 218
Ontological principles of practice 221
Limitations of this research and future directions 225
Implications for education 226
Implications for theory and practice 227
Threats to reigniting the ontological 227
Supports to reigniting the ontological 228
A call to act with intention 231
Conclusion 233

References 234
Appendix A - ASOS Poster Presentations 2016 278
Appendix B – Articles for publication 280
Appendix C –Conference presentations 299
Appendix D – Model of Human Occupation links 306
Appendix E – Sample of PhD journal entries 307
Appendix F – Links between contributors from other fields 313
Appendix G – CMOP-E environment definitions 314
Appendix H – Comparison of systems theory terms and the Model of Human Occupation 318
Appendix I – My interpretations of watching Tom 328

List of Figures

Figure 1. Broad overview of thesis chapters 13
Figure 2. How occupational therapy gained an ontic perspective. 37
Figure 3. Straps used to immobilise and retract the arms. 41
Figure 4. The order of nature from a positivist perspective. 44
Figure 5. The Law of Three Stages for societal development. 45
Figure 6. A noble lady sawing wood on doctor's orders for the sake of her 'nerves'. ... 48
Figure 7. Life in a workhouse picking oakhum. 51
Figure 8. The Binet-Simon Scale (1905) for measuring intelligence. 56
Figure 9. Seneca Training School. 58
Figure 10. Graphical representation of fatigue and progress. 62
Figure 11. How occupational therapy gained an ontic perspective. 66
Figure 12. Before and after with the mask on made by Anna Coleman Ladd. 71
Figure 13. Northway's social relationships target diagram. 74
Figure 14. "Teaching occupational therapy to student nurses" 76
Figure 15. Advertisement showing two occupational therapy treatment modalities. 82
Figure 16. The patient profile chart showing muscle and a functional test. 84
Figure 17. Conceptual model showing that the disadvantaged could be grouped. 87
Figure 18. A student nurse in a wheelchair experiencing deprivation day. 88
Figure 19. A Euler diagram showing the degenerate conjunction. 96
Figure 20. Basic outline of Bronfenbrenner's Ecological Model. 100
Figure 21. Set theory diagram of typical components of occupation, where self-care, productivity and leisure are subsets of occupation. 101
Figure 22. Set theory used more accurately to depict the typical components of occupation. 101
Figure 23. Basic outline of PEO and CMOP-E models as Venn and Euler diagrams. . 101
Figure 24. PEO model as a Venn diagram with its mathematical logical expression. . 102
Figure 25. Syllogistic representation of the PEO model. 103
Figure 26. Bridgman amongst other esteemed participants of fourth Solvay Conference on Physics held in Leiden in 1924. 107
Figure 27. Kurt Lewin's diagram for the life-space of a child and an adult. 111
Figure 28. Kurt Lewin's topological representation of the person. 112
Figure 29. Epistemological triangle for occupational therapy knowledge. 123
Figure 30. A basic interpretation of the Peircean triadic model making process in occupational therapy. 123
Figure 31. Semiotic process as applied to the Peirce's triadic relationship model. 124
Figure 32. Human Occupations Model adapted from Reed and Sanderson 1983. 142

Figure 33. Interpretation of Reed and Sanderson's (1983) range of structured to unstructured environments. 146
Figure 34. Interacting elements on the Model of Occupational Performance 148
Figure 35. Depiction of the Canadian Model of Occupational Performance..... 153
Figure 36. The human being as an open system. 173
Figure 37. Model of Human Occupation environmental layers..... 179
Figure 38. Model of Human Occupation dimensions of the environment..... 185
Figure 39. The environment in the fifth edition of the MoHO. 186

List of Tables

Table 1: Summary of perspectives, methodology and methods used in thesis 18
Table 2: Differences in epistemological terms 19
Table 3: A selection of University of Southern California Master of Arts theses. 116
Table 4: Semiotic elements used with an application to occupation-based models. 121
Table 5: Model of Occupational Performance terms used in diagram and text. 150
Table 6: Depiction of the person and environment between the 1997/2002 154
Table 7: Change over time in the development of the concepts in CMOP-E. 159
Table 8: A sample of Master's of Arts (Occupational Therapy) theses from the University of Southern California. 168
Table 9: Key terms associated with the editions/versions of the MoHO. 181
Table 10: An example of a comparison of Canadian Model of Occupational Performance and Engagement terms and Heideggerian questions. 200
Table 11: An example of a comparison of Model of Human Occupation terms and Heideggerian notions. 201

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

01/12/2019

Helena A.J. Blijlevens Reid Date

Candidate contributions to co-authored work

The journals these articles have been published in have given permission for publication to be included in the thesis. The contribution of co-authors for publications in this doctoral thesis are as follows:

Published articles (see Appendix B):

Reid, H. (85%), Hocking, C. (10%), & Smythe, L. (5%) (2019). The making of occupation-based models: History and semiotic analysis. *Canadian Journal of Occupational Therapy,86*(4), 313-325. doi: 10.1177/0008417419833413

Reid, H. (85%), Hocking, C. (10%), & Smythe, L. (5%) (2019). The unsustainability of occupational based model diagrams. *Scandinavian Journal of Occupational Therapy.* doi: 10.1080/11038128.2018.1544663

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Reid, H. (90%), Hocking, C. (5%), & Smythe, L. (5%) (2018). Emancipating the environment. Canadian Association of Occupational Therapists Conference, Vancouver, Canada, 20th – 23rd June 2018. (oral presentation)

Reid, H. (90%), Hocking, C. (5%), & Smythe, L. (5%) (2016). *Betwixt and between: Imagining the liminality of inclusion*. 7th Australasian Society of Occupational Scientists Symposium, Auckland, New Zealand 21st - 22nd April 2016. (poster presentation)

Reid, H. (90%), Hocking, C. (5%), & Smythe, L. (5%) (2016). *Exclusion in occupational therapy*. 7th Australasian Society of Occupational Scientists Symposium, Auckland, New Zealand 21st - 22nd April 2016. (poster presentation)

Reid, H. (90%), Hocking, C. (5%), & Smythe, L. (5%) (2015). *Bringing the environment in occupational therapy to scrutiny: Fresh insights enhance practice*. 6th Asia Pacific Occupational Therapy Congress, Rotorua, New Zealand 14th – 17th September 2015. (oral presentation)

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To my family:

A page of words will not make up for the sighs of burden cast at night under a shared comforting blanket, or for the furrowed brows trying to make sense of 'all the words'. These words will not reconcile the tears shed in heartache at another day without mum because she must study. Nor will a page of words do enough to recognise the proud smile from parents who might have dreamed of doing the same in their time only to pass on their hopes to their children. These words are here to express my appreciation to my family and those who have passed. Thank you for creating the space and time at home for me. Thank you for listening to me ramble on and explain notions, ideas, constructs, theories and models. Thank you for instilling in me an energy for being curious, to make completion of this project possible. Thank you for the hand-drawn pictures and words that encouraged and inspired me during these years. It has been an authentically enjoyable journey where I have revelled in my travels to the depths and breadths that the reading and thinking has taken me. From the tangible earth on the ground, to the stars of possibility and back again I have tried to make what has floated in my head something real on paper. I hope this document inspires others to seek out an understanding about things that matter in what makes us human.

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Chapter 1 Introduction

> People who have not been in Narnia sometimes think that a thing cannot be good and terrible at the same time.
>
> C.S. Lewis, The Lion, the Witch, and the Wardrobe (1950, p. 123)

Introduction

This thesis explores the history and design of occupation-based models[1], theoretico-conceptual devices constructed to help organise knowledge, and their western philosophical underpinnings that encouraged a scientific line of thought in occupational therapy at the expense of other perspectives important to practice. To be clear from the start, I will refer to the theories on how a person engages in occupation as 'the model', and the symbols that represents many of our models as 'the diagram'. This is explained in more detail later in this chapter. Occupation-based models and their diagrammatic entities are common in occupational therapy and provide a structure for organising knowledge. They are held up as epitomising the theoretical basis of occupational therapy practice. Some, but not all of these, have related assessments and intervention guidelines that appear to define what practice is important. However, I will argue that models rely on stagnated perspectives that no longer have relevance in today's practice because the human experiences of the world have greater complexity than what a model can capture. I could have said that practice has grown more complex, but this would be a false claim, because practice has not grown in complexity of its own accord. Instead the profession has created complexity through its research, theories, technology and through its lack of critical depth in questioning the underlying philosophy of practice. It has moved away from the lived experience, the ontological, to devise theoretical perspectives of how practice 'ought' to be, the ontic.

This research is, in some ways, a reaction to the call to be more questioning of the underlying philosophies in practice. Responding to this, I have used a history of ideas methodology for the first of my thesis questions:

1. What was the contextual history that led to the development of occupation-based models?

[1] In feedback on the first manuscript for publication from this thesis, a reviewer suggested I remove the term 'practice models' which I had used up to then and replace it with occupation-based models.

To answer this question, I firstly look at how people receiving care were perceived and secondly how practice was carried out between the 1800s and the 1980s, when conceptual models began to emerge. Looking at these two specific strands will show how the scientific stance has grown and gained strength in occupational therapy through philosophical and scientific shifts. Throughout this part of the research I look for the main contributions to occupational therapy's understanding of people and practice that came from other disciplines. These contributions are explored to further help answer this first question and find out what scientific traditions were adopted into occupational therapy.

I assume that models help therapists step over a threshold, as in stepping into Narnia (Lewis, 1950) that allows them to see the world from, in this case, an occupation perspective. Models provide a lens through which to see the world of practice, but only once a therapist has understood what theory lies behind a model can it be appreciated for its benefits and shortcomings. I also assume that, seen from afar, things are not always as they seem to be and as the opening quote suggests, models could be both 'good and terrible' at the same time. All the various occupational therapy models depict their key concepts using simple geometric diagrams arranged in such a way as to indicate relationships between concepts. The only one that does not do this is the Kawa model (Iwama, Thomson, & Macdonald, 2009), which uses a pictorial representation of water flowing down a rocky riverbed. Each is portrayed as a faithful vehicle of assumed shared understanding in the discipline's practice domain. Occupation-based models have a diagrammatical representation made up of symmetrical shapes, almost as emblems (or a Narnian wardrobe) of the underlying theory. These representations are examined more critically using semiotics and through an analysis of the systems theory they claim to use. Semiotics, the study of signs and symbols, aims to show how the theory behind the model is symbolised. A more in-depth analysis of what the models are trying to convey works towards answering the second question:

2. What do the diagrams representing the models reveal and neglect from practice in their use of signs and symbols?

In this study I challenge some of the ideas in occupation-based models and the underpinning philosophy and epistemology that has gone into the model making. I argue that by taking for granted the presence of occupation-based models and the perspectives that underpin them, practice has lost important ideas about how a person

engages in the world through their every-day doing. I argue that every-day doing cannot be captured through reductions, mechanisations and abstracted concepts utilised by the occupation-based models. Instead, and the reason why this study is important, I argue that occupation-based models be abandoned to bring the meaning of everyday doing and being to the fore of the profession. To show this I ask a third question:

3. What perspective can bring back a person's everyday doing, the things that matter most to them, that are currently overlooked?

This final question points the way forward to an ontological perspective for the profession. That means, to focus on the doing, being and becoming of the unique person within their own context. It is to come to understand the things that matter.

In this chapter I will explain how this study came to be what it is now. I will outline previous research on occupation-based models. I conclude by defining the key recurring terms as well as the boundaries of this research.

Professional and personal contexts

Any form of ethical historical research uses a measured and careful approach to ensure all elements of rigour are maintained. One element of that is to recognise my perspective and how that may have shaped my interpretation at this time. To that end, a presuppositions interview was conducted between myself as researcher and my supervisors at the start of the research process. Because the study refocussed along the way, another interview was held to focus on the pre-understandings and contributions of my own history to this study and my pre-existing understanding of what practice models were, are and could be.

To explain how this research began, I need to return to some very early beginnings of my own story and reveal both personal and professional inspirations to this research. I am Dutch, and thanks to my parent's continuation of cultural values and traditions after immigration to New Zealand/Aotearoa in the 1980s, I speak, write, read and at times think in Dutch. This heritage has enabled me to have a good appreciation of the meaning of some German words from Heidegger's [1889-1976] philosophy, which came to be important reading as I grappled with the ontological perspective. It has also given me a general appreciation that language can shape how people view and interact with the world and others. My father's profession took him far and wide across the seas for months at a time, with the occasional family trip for a few months to places I could

not easily return to now. This helped my broader-mindedness and tolerant views of others' ways of being and a relative ontological perspective, recognising that this perspective is still naïve. As well, I have a strong appreciation for nature, its patterns and power, gained from time on the water and being acquainted with the land, sea and sky environment around me for my personal pursuits. My mother, a genealogist, has done reading and translating for the Dutch National Archive of 600-year-old texts. Her research on our family tree, rural and canal ways of life, from 100-300 years ago fascinated me and how people experienced the world then and what driving forces there were for change.

On completing high school, I was determined to live out my dream of becoming a physiotherapist. Unsuccessful attempts at admission to the physiotherapy programmes forced my hand to select a second option. I decided to do an engineering degree and embarked on a very black and white, scientific course. Two years of hard science and mathematics, I believe, helped my understanding of the more positivist elements in the thesis, such as the chapter on the contributions from other fields (Chapter Five). I believe it also gives me a view on the world that helps me see other possibilities in how it may be experienced and conceptualised.

At the end of two years I faced a dilemma, as I was not happy with the prospect of a career in engineering. I read a pamphlet on occupational therapy and was overwhelmingly excited at the potential this held to use the more mechanical and people related sides of me. I started occupational therapy in 1995 and enjoyed my study. I was particularly proud of an assignment I did in my final year writing about the early philosophies of occupational therapy. This is a good indication of my early interest in the history of occupational therapy and its philosophies. I also remember one of my current supervisors talking about a new American model called the Model of Human Occupation. Our class in 1997 was introduced to it from the first edition 1985 (Kielhofner, 1985) text and, honestly, I did not understand a word of it or what it meant in real life. The models that made more sense were the Person-Occupation-Environment model and the Canadian Model of Occupational Performance. These models I took with me into practice after graduation when I worked in older adults and neuro-rehabilitation wards. I used the Canadian Model of Occupational Performance as a basis for some post-graduate work and developed a more occupation focussed initial interview and clinical documentation system (Blijlevens & Murphy, 2003) that several large hospital based services now use.

My occupational therapy 'training' has made it hard to step outside of my 'conditioned' way of thinking about people, their occupations and the environment. However, my training and practice equally allowed me to bring a sound understanding of the models and how they may be used in practice. As well, I have taught for the last 10 years in an occupational therapy curriculum that is based on the Canadian Model of Occupational Performance and Engagement. During my academic career, I felt frustrated teaching a first-year paper about the environment in occupation. Each year I cobbled together a booklet of articles, chapters and other readings because there is still not a fundamental text such on the 'environment' in occupational therapy, other than those focussed on intervention or chapters within larger texts on occupational therapy. My familiarity, appreciation and understanding of the complexity that the environment offers practice grew immensely. I began to contemplate producing an e-book on the environment part of my thesis. Importantly, I came to recognise the gaps that our models portray. Here enters this thesis. The idea of a resource related solely to the environment was cast aside as I began to understand the reductionist nature of such an approach. I began to see how it was the models of occupational therapy that had cause me to reduce practice down to categories, environment being one of these. It was my fascination with the development and influence of the 'models' that became the focus of my thinking. At the start of my research I would not have believed the serendipity in where it has come to. The combination of my interest in history, philosophy, maths and physics, the environment, people, their occupations and experiences were unexpected.

The impetus and the spotlight shifts in the study

Looking back, there have been three shifts along this thesis journey. Initially I wanted to write a textbook on the environmental cornerstone of the occupational models and somehow make this my PhD; it was a huge undertaking. I shifted away from this idea and started to review all the models and trace the concept of the environment to the models' origins. As the research progressed into its third year, it became apparent that the models I explored contained very similar structures, underlying philosophical perspectives and contextual influences, especially in North American based models. Another shift occurred at this point in the research and I decided it would be more useful to put the spotlight on critically examining the philosophies of the models to show how the environment is viewed within them and whether any change had occurred to the environmental perspectives along the way. This meant the detailed development

of the model was less important versus the critical exploration of the philosophies and whether 'model A' was any different in its perspective and influences than 'model B'.

Along the way, I submitted two abstracts for an occupational science symposium (see Appendix A for posters) which challenged my thinking in relation to the exclusionary nature of the environmental concepts. This spurred my desire to discover what prior knowledge or understandings went into the occupation-based models more broadly and so the third shift occurred to explore what overall knowledge models contain and also overlook in their making. During this final transformation and while writing the chapters, I submitted two manuscripts for publication, as well as presented at the 2018 Canadian Association of Occupational Therapists annual conference in Vancouver (See Appendix B for journal manuscripts and Appendix C for conference slides). Through the journal reviewing process I honed my thinking, which helped polish both articles and chapters. I have drilled down to occupational therapy philosophies, history and what models can and cannot contribute to practice. Having recognised the limitations inherent in the ontic view of practice, I then moved on to explore ontological, lived experience possibilities.

Previous research into occupation-based models

Occupational therapy is interested in three fundamental areas; the person, their occupations and the environment in which this occurs (World Federation of Occupational Therapists, 2012). There are at least nine occupational therapy models in English trying to capture theory on how a person engages in occupation in an environment[2]. Each has a different description of the model's constructs, a faintly different purpose (Christiansen, Baum, & Bass, 2015), and each states it is a faithful representation of occupational therapy's three cornerstones. The intention of models was to guide practice, delineate areas for assessment, distinguish occupational therapy from other professions and "act as a unifying basis for the profession….[that would be] critical in describing its rationale" (Krefting, 1985, pp. 176–177).

Before the 1960s, however, the word model rarely appeared in the profession's literature. Theory was described in a linear manner in prose, capturing causal sequences

[2] 1. Canadian Model of Occupational Performance (North American); 2. Person-Environment-Occupation Model (North American); 3. Model of Human Occupation (North American); 4. Person-Environment-Occupation Performance Model (North American); 5. Occupational Adaptation Model (North American); 6. Ecological Model (North American); 7. Kawa Model (Japanese); 8. Occupational Performance Model - Australia (Australian); 9. Biel Model (Swiss). A substantial list can be located at https://ottheory.com/theories-and-models

from observations. From about the late 1960s, models seem to have taken on a life of their own. This trend was started by many of Mary Reilly's students at the University of Southern California. These students (Baker, 1977; Posatery Burke, 1975; Esenther, 1969; Heard, 1975; Hillis, 1974; Liptak, 1970; Pezzuti, 1970; Plumtree, 1977; Short, 1977; Wirth, 1970) created models in their master's theses based on systems theory, and drew on much the same literature[3], in an attempt to refocus knowledge on occupation (Reed, 2008). Reilly was interested in developing an occupational behaviour theory and saw that models presented a tool for conveying knowledge (Reilly, 1962). She believed that a model was a representational, thinking tool with its usefulness based on its ability to order, categorise and simplify complex phenomena. These messages were consistent with many other discourses at the time, expounding the benefits of conceptual modelling. As King (1978) said "In order to satisfy the profession's current needs, a theory or science of occupational therapy should provide….a model that is readily explainable to other professionals and to consumers [with]….a theory that is adequate for scientific elaboration and refinement" (p. 255). Thus, models became a vehicle or tool for the expression of what was considered important for occupational therapy's knowledge base. Occupational therapy models began coming to life in practice in the 1970s (Kielhofner & Barris, 1986), with a burst of activity in the early 1980s. Further model development and discussion followed in the 1980s and beyond, as summarised below:

Publications describing the development of:

- A model for occupational therapy (Mosey, 1980) based on the biopsychosocial model (Mosey, 1974). A revision to Mosey's model of the major parts of the profession was published in 1985 (Katz, 1985)
- The Model of Human Occupation (Kielhofner, 1980a; Kielhofner & Burke, 1980) – a complete publication list can be found at https://www.moho.uic.edu/resources/scholarship.aspx
- The Occupational Adaptation model (Schkade & Schultz, 1992)
- The Ecology of Human Performance framework (Dunn, Brown, & McGuigan, 1994)
- The Person-Environment-Occupation model (Law et al., 1996)

[3] These theses used arguments based on the work of systems theorists: Kenneth Boulding, Karl Deutsch, Alphonse Chapanis, Robert Chin, David Cleland and William King, Arthur Koestler, and Ludwig von Bertalanffy.

- An Australian Occupational Performance model (Chapparo & Ranka, 1997) Which has a number of associated publications. A complete list can be found at http://www.occupationalperformance.com/
- The proposed Model of Lifestyle Balance (Matuska & Christiansen, 2008)
- The Kawa model, a novel alternative to the 'Western' models of rehabilitation (Iwama et al., 2009).

Assessments derived from a specific model as applied to practice

- How models have been applied in specific practice settings (e.g. Clarke, 2003; Grant & Lundon, 1998; Haglund, Ekbladh, Thorell, & Hallberg, 2000; Rousseau-Harrison & Rochette, 2013)
- Research on the models' assessment tools or treatment fidelity of models (Bowyer & Tkach, 2018; Brown, 2009; Pan et al., 2011; Williams, Fossey, & Harvey, 2010).

Use of models in:

- Practice and what influences model use (Boniface et al., 2008; Davis-Chesire et al., 2019; Ikiugu, 2012; Joubert, 2010; Lee, Taylor, Kielhofner, & Fisher, 2008; Owen, Adams, & Franszen, 2014; Vermaak & Nel, 2016; Zhang, Mccarthy, & Craik, 2008). These mostly take a positive stance on model use.
- Education (e.g. Ashby & Chandler, 2010).

Research and ongoing development of models

- Reviewing the evidence or research related to models (Kielhofner, 1984; Kielhofner & Barris, 1986; J. Lee, 2010)
- The contributions of occupational science to new models of practice (Wilcock, 2001b; Yerxa et al., 1989).

Conceptual discussions or disagreements on:

- Environmental or ecological interactions e.g. (Barris, 1982; Howe & Briggs, 1982)
- Critique of the concepts in the Model of Human Occupation (Hocking, 1994; Leclair, 2010; Mocelin, 1992, 1992)
- Support for occupational therapy models as holding the profession close to a focus on occupation (Joosten, 2015)

- How to develop eclectic practice based on more than one model (Ikiugu & Smallfield, 2011; Ikiugu, Plastow, & van Niekerk, 2019; Wong & Fisher, 2015)
- The conceptual links between multiple models (e.g. Larsson-Lund & Nyman, 2017; Stamm, Cieza, Machold, Smolen, & Stucki, 2005).

Critique of models for their:

- Consistency with professional values and beliefs (Creek & Feaver, 1993; L. Haglund & Kjellberg, 1999; Hooper, 2006; Labovitz & Miller, 1986; Turpin & Iwama, 2011; Whalley Hammell, 2009, 2011)
- Symbolic limitations and Deweyan contributions to perspectives of occupation, person and environment e.g. (Dickie, Cutchin, & Humphry, 2006; Laliberte Rudman & Huot, 2013; Madsen, Josephsson, & Madsen, 2017).

As the list shows, theoretical thinking and modelling has been on the profession's radar for fifty years, but since the early to mid-1990s discussion on their effectiveness in practice, their consistency to professional philosophies and their place in clinical practice has grown. The critique of the models' consistency to professional values or symbolic limitations sits within the scope of this study. Whalley Hammell's (2011) argument on the domination and hegemony of things like models is reminiscent of Mosey's (1985) declaration that practice needed to be pluralistic rather than monistic, as well as Yerxa's (1998) fear of the oversimplification of practice through rendered down theories. Decades apart, these scholars saw the dangers in using abstracted theories which have become a referential preference in practice. However, none of these publications show the background history of the models themselves and what their underlying philosophies are. Instead, these publications take the models at face value, mostly accepting them as they stand today. Furthermore, none have analysed the model's diagrammatic representation or underlying structural framework, which I argue is a contributing factor to their hegemony. The purpose of this research is to extend the profession's thinking about the place, meaning and usefulness of models in occupational therapy practice and scholarship by digging deeper into their origins, how they portray espoused day-to-day practice and how a person's engagement in occupation is represented through these models.

Definition of some key words

Here I define the concepts that are the foci of this thesis and that are used in answering the three overarching questions; models, occupation-based models, and semiotics as the

study of the model's symbolism as well as ontological and ontic. Words related to the methodology are covered in the next chapter.

Models

Merriam-Webster's dictionary defines a model (-noun) as a description or analogy used to help envisage something, such as an atom, that cannot be directly perceived, or as a system of theories and inferences presented as a mathematical description of an entity ("Model," n.d.). It can be understood then that the word model in occupational therapy could be used to describe both the diagram and the theory that underpins it. The two models examined in this thesis name themselves as models and have a system of theories to explain a person's occupational performance, so I will call overall theory a *model*. Extending on the dictionary definition, Sebeok (2001) explained that models are symbolic representations of empirical phenomena illustrating certain phenomena, that allow people to look for patterns and guide actions through their predictive powers. Because they are symbolic, they are abstractions of what reality is, and they use generalised concepts to define their domain of concern. But to prevent confusion, in this thesis, the word *diagram* will be used when discussing the symbolic representation of the model's theories.

As conceptual devices, models and their diagrams are used in a network of activities in the production of scientific knowledge. In occupational therapy, many scholars have attempted to get a clear grasp on what a model is (Cole & Tufano, 2008; Kielhofner, 2009; Kielhofner & Barris, 1986; Mosey, 1981; Reed, 1984), and differences in terminology still exist. Some argued there were four hierarchical levels of knowledge in occupational therapy. At the top was paradigm, followed by practice model, programme conceptual framework, and then personal frame of reference. The practice model had a limited number of concepts and principles that defined, bounded and guided practice across and within specialities (Kielhofner & Barris, 1986).

Occupation-based models

Occupation-based models (somewhere between paradigms and practice models as described above) are defined by Cole and Tufano (2008) as ways of organising to help with "…categorising ideas and structuring approaches to thinking about complex problems" (p. 61). The purpose of occupation-based models is to portray a relationship between people, their occupation and the environment. They are conceptual models in that they represent concepts and assumptions, as distinct from practice models, which

recommend specific approaches to remediate dysfunction (e.g. Dynamic Model of Cognition (Abreu & Toglia, 1987; Toglia, 2011)). As discussed earlier, occupation-based models are usually expressed symbolically as diagrams and are intended to inform occupational therapists across diverse practice contexts. Each holds true to the profession's cornerstones of the person, occupation and environment, but different explanations of those concepts and the relationships between them are described in originating texts. Occupation-based models is the term that will be applied in this thesis or shortened simply to model.

Semiotics

Semiotics is the study of signs, symbols and the things they connote. It is both the theory and analysis of signs and signifying practices. Semiotics is often associated with the disciplines of linguistics or with mathematics, and with the philosophy of structuralism. Where semiotics is the study of signs, symbols and their meaning, semiosis is the process of meaning generation through signs. Both are discussed in this research. Terms used within semiotics include signifier, symbols and signs, and the signified. The physical, real life entity, or referent or referential domain, is referred to using a signifier. The signifier could be a sound, an image, smoke or letter conveying meaning. In the case of this study, it is a person's engagement in occupation. The gestures we use in everyday life are symbols, for example, the curling of a finger to gesture "come here". Signs and symbols are a language rooted in culture and learning (Stokoe, 2000). The signified is an interpretation of a signifier. In the case of this study, occupational therapy models signify the real-life entity of a person or people engaged in occupations in various contexts. This is discussed in more detail in Chapter Six.

The ontic and ontological

Metaphysics is the fundamental branch of philosophy concerned with many concepts including, amongst other things, existence, knowing, time, space, world, objects, and identity and change. Ontology and the ontic are a dichotomy, but with a common beginning, that of ont- which means to be or being, and so the ontological and the ontic have dichotomous perspectives on Being. The ontic is the real physical existence of what there is. It is the study of entities, independent of any knowledge about these entities, and it aims to prove or verify certain facts rather than being some theory of it. The ontic in our world are the factual, concrete or real things about a person. A person can be understood in terms of their history, biochemistry, biology. This comes from positivist science, which strives for objective evidence, usually by using apparatus to

determine what is “true”. Ontic is narrowing and sees only a part of the world, or “this or that human being” as objects (Heidegger, 2001, p. 222). For example, it is ontic when a therapist uses assessments, or models and theories that are limited in their scope or sees the person as detached from the environment and their experiences of the world. The ontic is complemented by concepts like universal laws and scientific investigations. For this reason, science or empiricism help make the ontic more accessible than other research or methodologies. Ontology, on the other hand, is an arm of metaphysics that seeks to answer the question ‘what is the nature of ‘being’, reality, existence and change?’ Ontology does this by looking for the profound significance of experiences or things as they reveal themselves to existence. Ontology asks questions such as what it means ‘to be’? In effect ontology seeks to understand the most fundamental issues in everyday life, and thus ontology can be seen as foundational to occupational therapy.

Despite the dichotomy, humans are both ontic and ontological (Dreyfus, 1991), but the ontological exists before the ontic. That is, there is something, for example, measurement in nature that underlies or explains, but this ontically focused ‘something’ does not make sense of our way of experiencing the world from which we always start. These shifts between the ontic and the ontological happen frequently in people’s every-day lives. A simple example is when a person is at an orchestral recitation, they may feel deeply moved by the music which brings the experience into the ontological sphere. When a musician makes a mistake, the person may scan the orchestra to see where the noise came from, searching for the factual existence of the error. This is the ontic.

Research boundaries

Fortunately for knowledge development, information or ideas are never located in isolation with one author; they are shared and often very complex in their networking across people and disciplines. Unfortunately for a thesis such as this, it means putting boundaries in place for a manageable and realistic project. Whilst there is a formidable history prior to the 1800s that laid the early foundations for model thinking, this is not solely a history thesis. Thus, my research into the historical context of models has its outer limits set to literature from 1800 to the 1980s when models came into existence in occupational therapy. The criterion for choosing the models that are the focus for this research was those with a substantial research base or wide international use. For this reason, the Model of Human Occupation and the Canadian Model of Occupational Performance and Engagement (current name) are researched. Whilst the Kawa model is included in curricula in Australia, Canada and the United Kingdom (much less in the

United States), it was not a focus of inquiry in this study due to its smaller research base, alongside the Occupational Adaptation Model (included to a higher extent in the United States curricula). The Person-Environment-Occupation (PEO)[4] and Person-Environment-Occupation-Performance (PEOP) models are also not covered in this thesis but are discussed in the articles based on this thesis (see Appendix B). Overall, the PEO, and P-E-O-P use similar rationale, research base, and structures to the models selected for inclusion in this study.

This study is primarily situated in Northern American literature, except for the early part of the 1900s timeframe when Britain and Canada shared close ties, so I also draw on British literature. For the contextual history, I limit my research to literature that pertains either to occupational therapy or to healthcare. Other boundaries on which philosophical inspiration I drew from are addressed in subsequent chapters.

Overview of the thesis

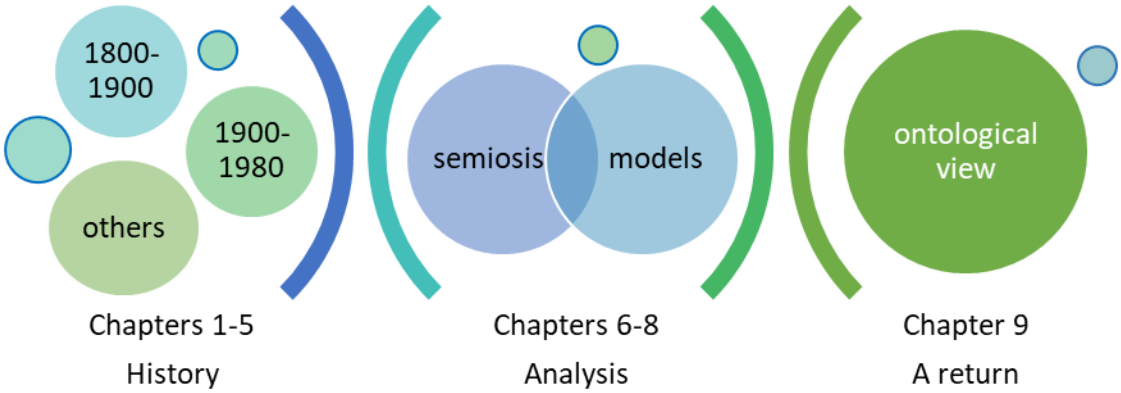

Figure 1. Broad overview of thesis chapters

Figure 1. captures the overview of this thesis, with this chapter and methodology at the start amongst the historically focussed chapters, represented by the two additional empty circles above. The thesis is presented here in a linear fashion, which belies the fact that this has been a kaleidoscopic process, with many spotlight movements along the way. Shifting between historical research with a certain focus, to critically appraising the models, to semiotics and finally to the ontological perspectives may seem

[4] The Person-Environment-Occupation model developed in Canada, in the adjacent decade to the Canadian Model of Occupational Performance and Engagement and draws on similar, if not the same sources and there are many similarities in its history as the latter model.

fragmented. But the constant movement between reading, reflection, analysis, chapter writing, publication and discussion is the nature of a multifaceted doctoral thesis rendered down into these pages. What remains is to describe, briefly, the organised presentation of this research as convention requires.

Chapter Two – Methodology

In Chapter Two I outline the epistemology and ontology used in this thesis. Because this research straddles more than one worldview across the chapters, I make a point of delineating between these in the beginning of this chapter. Following on from this I explain the theoretical perspective underpinning both modes of research and analysis used in subsequent Chapters Three to Six. These are the history of ideas and semiotics, which are explained in more depth. I felt this was needed as both are distinct areas of study that come together in supporting the analysis of the models themselves in Chapters Seven and Eight. Because this thesis in essence comes from three perspectives, with the final culminating chapter on the ontological perspective, this is also elaborated on in Chapter Two.

Chapter Three and Four – Contextual history

Chapters Three and Four are two historical chapters that look specifically at the time from the 1800s to the 1980s. Chapter Three begins in the 1800s and ends at the beginning of the 1900s. Chapter Four starts at the time just before the occupational therapy profession began and extends to the beginning of the 1980s. As described in the introduction to this chapter, at the heart of these chapters is the way people were viewed and what practice was like. By using academic literature in these chapters, I look for what espoused practice was, as this flowed into what practice should be according to the models. These chapters went some way to inform the publication on the history of model making (Reid, Hocking, & Smythe, 2019a).

Chapter Five – Contributions from other fields

This chapter explores the contributions that maths, physics and psychology made to the early years of occupational therapy. The signposts to each discipline's contributions are clearer in the chapters that look specifically at the models themselves, but are signalled in the preceding chapters Three and Four. The influences explored are not only the science inherent in the disciplines that brought this type of discourse to occupational therapy, but also the science or mathematics behind diagrammatic representation of models. Science's influence on the grouping of concepts and taxonomies is discussed

here which leads into the next chapter where I show how these were built up into faithful representations of what a person's engagement in occupation looks like using shapes and figures. Excerpts from this chapter were incorporated into the publications on the history of model making publication (Reid et al., 2019a).

Chapter Six – Semiotics

At this point in the thesis a sidestep is taken into semiotics to build on the analysis of the diagrammatic representation of models. Using semiotics, I unpack what the representations of the models are trying to convey. I draw on the content from the previous chapter on taxonomies and apply that to my critique of the diagrams. This chapter was used across the bulk of both articles on the history and unsustainability of models and their diagrams (Reid et al., 2019a; Reid, Hocking, & Smythe, 2019b).

Introducing Tom

Between Chapter's Six and Seven, Tom is introduced, as shown by the extra circle in Figure 1. This short two-page introduction is like a referral to a therapist before seeing him for the first time in his home. Tom's story and video are later used to illustrate how the models would describe his engagement in the activity of peeling a potato, and then how an ontological perspective would interpret it. It is deliberately placed here in the thesis before I make a start on the analysis of the models, to simulate an occupational therapy practice process, such as when a referral is received.

Ethical considerations

Ethical approval to use Tom's story in this study was obtained via a previous study. In 2005 I completed my Master's thesis on the lived experience of people with dyspraxia after stroke (Blijlevens, 2005). As part of my ethics application at the time, the participants consented to their stories (and videos) being used for future educational purposes and professional presentations[5]. As such, I have used Tom's story in chapter nine to illustrate my argument for a strengthened phenomenological perspective.

Chapter Seven and Eight – The occupation-based models

A combination of processes is woven into Chapters Seven and Eight. I begin each chapter with a brief contextual history of each model's development (the Model of

[5] Ethics approval at the time was granted to include the use of analysed material and video-recordings for education and/or study related professional presentations. It received ethical approval from the Auckland Ethics Committee on the 22nd of February 2003 (AKY/02/00/026) and for the amended study criteria on the 12th of January 2004 (AKY/03/02/026).

Human Occupation and the Canadian Model of Occupational Performance and Engagement) before applying semiotics to each with the aim of revealing their strengths and weaknesses. At the end of each of these chapters is an interpretation of Tom's performance using the model. These reviews are not exhaustive but might be what therapists would collect from their first encounter with Tom in his home. The analysis of the specific models was used across both publications (Reid et al., 2019a, 2019b).

Chapter Nine – The ontological perspective

The argument of the thesis reaches its pinnacle in this chapter, after I have shown the contextual history of the models and their various contributions and analysed their diagrammatic representations. In Chapter Nine, I explain why an overt Heideggerian ontological perspective is needed in occupational therapy, having revealed this as the critical deficiency inherent in the occupation-based models. My aim with this chapter is to re-open and stimulate discourse on the epistemology of practice and the missing pieces on the ontology of being. This chapter's centrepiece is an in-depth ontological interpretation of Tom from two points of view akin to emic (insider's perspective) and etic (outsider's perspective) viewpoints.

Chapter Ten – Conclusions

In the final chapter, the last circle in Figure 1., I reflect on all that has come before in this thesis, giving an overview of the study, and the conclusions that can be drawn from the culmination of Chapters Three to Nine. I conclude this chapter by considering the study's limitations and trustworthiness and, finally, its implications for practice.

Chapter 2 Methodology

> Maybe you are searching among the branches, for what only appears in the roots
>
> Rumi [1207-1273]

Introduction

In the previous chapter, I contended that models provide a structure and organisation for occupational therapy knowledge, but hold back the development of practice that is attuned to people's real experiences of their world. To research how the knowledge is organised in the models required a two-part process beginning with uncovering their history, followed by a more detailed analysis of the models as 'objects' of knowledge. In Chapter One I showed how my own history led me to this topic and how the unfolding nature of simultaneous research, thinking and writing delimited the thesis to give it the eventual focus on occupational therapy models and their history. History, broadly described, is about bringing *a* consensus to what may have happened in the past, even though we may never know the past exactly. Emphasis is placed on 'a' because this is my *re-presentation* of occupational therapy models based on the available historical evidence before the models began.

Exploring the history before the models' beginning shows what knowledge was considered important for their development, and as the quote above describes, what the roots are to the branches that are visible today. It will also show how they have developed and 'idled', bringing into question their relevance in understanding a person's everyday doing. By looking at the models as objects, I was more critical of them in themselves and their fit with practice.

This chapter takes the form of a traditional methodology chapter by explaining the theoretical and philosophical perspectives employed that support this research. I describe the three main strands of the research; the history of ideas, semiotics[6] and the ontological perspective. My aim is to demonstrate the fit between the methodologies and the methods, beginning with an explanation of the epistemological and ontological foundations of this research. After discussing the methodologies and philosophies, I describe the specific methods used to gather, make sense of and describe the history and the semiotic process in relation to language and symbols. As well, the methods used to

[6] Semiotics is the study of signs and symbols. Not to be confused with semiosis which is the technical term (noun) related to the process of meaning making through signs and symbols.

support the discussion in the phenomenological chapter are discussed. I conclude this chapter by considering the notion of trustworthiness and the limitations created through the choice of methodology and methods.

The making of meaning and the making of meaningful reality: Epistemology and Ontology

In this section I defend which epistemology and ontology fit best with this research and describe the concepts from my point of view (see Table 1). To begin, I recognise there are innumerable texts dealing with epistemology, alternative paradigms and ontology, revealing that many words and concepts overlap or are used interchangeably in research (Yvonna S Lincoln & Guba, 2013). Furthermore, this research straddled multiple worldviews as discussed in the last chapter. For example, I researched the positivist tradition in the early to mid-1900s and its contribution to occupational therapy in Chapter Five, then move to a deconstructionist view examining the models more closely using semiotics, and finally to the concluding ontological argument in the final chapters of this thesis. These three pervading strands are shown in the table below.

Table 1: Summary of perspectives, methodology and methods used in thesis

Perspective	**Kind used in this thesis**
Epistemology	Constructivism
Ontology	Relativism
Theoretical Perspectives	Interpretivism Structuralism and deconstruction Ontological
Methodology	History of ideas Semiotics/semiosis Heideggerian phenomenology
Methods	History of ideas Semiotic analysis Searching for phenomenological meaning

Epistemology

Epistemology deals with the kind and scope of knowledge and its possibility (Crotty, 1998). The kinds of knowledge are, according to Crotty, either subjective, objective or constructive. Subjective knowledge is the kind where meaning is placed on the object

by the subject. My research is situated in a constructivist epistemology, where it is assumed that meaning is not discovered by stumbling upon something that holds knowledge, as in the objectivist fashion, but rather meaning is constructed by a person. There are several differences in terms surrounding this epistemology according to Crotty (1998) and Lincoln and Guba (2013). These differences are outlined in Table 2, but they have overarching common ground about humans interacting with other humans to create knowledge, either independent of social reality or dependent on the social context.

Table 2: Differences in epistemological terms used by Crotty (1998) and Lincoln & Guba (2013)

Author	**Term**	**Explanation**
Crotty	Constructivism	Psychological term where meaning is discovered rather than constructed by the person
	Constructionism	Sociological term of the collective process of generation and transmission of knowledge. Dependent on human practices in a social context.
Lincoln & Guba	Constructivism	Meaning is created independent of social reality. Can be created by groups
	Constructions	Semiotic organisation of terms and inter-relationships.

Based on the descriptions in the table, it may seem realistic to claim Crotty's constructionist epistemology. This claim would be because this research deals with ideas generated by individuals and groups of scholars, transmitted across time and globe through interactions between humans and their world. However, Lincoln and Guba's (2013) 130 or so conjectures on constructivism equally support a group process and supports the more deconstructionist semiotic process taken in Chapter Six. Lincoln and Guba presented very clear parameters for what is and is not a construction[7]. In contrast, Chapter Five, where the contributions of other fields are considered, I present a review

[7] The use of the term *constructions*, versus talking about constructivism and constructionism, resonated with this research. A construction is the "…semiotic organization of terms and their interrelationship in ways that allow the constructor both to crystallize them in [their] own mind as well as to communicate them to others" (Lincoln, & Guba, 2013, p. 29), to make sense of something real.

of literature based in a very objective epistemology with positivist traditions (i.e. physics and mathematics), but the constructivist epistemology still works as a foundation if we regard the physicists and mathematicians creating the constructions of their field. Furthermore, it is the adoption of the maths and physics ideas into occupational therapy over time that is of interest in this research, rather than any specific mathematical proof or physics theorem. Constructivism resonates with historian and physicist, Thomas Kuhn's [1922-1996] view that constructions are the product of a scientific community and evolve over time (Overton, 2012). In the case of this research, the 'scientific community' are the academics and scholars in occupational therapy who have created and perpetuated the idea that occupation-based models are truthful explanations of every-day human life. Thus, the constructivist epistemology fits with its close look at the construction of this kind of knowledge[8]. Constructivism also supports the ontologically focused Chapter Nine where my argument culminates in the claim that the practice model is a construction, albeit symbolic. It is precisely the model's symbol that does not resonate with my call for occupational therapy to return to people's primordial experiences of the world.

Ontology

Epistemology and ontology need to "fit" together to make useful sense of the phenomena being studied (Yvonna S Lincoln & Guba, 2013). The claim that this research sits within a constructivist epistemology, naturally ties it with a relativist ontology. As Lincoln and Guba stated, "relativism is the basic ontological presupposition of constructivism" (2013, p. 39). A relativist ontology supports the view that social reality, and the sense made of it, is relative to the person's context. Before I can claim this thesis uses constructivism, I need to recognise the presence of a being, or group, who constructs that meaning. That is, to make meaning of reality requires meaning-making beings to make sense of it, which pertains to ontology. Ontology, as defined in Chapter One, is an arm of metaphysics[9] that looks for the profound

[8] It could be argued that all objectivist science is interpretivism (or post-positivism), because the scientist still needs to make sense of parts and wholes as in hermeneutics, which is also explained through the Heisenberg's uncertainty principle when applied to social context. Heisenberg's uncertainty principle in quantum mechanics (not to be confused with the observer effect), asserts that due to the limits of accuracy, nothing has a definite position, momentum, or trajectory. This has cultural influences on concepts of freedom of will, and places critique on the possibility of determining an ultimate reality suggesting positive science is also relativistic versus realistic.

[9] Metaphysics, as a fundamental branch of philosophy, is concerned with things like existence, knowing, time, space, world, objects, identity and change, necessity and possibility, religion and spirituality, determinism and free will. Metaphysics is interested in the rules of things and how things play by these rules.

significance of experiences or things as they reveal themselves to existence. Ontology is the study of Being and asks “what is the nature of reality”. In this way epistemology and ontology go hand in hand.

Relativism is captured in this thesis in three ways. The primary two relativistic perspectives stem from the historical research process. Firstly, by nature of this being historical research, it was from my point of view and thus called historical relativism. Relativistic views hold that people have subjective experiences of the world and that these are socially constructed through inter-subjective epistemology. This inter-subjective epistemology supports a history of ideas anti-individualistic stance whereby history is understood to be multi-causal, created by people and events. Likewise, this philosophy supported my involvement in the research process and analysis, which was also relative to my context as described in the first chapter of the thesis.

The second historical claim to relativism is because I explored multiple contexts across time, recognising the occupation-based models are steeped in half a century of occupational therapy and societal perspectives with numerous contributors to their development. Within this, each person involved in a model’s development saw the world through their own cultural lens, supporting my claim to this second relativist rationale. Alongside this, the accumulated layers of interpretation across time and place in the profession, as more theory separated the existential world from the culturally fabricated theoretical creation of the world, removed the authenticity of reality, an idea supported by Crotty (1998).

The third claim to relativism is exposed in the final chapter on the phenomenological ontological perspective. Some authors describe phenomenology as sitting between realist and idealist ontologies (Stepanich, 1991). But equally, it is seen to fit within a relativist ontology as every person has unique experiences of the same event or phenomenon. In Chapter Nine a philosophical shift was made which set the style of writing on a different path. This final chapter is the culmination of my argument, having pointed to it along the way through the analysis of the occupation-based models. I chose a phenomenological perspective because the neglected elements in the occupation-based models were about the need to go “back to the things themselves”. A more authentic understanding of a person’s everyday life experiences was needed, as this is the essence of occupational therapy.

In the initial stages of my research I explored the idea of using other philosophies to culminate my argument and to extend recent scholarship, through Dewey's [1859-1952] transactionalism or Merleau-Ponty's [1908-1961] embodiment notions for object use (e.g. Bailliard, Carroll, & Dallman, 2017; Barber, 2006; Cutchin, 2004, 2007; Cutchin, Aldrich, Bailliard, & Coppola, 2008; Dickie, Cutchin, & Humphry, 2006b). These perspectives aimed to find the inter-relationships between the parts of the models or a person's experience, which lies in contrast to Heidegger's phenomenology. Heidegger's philosophy takes us most deliberately to ontology, to the primordial experiences, the meaning of being and the things that matter. This resonated with occupational therapy because much of what Heidegger focussed on are the everyday things that people do, and how individuals use things to make sense of themselves. Much of Heidegger's, as well as Merleau-Ponty's, philosophy considered the use of equipment, tools and the making of things. Therefore, whilst Chapter Nine was predominantly informed by Martin Heidegger, it also drew on other works, such as those of Maurice Merleau-Ponty to supplement or expand on certain elements of my discussion.

Theoretical perspectives

A theoretical perspective is the philosophical stance that informs the research methodology (Crotty, 1998), with the two dominant perspectives being positivism and interpretivism. Interpretivism's foundation comes from Immanuel Kant's [1724-1804] Critique of Pure Reason (Kant, 1781), in which he argued that people do not directly experience the world out there as it is, but interpret their sensations. Interpretivism is also linked to philosophies of Max Weber [1864-1920], and in particular Wilhelm Dilthey [1833-1911]. Dilthey, a hermeneutic philosopher, argued that understanding through lived experience research was the goal of social science research. He was reacting against contemporary ideas that the social sciences should emulate the positivist methods of the natural sciences based on the assumption that humans could be treated as complex machines.

The first part of this thesis investigated the history of models underpinned by an interpretivist methodology. The interpretive paradigm has an ontological doctrine of relativism (Guba & Lincoln, 1994; Schuh & Barab, 2007). The specific critique of the models as individual representations of theory, by means of semiosis, was supported by a deconstructionist perspective. The deconstructionist perspective works here because I essentially took apart the models' diagrams. These are explained further in the sections

below, but first I explain what alternative methodologies were considered in the early stages of the research.

Alternatives considered: Method in the madness

The decision to use the history of ideas for the main part of the research was not taken lightly. Alternatives were explored which at times made me feel lost in a quagmire, but also firmed up the rationale for the final path I found myself on. For example, a pragmatic view of occupation-based models was considered earlier in the research, but eventually discarded. This perspective would have pursued questions like:

- Considering all its implications and the practices actually associated with models, does adherence to this theory make our lives better?
- Is anything about this theory useless, or worse, an obstacle to living in a better way?

A pragmatic view would have kept the research in the present moment researching the fit or utility of the models with practice today, forgetting the models' base assumptions or beginnings as potentially questionable in their usefulness.

Another historical approach that was briefly considered was poststructuralism or deconstructionism, which is associated with French philosophers Jacques Derrida [1930-2004], Michel Foucault [1926-1984] and Gilles Deleuze [1925-1995]. Poststructuralists are interested in the discursive formations, socio-cultural norms, and the underlying systems that support the text. A Foucauldian perspective would have seen the research questioning the power games that might be lurking in the conceptual ideas and practices on such things as the environment. Rather than exploring the influences of the historical context, it would have been about the *purpose* of changes in the environment as an occupational therapy concept. I chose the history of ideas at the expense of poststructuralism because I wanted to find out about the idea of the model per se, not so much the hidden agenda or political basis of the social forces.

Occasionally in the research process I took a more critical view, but I do not claim to use a Foucauldian approach. Instead my goal was to 'read like a critic'. This meant being attentive to such things as the key words in a text, as well as article or book in its entirety looking for the texture, tone, and voice of the text (Collini, 2016b). Reading like a critic exposed a key problem in historical analysis discussed later, that of presentism.

History of ideas

History has never been and will never be a positivist research process (Collini, 2016b), and so it sits within an interpretative paradigm. Interpretivism rejects the positivist idea that the same research methods used in fields such as physics can be applied to study human behaviour (Kelley, 1987; Levers, 2013; Scotland, 2012). The relativist ontology supports interpretivism, and the philosophies of hermeneutics and phenomenology, because language is actively shaped and moulded by people's subjective realities and the meaning ascribed to them (Cresswell, 2008; Crotty, 1998). For example, occupational therapy's history, prior to the 1940s, was in moral treatment and a more humanistic or socially driven arts and craft perspective. However, the realities of the 1940s shaped the language and what was considered important in occupational therapy. The conflict in occupational therapy's paradigm around this time saw the discourse change to more positivist perspectives. Had the profession been more grounded in its principles at the time, this might have been avoided or moderated. However, the pull of the positivist tradition appears to have been stronger, likely due to larger societal and contextual forces in play that are discussed in Chapters Three to Five. The wider socio-political context changed the scope of occupational therapy, which in interpretivism would be described as the change imposed by the environment on the event being studied. Even then, the strength of the influence is hard to determine, and contextual influences are not direct because people are also influenced by their own subjective realities.

Model analysis

The chapters dealing with the models' diagrams themselves (Chapters Seven and Eight), required a divergence from the historical approach. To analyse the models I chose semiotics, the study of signs and symbols. The theory of semiotics developed in 1868 when Charles Sanders Peirce [1839-1914] argued "we have no ability to think without signs" (Short, 2004, p. 241). This was Peirce's direct challenge to René Descartes' [1596-1650] Cartesianism and idealist views (Short, 2004). Peirce's sentiments from the late 19th Century are similarly echoed by Sebeok (2001), who contended that the ability to develop signs is a basic survival skill for, not just for the human species.

Semiotics is located in structuralist[10] and discourse analysis[11] perspectives and seeks to explain how meaning is constructed and understood through signs, symbols and communication (Chandler, 2017). Structuralism sees that people merely inhabit pre-existing languages that allow them to make a story using words. In this research, the 'story' of an individual's occupational performance used abstractions and the language of shapes and symbols to portray it in an occupation-based model. The point of the chapter on semiotics was to understand the meaning models were conveying. Consequently, Peircean theories served to unpack the meaning of occupation-based models. Thus, I argue that I have taken a deconstructive approach in analysing the models to highlight their gaps and failings. Deconstruction of the models was aimed at disassembling the reified models, the potential metaphors and practices found in their construction. Lincoln and Guba (2013) stated that deconstruction seeks to "lay bare the assumptions which undergird its [the construction's] production, employment, and deployment" (p. 68), without becoming elitist. In order to expose or illustrate the failings of the models more clearly, I threaded the concept of the environment throughout some of the chapters.

Ontological perspectives

Interpretivism, as discussed earlier, supports an ontological perspective. Using the ontological perspective was another divergent step made in the philosophical base in Chapter Nine. This was done deliberately to challenge the dominant positivist traditions and ontic views in occupational therapy. Using phenomenology allowed for the meaningfulness in 'being-there' to become visible and to see what mattered. Phenomenology is a distinct discipline that has been central to the continental European philosophy tradition throughout the 20th Century, led by Edmund Husserl [1859-1938], Martin Heidegger [1889-1976], Maurice Merleau-Ponty [1908-1961], Jean Paul-Sartre [1905-1980] and Simone de Beauvoir [1908-1986]. Each of these philosophers had a unique perspective within the existential phenomenological field. Merleau-Ponty broke away from Descartes' perspectives, thanks to Heidegger, and "filled the gaps" in Being and Time (Heidegger, 1953) to look at perception and the body. His vocabulary came

[10] Structuralism was an earlier literary movement begun by Ferdinand de Saussure [1857-1913]. It is concerned with understanding language meaning systems synchronically like a closed system. I did not go any further in adopting a linguistic 'Saussurean', pragmatic or structuralist view. Deconstruction which came later, developed by Jacques Derrida [1930-2004] emphasised units of language that do not have definite meaning, like an open system.

[11] Discourse analysis can take on many levels and topics. For example, discourse analysis on syntax, semantics, political, science, interactions, power and symbols. Therefore, semiotics is a form of discourse analysis.

from ontology, using some of the dense sounding prose in Heidegger's work, and took it in order to understand what it means to be a perceiving human being with a body. For example, Merleau-Ponty stated that habit is "knowledge in the hands, which is forthcoming only when bodily effort is made, and cannot be formulated in detachment from that effort" (Merleau-Ponty, 1962, p. 144). The ideas of habit, embodiment and doing resonated with what occupational therapy is interested in, which is why I drew on some of Merleau-Ponty's work alongside Heidegger's phenomenology.

As discussed earlier, Heidegger's phenomenology was chosen for this study because it revealed the meaning of being a person in the world through experiences and doing everyday things. Phenomenology attempts to gain insightful descriptions of the way the world is experienced pre-reflectively (Van Manen, 2014). This kind of description is different to psychological or sociological ones in that it resists taxonomies, categories or abstractions that try to control or explain the world. Instead it offers the possibility of a believable understanding that bring us into contact with the world. Phenomenology required a shift in language and style of writing, which is evident in Chapter Nine. It is story-like and does not try to convey a truth of the person's experience, but a plausible insight into it.

Methodology

History of ideas + context

The history of ideas is the historiography of concepts or ideas in their context. This approach was created by philosopher Arthur O. Lovejoy [1873-1962] in the 1920s (P. E. Gordon, 2012; Mandelbaum, 1965). Lovejoy sought to replace traditional historical approaches, which were seen as too linear, rational, and logical, with one that recognised the fluidity of idea development where ideas layer, 'taking' from other times to create the present (Whatmore, 2016). Lovejoy established a process of studying discrete 'unit ideas' that may change overtime (Lovejoy, 1936). Some critique of this approach was that it neglected the context for these changes to 'unit-ideas' (Shogimen, 2016; Skinner, 1969). The wider scope on ideas and their context exists in recognition that ideas do not develop in isolation but by, and through, the people who use them (Bevir, 1999; Cuttica, 2012; D. R. Kelley, 2002). This is similar to Thomas Kuhn's revolution of scientific knowledge as ever evolving through people's connections (Kuhn, 1970). This shows that ideas are non-individualistic, which necessitates social forces. In turn, these social forces give power to the ideas and affect people (Whatmore,

2016). Social forces include things like social movements, discord in a community, role changes, or the general uptake of research that shaped ideas and knowledge. The interaction or transaction of people, the ideas and social forces occurs through transmission, translation, diffusion and reception (Whatmore, 2016). These variables are not necessarily the focus of this study, but do form part of the contextual history to occupation-based models.

Therefore, in this thesis I adopted an 'history of ideas plus context' approach to widen the historical understanding. I did not go so far as to research the people themselves and their personal history due to the limits of the project; this is left to intellectual historians[12]. Consequently, the history of ideas approach was pluralistic, starting with the words but aimed at revealing social forces at play through the ideas the words conveyed. For the contextual history chapters (Three and Four), I looked through academically inclined texts[13] for clues as to how people were viewed at the time to see what ideas were important and whether these were ontic or ontological in nature. This helped answer the second question, as described in the last chapter, on how practice was espoused. In contrast, for the chapters dealing with the contributions from other fields and specific models (Chapters Five, Seven and Eight), I wanted to know what specific theories were brought through to the models. After all, it is well known that occupational therapy has drawn from other fields (Hooper, 2006; Yerxa, 2014), in particular from psychology. This meant exploring wider contexts and forces through the literature from those disciplines to link ideas between 'schools' and the cultural or social contexts in which they developed (Kramer, 2004). For example, some terms adopted into the Model of Human Occupation, such as 'affordance' and 'press', are psychological. I examined the original psychology texts to see how they were translated in occupational therapy models. Words like this were the signposts of the false starts, wrong turns and direct paths to our present use of occupation-based models. Furthermore, using a self-imposed broadened history of ideas approach allowed me to explore some of the links between key people, such as Mary Reilly and her University of Southern California students, and academics of other disciplines that contributed to occupational therapy (see Appendix D for links with the Model of Human Occupation).

[12] Intellectual history arose between 1960s to 1980s and is attributed to authors such as Donald R. Kelley, John G. A. Pocock and Quentin Skinner (Megill & Zhang, 2013) who challenged the 'unit-ideas' approach taken by Lovejoy. The shift in the history of ideas has been tied up with shifts toward social and cultural histories in America (Megill & Zhang, 2013) and with post Kuhnian views of paradigms (D. R. Kelley, 1987) as well as post-modernism (Bevir, 2011).
[13] What was written about is different to what was done. However, I could only rely on text analysis.

The historical method

Historical research is regarded as an approach in its own right that allows the researcher to discuss past events in their context, to provide possible answers to current issues or problems (Lewenson & Hermann, 2008). Historical research may, at face value, appear a straightforward methodology with broad indicative methods for retrieving evidence, analysing it and writing it up. However, information on the specific method is difficult to garner, and experts in the field share the assessment of using *indicative* methods (Gilderdale, 2013; Megill & Zhang, 2013), leaving it up to the researcher to figure out how to conduct the research. Nevertheless, some indicative methods were adopted to gather and analyse the historical data, and to write history. Adhering to Lewenson and Hermann's (2008) five fundamental commitments reduced methodological vulnerability. For example, believing that all variables are intrinsically interconnected, emphasising contextual detail and that historical information is not necessarily true or false but more or less probable.

Gathering historical data

One of the idiosyncrasies of the adapted history of ideas approach was being able to gather information from multiple philosophical schools with multiple avenues to look for both historical context and content[14]. Essentially anything that gave clarity to the topic was welcomed, but needed to be chosen in a judicious way so as not to be misinterpreted (Collini, 2016a). Drawing on multiple schools of thought took me down many rabbit holes with complex reading on such concepts as positivism, empiricism, rationalism, naturalism, and utilitarianism. The content I wrestled with down these rabbit holes included writing on social reform in healthcare, psychophysics, mathematics and systems theory.

Getting back on track was part of the process of moving back and forth to understand the content and context. I used inductive reasoning to come up with a few nebulous conclusions which were refined through continuous reading and research. Inductive reasoning is understood to be humanistic, versus sociological, helping build theory from the ground up. This was achieved through familiarity with the literature from professional and personal experiences, called theoretical sensitivity, and continual

[14] This may appear to be post-modernistic by denouncing meta-narratives and embracing 'truth' as being a conglomeration of many types of knowledge (Walliman, 2011). However, post-modernism aligns better with Foucauldian or social theories that examine discursive formations.

interaction with the texts and evidence. This enabled me to make generalisations and identify preliminary relationships between ideas in the historical documents.

Collini (2016a) stated that three forms of publication predominate in importance for the historian; the essay, scholarly edition and monograph. In occupational therapy, monographs are rare, and so I used Collini's other advice that history is a collective and that context can be shaped out of critical reading, philosophical analysis and historical explanation. In the interests of keeping the project manageable, the unearthing of texts was not always exhaustive. My aim was simply to discover through reading if there had been change within the perspectives or the adopted terms. The process I used to trace ideas back through time felt like following threads in a knot to try to find the source and route. Sometimes disentangling the threads was difficult, because of incomplete reference lists, even though ideas expressed were undoubtedly from another source (e.g. Reed & Sanderson, 1983). To understand how people were viewed or appreciated, I looked for key words as markers to the underlying philosophies of the time, or feelings or dialogue that portrayed how people were regarded. Some examples of the method used I describe below for illustration.

Some of the first edition publications of the models were located by moving along all current publications through reference lists and associated articles. For example, research on the first edition of the Model of Human Occupation led me to the first Kielhofner and Burke (1980) article in the American Journal of Occupational Therapy. From here I took the thread of work by Roan Barris (1982), to whom they in part attribute their environment understandings to. Based on Barris' work and others referenced in the 1970s and 80s I began to compile a list of familiar authors, such as the recurring systems theorists. The repetition of these authors across multiple sources revealed a pattern to the thinking and influence of ideas in that era. Manual searches, sitting on the library floor for pre-digitised journal articles was also needed. This was done at the Auckland University of Technology and the Auckland Philson Medical Library where archival acquisitions are held. Tracking Burke's work led me to the University of Southern California's digital library where many original theses are archived. The obvious influence of Mary Reilly in the theses brought me to her own work, which was harder to come by. Connections Reilly had to earlier occupational therapists from the United States Army, such as Winifred Kahmann (Chief of Occupational Therapy from 1943) took me to military archives. There were times when

I found that more information was needed but not possible to locate. For example, I was not able to obtain a copy of Kielhofner's Master's thesis.

The archives for the U.S. Army and Navy, Internet Archives, online archival repositories, and JSTOR proved valuable sources for magazine articles, video clips, journal articles, reports and letters, as well as for original texts published by authors. I also read across the text to get a feel for the nature of occupational therapy at the time, to try to align it with bigger, socio-political changes afoot that may have shaped the profession's identity. To help verify the strength of some concepts and the understandings I was building, I checked early literature on occupational therapy education, on the assumption that if education changed it must have been in response to credible knowledge. Seminal pieces of work helped close off certain avenues of investigation.

Evaluating source material and deciding what went and stayed was of utmost importance, as described by McDowell (2002). It required an appreciation of changes over time and a questioning attitude to discover why particular events occurred. To help with this, I kept notes on who 'borrowed' or was inspired by ideas from others (see Appendix D – for an example of the web of connections I unearthed). Simultaneously, concepts such as the 'environment' was traced back through key literature on occupational therapy models. From there the environment and other terms were sourced back to their original versions in systems theory, gestalt psychology and psychophysics. This was to discern changes in definitions and the successes/continuity and failures/discontinuity of ideas, as well as nuances that shaped present ideas and beliefs (Hamilton, 1993). The continuity of ideas was important, but also what was not written, either intentionally or because it was too every day or inconsequential (Curthoys & McGrath, 2009). So, I also looked for the 'invisible' ideas, assumptions and philosophical viewpoints in the writing and occupation-based models which led me to using the phenomenological perspective. Overall, the more I read the more I discovered to read. The challenge was to organise the vast quantity of sources into a readable narrative with a credible, valid and persuasive analysis.

Describing historical data

Historical research seeks to create an informative, accurate, well-balanced account of actions, events and historical trends (Moses & Knutsen, 2012). As with the methodology, guidance on how to write historical research is scant, aside from the role

models of other historical accounts. The writing of the chapters unfolded at the same time as the research and they are part of each other. I followed Curthoys and McGrath's (2009) advice of writing interestingly as well as factually. I aimed to write accurately, depicting undistorted, discoloured information, and I used praise and censure sparingly. I balanced the art and science of historical writing through scene setting, characterisation, and event description alongside trying to show what was new, what was added and the argument to the thesis.

The phenomenological method

I used Martin Heidegger's phenomenology to understand the experiences of Tom, the man featured in the video I brought in as data, in Chapter Nine. To do this, I drew on large sections of Macquarrie and Robinson's translation of Being and Time (Heidegger, 1962), in conjunction with Hubert Dreyfus' archived, online lectures[15] (Dreyfus, 2007). I also used Dreyfus' (1991) book on Being-in-the-World, Thomas Sheehan (2015) whose writing calls for a paradigm shift on Heidegger's interpretations, and Richard Capobianco (1957). Heidegger's Zollikon Seminars (Ciocan, 2015; Heidegger, 2001) were invaluable in helping with the argument around dualism and embodiment discussed in Chapter Nine. Finally, I read numerous articles independently and through a regular Heidegger reading group, which looked at specific elements from Heidegger's works and phenomenological concepts. Following Van Manen's (2014) suggestion of using 'insight cultivators' such as novels, poetry or other first person accounts stimulated creative thinking and helped me to transcend some of my interpretive limits. But reading was not enough to make something mundane, like peeling a potato, into an insightful description of believable experiences. I needed to ensure I was open to numerous possibilities; open to the emotive, distinctly existential, temporal, relational, embodied, intentional, and technical experiences that created meaning for Tom in that moment. I needed to think beyond what occupational therapy theory had taught me and to 'see' what occupation-based models had been hiding, to try and grasp the ungraspable and bring the meaning of Tom's Being into words and writing. The ontological perspective is expanded on in Chapter Nine to explain that chapter more clearly. This intense reading and thinking was journaled to bring my own understanding

[15] https://archive.org/details/Philosophy_185_Fall_2007_UC_Berkeley/Philosophy_185_Fall_2007_UC_Berkeley_Lecture_02_Phil_185-Lecture_2_20423.mp3

to what I was reading and hearing (see Appendix E for samples of my journal entries) and discussed with supervisors.

Trustworthiness

Interpretive studies such as history encounter problems with faithfulness or trustworthiness in the interpretation (Megill & Zhang, 2013; Shogimen, 2016). As with other steps in this kind of research, there is no clear literature explaining how to ensure trustworthiness in the historical method. However, for this research to be useful to occupational therapists and academics afar, it was done rigorously to build trustworthiness. The broader terms trustworthiness describing naturalistic enquiry, (Denzin, 1971; Guba, 1981; Lincoln, 1995; Lincoln & Guba, 1985, 2013) and reflexivity are applied with an added consideration of present-ism[16].

Threats to validity and reliability in this paradigm come in the form of accuracy of description and inferred meaning, omissions or absence of key literature or contextual influences, and the socio-cultural value of the research where a comfortable view could be taken. These threats were overcome by ensuring ontological authenticity, verifying conclusions and alternative accounts with supervisors, using primary and secondary sources of literature, checking concept consistency through mapping and broad reading, and using language that 'fitted' with the literature or context. The limitations and imprecision in language at any one time are such that no interpretation will be final.

Reflexivity is important in establishing rigour, and relies on the continuous process of pondering, returning to and shaping thoughts, analysing and interpreting the information found. It is a process of objectification of the researcher's position in relation to both the past and the present, to ensure bias is minimised as much as possible. Although there is no recipe for bringing the required contextual information forth, my journey between present and past increased familiarity and helped in the judicious choice process and this, in turn, built trustworthiness. Achieving consistent reflexivity has been a challenging endeavour during the intensely immersive reading, writing and thinking, and at most I would describe it as fragmented and partial. Whilst this may be a limitation, it could equally be a strength, as described in the last section on the phenomenological method, offering freedom, daring resistance to fixedness and a more

[16] According to Guba and Lincoln (2005), for research situated in a relativist ontology and constructivist epistemology, the usual criteria of validity and reliability are replaced with authenticity and trustworthiness. However, Guba and Lincoln's term of authenticity relates to qualitative research that involves active participants, hence why trustworthiness and reflexivity are used.

authentic account of the history as I came to understand it. Dowling (2012) described four kinds of reflexivity[17] of which I have embraced a combination of three. I sought to recognise my bias from the research analysis through the pre-understandings interview, I journaled my ideas and annotated findings with some critique of the social and philosophical issues in the context (see Appendix E Journal Entries).

The text-context conundrum or language and present-ism

Present-ism describes the idea that we are affected and driven by the conditions of the present, whether we know it or not, and it is difficult to divorce present perspectives from the past because of 'context'. Likewise, texts cannot be taken as a reflection of the whole society, but of the writer themselves in a context[18]. The context or culture of a particular time produces a language (Curthoys & McGrath, 2009) as many structuralists, linguists and semioticians would agree, which raises three considerations.

Firstly, the language of the past cannot be read as though it was from the present. The awareness that the language used in historical sources held potentially different meanings between past and present needed a reflexive approach to ensure that interpretations were as reliable as possible. To this end, I made critical choices on sources, considering the fit and how representative they were to the overall context. For example, I discarded an article that initially appealed but did not gain traction with citations in later work, or one that used unconventional terms. Furthermore, my approach to interpretation was to try to understand the language as close to its context as possible by, for example, looking up the etymology of words to look for any changes to its meaning across time.

Secondly, the language of the present cannot capture the past. Any historical project is a creation of a narrative on the history from the researcher's point of view through their language and socio-cultural interpretation. I accept the language used in this thesis will not accurately portray a past context. There were steps I took to try to increase trustworthiness in this domain, despite Shogimen (2016) stating that it is impossible to be guided by a practical set of instructions on how to rebuild a correct context. Where necessary, the actual historical language was used to preserve the meaning or the word

[17] Dowling's four kinds of reflexivity are broadly described as objectivist, which holds a more positivist view adopting 'bracketing'; a broader view of epistemological reflexivity such as in philosophical hermeneutics; critical journaling of socio-political issues; and the fourth is a feminist reflexivity.
[18] Similarly, authors do not typically contextualise their own writing and so the texts themselves are decontextualized.

and the ideas, thereby keeping 'the present' out of my writing. Thirdly, meaning is embedded in texts differently through the type of language used. Poetic language carries strong meaning, whereas informational texts carry weak meaning (Van Manen, 2014), which the majority of this thesis uses. Meaning, then, was at times hard to extract and this meant reading across multiple sources to build up a richer picture.

The occurrence of presentism means that history will never be a truly objective discipline. Because of these reasons, care was taken to read broadly and deeply to understand the context better and look for patterns. I have captured some of my own present-ism in describing my personal and professional contexts in the Introduction Chapter.

The lens I brought to the research

Any form of ethical historical research uses a measured and careful approach to ensure all elements of rigour are maintained. Lincoln and Guba (1985) cautioned that qualitative research requires that the "biases, motivations, interests or perspectives of the inquirer" (p. 290) are identified and made explicit throughout the study. Some historical research texts offer suggestions that this kind of research should occur from the researcher's individual perspective (Lewenson & Hermann, 2008). Recognition of that perspective is important to help the reader make sense of the contribution to a larger picture (e.g. culture, gender, religion) and the inter-subjectivity between the researcher's own values that shapes their perception of past events. Therefore, recognising my past and how that may have shaped my interpretation was done through the presuppositions interview held with my supervisors at the start of the research process. As discussed in the previous chapter, another interview was held after my thesis shifted in focus to hone in on my understandings of model and the contribution of my own history to this research.

Limitations

The boundaries set for this research created some limitations in either not being big enough to catch all ideas, or too big that some ideas slip through the boundary lines. All the colourful divergences in my research questions were still motivated by an historical emphasis, but one that was broader and enhanced through the questions I sought to answer. The trade-offs between exactitude and detail, and context and possibility lay in the tension of being too broad over too narrow. I believe I have covered considerable ground in this thesis exploring across multiple philosophical areas, domains of

understanding in several disciplines, all across a manifold of timeframes but with a specific eye for occupation-based models and their fundamental history. At some point in this research I had to say ‘enough was enough’, stop my search and settle on a conclusion, which may in the future serve as a point of origin for some other study.

As already revealed, this history of ideas methodology is laden with limitations because of its interpretative nature. I believe I have sufficiently highlighted these and my steps to overcome this in the preceding discussion on language, interpretation and context. Aside from this, there were limitations in being able to access texts, as alluded to. I acknowledge this is not a complete history and it presents incomplete accounts of both events and context. Being a full-time academic and a mother of two did not allow me to travel overseas to access hard-copy historical data. I relied on electronic records, inter-loanable documents or those archived online. Fortunately, today, electronic material is readily accessible via institutional databases, and global internet archiving platforms.

Summary

In this chapter, I have provided a detailed description of the various methods employed in this study. I began by outlining the epistemological and ontological foundations of the study and provided a rationale for employing multiple approaches to answer my research questions on occupation-based models. Each of these approaches was then described and clarified with some examples of the specific steps taken along the course of the research. Finally, I addressed the main trustworthiness concerns and limitations that arose in this study. The next three chapters set out to describe the contextual history of the ideas that fed into the occupation-based models. Chapters Three and Four, in simplicity, answer the questions ‘what was the view of people’ and ‘what was practice like’. Chapter Five looks at the specific contributions of other fields to occupation-based models.

Chapter 3 Societal and contextual history: Academic views of the frayed edges of sanity, rationality and humanity

Introduction

I stated in the opening chapter of this thesis that occupational therapy's reliance on occupation-based models to inform practice is preventing a more humanistic perspective from re-entering the profession and holds the profession to its 1980s ideologies. My purpose in the next two chapters is to reveal how the profession progressed towards the inception of the models in the profession. I do this by going beyond the historical documents and accounts that have been written about occupational therapy, and seek to answer two main questions:

1. How were unwell (or underprivileged) people viewed in society?
2. How was care and practice shaped by these views?

Answering the first question will show how humanistic practice and ontological views shifted into the scientific and ontic realm. By focusing on illness, disability or disadvantage I assume that occupational therapy predominantly came out of this grounding. I acknowledge that much can be learnt from the arts on how people were viewed, such as the writing of Virginia Woolf, Fyodor Dostoevsky, or E. M. Forster and art work such as that of impressionist/naturalist/realist artists Albert Edelfelt, Gustave Courbet, or Jules Bastien-Lepage. But I stay with the academic writing for the purpose of the next two chapters. To uncover practice as espoused by the scholars, the second question will show that practice changed from an ontological perspective to one with ontic underpinnings about how practice 'ought to be'. I show what contributed to the shift from humanism to scientific, positivist thinking. These contextual markers provide information on what paved the way for models and what was considered important knowledge. Practice is considered broadly, given occupational therapy was not around before the 1900s. With this in mind, I acknowledge that practice has always been both ontological and ontic, with the alienists, doctor, surgeon/butcher seeking to be objective and strive for evidence or a truth of something.

Figure 2, captures the overall changes that occurred in societal ideas, practice and the use of occupation across the centuries. What is revealed is an overall increase in abstraction in ideas and in the scientific or ontic nature of practice knowledge, as represented by the expanding arrow. The diagram does not indicate that at each time

period the prior practices were necessarily abandoned. Many practices still continued into proceeding centuries and decades, and some even continue to be used today.

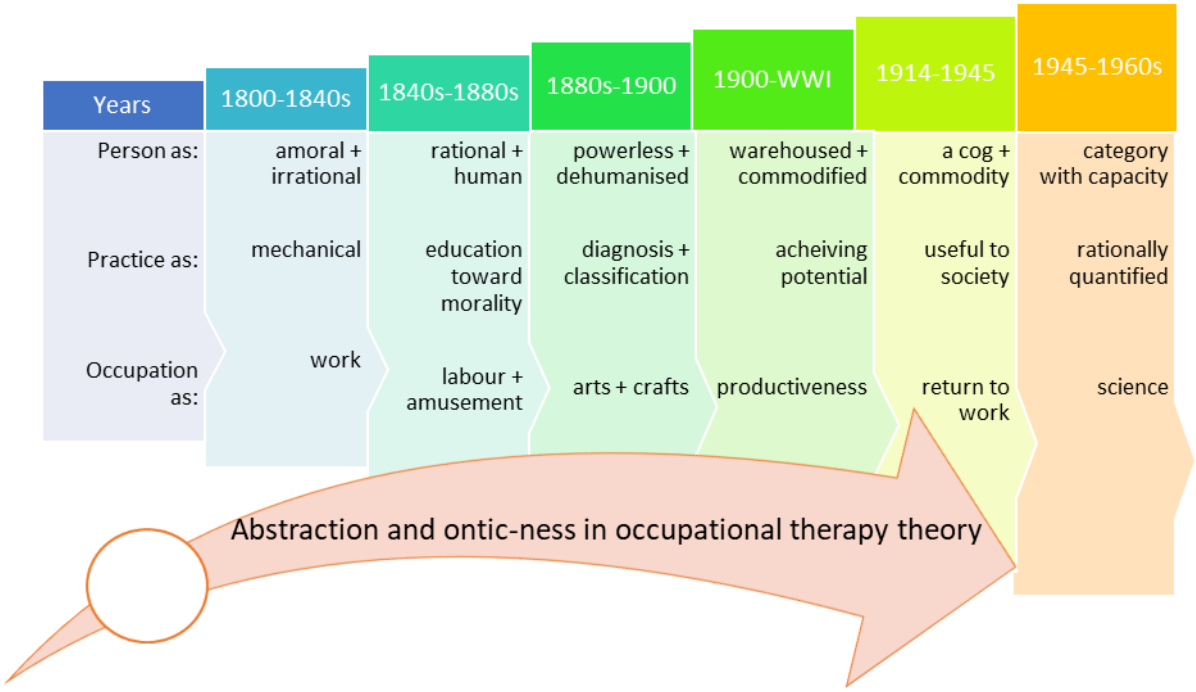

Figure 2. How occupational therapy gained an ontic perspective in occupational therapy theory.

As illustrated in the figure, this chapter reaches back to the 1800s, in particular to the idea of 'lunacy', since that is where most occupation as therapy was used. I then move non-incrementally through the decades to look at the influence of culture, philosophy, and medicine that shaped the way unwell people were perceived. Occupational therapy was not around in this time, but the idea of occupation mattered in western society. As Ann Wilcock (2001, 2002) has shown, occupation has been important for centuries and it is this that provided the substratum for the profession's emergence. To help answer the two questions above, I focus on general perceptions of health and the use of occupation or accounts of people's doing. Across the next two chapters I show that practice was at times led by how people were viewed and in other times was a revolt against popular views. Regardless, the changes to practice and how people were perceived that support both questions will be shown to come from multiple areas in society.

I have selected examples that show the essence of the wide and deep reading undertaken, with numerous other works not mentioned here, to answer the questions for these two chapters. In each section I use different examples, as much as possible, to show the breadth of views across contexts. For example, in the early sections I look at mental and physical illness, then intellectual disability in the 1900s before moving on to physical disability in the next chapter. The dates on the references may indicate they come from a different decade or era, but I ensured they were referring to their own recent history or were influenced by preceding ideas. Alongside this, it is understandable that practices and views are not distinct and generational overlaps exist across all the time periods.

1800-1840s: Person as amoral or irrational

The late 1700s and early 1800s is considered the *late* Enlightenment or Age of Reason[19]. The Enlightenment shook the foundations of western intellectual thought and laid the building blocks for the scientific worldview (Audi, 1999). In this period, the first industrial revolution [circa. 1760-1840] in Victorian England resulted in an increasing gap between rich-upper class and the poor-lower class (Scull, 1981). Amplified by industrial mechanisation, rapid urbanisation and immigration, tenement housing, pressure on sanitation and water supply, people's mental and physical health[20] deteriorated (Buer, 1926; Jenkins, 2016).

To understand the context for how people were viewed, I turn to the predominant philosophies of the time, and those of the era before that set the mood of the early 1800s. I do this because the philosophers of the Enlightenment used considerable effort to disseminate their ideas through such things as the Republic of Letters, and the Royal Society (Fumaroli, 2018) to nobles and the educated. These people, with their cultural capital, were usually also the ones 'in charge' of institutions such as education, law and health, as the law privileged men who were able, rational and Caucasian, a social arrangement that was deeply rooted in medical theories about mind and body (Thompson, 2018). The wealthy, rational and educated were also those apparently not

[19] The Enlightenment was a late 18th century movement in thought with important social and political ramifications. The core beliefs were on human rationality, freedom of actions, educating toward reason, and that rationality could explain the true forms of all things (Audi, 1999). Key thinkers of this time were David Hume, Immanuel Kant, Thomas Jefferson, and Voltaire. Some see the Enlightenment (18th Century) as following the 17th Century Age of Reason (Shimony, 1997), others see them as one in the same extending to 1830 and call them the 'long 18th Century' (Baines, 2004).

[20] Cholera, smallpox, rickets, typhus and tuberculosis (consumption) and its associated scrophula were not uncommon in this time (Buer, 1926). There are also many accounts of intoxication, stress or despair, drug use (opium), and hysteria.

likely to experience the same level of lunacy as the poor, uneducated and immoral (Burrows, 1828).

Morality and reason were important human abilities understood to lead to human improvement (Hughes, 1898; Locke, 1689; Scull, 1981). Intellectuals of this time thought that all human action should aim to increase reason and knowledge, bringing it to a lofty status (Burdett, 1891), rather than increasingly emotional states, since emotional states represented a weakness of mind (Comte, 1848; Hocking, 2008). Medicine, which was becoming a very rational profession, adopted René Descartes' [1629-1649] dualistic theory suggesting that there were no connections between mind and body[21]. Descartes' ideas brought a mechanical view of both the person's body and mind (Suzuki, 1992). Even though there was little to account for how the connection occurred, called the dualistic problem, medicine found a good tool in this theory for it promoted reasoning as the seed house for truth (Hocking, 2008). But those mechanical dynamics could not account for mental experiences, when pathology failed to show the diseased 'insanity inducing' part of the brain. Understanding the nature of lunacy was difficult, so it was plain and simple for the physician; a madman either had reason or did not, according to the ideas of the time[22].

In the first half of the 1800s, lunatics were people who were insane, an idiot, of unsound mind or of dirty habits[23] (Fry, 1877). Lunatics were seen as a subordinate class of people, with the yoke of moral religious superstition, witchcraft, animal spirits and demons not fully removed in society or from science (Trélat, 1839). Insanity was seen as deplorable (Broussais, 1831) and yet as a "sacred disease" ("The moral treatment of insanity", 1847). The default answers to lunacy, since organ dissection did not reveal any causes, was either Divine intervention (Jarius & Wildemann, 2013) or the removal of the moral disorder. The moral and the legal institutions that decided if a person was insane or not were based in the utilitarian ideas of the time. Utilitarianism, espoused by Jeremy Bentham [1747-1832] and later by John Stuart Mill [1806-1873], suggested to

[21] The mind was considered incorporeal versus the corporeal body. The soul on the other hand was located in the pineal gland in the brain, and was understood to be an embodied spirit (Richardson, 1893). The incorporeal mind and its power met with the body in the pineal gland, physically moving it to the side which made the spirits move the limbs. Many scholars of the time argued that the incorporeal mind could not effect a corporeal substance of the body (Suzuki, 1992).
[22] John Locke [1632-1704] on the other hand did not think that madmen lacked reason. Instead he felt they joined ideas together wrongly and mistook them for truths and argued then, from wrong principles. He also saw that all men were liable to the 'weakness of madness' (Locke, 1689, p. 366).
[23] Filth implied social disorder and when found domestically taught immoral habits such as going to a gin palace http://blog.yalebooks.com/2016/05/23/victorian-london-dirty/. Cleanliness came to be seen as acceptable when understanding of germ theory increased.

lawmakers that the 'moral agent'[24] should choose the action that would have the most utility. Utility was measured by the happiness of everyone, and unfortunately it was believed that lunatics were a physical and moral danger to the public and that mania or excitement should be treated with fear and punishment (Bucknill & Tuke, 1879; Burdett, 1891). Morals were implanted back into a lunatic through the civilising process of subjugation, brought on by pain and the penalties of law (Ezorsky, 1972). So lunatics were locked up to shield the public, or secluded, alienated, vilified, outcast and deprived of their freedom (Burdett, 1891) and treated poorly. It is not surprising then, that people grew suspicious of the criteria used to determine insanity, when a person could be locked up for arguing with their parent (Wise, 2012) or for being old and feeble in a workhouse ("Section of psychology", 1887). The ontological tension in this time and leading up to it, moved from scholastic-Aristotelian philosophy to rationalism and drew attention away from spiritual accounts of Being to mechanistic reasoned accounts of being (Audi, 1999; Shimony, 1997).

Practice as mechanical: Recovering reason through lashings and cures

The care of those in mental distress was similar in the United Kingdom, and by relationship in Canada, as the United States. Unfortunately, care did not follow the same progressive industrial revolution path as technology and economics or even physical medicine. Practice was often unregulated and there was an absence of professional organisation (Jenkins, 2016).

Whilst there were pockets of obvious humane care for the insane by physicians and others (Burdett, 1891), perhaps showing generational changes in society, medicine in the 1800s was largely focussed on acute diseases of the body ("The American Journal of Medical Science," 1829). 'Care' was often violent and inhumane[25] (see Figure 3), making it difficult at times to know whether the tormented or the tormentors were insane (Smith Williams, 1895). But a cure was sometimes as simple as a few days to get over intoxication, or recognising that a person spoke a different language (Hansard, 1844). The punitive curative practices raised moral problems, and those involved

[24] Physicians were right not to be involved in the determination of insanity. This was left to the magistrate, alienist (early version of a 'psychiatrist' who assessed competence in a law court) or clergyman (Scull, 1981). Divine retribution, after all, was better handled by the ecclesiastics than by the physician who could not 'see' the pathology of madness.

[25] Treatments included withholding of food, cold showers or submersion baths, muzzles, chains, girdles, handcuffs, leg-locks, circulating swings, whipping (Higgins, 1814; Shimony, 1997). These were used more as punishment and discipline than care and treatment.
Some inhumane practices were still carried out by the so-called moral treatment advocates (Harris, 2016).

needed to account for the benefits of such practices to the lunatic and to the society, perhaps showing a greater uptake of the moral treatment practices in this time period.

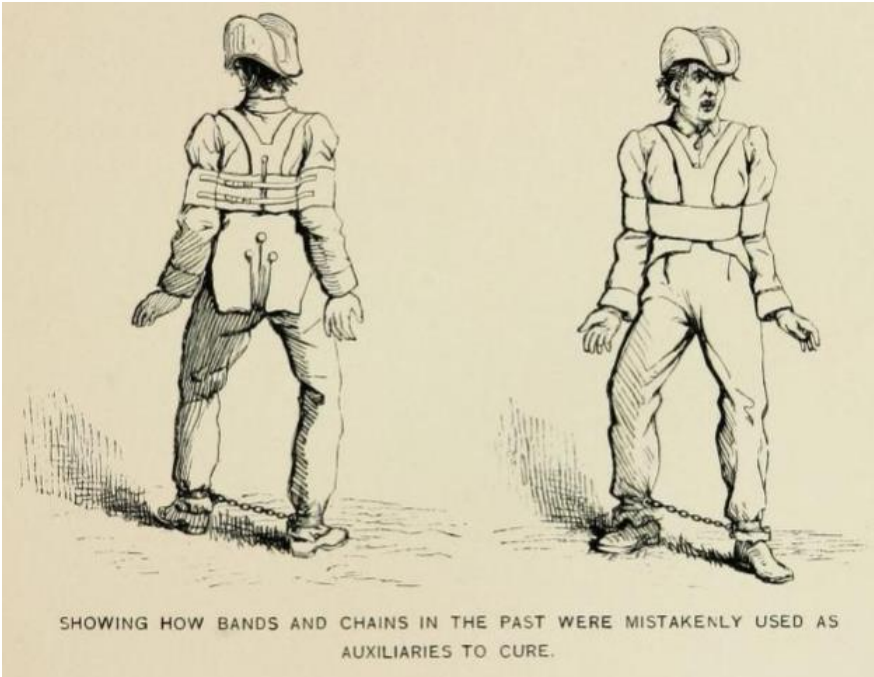

Figure 3. Straps used to immobilise and retract the arms, with shackles and chains to the ankles. From *The Insane in Foreign Countries* (p. 10), by Letchworth, 1889, New York: Putnam's. Copyright in public domain.

Those who were deemed harmless and incurable were boarded-out in the houses of the peasantry or sent to a charitable poorhouse (Burdett, 1891), where work was the main solution (Wilcock, 2001; Wilcock, 2002, p. 52). In the care of the Church they were perhaps more likely to experience generosity and care, as described by the writer of The Religious Tract Society (1839).

> That she was really poor as it respects earthly riches, was evident by her being obliged to apply to the parish for a nurse from the workhouse, to be with her during the first few days of her illness; and not only so, but the kind-hearted nurse who was sent, more than once shared with S. W. the little pittance that she had brought each day from the house for her own dinner. (p. 5)

But these descriptions are far and few between in the literature, revealing the general sentiment at that time was one of disdain for the sick and poor, who were the amoral threads in the fabric of society.

Broussais (1831), a physician with strong opinions, claimed that many of the old physicians treated insanity empirically rather than with logical reasoning. Broussais

suggested that the physicians' knowledge based on experience was less important than that of either inductive or deductive reasoning[26]. The physicians' purpose in insanity was to contribute to the perfection of therapeutics which had not been tested to medicine's principles, and "…to contribute to the improvement of real knowledge, by the overthrow of what is called ontology" (Broussais, 1831, p. 181) as it added to fanaticism[27] through its metaphorical language. So, rather than listen to the experiences, empathise or show care for a person dealing with the life consequences of metastasis, asthma, gout, rheumatism, cutaneous eruptions, it was more important to see these conditions as leading to 'excitement' and insanity through either transference, sympathy or conversion (Burrows, 1828) of their physical symptoms. This view of insanity reveals that the person's meaning and experiences were not important, as they were also seen as then impinging on their normal relationship to other 'rational' and respectable people, namely the middle-class (Scull, 1981). It is clear that medicine was trying to shake loose the philosophical and religious dimensions in its understandings of madness as being of the mind or metaphysically of the soul (Suzuki, 1992) and to bring it into a logical, rational sphere that was much easier to explain, based on what they already knew about the body and mind.

A disease in general was seen as "…nothing else than disordered action of some injured or irritated tissue….it has no meaning separate from the tissue actually affected" (Broussais, 1831, p. iv). The primary aim was to cure and restore the regular, healthy and normal action of the body. Physical medicine had something clear to observe - a lesion, inflamed tissue - and went about treating the understood pathology, or organic disease with the various treatments of the time. The strict, mechanical treatment regimens used for most physical ailments (Jarius & Wildemann, 2013) were derived from the philosophies of René Descartes. Medicine, considered a very rational profession with sound moral judgements (Broussais, 1831), had little to no answers for the person experiencing mental distress, so treatments for insanity were also mechanical in nature with copious bloodletting, purging, blistering, warm baths, and leeches (Burrows, 1828; Duncan, 1845). These treatments continued well into the early 1900s, before the advent of modern pharmaceuticals.

[26] I leave off abductive reasoning as that came to the fore in the late 1800s when mathematician Charles Sanders Peirce introduced it into modern logic (Peirce, 1868).
[27] Broussais wrote very clearly on his support of thinkers like Locke, Hume and Descartes, and unfavourably of people such as Kant, Plato and other 'spiritualists' and psychology. Psychology is understood by some to have grown out of the reactionary movement toward naturalism (Callahan, 1931).

This ideology transitioned to one where morality should make way for understandings based on reason and rationality. Visible and definite physical problems were considered more scientific, since many had begun to rely on ideas of empiricism as leading to truth. For the lunatic, whose mental issues were only visible through their actions, a person was categorised as either sane or a lunatic, based on moral values using a kind of hypothetico-deductive method. Morals however are subjective, relative, uncertain, and closely linked to cultural meanings (Brandt & Rozin, 1997), which were in flux during this time, creating a chaotic and scary place for people experiencing mental distress. Values and morals played a greater role at this time as decided by those people who were rational. But both the moralistic and rational stances showed a disregard for existential ontological views in favour of an ethical and a superficial mechanistic ontology of the nature of being (Shimony, 1997). This argument continued into the next period.

1840s-1880s: Person as rational + human

It is well known that in the late 18th and 19th Century, some people challenged the treatment of people in hospitals, asylums and madhouses, perhaps a sign of a slower uptake in the caring sciences of enlightenment thinking about humanity[28]. But perhaps also because of other reforms at the time that were changing pauper lunatics' working conditions, increasing women's rights and abolishing slavery (Blakesley, 2006). These reforms came in response to a growing realisation that people should be treated more humanely and could not be treated as horrors or as entertainment for the public to pay a penny[29] to see (Wilcock, 2001a).

The distinction between rational/scientific thought and irrational/emotional thought was still important. For example, women were regarded as not able to reason or make proper decisions, since man surpassed woman in all intellectual, physical and practical forces (Comte, 1848). Women, likely those of the upper class, had comparatively little to do with the practical business of life, being of the "affective state" (Worthington, 1861), and therefore more disposed to hysteria and other mental disorders (Hughes, 1898;

[28] Previous to 1841 the annual report from Staffordshire General Lunatic Asylum reported: "The use of mechanical restraint had to some extent been diminished in this Asylum, but still I found the leather muff and wrist straps, iron handcuffs, long leather sleeves, hobbles for the legs, the restraint chair, and various devices specially adapted to the propensities and habits of patients, freely employed both day and night" (Earl Talbot, 1855, p. 12). It was described architecturally as a prison. The 1881 report shows seclusion and fastening of hands of the sides and 'packed' for at least 30 hours.

[29] Bethlem Hospital attracted visitors who could pay a penny to watch the lunatics in the long gallery day rooms as a form of entertainment.

Theriot, 1993). The occupations of upper class women in the Victorian Era were to secure happiness in the home by managing the household servants, organising social activities for their husband's prestige, reading, embroidery, music, and handicrafts (Beeton, 1861). Whereas men engaged in sport, hunting or physical combat, business, and homosocial political discussion based on 'extensive' reading such as philosophy (Mangan & Walvin, 1987).

Philosophy, mingled with mathematics and societal views, meant that rational thinking was important in scientific study. Auguste Comte's [1798-1857] "A General View of Positivism" had a twofold purpose; "to generalize our scientific conceptions and to systematize the art of social life" (Comte, 1848, p. 3), with the aim of neutralising the principles of theology and discarding materialism and spiritualism. Comte's order of nature (Figure 4) claimed that sociology was to become as comprehensive and as homogenous as that of science, with scientists not priests or philosophers leading this shift. He saw the order of nature going from more ancient and advanced sciences, with mathematics at the top[30], to newer and less developed sciences such as sociology lower down.

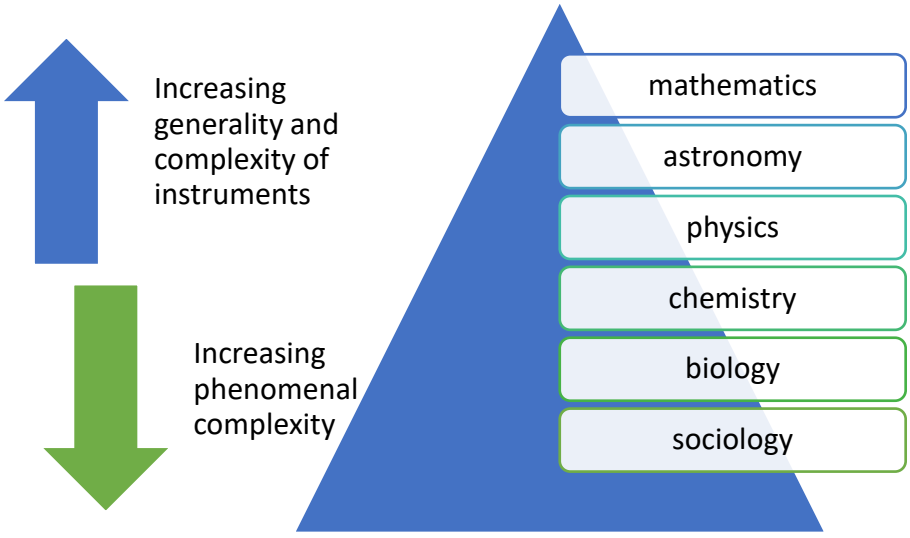

Figure 4. The order of nature from a positivist perspective. Adapted from the writing in *A general view of positivism* (pp. 35-38) by A. Comte, 1840, London, England: George Routledge & Sons. Copyright in the public domain.

[30] Comte saw that the study of the universe should be for the sake of man and humanity or be considered immoral and highly irrational (pp. 33-39).

Comte, credited with the naming of positivism (Bourdeau, Pickering, & Schmaus, 2018; Drack, Apfalter, & Pouvreau, 2007; Pearce, 2015), moved away from theological and metaphysical philosophy to a narrower reliance on observed facts. Comte saw metaphysics being replaced with the scientific method in the philosophy of science and history of thought (Pearce, 2015). His Law of Three Stages[31], or Universal Rule, saw society undergoing three progressive phases in its quest for the truth (Figure 5). An ontological understanding was considered lesser to the rational, ontic view. This positivist tradition was thus infused into health care a long time before the emergence of occupational therapy.

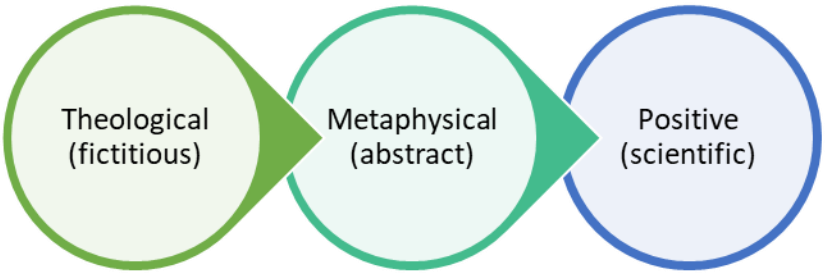

Figure 5. The Law of Three Stages for societal development. Adapted from the writing in *A general view of positivism* (pp. 36-37) by A. Comte, 1840, London, England: George Routledge & Sons. Copyright in the public domain.

In 1871, health was understood by some as "the balanced condition of organs best fitted for due performance of the functions of body and mind within the capacity of the individual" (Acland, 1871). Some reasons given for poor health and race deterioration[32] were: bad air, bad food, bad clothing, deficient fuel, too long hours at work, intemperance, excessive exercise, excessive study, fanaticism, gluttony, idleness, late hours, intermarriage among unfit persons, depressing passions such as gambling, overcrowding, bad lodging, and bad dwellings (Acland, 1871, p. 34). The science of biology, as well as the social status and occupational circumstances of the individual, fuelled by imperialism, nationalism and some enduring religious overtones, determined diagnosis, treatment and outcomes (Arendt, 1976; Shepherd, 2016). Individuals did not

[31] These are the theological stage, where everything is referenced to God and the divine will subsumed human rights; the metaphysical stage or the post-Enlightenment humanist period, where the universal rights of humanity are most important; and the positive final scientific stage, where individual rights are more important than the rule of any one person (Giddens, 1974).
[32] This paralleled Charles Darwin's theories and Herbert Spencer's phrase of "survival of the fittest".

need to stray far from the correct course of behaviour to be considered inferior or be vulnerable.

Certainly, there are glimmers of an ontological and even an existential perspective in this era, unfortunately captured in a book on capital punishment which draws on clergymen's accounts:

> As to the impression which the sentence produces on the culprits, it cannot be denied that, when the last ray of hope of acquittal has disappeared, a state of mind is brought about which borders on despair. By listening, however, to clergymen and functionaries, who during the final sad moments stand beside culprits, endeavouring to comfort them, we learn that their dispositions greatly differ. (Moir, 1865, p. 186)

But for the most part, the power of the empirical and positivist tradition was strong in many areas of society, philosophy and the sciences.

Practice as education toward morality and occupation as labour and amusement

A time of moral treatment[33] ensued, with proponents across the globe[34] calling for the establishment of morally based care and purpose-built asylums[35] that used more humane forms of treatment in order to normalise or equalise people. It took time for these views of the insane patient to spread[36] and practices varied widely as shown through the examples in this section. The cures of the moral treatment era that led to patient tranquillity were in many cases the use of occupations, amusements[37] and religious service, and were even discussed at British Parliament as being the most beneficial to the lunatic (Hansard, 1844). Some asylums employed artisans (butcher, baker, tailor, shoemakers, upholsterers) who would supervise patients in their respective occupations (Burdett, 1891). In later years, this practice was abandoned in favour of

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[33] The work done in France, particularly at Petié-Salpêtrière Hospital, Spain and Gheel, Belgium were concentrated on with unprecedented zeal in the late 18th century for their humane asylum conditions (Burdett, 1891).

[34] French physician Philippe Pinel [1745-1826], English Quaker William Tuke [1732-1822], followed by his grandson Samuel Tuke [1784-1857], American physician Benjamin Rush [1745-1813], as well as school teacher Dorothea Dix [1802-1887].

[35] Asylums built specifically for the care of the insane (using the Kirkbride Plan) began in 1848 in New Jersey. At least seventy-three asylums were built on these principles, usually in seashore or country settings across America and Canada up to 1913.

[36] In Germany, asylums were not called institutions for the insane but "establishments for the cure or care of psychical patients" (Burdett, 1891, p. 401), revealing some potential differences in how people were seen across Continental Europe, Britain and America.

[37] Occupations were things like farm work, workshops, boot repairs, laundry, needlework and kitchen duties. Amusements were things like using airing courts, cricket, carriage rides, walks, billiards, bagatelle, cards, dances and music.

trained teachers, qualified in either manual training or domestic science, due to the pedagogical knowledge of teachers versus artisans (The Board of Education, 1903). This shift reveals that over time 'expert knowledge' on how people do things versus simply what they are doing was imperative.

Some descriptions held an air of pity, but also carried with them a history of previous eras, that of alienation and cautionary fear as people were regarded as creatures, distinct from humans.

> "…a poor infirm woman, an incurable idiot, who was often so dangerous that formerly it became necessary to watch her constantly, lest she might commit suicide….This unfortunate creature having been taught to spin, she has become so tranquil…that she now sits in the ward quietly spinning at her wheel, although only very loosely tied to the back of the chair, to keep her from falling, both her hands being perfectly free….when I saw her, she even showed some dawning of returning intelligence. (Provincial Medical & Surgical Journal, 1841, p. 198)

In this not uncommon case description, we get a sense the physician defended his use of restraint to prevent falling and ensured that her hands were "perfectly free", versus mechanical restraint propelled by fear, so as to be seen to be engaging in humane treatment. The above quote also shows that patients were allocated to available activities according to their abilities, having been duly assessed and educated in the activity, rather than doing activities that held meaning or interest to them.

The fight towards admirable morals and reason was still a key motive for cure, but positive sentiments on moral treatment such as the one below were echoed in numerous places:

> The insane have too long been regarded as something less than human; physical force, "whose days are numbered", the means employed for winning them back to reason; and the houses for their reception, places wherein they might be shut up, as if they had become an inconvenience to the rest of the world; the horrors which have been perpetrated therein, and the misery which their offending inmates have endured, have become matters of notoriety….Brighter prospects are now opening; the lunatic is being treated as a human being; constant and regular occupation for his mind and body are provided, and rational amusements wisely blended. (Rowley, 1845, p. 302)

From this description we can see a more hopeful view of people who were insane, with potential for change, and that occupation could affect the positive change towards

becoming the rational human that society epitomised. The above quote also shows the systematisation of occupation through the measured, ontic qualities in the account through "constant and regular occupations" as also seen in Figure 6.

Figure 6. A noble lady sawing wood on doctor's orders for the sake of her 'nerves' from the late 1800s. Described as caricature since the idea of a lady doing mechano-therapy provoked derision. From *The lame, the halt, and the blind: The vital role of medicine in the history of civilisation* (p.161), by H. W. Haggard (1932), London, England: William Heinemann (Medical Books) Ltd. Copyright 1932 by British Journal of Surgery Society Ltd. Reprinted with permission.

The lunatic human being was still like 'a thing' that needed taming. The idea of deliberate, rationalist, monitored processes is also noted by Burdett (1891), who described the insane patient not as a danger, but as an "invalid who should be confined in some place calculated to result in their own benefit" (Burdett, 1891, p. 107). One of the early attributions to the systematised use of occupation therapy[38] is from 1822 where a certain Dr. Wyman wrote:

> the amusements provided in the establishment for lunatics, as draughts, chess, backgammon, nine-pins….divert the attention from unpleasant subjects of thought and afford exercise both of body and mind (and) have a powerful effect in tranquilizing the mind, breaking up wrong associations of ideas and inducing correct habits of thinking as well as acting. (cited in Dunton, 1915, p. 12)

[38] Occupation therapy is distinct from occupational therapy. The term 'occupational therapy' is used from about 1914, whereas 'occupation therapy' was the phrase used in this time period alongside 'work cure'.

Wyman's overall positive sentiments toward occupation carry with them a distinct element of knowing what these occupations do specifically to the Cartesian body and mind, and in so doing announce themselves as ontic.

An alternative example comes from Duncan (1845) who sympathetically listened to his patient and found it important enough to write about going beyond his professional role to try to help, rather than simply looking at symptoms of a disease:

> For several weeks it [inveterate diarrhoea] continued, till she was worn to a skeleton, and exhausted to such a degree that she was unable to turn in her bed. Despairing of doing her any good by Medicine, I tried to gratify her in every little way in my power, and asked her if there was anything she would like to have….She expressed a particular wish for Strawberries….as soon as this desire was gratified her complaint began to amend, and she recovered in a short time her usual health and strength. (Duncan, 1845, p. 26)

Duncan's (1845) uncertainty as to why this phenomenon was not repeated in other instances, did not prevent him confirming that soothing with gentlemanly kindness, sympathising with their sufferings, and gratifying their desires was often more successful than remedies such as cold showers. Others echoed similarly, saying that lunatics needed others' "warmest sympathies and kindly care" after being "overtaken by a most calamitous of afflictions, the loss of reason" ("The poor lunatic and his home", 1891, p. 958). To ensure the lunatic was given the kindest of care, staff were also selected on their attributes and characteristics. At numerous institutions attendants were encouraged to care with a spirit of active kindness, gentleness and sympathy (Worthington, 1861), to be tolerant and pitying (Smith Williams, 1895), and to engage patients in occupation in the open air to prevent excitement (Burdett, 1891; Hansard, 1844). With these acts the patient might feel confident, hopeful and secure in their remedies and less likely to want to escape, or to need restraint[39]. It is likely that through this ontological understanding and way of interacting that staff would have come to see the patients as more like them, where the pain or mental distress could be eased through care and compassionate ways of being.

Occupation's curative powers were already understood by numerous practitioners in health and medicine (Reed, 2017b; Wilcock, 2001a) at the crossover to moral treatment, albeit with little evidence of their cause and effect aside from observation. Proportioned

[39] Restraint had been seen as a way of increasing profit, by reducing the number of attendants present in an asylum.

use of occupation, crafts and activities, or hard labour were understood to, at times, offer a cure where other more 'scientific' solutions such as phrenology, opium or bloodletting had failed (Shierclife, 1809; Tucker, 1806). The moral treatment era had spectacular success in reducing the use of restraints and length of institutionalisation, some suggest even better than in the early 2000s (Wolfensberger, 2009). Hard labour and exercise were used in the context of both humoral[40] and scientific medicine (Freebody, 2016) as a way of restoring good habits of body and mind. Somewhat conveniently for the asylums, employment or occupation was understood to be better than amusements because of its moral factor (Burdett, 1891), while also helping to reduce institutional running costs or even raise a profit. So, occupations and amusements were not just brought into the scientific-medical sphere and used in a calculated way, but people's engagement in occupation was also beginning to be seen as economically useful (Lord Wrottesley, 1883). Perhaps this is the first glimpse of the second industrial revolution discourse establishing itself in occupation therapy.

1880s-1900: Person as powerless, dehumanised and classified

The second industrial revolution, sometimes called the American revolution, began in the 1870s and continued until the beginning of World War I (WWI) in 1914 (Muntone, 2012). It was a time of rapid transformation in invention, technology, chemical processes, mechanisation and manufacturing. As with the first industrial revolution, rapid urbanisation of the British population occurred around 1890[41], as agricultural labour demand declined (Grigg, 1992). The lure of the machine, the call of urban life, or the competition of mass production, left the once profitable craftsman working in subhuman conditions, impoverished and in poor health (Blakesley, 2006). 'Commoners' were seen as material, or human capital, that could be used for profitable gain in factories, mines, steel works or where other large-scale manufacturing occurred. Whole families were at times forced to work to support themselves or fell sick and died due to long work hours, low wages, and poor working conditions. This meant children were often neglected or gathered up by charities or the state (e.g. hospitals, schools, board houses, training ships or in remand), or left on the street (*Metropolitan Asylums Board:*

[40] Aelius Galenus' [129AD-c. 191] ancient ideas of balance between the six 'non-naturals' of air, food and drink, exercise and rest, sleep and waking, repletion and evacuation and the passions and emotions still existed.
[41] Under 10% of population was engaged in agriculture in 1890 in Britain (Grigg, 1992).

Annual report for the year 1906, 1907; Sir Dorrington, 1906). A lower-class[42] person in this time period was essentially powerless.

Karl Marx [1818-1883] saw that industrialisation dehumanised, alienated, exploited people and his ideas gained traction in the socialist movement of this time (Ghent, 1916) after predicting how capitalism and industrialisation would play out amongst the social classes. Others also suggested people were classified according to outward appearances[43] and wealth status (Thornton, 1901). In a later publication, Karl Marx said that "Labour produces not only commodities, it produces itself and the worker as a commodity" (Marx, 1932, n.p.) and given the undesirable work such as that shown in Figure 7, with the worker became poorer and less noticed in society.

Figure 7. Life in a workhouse picking oakhum (unpicking hemp rope and pulling out strands one at a time). A commonly used occupation in workhouses or prisons, often leaving fingers bloody and blistered and damaged. From "British Library", by unknown author, circa 1906 (https://www.bl.uk/collection-items/women-picking-oakum-in-the-workhouse). Copyright by National Archives. Reprinted with permission.

The stress of overcrowded living conditions, hunger and what must have seemed like insurmountable challenges led people to desperate solutions like drugs and drinking, crime and other things that would end up with the person labelled as either insane or a criminal. Insanity was divided into three branches, hygienic, moral and medicinal (Bucknill & Tuke, 1879). Thus, moral causes of insanity were still reported on, such as

[42] The middle class (lower and upper) grew in Victorian England, as distinct from the Aristocracy, and gained a stronger voice through increased voting rights and entry into the political arena.
[43] In the late 1800s social Darwinism and moral evolution, eugenics, castration of the insane, and 'scientific' racial profiling based on phrenology or physiognomy became popular beliefs.

domestic troubles, adverse conditions, changes of habit, mental anxiety, religious excitement, want of work, love affairs, fright and nervous shock (Lord Wrottesley, 1883). The elite socialites still held onto moralistic views and saw the life of the poor worker in their tenement slums as dirty, where germs and disease thrived (Knupfer, 1997), but did not necessarily see their own materialism or the Poor Law amendments[44] as contributing to this problem.

Practice as diagnosis and transformation through arts and crafts

Bucknill and Tuke (1879), in their 815-page, fourth edition text on psychological medicine wrote:

> psychological science is undergoing a most notable process of expansion, and there is no sign that it will every again be "cribbed, cabined, and confined" by dogmas, either legal or theological, nor any indication that its bounds will be circumscribed by any limits more narrow than man's power to investigate the secrets of organisation. (p. vii-viii)

They show that psychiatry could not be held back by past ideologies from its scientific endeavours to uncover the medicine behind psychology. The increased knowledge about possible 'ultimate' bodily causes of insanity made it seem like the quest had begun for the best pathology based medicinal cure[45]. Diagnosis based on pathology and histology was even more radically changed when, for example, Wilhelm Röntgen [1845-1923] presented the X-ray photo in 1896. Physicians could now see inside the body without having to cut it open and had another tool in their treatment schedules (*Metropolitan Asylums Board: Annual report for the year 1906*, 1907).

Both the physically and mentally sick were now predominantly diagnosed through empirical science, but more subtlety was also encouraged in the examination of insanity. Physicians were instructed to use their knowledge of mankind to get on good terms with the patient through sympathy of any other ailments, respecting interests and using a natural quiet self-possessed manner (Bucknill & Tuke, 1879). This description shows that not only was science important, but also the physician's humane therapeutic use of

[44] The Poor Law Amendment Act (1834) in the U.K. deprived poor people capable of work (including children) any public relief aside from a place in the workhouse where they were forced to work.
[45] Common medicines were tartare of antimony, mercury, opium, morphia, hyoscyamus (nightshade), conium (hemlock), sulphuric ether, carbonate of ammonia, chloral, bromide of potassium, physostigma venenosum (poisonous Calabar bean), stimulants, shower-baths, wet sheet wraps, ointments, tonics, forced feeding, purgatives and aperients. Any combination of these were used for all manner of diagnoses, as well as galvanisation of the brain (Bucknill & Tuke, 1879).

self. Even though this description is small in this expansive text, and scarce within the overall literature, it highlights that in the face to face interactions, being ontological and mindful of the patient's responses and experiences was important. This way of thinking could be remnants of the moral treatment era which were also carried through to the ideals of the social reformers of this time.

The social reformers and clubs, such as the philanthropic Women's Club Movement and the Arts and Craft Movement, challenged the social ill-effects of industrialisation. Women's clubs were part of the Progressive era of the 1890s to 1920s. Often starting out as a religious group, these clubs reformed child labour[46], juvenile courts, and other institutions, and were seen as noble contributors to industrial improvement (Strong et al., 1906). There were many strong links between these clubs, the members of the Federation of Women's Clubs, nurses (Kelley, 1901)[47] and arts and craft proponents ("General Federation of Women's Clubs", 1914), who extended their altruism to those in need in their communities and the Settlement Movement (Thornton, 1901). "Settlement," according to the American Nurses society, was "an opportunity for different elements of society to know each other, and to find again those common ties that may fasten the bonds of mutual interest and mutual responsibility" (Thornton, 1901, p. 683). Settlement Houses cared for the least fortunate (widows, orphans, immigrants, poor, sick, unwed mothers) (Bureau of Labor Statistics, 1904), which interfaced with education, medicine, justice and the health related needs of the community. Settlement aimed to even out the playing field between rich and poor as in earlier times, and to be a "frank avowal of relationship" (p. 684) gained through leisure occupations, education, and training. Training schools were considered an educational success offering hope to many families. Many wrote to state authorities seeking admission for their children with developmental disabilities. The aims of the moral treatment era present in this time, despite industrialisation's surge forwards, were used to equalise class.

Not only did this movement care for the needy, the Arts and Crafts Movement[48], a cultural offshoot of Romanticism ("Arts and crafts", 1902), was also seen as a vocation

[46] Child education was advocated and vacation Schools were not uncommon where teachers were encouraged to be personable, playful and childlike in their thinking and doing (Milliken, 1898)
[47] Members included Julia Lathrop (Chicago Women's Club) and Hull house employees Florence Kelley and Jane Addams who worked against sweatshops and the minimum wage and advocated for an eight-hour day and racial equality.
[48] The Arts and Craft Movement became an organised movement in London in the 1880s. Key proponents were William Morris, John Ruskin, and Oscar Triggs. Whereas, the Industrial Art League, as opposed to

with its primary motive to associate art and labour, of beautifying the industrial field and to "bring art into the everyday work of the industrial classes" ("Arts and crafts", 1902, p. 108). It was an idealistic, anti-industrialist protest against a soulless technology and social organisation of the time that created an impotent humanity and removed the connections between the person, the world and people around them (Blakesley, 2006; Crawford, 2002; Triggs, 1897). This movement suggested people wanted a return to the simpler life, to make things by hand in an anti-Cartesian approach which underpinned so many occupations that favoured the head versus the more ontological hand and heart (Blakesley, 2006). Curiously, art life in Chicago was "peculiarly dependent upon the women's clubs of the city" (Condit, 1899, p. 8), which brings the link between Arts and Crafts and the inception of occupational therapy in Chicago closer.

Stalwarts of the craft movement (e.g. Mary Black) and people such as psychiatrist, and early proponent of occupational therapy, Adolf Meyer [1866-1950] (1922), were trying to keep the movement alive for social reform in the early 1900s (Morton, 2011; Twohig, 2003) because they saw the benefit of occupation for the good of the patient versus economic gain. Occupation, for Meyer, was for opportunity (versus prescription) and to gain a pleasure in achievement which was in health harmony with human nature (Meyer, 1922 paraphrased from writing between pp. 8-10). Indeed, Meyer was a great believer that occupation was for a happy appreciation of time, individualisation versus the industrialisation of work. This ontological perspective is reflected in more recent work on examining the philosophies of early occupational therapy (Wright-St Clair & Kinsella, n.d.).

1900-WWI: Person as warehoused and commodified

At the turn of the 20th Century, the industrial era merged with the service, technological and digital age (Wilcock, 2002). In industrialised nations the importance of services, information technology and research increased (Krahn, Lowe, & Hughes, 2014), and these were marked by such things as analytical thinking and a knowledge economy[49]. Industrialisation brought another wave of rapid transformation in invention, technology, chemical processes, mechanisation and manufacturing as well as organised health

fine arts, established in 1899 by Professor Oscar Lovell Triggs, University of Chicago, had four aims: to provide workshops and tools for artists and craftsmen, to sell and exhibit, to give instruction to establish industrial art libraries and museums and to promote itself through publications.

[49] In Great Britain the Board of Education, in 1915, proposed a scheme for the organisation and development of scientific and industrial research, with the government voting for $5million (about $70 million today's equivalent) to meet the first five years of expenditure (Canadian Reconstruction Association, 1918).

services (Dalko & Wang, 2018). The race for scientific knowledge seemed like it was galloping, with developments in other areas like physics[50], maths[51], psychology[52], as well as acute disease (Easterlin, 1995). There was also a ground swell of experts and scholars who discussed logical positivist philosophy[53], culminating in a series of books by the Vienna Circle on the scientific worldview.

Rapid urbanisation and increased immigration again created urban centres of depredation, disease[54] and segregation of social classes that, as with the first industrial revolution, led to a more medicalised "nervousness syndrome" (Anthony, 2005; White, 1913), and again overwhelmed the asylums (Harris, 2016). Nervousness syndrome, as well as neurasthenia, hysteria and fatigue were not considered a class of 'proper' medicine and remained in the psychic realm of medical practice (White, 1913). However, syndromes like neurasthenia were beginning to be recognised as conditions and diseases (Farrar, 1906) brought on by the "long work hours, the extreme effort of attention...and the work's constant and irritating character" and as "social diseases"[55] (White, pp. 223, 224). The social causes for illness were explained in other parts of healthcare too, such as intellectual disability.

Intellectual disability or feeblemindedness, as in the early 1800s, was linked to insanity, pauperism, prostitution, drunkenness and juvenile delinquency, and came to encompass an ever-expanding range of people, but not necessarily attributed to society, politics or culture. People with developmental disabilities were thus made the scapegoats for many of society's problems and became research subjects that could be done away with, lest society wanted to ruin the genetic line. It was deemed a social disease that ought to be eradicated at best, or those defined as a cretin, sexually amoral, lunatic, insane put to

[50] Albert Einstein's relativity theory 1905.
[51] Bertrand Russell's and Alfred Whitehead's mathematical logic three volume magnum opus "Principia Mathematica" 1910-1913.
[52] Wilhelm Wundt's first experimental psychology lab 1879 and William James' text "The Principals of Psychology" 1890. Sigmund Freud's founding of the International Psychoanalytical Association 1910.
[53] The Vienna Circle established formally in 1920 but meetings were held as early as 1907 between Philipp Frank, Hans Hahn and Otto Neurath. They discussed the philosophy of science and logical positivism with the aim of making philosophy scientific aided by modern logic.
[54] Longer life expectancy, the gap between rich and poor and the reduction in infectious disease, saw chronic disease increase with little answers for cure (Weisz, 2014) aside from sending the person to a sanatorium, as the care in alms-houses became inadequate (Boas & Haywood, 1923).
[55] Dr White made a plea in the 1913 American Journal of the Medical Sciences to have social diseases as a broader problem to do with society recognised in medicine. He also suggested that in certain cases of psychoneuroses that it was attributable to a childhood spent in overcrowded living conditions, which could be directly related back to social conditions dependent on industrial conditions. He wanted recognition of the correlation between psychiatry, neurology and social work which could offer many possibilities for work.

useful labour. It was believed that through eugenics or castration (Hatcher, 1915) the ‘menace of the feebleminded’ could be suppressed or eradicated. With beliefs like these, a person was presented as unwanted and disposable, reminiscent of times gone by. Due to the increase in scientific thinking, experts could measure intelligence (see Figure 8) and classify people accordingly. Intelligence, and the sentiment that morons were a social problem, reveals that reasoning and morality were still highly regarded but could now also be quantified and used for social control, research and experimentation. For example, the Training School for Backward and Feebleminded Children in Vineland, New Jersey opened a laboratory and a research department in 1906 to determine the cause of feeblemindedness (Goddard, 1922). Research was done to show familial links and promote segregation and eugenics. The logical solution through eradication of the feeble-minded from civilisation, due to the expense and trouble they caused society, would reduce “pauperism, crime, prostitution and ne’er-do-wells” (Goddard, 1911, p. 507). Fear was once again instilled in the public’s eye and physicians could now choose who lived or died for the good of society, based on their intelligence.

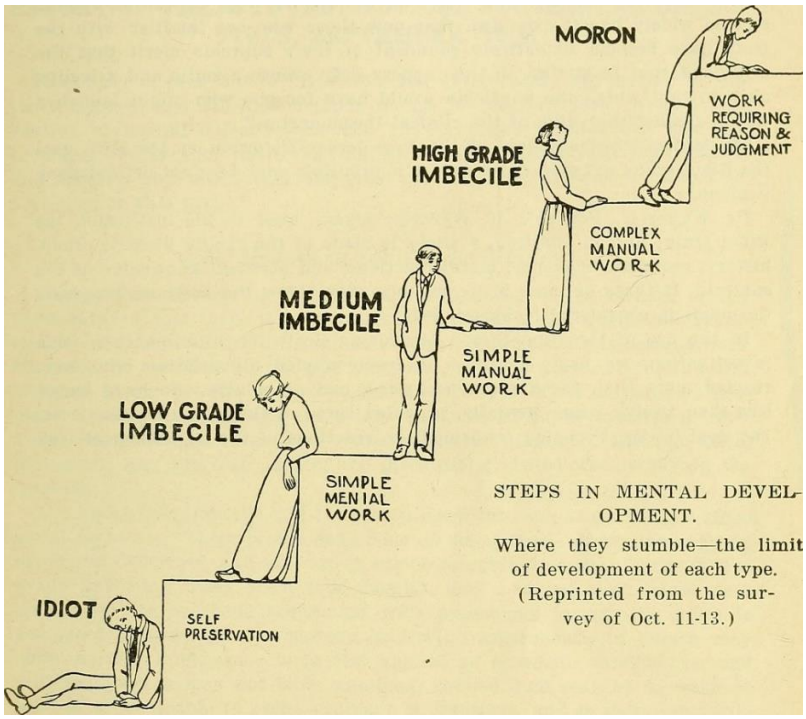

Figure 8. The Binet-Simon Scale (1905) for measuring intelligence from Hatcher (1915, p. 9). People were scaled according to this. If deemed ‘normal’ they would also be assessed based on their moral, social, familial and school history. It was administered by the Public Health Service from 1913. This scale is now in its revised 5th edition (2003) as the Standford-Binet test. The imagery used is of a downcast individual with little hope in their expression. Copyright in the public domain.

Of greatest concern in the literature was the care costs and what people's potential for industriousness was. A person's intelligence was linked to economic efficiency in industrial work and created a rationale for segregation from 'normal' society through the colony plans[56]. The training schools of the previous decades came to be used more frequently as the labour colonies for the feebleminded (Waggaman, 1920). They became overcrowded and underfunded, turning them into the asylums of yesteryear. People were segregated according to epilepsy, gender, intelligence and the training school ended up providing custodial care, with their educational motives abandoned. Feeblemindedness was now the biggest social problem since lunacy in the past century, and people were once again being seen as 'almost human'.

Classification was seen in more ordinary places too. In some of the industrial training schools across the globe classification was deemed necessary because:

> From experience I find that it is of the first importance that the tasks given to these deficient children should suit their special capabilities….With this in view, the first thing to be done in dealing with numbers of defective children is to classify them carefully according to their mental capabilities and find work suitable and congenial for each class. (From the annual report of the Bridge Industrial Home for boys *Metropolitan Asylums Board: Annual report for the year 1906*, 1907, pp. 64–65)

For this boys' home, classification increased management economics because of the sheer numbers – 60 boys were present according to the report. Secondly, the boys could be classified according to mental ability not age to ensure their potentials were met by giving them occupations suited to their capacity. In the end, however, these boys were described as workers.

[56] Hatcher (1915) promoted eugenics and dedicates pages of heart-breaking descriptions of people classified as imbeciles, almost as a way of creating a spectacle and shock value for the reader.

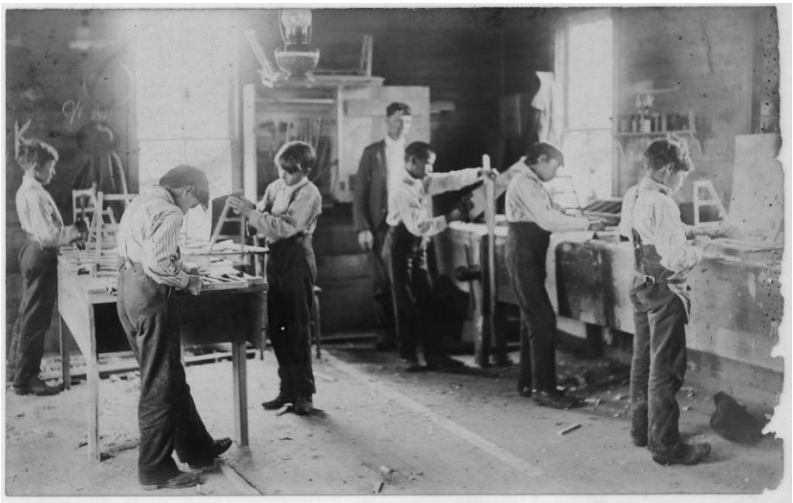

Figure 9. Seneca Training School. From "Wikimedia Commons", by C. R. Scott, 1905. (https://commons.wikimedia.org/wiki/File:Photograph_probably_made_by_Charles_R._Scott,_an_employee_of_the_Seneca_Training_School,_for_Superintendent_Horace_B...._-_NARA_-_251694.jpg). Copyright in the public domain.

Even in these 'care' or educational settings, children were put to work or into 'industry training' (Sir Dorrington, 1906; The Board of Education, 1903) to learn skills or to be able to teach manual training[57] from kindergarten to high schools (see Figure 9). Industrial training was a way of normalising and social role valorisation (Wolfensberger, 2009).

Nonetheless, in the writing of those who would become the founders of occupational therapy, people were seen as holding potential and full of possibility for improvement, with concern for the meaning of illness:

> A very wise physician has said that "every illness has two parts – what it is, and what the patient thinks about it". What the patient thinks about it is often more important and more troublesome than the real disease. What the patient thinks of life, what life means to him is also of great importance and may be the bar that shuts out all real health and happiness. (Hall, 1915, p. v)

The language used by many of the forerunners of the profession did not denigrate people. They wrote to arouse empathy in the reader for the handicapped and crippled and elevate the idea of potential in all of them (Hall & Buck, 1915, 1917). This gave occupational therapy a fortuitous foothold in healthcare in the lead up to the First World

[57] Subjects covered in the course on manual and domestic training were: basketry, clay, drawing, wood and bent iron, mechanical drawing, psychology, pedagogy, science and mathematics electives, forging and foundry, machinery, food preparation, textiles for clothing, household economy management, science, and hygiene.

War, with returning soldiers needing care, and in a time when occupation was in dire need.

Practice as achieving potential: Everybody doing something

By the early 1900's, the public came to want and expect homogenously well-trained and paid physicians who set standards of health practice. Homogenised training and practices led to such things as the establishment of the American Medical Association in 1904 (Anthony, 2005), which was largely concerned with bodily ills and strategically positioned itself as a powerful institution in healthcare[58] (Anthony, 2005). Associations played a large role in setting professions apart and legitimising a practice space and educational credentialing (Arndt, 2010). Physicians began to professionalise by drawing on science, creating a distinct body of knowledge that set them apart from others and even subordinated or excluded forms of pseudo-science (Arndt & Bigelow, 2005). Pseudo-sciences were difficult to account for through empiricism, such as talking therapies or the more meaningful or socially derived Arts and Crafts Movement.

The waning strength of the Arts and Crafts Movement and its ties to a more ontological way of working with people, created more space for an ontic, scientific practice focus. To discover when the turn to the ontic occurred, I sought, amongst other things, information from hospital annual reports, the institutions where patients were treated, as well as newsletters and early texts on occupation as therapy. This was done deliberately to not solely rely on textbooks that described how treatment/therapy *should* happen, but how it was reported to have happened. The hospital reports were from before World War I, when the turn towards a more economically driven practice appeared to emerge. There is not one distinct moment where the profession moved from an ontological to an ontic perspective, it was gradual with some places, such as Ireland, taking to beyond 1930s to really change (Cahill & Pettigrew, 2020), and in varying measures around parts of northern America. However, it is clear that "occupation as therapy" grew more ontic around 1910-1915. One example comes from Susan E. Tracy's work on invalid occupations ("Nursing news and announcements," 1910) was that occupation was for both the more ontological "tastes and capacities and conditions of the patient" (p. 765) as well as being controlled and systematised in its use. Similarly, Tracy's book "Studies in invalid occupations" (1912) has slightly romanticised contents page (e.g. chapters

[58] The Flexner Report (1910) in the United States radically reformed medical education. It was harsh and recommended science, regulation, and a reductive approach using 'hard science' that split medicine from the humanities (Altschuler, 2019).

titled *grandmother, with waning powers, the clouded mind*), point towards a practice that still held an air of the ontological and reveals the tension between the romantic and rational elements in practice (Hocking, 2004, 2008b, 2008a).

There are numerous other examples of occupation being used for the good of patients (e.g. Board of Directors and Superintendent, 1912; Mullally, & Konder, 2020; Trustees of the Massachusetts General Hospital, 1909). One such example comes from the New York Hospital report (The Society of the New York Hospital; Bloomingdale White Plains, 1907), which states the establishment of a small occupation department was under considerable strain through the demand of "fancy manual occupation" (p. 53). A whole section, in this report, is dedicated to patient occupations with no mention of the economic thrust of this innovation, not even in the accountancy tables.

Many examples of the patients' work were shown at exhibitions over the years (e.g. American Hospital Association Exhibition 1912, Florence Nightingale Exhibit of 1910), such as those from the Worcester State Hospital in Massachusetts[59], which were displayed in several exhibitions in different parts of the country, and attracted interest from the community with some pottery pieces considered works of art (The trustees of the Worcester State Hospital, 1917, p. 12). The Superintendent stated that the mark of success in his hospital in this department was not the numbers of goods made, but the good done for patients in their therapeutic occupations.

The shifting tide from a more romantic and ontological way of practicing can be noted in writing by Dunton just prior to occupational therapy's inception (Dunton, 1915). For example, the woodworker needed certain materials and tools to be effective in the completion of the "prescribed" therapy. The ebb and flow between the ontic and the ontological is seen in this work describing his own practice where Dunton used bright colours in quilting so as to bring pleasure to his 'nervous patients', let alone the need for aesthetically pleasing environments to do the work in. This reveals both the ontic through the 'prescribed' and measured method to practice as well as the more human

[59] Other occupation focussed exhibits were supported by the likes of philanthropic schools such as the Chicago School of Philanthropy, which was described as "the most inspiring and valuable features of the exhibit" (Aikens, 1912, p. 301). The connection to the school of philanthropy brings the settlement house movement, arts and crafts in the hospital setting and occupational therapy closer together in their histories. The influence of the Arts and Crafts movement, or artisanal labour, in the early days of occupational therapy is supported by recent work that looked at Herbert Hall's work and letters (Mullally & Konder, 2020).

humanistic approach which was about appealing to interest, and for personal growth of the patient.

However, it is acknowledged that around this time, there was a change to the focus of the work patients performed in both general hospitals and psychiatric establishments, moving from a benefit to the patient to a benefit for the hospital, in the form of unpaid work. This shift to an economic benefit came with the need to be able to report on it and as such quantification and measurement of the patient was seen. There is no exact date that this occurred, as with much of the stream of history, but examples of the shift towards an economic profit can be seen in the aforementioned works where there is clear link to the economic benefit of patients engaged in occupations with a productive output. Herbert Hall presented his "manual work as a remedy" paper and was described as clearly stating the craft-shop establishment for neurasthenia was "on a strictly economic basis" ("Nursing news and announcements," 1910, p. 766).

Whilst some recent authors have focused on the economic or industrial impetus for occupational therapy in the early 1900s (Hicks, 2014; Laws, 2011), there are accounts that do not have this bent and are simply about the human value of occupation, as shown above.

By 1910 the Arts and Craft Movement had lost its significance, as manufacturing took over the production of certain crafts. It was seen as uneconomical, a frivolous past-time and running on sentimental grounds with no reasoned practicality ("Arts and crafts," 1902; "The arts and crafts," 1910; Blakesley, 2006). The Bulletin of Labor (1904) wrote that "while the articles produced by handicraft in the United States are of small value compared with the products of machinery….the revival of handicrafts is of no little importance to a considerable number of persons" (p. 1622). Industrialisation and rational thinking had taken firm hold in the way people and practice were seen. For example, prisoners who could be valid criminals or those deemed feebleminded were required for labour. Putting prisoners to work was conveniently economical and saved Virginia $80,000 per annum (today equivalent to about two million dollars), at Occoquan alone (Hatcher, 1915).

Irrespective of a seeming drive for labour, within a number of settings arts and crafts was a contributor to health. An important founding figure in American occupational therapy was Dr Herbert James Hall [1870-1923]. Hall used carefully planned, graded and progressive occupation that reorganised the life of the individual; he called it

occupation therapy. Hall, averse to the en-vogue psycho-analysis methods, had a strong belief that sanatoria were only useful for patients if they offered "training in actual living that would….leave the patient ready to meet with the maximum efficiency the requirements of ordinary life" (Hall, 1913, p. 387)[60]. The term 'maximum efficiency' points to the increasingly influential Progressive Era (1890s-1920s) that extolled best practices and eliminating waste, which is discussed in the next chapter. Sanatoria, some only accessible by the wealthy, used a combination of rest and work to help cure the distressed. The idea of a work-cure was supported by Dr Herbert Hall (1913), who said that knowing how to rest or be idle was just as important as a work cure and therapeutic crafts, stating:

> When you have learned how to rest…to know the joy of idleness and the peace of rest, you are a great deal more likely to get back to efficiency and to find your way along the great paths of activity into the world of life. (pp. 34-35)

Many experts around the world were espousing the use of occupation for health (Ernst, 2016), but science was being attached to it. For example, Figure 10 from 1919 shows the growing interest in quantifying people's experiences such as fatigue.

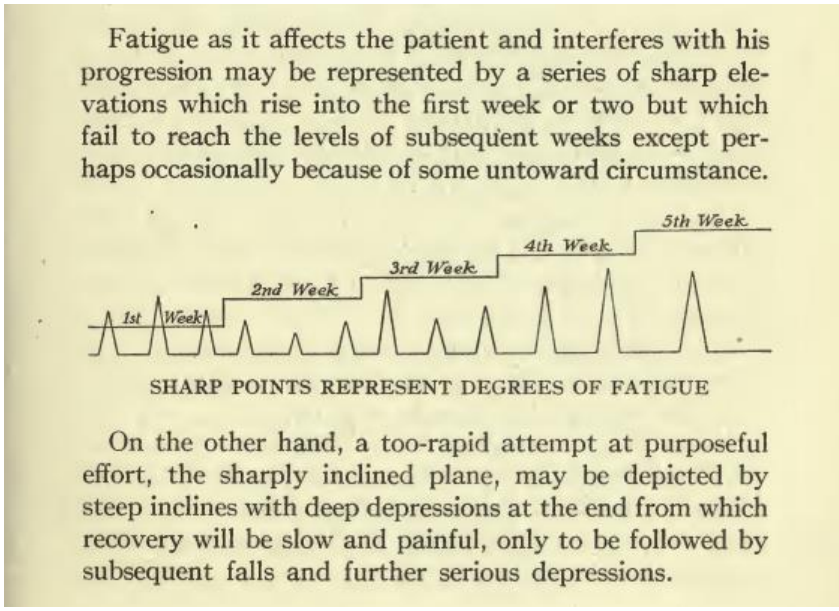

Figure 10. Graphical representation of fatigue and progress in the reconstruction of an invalid. From *Bedside and wheel-chair occupations* (p. 25), by Hall, 1919, New York: The Red Cross Institute for Crippled and Disabled Men book on bedside and wheelchair occupations. Copyright in the public domain.

[60] At this point Herbert Hall had been using the 'work-cure' for eight years.

The science that became attached to it, stemmed from medicine in the form of diagnosis and treatment regimes. Diagnosis, classification and administration of specific treatment was prevalent in all corners of the western world, with institutions bringing more of the ontic realm into everyday life. This view is in part attributable to the earlier mentioned work of Auguste Comte, the logical positivists and the Vienna Circle.

The logical positivists wanted to remove the haze of unverifiable speculative science and link empiricism with the logic of mathematics. Logical positivism gave those governing a stronger argument for how to organise society, rather than through its earlier reliance on mythology, religion or the large-scale philosophical systems to explain nature. Philosophy became the servant to science to show how science and mathematics gave access to the truth, in much the same way that philosophy had been subservient to religion in the previous centuries (e.g. middle ages). Science was seen as better, more reliable and showed truths not heard, seen or understood before. Science offered structure based on verifiable observations, that was not tied up in language and poetical ideas. I discuss the links to maths, physics and psychology more in the next chapter.

Conclusion

In the 19th Century the proletariat had a hard time living up to the moral expectations of the bourgeoisie. The stresses of hard work and poverty amongst the lower class, created by the upper class' drive to more industrialisation, made the proletariat seemingly more prone to illness and insanity. Class segregation was easy when it was paired with moral classification of sanity. The labourer, more prone to immorality and thus insanity was distinguishable from the upper, more moral and rationally educated people. The possibility that a minor infraction of these loosely defined moral codes could lead to incarceration created a fear of those in power, especially when treatment for these morals was through punishment. Through these views of the early 1800s, I showed that people were viewed as unwanted and easy to throw-away into a workhouse, poorhouse, asylum or prison when it contributed to the greater happiness of society. In this time, the views of people appear to work, more or less, in harmony with the practices of the time.

Earnest moral treatment, versus the treatment of morals, paved the way for people to be seen as more equal and normal. Moral treatment opposed the earlier unjust treatment strategies and made the unwell and unprivileged visible to the public. Spurred on by the positivist views of the mid 1800s, the natural world, society and humans began to be

seen as legitimate places for scientific enquiry. Medicine moved from practising heuristically to applying their wares and ideas with more empirical motives. It seemed entirely rational that human beings could be studied according to the same universal laws of nature as the more advanced sciences of mathematics.

The increased focus on science, combined with the advent of industrialisation, progressed the economic ideal and commodified humans, reducing them back to things useful for material gain. The amusements and occupations of the moral treatment era turned into labour, especially of the kind not wanted by the general populace, like a different form of punishment. The science of economics and human capacity worked well to establish efficiency in manufacturing and this warehoused and streamlined people into suitable training and jobs.

Prior to the genesis of occupational therapy, occupation was significant in people's lives. This chapter has shown that occupation was used as an important function in society for maintaining a level of order and justice, for moral standing, for care and for training or education to establish justice for all. I have shown that across these short 100 years practice ebbed and flowed, being conducted either in accordance with the views of the time or in revolt of the way people were viewed and treated by society as the frayed edges of morality, reason and humanity were constantly reviewed and reformed. In the process, something of each was lost.

The next chapter begins where this one left off. It starts with the World Wars and ends where occupation-based models were developed.

Chapter 4 Societal and contextual history: Turning art into science across the 1900s

Introduction

The previous chapter focused on how people with illness or disability were viewed between the early 1800s and beginning of the 1900s, and how practice was espoused alongside or in response to these views, as captured in Figure 11. My guiding assumption was that occupational therapy stemmed from an illness perspective. As will be shown, much of that legacy came from the World Wars irrespective of the profession's concern with social justice at the time of its inception. After the wars, ever advancing medicine, science and economic drivers pushed and pulled at the profession, eventually leading to the development of occupation-based models with a homogenised view of the person and standardised practices. These two chapters show that in the 100 years before occupational therapy's existence, the ground for its genesis had been prepared in the fields of science, medicine and society. This chapter shows the genesis of occupational therapy in the Arts and Craft Movement, and World Wars. The following chapter elaborates how maths, physics and psychology prompted the profession's toil to turn art into science. Systems theory, whilst briefly covered in that chapter, is discussed more in Chapter Eight as it relates to the Model of Human Occupation. Again, my overall aim is to show the shifts between the ontological and ontic perspectives. While I cannot cover all the context in a chapter, I provide snapshots of what my wider research and reading has shown.

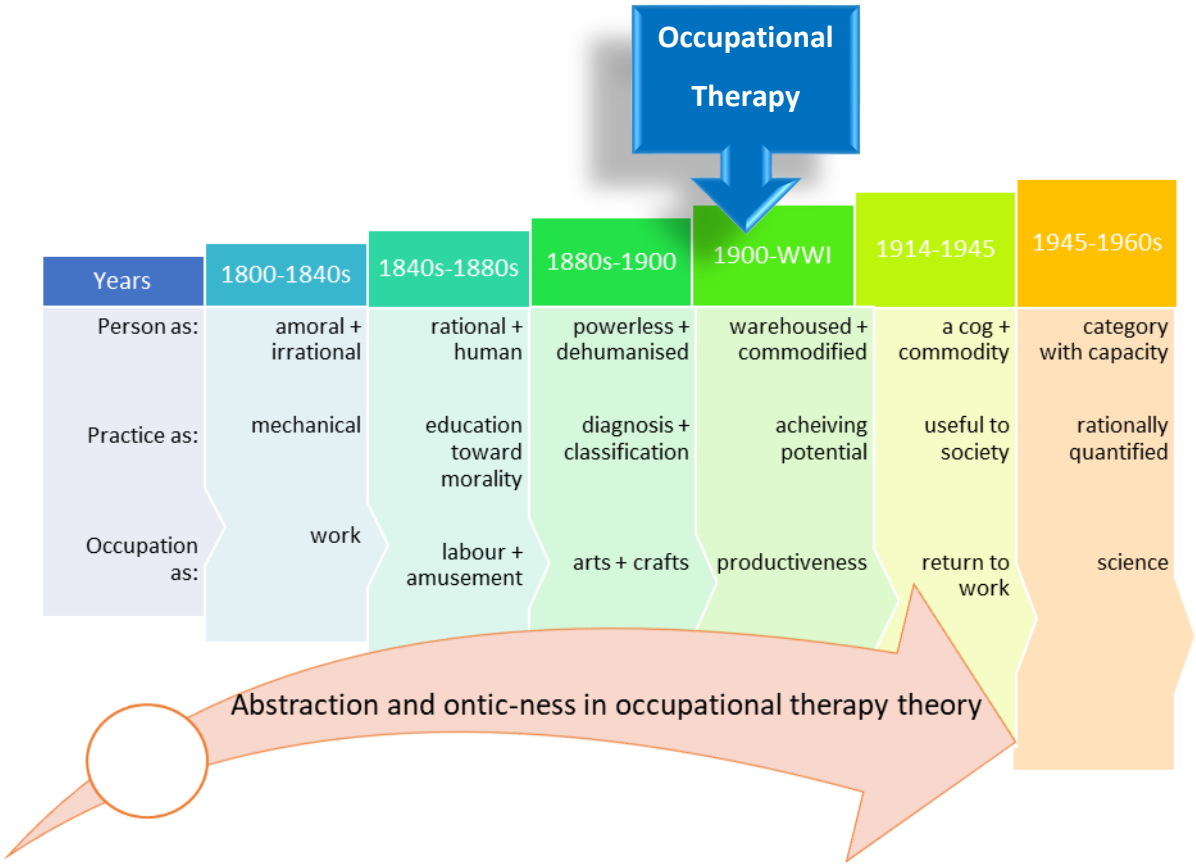

Figure 11. How occupational therapy gained an ontic perspective in occupational therapy theory with origin of occupational therapy profession indicated.

1914-1945: Person as a cog, commodity and useable

The turn of the century saw an unprecedented rise in the breadth of invention and knowledge in areas of physics, chemistry and psychology. This was the height of Modernism where traditional ideas were brought into scrutiny and challenged, and new ideas were welcomed with zeal. Key markers of this time were self-consciousness, free-will, irony, non-conformity and polemics (Everdell, 1997). Everything was debateable, especially if it was considered conventional, and questions on the outward universe and the inward Self spread in popularity.

Radical ideas proposed by Albert Einstein [1879-1955] and Sigmund Freud [1856-1939] invigorated people to look both outwardly at abstract notions of reality through general relativity theory, and introspectively at thoughts that were otherwise repressed. Making something entirely ontological into something ontic seemed feasible, given the advances in science. For example, psychologist William James' [1842-1910] book, published posthumously, claimed that religion was primarily a biological reaction

bringing forth an altered state of consciousness (James, 1917). His study on human nature announced itself as creating a science out of something that was deeply personal and ontological. Twenty years later, Robinson's (1939) book 'The patient as a person', espoused a similar view:

> Seek truth. Discover causes. Learn how they disturb life and how order is re-established. By science and persuasion preserve men. By science, gentleness and firmness combat death and reduce suffering. Guide, encourage and console in a brotherly and tolerant spirit. This is medicine. (, 1939, p. 49)

This 'mantra' affirms that science and medicine could combat death. The doctor-patient relationship seemingly came second, showing that the ontological was also in combat, but with the ontic. Adolf Meyer [1866-1950], a psychiatrist and early proponent of occupational therapy, promoted the concept of whole personality, emotional and social elements to medicine [61] (Meyer, 1922a, 1922b) which brought a more holistic view of the person, albeit with psychiatric science attached.

Modernism was not just a way of doing things, it was a way of thinking about knowledge, metaphysics and ontology (Everdell, 1997). For example, Stephen Smith's [1823-1922] [62] at times, romantic and narrative book 'Who is insane?' expresses his incredulity that insanity was undefined and therefore not scientifically based:

> Incredible, is it not, that at this period of advance in the medical sciences, when precision in details is so exact, that a definition of insanity cannot be formulated of universal acceptance?....Are not authorities still seeking a solution of the phenomenon of the mind in the hazy realm of metaphysics, rather than in an accurate knowledge of the structure and functions of the brain, the centre and source of all mental activities? (Smith, 1916, p. 63)

Harking back to Auguste Comte's positivist ideas, Smith's account shows that moving from metaphysics to science's emphasis on the accuracy of details was considered key to finding answers to problems. The ever-increasing specialities and complexities further strengthened the scientific perspective of the nature of being, that saw people from narrow perspectives missing the whole picture. For example, medicine divided into specialities such as aurists, gynaecologists, neurologists. Their abilities to diagnose

[61] Meyer's main ideas were about bringing together biological, social and psychological factors in when working with a patient.
[62] Smith was founder of the American Public Health Association. The New York Academy of Medicine has a medal in his honour and so he was a man of science and status at the time.

and treat became more complex as experimental trials and research[63] on chemical reactions, formulae and microbes allowed them to see more of the minutia of a person's body. Modernism, with all its favourable scientific contributions, fragmented knowledge on the nature of being into hard to grasp, disjointed and discontinuous[64] things. Knowledge became fragmented into new specialities such as sociology, industrial, behavioural and social psychology, management sciences and economics. Eventually, this brought about the idea of the unification of science in the 1950s through systems theory, as discussed in later chapters.

American economists, often trained in the greatly admired administrative systems of Germany, were taken by the idea of a society run by scientific experts knowledgeable in the human condition (Leonard, 2016). Economic policies, alongside the popular ideas on eugenics, Protestantism[65], utilitarianism and efficiency through waste removal, segregated people into 'those who could', and 'those who could not' (Fiorito & Foresti, 2018; Leonard, 2016; Sanders, 2011). This built on work around intelligence and industriousness, raised in the last chapter, and became a special science that helped determine the factors which might impact on 'progress' (Shenhav, 1995). The development of such science was mistaken for a deepening moral and spiritual life (Egonsson, 2018). Instead, each speciality focussed on a single or few elements of the person, shrinking the view of the person as a whole being. For example, social psychology became interested in the relationship between a person and their environment, especially in groups that could be studied scientifically. German-American psychologist Kurt Lewin [1890-1947] described a quantifiable relationship between behaviour and the person in their environment. (Lewin, 1936), distilling a person's environment interactions into an equation:

$$B = f\,(P, E)$$

Where B = behaviour, is a function, f, of P = person and E = environment

[63] Research still contained some speculation at this point. For example, Cotton's (1921) research on focal infections (e.g. tooth or gynaecological infections) as the cause for insanity. Adolf Meyer, an early supporter of occupational therapy, wrote the fore word to Cotton's book whose ideas received severe criticism in the 1930s. This theory fell out of fashion in the 1940s, only to see a revival in the 1990s.
[64] Ontological discontinuity was a phrase coined by historian William Everdell (1997) who saw science and maths as the starting points of modernism rather than arts and literature.
[65] Max Weber's *The Protestant Ethic and the Spirit of Capitalism* (1905) raised the idea of the 'work ethic'. His work influenced general sociology and economic sociology in the 21st Century. Sociology, being important for occupational therapy, therefore draws links to Weber's ideas.

This formula, discussed in later chapters, turned out to be central to many of occupational therapy's ideas on occupation and became integrated with systems theory.

Even art, architecture, prose and literature, and people's experiential responses to these, were under consideration as following some law of human nature. It was believed that the ontological understanding of a person could be investigated and treated, and brought in line through the science of psychology (Hubbard Judd, 1917).

I spent considerable time looking for text where patients were regarded as a person[66]. One strong article in the Canadian Medical Association Journal by Gordon (1934), which unfortunately is not cited more than ten times beyond 1934, said that doctors should look past the illness because

> while technically it may be correct to say that all the phases of human life in sickness and health are biological phenomena, we recognize in ourselves and by analogy in others, disquieting lights and shadows which the biology of the laboratory or the chemistry of the test tube does not explain, and we firmly, if vaguely, realize that the person called "me" and the person called "you" has each about him an intangible boundary, or an aura, at which even biological investigation must hesitate before it enters. (Gordon, p. 192)

Gordon recognised the intangible elements to illness, and advocated that how the person was cared for during diagnosis should take precedence over the illness, as well as the meaning of the illness to the person, their existence, family, and work. Gordon, a well published physician in medicine, gives strong support to quelling fears, raising hope and recognising the patient's past and future. Perhaps supporting the importance of the ontological was in revolt to what he was seeing more of; the person as a laboratory subject, the rational interest for disease causality and health for the masses (Cotton, 1921; Glasser, Fee, & Brown, 2011; Smith, 1916). Overall the person was beginning to be lost amongst the strength of theories, behavioural laws, experiments, scientific methods and understandings[67]. In the previous chapter the person was unmistakably and pejoratively present in the writing, with many case examples and descriptions of the person themselves. In these decades, the person is lost amongst the tangle of research

[66] A book written by George Canby Robinson "The patient as a person" in 1939 may sound ontological, but was written about research undertaken at John Hopkins University on the social conditions of 174 patients and their illness in order to improve conditions and the emotional disturbances they cause.
[67] Periodic medical examinations for schools and health insurance policy holders became more common, bringing the human body under scrutiny regardless of whether it was suffering from something or not (Weisz, 2014). This scrutiny likely called for increased science to ensure the insurer's monetary accountability.

and science, and 'man' is discussed as an homogenised entity. But, however fragmented the knowledge became, these ideologies, as in other eras, were still about the possibility and hope for a better future.

The biggest upheaval to how humanity was seen were the World Wars. Both World Wars were catastrophic to areas of society but also a boon for many services. In health care, advancements were made in the reconstruction and rehabilitation of soldiers. Soldiers who had been sent off with fanfare and glory returned needing repair like factory machines. But the returned soldier wanted neither applause nor sympathy. Instead, according to many institutions, he wanted and was expected to get a job (e.g., Bureau of Labor Statistics, 1917; The history of Letterman General Hospital, 1919). Functional restoration was the ultimate aim for the modern physician and surgeon, as health was the workingman's main asset (Kober, 1920). Of utmost importance was returning the soldier to a resilient social status and full economic output, so that they were not hated when the public remembered the war and burdens to society (Amar, 1918; Hall & Buck, 1915). This worked well with the aforementioned economic policies and administrative systems management. The United Kingdom's Workmen's Compensation Act (1906)[68] created possibilities for a disabled man to return to work either through diminishing his incapacity or through training (Barton, 1919; "The working capacity of the disabled man," 1919). Physician Jules Amar [1879-1935] and mechanical engineer Frederick Taylor [1856-1915], who was interested in industrial efficiency, held dovetailing views. Both increased the mechanical and scientific study of man, work/training, efficiency and management to reduce waste and increase efficiency. Wilcock (2002) writes a number of pages on Amar's work, which revealed that man was increasingly regarded figuratively as 'a cog in a machine' on the factory floor, and literally as a body with parts that could be replaced like a machine (Mock, 1918).

[68] In the U.S. section 304 of the War Risk Insurance Act (1918) stated "that in cases of dismemberment, of injuries to sight or hearing, and of other injuries commonly causing permanent disability, the injured person shall follow such course or courses of rehabilitation, re-education, and vocational training as the United States may provide or procure to be provided". In effect securing occupational therapy through legislation in rehabilitation.

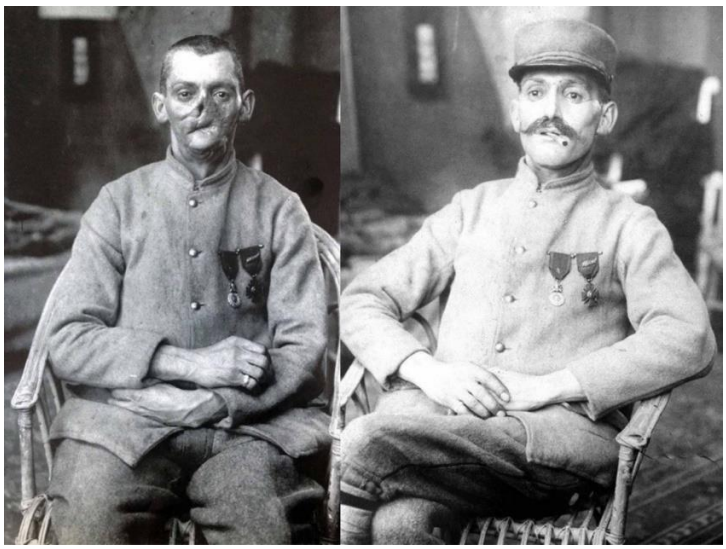

Figure 12. Before and after with the mask on made by Anna Coleman Ladd. Even though the masks were an outpouring of humanitarian concern for the soldiers' grief and psychic torment, the message was to conceal the shocking truth that lay behind them, and to 'almost' normalise him for the sake of society, akin to utilitarianism. From "Rare Historical Photos", by unknown photographer, circa 1918. (https://rarehistoricalphotos.com/anna-coleman-ladd-masks-1918/). Copyright in the public domain.

Nevertheless, suspicion and stigma still existed, not only for the shell-shocked and physically injured serviceman (Figure 12), who carried the horrors of war on their faces (Lublin, 2008), but also for the chronically[69] unwell patient discharged home. As Hall wrote:

> The great difficulty is encountered when the chronic patient is obliged to leave the institution and go back to his home. There organization ceases and he finds his handicap painfully evident. The case of the cured or partly cured tubercular patient and of the cured insane is pertinent enough. These people, like ex-convicts, are looked upon with suspicion. They are either not wanted because their strength is inadequate or because the employer is afraid that some accident will happen. (Hall & Buck, 1915, p. xvi)

Good care was present in the institution but lost once the person returned to the community. Even so, these problems were met with hope and possibility by establishing special, supervised workshops and remunerative work for jobs that other people did not want to do (Hall & Buck, 1915). The handicapped person was useful even with chronic

[69] The term chronic illness was used more frequently by this time versus 'the incurable'.

conditions, and some of society's burden could be moved off to these seemingly less worthy people.

Practice as observed and useful to the economy

In her review of the 1930s, Rerek (1971) lists three major influences that shaped occupational therapy. The profession's future leaders grew up during the great depression, likely holding values of caution and conservatism. Health service funding changed as the federal government entered the healthcare field. Thirdly, Rerek saw the population's increasing cynicism and suspicion toward the elected officials in federal government as a contributor to the development of occupational therapy. The time between the World Wars had high unemployment and it was generally accepted that occupations were necessary for well-being (Reed, Smythe, & Hocking, 2013). Alongside this, work was a traditional religious value with the working man being good and the nonworking man being bad (Shannon, 1967).

To minimise the significant effect of disabilities on society, treatment aimed at making the person as useful as possible. The systematised return of the soldier back to work was accomplished through scientific management, based on machine analysis (Wilcock, 2002). Governments favoured this during World War I by adapting the work or the environment to the disability. The added view of man as a machine that could be readily fixed eased society's burden of the injured returned service man (Hall & Buck, 1915). It also served the capitalist businessman, the inventor of gadgets and prosthetics, and specialities such as industrial medicine. Whether, a physician was interested in reconstruction, arts and crafts or industrial medicine, the intent was purposeful engagement of the patient in some form of occupation that could be useful to them on discharge and useful to society.

The work-cures and occupation therapies of the previous decade held a strong position in this era when work was the desired outcome of many treatments (Bloom Hoover, 1996; Friedland, 2011; Reed, 2017). Through the many charities established to help soldiers, reconstruction aides[70] were requested to keep soldiers' minds off their

[70] Reconstruction aides were not just the early 'occupational therapists' they were also part of the physiotherapy department of many hospitals (The history of Letterman General Hospital, 1919). Reconstruction was a term used in many circles post war; from economics, politics, public health, welfare, education, religion, to Dewey's 1919 Reconstruction in Philosophy and conferences being held about it. But this term was largely to do with time of social reconstruction following WWI (Dunton, 1919; Newell, 1919; "Social reconstruction," 1920). The Canadian Reconstruction Society's moto being Unity Stability Prosperity.

illnesses[71] (Du Feu, 2009; Wilcock, 2002). Once proven in military settings, reconstruction and re-education spread to civilian hospitals (Peloquin, 1991), and the war experiment became a profession. In some cases the teaching[72] and supervision of reconstructive handicrafts became the largest single enterprise on the wards, with hospital buildings dedicated for occupation therapy (New York Reconstruction Hospital, 1921), gaining significant support as "the most successful feature of the program" (Waugh, 1920, p. 452). But some challenges were creeping in. Medicine repeatedly called for occupational therapists to have professional training on technical, anatomical, physiological, psychological, sound ethical lines, and to further study things like the careful grading of work exercises for different cases (Hansard, 1949; "The fifth annual institute and conference of chief occupational therapists", 1928; *The history of Letterman General Hospital*, 1919). The seemingly prosperous professional events after the First World War I were replaced by some challenges around the time of the Second World War.

The Second World War motivated rehabilitation of the wounded, but also created some direct challenges for occupational therapy with disruptions to patient care and a lack of materials for the usual craft work. Instead, patients did things like semi-skilled war work (Hall, 2016) or industrial therapy. Indirect challenges to occupational therapy came from professional offshoots that wanted to make themselves one of the 'specialities'. The professionalised industrial therapy, supported by industrial psychology (Benjamin, 2007; Hall, 2016), challenged the domain of the occupation or reconstruction therapist. Furthermore, psychoanalysis and other rehabilitative initiatives like art therapy, milieu therapy, writing therapy, role play, play therapy, plastic art, and music therapy (Strang, 1943) pulled attention away from occupational therapy's 'work-cure'. Research efforts that seemed to hold more validity and reliability, for example sociology's scientific diagrams (see Figure 13), gained strength when occupational therapy was still largely offering arts and crafts, albeit with therapists who knew how to notice musculoskeletal and kinesiological changes (Robinson & Le Vesconte, 1944; University, 1942; Universty of Toronto, 1937). Sociology's and other's results were

[71] Some notable figures of this time who are well represented in the occupational therapy literature are Louis Haas, Sidney Licht, Winifred Brainerd in WWI. Winifred Kahmann, Mary Reilly around WWII, Muriel Driver, Helen LeVesconte, and Isobel M Robinson.

[72] Susan E. Tracy is credited with giving the first course in Invalid Occupation in 1906 at the Adams Nervine Hospital (Dunton, 1915). She was Nurse Superintendent at the Adams Nervine Hospital in Boston and set up the first occupational therapy department at Michael Reese Hospital in Chicago in 1916 ("Occupational therapy aids in the recovery of patients: Doctors prescribe it as they do medicine and other treatment," 1941).

mathematically focussed, which at this time was important given the developments in such things as operationalism[73] – this is further discussed in Chapter Five.

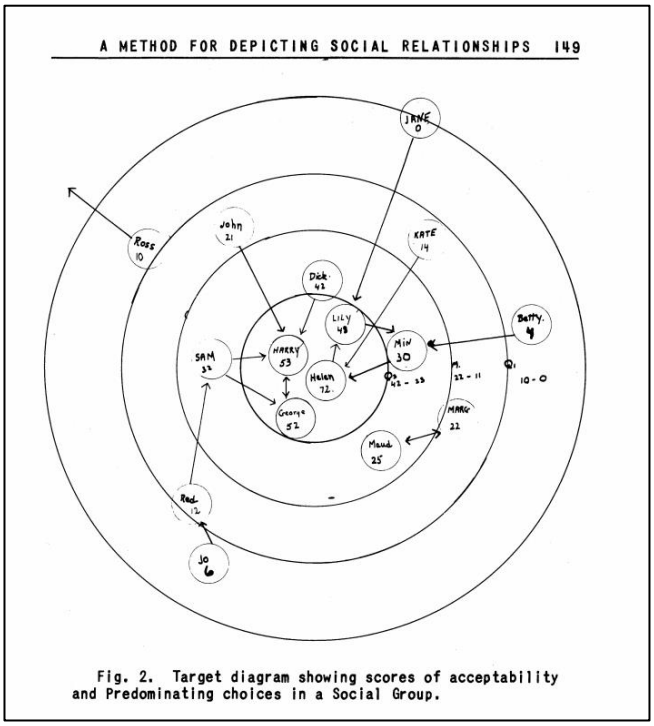

Figure 13. Northway's social relationships target diagram referenced by renowned sociologist Urie Bronfenbrenner and still cited in 2000s by scholars. From "A method for depicting social relationships obtained by sociometric testing" by M. Northway, 1940, *Sociometry*, *3*(2), p. 149. American Sociological Society. Copyright in the public domain.

Emphasis on measuring and the scientification of occupational therapy care was evident in accounts like this from Reconstruction Aides Director at Walter Reed Hospital: "She [occupational therapist] must watch the patient's progress….She must know how to read the graph of the curative measurements, and if the curve is not showing steady improvement, she must check up her part of his treatment" (Taft, 1921, p. 16). With challenges from an expanding health care community, a young occupational therapy responded by aligning itself to the status quo; to see the person as a scientific entity that could be measured and understood as made up of parts (Laws, 2011). Research was conducted within some clinical settings, for example between 1942-1944 Miss Margaret Grinnell, Chief Occupational Therapist at Warren State Hospital, conducted seven

[73] Operationalism is a form of positivism which aims to measure concepts and theories. Outside of physics, operationalism was taken up in fields like behavioural psychology.

research projects[74]. The focus of these were on the benefits of occupational therapy in general and with mental patients, craft, industrial and recreational therapy for women patients (Allen et al., 1944). Likely, this occupational therapy research was done through case-study observation under the direction of the physicians. In journals like the Canadian Journal of Occupational Therapy between 1933 and 1945, scientific treatment articles were typically written by physicians, whereas occupational therapists' articles ranged from describing how to do crafts to describing the benefits of appliances and aides with enhanced scientific properties. Publications on crafts remained (e.g., Morrow, 1945; Robinson, 1945; Waugh, 1920b; Wright, 1934), with more focus on functional effectiveness, but were fewer and less dominant than those dealing with the science of other modalities. In subsequent decades, discussed later, there were strong calls for this entanglement with arts and crafts to be severed.

After World War II, therapy was described in the same vein as in the 1920s and 30s. It was pleasant and "an activity, mental or physical, definitely prescribed [with dosages] and guided for the distinct purpose of hastening recovery from disease or injury and assisting in the social rehabilitation of the individual" ("Occupational therapy aids in the recovery of patients: Doctors prescribe it as they do medicine and other treatment", 1941, p. 3). Occupation was prescribed[75], prearranged and given quantifiable dosages by physicians. To help with the prescription of occupations, categories were devised that captured the intent of therapy. Diversional therapy was for occupying time and diverting the mind (e.g. see Figure 14), and therapeutic occupation was aimed at eventual employment (Howland, 1944; Spainhower, 1925). Categorising practice and patients according to some sort of logical property or therapeutic intent demonstrates that the ontic, scientific perspective was strengthening in practice. Additionally, to attain the 'social rehabilitation' objectives[76] described in the last quote, occupational therapy was presented with an epistemological decision; whether to focus on the handicraft as diversional therapy or on occupation as therapy.

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[74] Such research would have been difficult to produce given the report to the hospital's Board of Trustees stated the war crisis and private industry salary advantages had depleted employee numbers. In 1947 the Warren State Hospital housed 2,562 residents and had two occupational therapists.

[75] "Very few physicians know enough about occupational therapy to prescribe it with full assurance that they are doing the right thing" (Pollock, 1932, pp. 244-245). Pollock went on to suggest that physicians' distaste for prescribing occupational therapy was retarding its progress.

[76] Government support in President Roosevelt's time for scientific research post-WWII escalated, with government agencies, universities, industry and private foundations, and military pushing for basic and applied scientific research (Mazuzan, 1994).

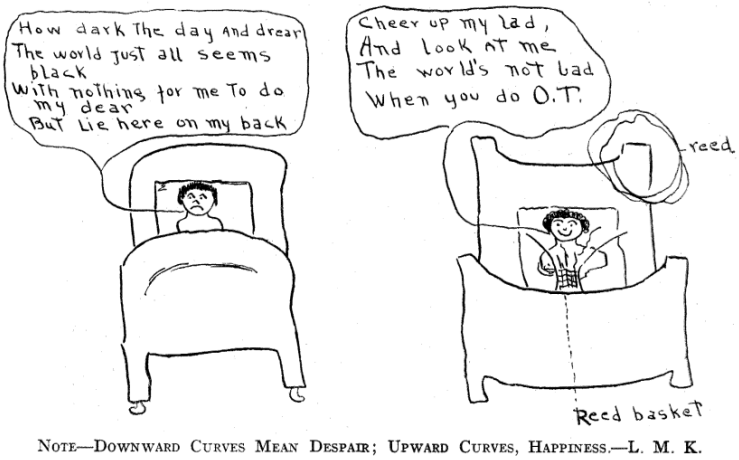

Figure 14. Cartoon figure believed to have been draw by a student showing the pleasure of doing occupational therapy. From "Teaching occupational therapy to student nurses", G. B Spainhower, 1925by *The American Journal of Nursing*, *25*(5), p. 378. Copyright by American Journal of Nursing. Reprinted with permission.

I agree with Friedland (1998) who stated that "as occupational therapy became incorporated into rehabilitation, the profession's core values eroded" (p. 373). The special character of arts and crafts was lost when it became associated with labour in the previous decades. Pure arts and crafts was gone as the "Art vs Labour" perspective swung to the side of labour, industry and economic purpose. As the labour and efficiency perspectives, described earlier, took hold, occupational therapy had to demonstrate its effectiveness. This change is evident in educational foci; in 1944 the term 'therapeutic occupations' replaced 'crafts' in the University of Toronto curriculum[77] (Robinson & Le Vesconte, 1944) and teaching stemmed from a medical model versus the crafts. Occupation was becoming more systematised, more ontically aligned and strategically used for its therapeutic benefits.

1945–1960s: Person as a category with capacity

A campaign for 'socialised medicine'[78] had begun in the United States following the establishment of the Social Security Act in 1935[79] creating space for a health insurance programme. The period from 1900-1950s was described as American medicine's golden

[77] In the Canadian Journal of Occupational Therapy it changed from being a section called Craft Work (e.g. Wright, 1934) up to 1937, to the Department of Crafts in 1939-1944 (e.g. Langley, 1939) and finally to Professional Notes 1945-1949 (e.g. Robinson, 1945).
[78] Similarly, in Canada the first provincial hospital insurance programme was introduced in Saskatchewan in 1947 which would eventually lead to changes culminating in the 1984 Canada Health Act ending user-fees for insured physicians and hospital services.
[79] In 1919 The Lancet stated that the United States had no Ministry of Health with each state a law unto itself. Political statements such as this helped motivate discussions towards an organised health system.

age, bringing physicians from a priestly to an organised technical role (Burnham, 1982). Contributing to this status were increased pharmaceutical[80], technological developments[81], the Medical Association's powerful place in the American nation (Burnham, 1982) and the establishment of social security in 1935. However, Medicare was established in a society with idealistic outlooks on wealth for all - who deserved it, and functioned to increasingly isolate the poor, elderly, and minorities. Medicare was established at a time of radical acute medical advances (Gaudette, Tysinger, Cassil, & Goldman, 2015), and the care of long-term sickness did not receive the same attention (R. A. Stevens, 1996). People at this end of the restorative spectrum were less privileged, while medicine forged on with life-prolonging research focussed on the components of the human corpus. The categories established in earlier decades became more comprehensive as more detail was discovered (Löwy, 2011; Pelling, 2019), as seen in the various diagnostic manuals and international classification systems (e.g. the American Psychiatric Association's 1952 DSM, the World Health Organization's 1949-1965 ICD-6-8a).

Scientists and medical professionals have long been interested in labelling and categorising people into generalised groups. Classification, aggregation and generalisation are mechanisms for abstraction (Dekkers, 2015) and as Rosenblueth and Wiener (1945) stated:

> abstraction consists in replacing the part of the universe under consideration by a model of similar but simpler structure. Models, formal or intellectual on the one hand, or material on the other, are thus a central necessity of scientific procedure. (p. 316)

These, and things like Northway's diagram, are the very early signs that science was zealous about simplifying through abstraction, the increasingly complex world it was discovering. For the person, labels are a reference point for how others treat them; they can render a person powerless and stigmatise to the point the label becomes their identity.

Seen as less derogatory at the time, labels such as retarded (used in place of idiot, moron, imbecile), handicapped, and crippled were used more during this period. The term insane was used in relation to things like children's mental abilities (Holt, 1957), the effects of polio or other crippling orthopaedic diseases (Connor & Goldberg, 1959;

[80] For example the polio and a refined small pox vaccine.
[81] For example the heart lung machine, ultrasound, and defibrillator.

Hollinshead, 1953), and for those experiencing mental illness. Even though changing the terms might show a level of care for people who were seen as different, to give them a more acceptable label, they were nevertheless still seen as different. One of the main difficulties in researching this time period is the widely variable terminology. For example, the construct of handicapped distinguished classes such as 'severe subnormality' and 'mild subnormality', or the 'high grade' variety (Abbott, 1982), let alone the specific 'motor cripple' categories that existed. Refined categories like this were not necessarily an intelligence scale and linking them to appropriate schooling, but were socially useful for distinguishing who was incompetent and surplus to society's requirements[82] (Abbott, 1982), revealing what society's attitudes were to some people. Overall, such terminology put a person further into groups of diminished, less than normal capacity along with normal or abnormal deviations from the norm (Baker, Wright, & Gonick, 1946). Diagnostic terms, like these, can take on a persona of themselves when mixed with social attitudes and expectations. Alternative forms of thinking and treatment were needed, as called for by the National Association of Retarded Children in 1950. This association, mostly made up of parents, focussed on what was best for the children. A spotlight was brought onto the treatment of the person and gave them a powerful voice during the 1960s disability rights movement, shifting how people were treated and regarded.

Some writing held an air of possibility for doing most things again, within reason ("Journey through darkness", 1951; Smith, 1947). This quote from a pamphlet written about the possibility of overcoming the impossibility of blindness:

> Remember this – your sight isn't as good as it was; but you've still got a good brain, good muscle, youth, personality, experience – you've got far more than thousands and thousands of people around you. You've got your life head, a useful life, a man's life – what's a little handicap. (Mackenzie, 1944, p. 6)

The idea of overcoming one's disability was a popular theme but bringing people back to work was still the main thrust for healthcare and for the rehabilitation field.

[82] It was not until 1965 that the United States Congress reversed the prohibitive legislation colloquially called the Undesirables Act of 1882, which prevented paupers, convicts, idiots and the insane from entering the country.

Practice as rationally quantified: Crafts versus science

In 1931 the American Occupational Therapy Association was the first allied health profession to approach the American Medical Association[83] to accredit occupational therapy schools (Howard, 1991). This survivalist move produced some tension between the moral treatment grounding and the medical model to which it was now tied. Medicine's claim to coordination and management of rehabilitation teams was largely due to its authority over all allied health professions, especially in post WWII physical rehabilitation[84] (Gritzer & Arluke, 1985). The strong connections between physical rehabilitation and occupational therapy were clear when, in 1925, the Occupational Therapy and Rehabilitation Journal[85] (1925), previously the Archives of Occupational Therapy (1922), became the American Journal of Physical Medicine.

Howard A. Rusk [1901-1989], a key physical medicine doctor and leader in rehabilitation had a bifold interest in planned convalescence. He discussed both the art of the advancements made in the field of human relationships being fused with a more heavy leaning toward the science of normal, functional, physical reconditioning (Rusk, 1946). Reconditioning was accomplished through systematic, graduated series of exercise, education and training in the workshop and other avocational activities (Rusk). The science of "fitting the worker to the job" and vice versa[86] became a social institution and was monitored, measured and researched through the Office of Vocational Rehabilitation proving that "the physical and emotional rehabilitation of this large segment of our population is possible" (Rusk, 1946, p. 472). The treatment of component body parts through physical therapy was winning over diversional aims of treatment. Terms like 'functional and specific therapy', implying exact or detailed, were applied to physical movement whereas less lofty terms like 'functional and non-specific therapy' was applied in psychiatry. Licht (1947) had already suggested, with limited uptake, that the four objectives of occupational therapy were kinetic, psychiatric,

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[83] In 1949 this relationship ceased when the essentials of an acceptable school of OT was set as a university degree. Canadian occupational therapy's achievement of autonomous professional status occurred in 1944.

[84] Rehabilitation practices grew after WWII with focus on tuberculosis and surgical recovery, industrial rehabilitation, and acute care (Atanelov, Stiens, & Young, 2015; "Rehabilitation of the disabled: Comprehensive survey by Piercy Committee", 1957).

[85] Dr. Sydney Licht built up physiatry and was editor of Occupational Therapy and Rehabilitation Journal from 1947-1952 when it became the American Journal of Physical Medicine. Dr. Licht wrote one of the first textbooks (and many others) with William Rush Dunton: *Occupational Therapy: Principles and Practice* (1950) for and by physicians to publish the more scientific knowledge that had developed on remedial occupations vs diversional. In the 1950's what became known as the Licht series started in rehab medicine.

[86] The job was also adapted to fit the patient with such things as treadle sanding machines to strengthen ankles and cord knotting using the leg to tighten knots for increased knee motion.

metric[87] and tonic[88]. People like Rusk advocated for the comprehensive use of therapies such as occupational therapy. With occupational therapy's foremothers having walked the profession alongside medicine it was placed in a relatively secure position, in rehabilitation. I use the term 'relatively' because patients had to pay for occupational therapy in some physical rehabilitation, which meant there was a reluctance to accept therapy if it was seen merely as diversional. Whereas, physiotherapy was able to show more tangible evidence of improvement and therefore was more easily accepted as a treatment (Zinovieff, 1953).

Occupational therapy rehabilitation was concerned with holistic care. I avoid using 'patient-centred' here because of articles such as that by Le Vesconte (1954) who said that the patient was the fourth therapist, putting them in the least important position behind the doctor, physiotherapist and occupational therapist. Holistically, occupational therapists wanted to know about the patient's social circumstances, their daily living skills[89] and also their underlying psychological fears or hopes, for example:

> Every patient who is fearful, worried, is tense. This reaction may not be the symptom for which he was referred to you for treatment, but it is the symptom which colours his whole response and capacity to benefit from your treatment. (LeVesconte, 1954, p. 64)

Recognising that the patient was more than the reason they were referred to occupational therapy was important. Nevertheless, as in previous sections of these two chapters, the voice of the patient and the ontological is largely absent in scholarly writing. It was veiled in the cloud of professional rhetoric and academic jargon using numbers and graphical means to quantify rehabilitation progress (Campbell et al., 1960).

Gritzer and Arluke (1985) strongly advocated for the therapeutic value of occupational therapy and was unwilling to become subordinate to the medical profession and be tied to the medical market. But a scientific medicine called for occupational therapy to explain how occupations were curative. For example, less than positive remarks about occupational therapy's lack of a scientific basis were seen in book reviews.

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[87] Related to measured work tolerance i.e. graded exercise,

[88] Related to improving muscle and mental 'tone' which was sought to replace the term diversional activity. Diversional therapy, which others thought should be handed over to other hospital personnel, was less important and discard-able.

[89] Activities of daily living was an untouched area in occupational therapy in 1957 but potential could be seen here for expanding the scope of the occupational therapy profession (Le Vesconte, 1957).

> Work therapy was often a polite and somewhat cynical way of describing the cheap labour used on the chores and odd jobs of the mental hospital kitchen and farm. The surprisingly good results of this rather unscientific "therapy" in so many patients has long ago removed the cynicism and made overdue a proper study of how it works. But it is a difficult step, particularly in mental illness, from demonstrating the useful effects of a particular treatment to understanding the processes involved. Occupational therapy is now universally regarded as one of the mainstays of the in-patient care for mental as well as many other diseases, but its claim to be a science will not be accepted by all. Dr. O'Sullivan's textbook does little to persuade us of its scientific basis, though it is a good practical introduction to the subject for those training to be occupational therapists. (Backett, 1956, p. 306)

This review was echoed in the American Scientist magazine where the same book[90] was not recommended due to its outdated information and deficient linkage to principles of therapy (Bachrach, 1956). To keep in favour with not just the medical profession, occupational therapy research moved away from unsubstantiated empirical claims based on faith and use of controlled observations. Instead, to control the free environment of the occupational therapy department, variables could be controlled such as the gender, age, diagnosis and intellectual capacity of subjects (Bagnall, Boyce, Pinkerton, Frazer, & Hahn, 1955; Foulds, 1955). Occupational therapy's practices homogenised, became technical and more uniform. Untying itself from the arts and crafts image was vehemently stated as necessary in a panel discussion with rehabilitation specialists by Hahn, a Director of occupational therapy:

> We must sever the connection between occupational therapy and arts and crafts. You know how it is. The sort of thing we get is, "Oh, you are the people who make those lovely baskets"! We must completely change our approach and wording of what occupational therapy is. It is more of a functional re-education, both psychologically and physically and we use special tools and various kinds of activities in the same way as doctors use drugs in some particular types of disease that respond to drugs. (Bagnall, Boyce, Pinkerton, Frazer, & Hahn, 1955, p. 88)

I can only give a cursory view of the amount and scope of research that grew in the health care professions such as occupational therapy. Regardless, the 1950s appears to have been a time of rupture in occupational therapy's epistemology[91]. Hocking (2004)

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[90] The book reviewed was O'Sullivan, E. N. M. (1955). *Textbook of occupational therapy with chief reference to psychological medicine*. London, England: HK Lewis. With foreword by William Rush Dunton. O'Sullivan was a psychiatrist and advocate of occupational therapy.

[91] Practice in the United Kingdom 'lagged behind' that of Northern America in that they still practiced predominantly using arts and crafts versus 'scientifically' researched functional activities. The rupturing effect on their practice came later around 1958/59 (Capstick, Miller, & Power, 1959)

found that in the 1950s and 60s more daily living aides were manufactured, and this can even be seen in the advertising in academic journals (see Figure 15), where crafts sat alongside ‘contraptions’, splinting material and aids.

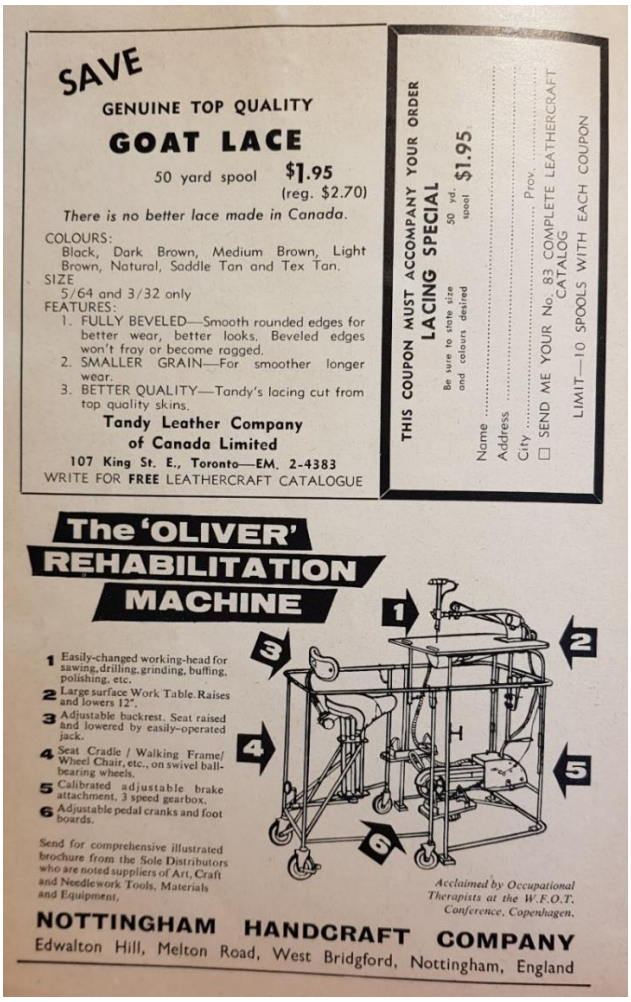

Figure 15. Advertisement showing two occupational therapy treatment modalities. The Tandy Leather Company seems almost charming in relation to the more business-like and geographically spread Nottingham Handcraft Company with its ‘craft’ machine – a pedal operated saw/worktable. Both companies still operate, with the latter now providing aids for daily living only. From 1959, the *Canadian Journal of Occupational Therapy*, *26*(1), p. 4. Copyright in the public domain.

Hahn claimed that occupational therapy was expensive[92] and would become extinct if it did not generate more streamlined and standardised methods, equipment and research. Naturally, standardisation and increased specialisation was accompanied by many new terms (Beldam, 1957) and labels which pigeonholed people with disabilities into groups

[92] Physiatrists had to judiciously consider budgets, resources, laws, patient need, prognosis in prescribing therapies. If occupational therapy could not account for its worth, then it was in a perilous position of being axed from services.

with their own specific treatments. In some cases narrowed to hand, hygiene, eating, dressing, wheelchair, car and gait activities and concerned with how much assistance the patient needed to perform them. Divisions in the profession by the tool or treatment[93] continued its breakdown of the understanding of a person (e.g. see Figure 16). LeVesconte (1957) expressed her worry that these moves away from a concern for the whole patient was a neglect of the basic concepts of occupational therapy. Likewise, Ferguson (1958) argued that the concept of 'normalcy', propagated and exaggerated by psychology, was a statistical measure that could not account for the less tangible characteristic of a person. He wanted to be sure therapists saw a person for who they were, not what norm they deviated from. Regardless of such concerns, occupational therapy knowledge became more ontic with the support of the research ethic, and new terms applied, such as those that divided the patient into constituent parts that aimed to make practice valid and valued.

[93] For example, milieu therapy, group therapy, hot clay for hand injuries, play therapy, dysphagia/aphasia interventions, splinting for arthritis.

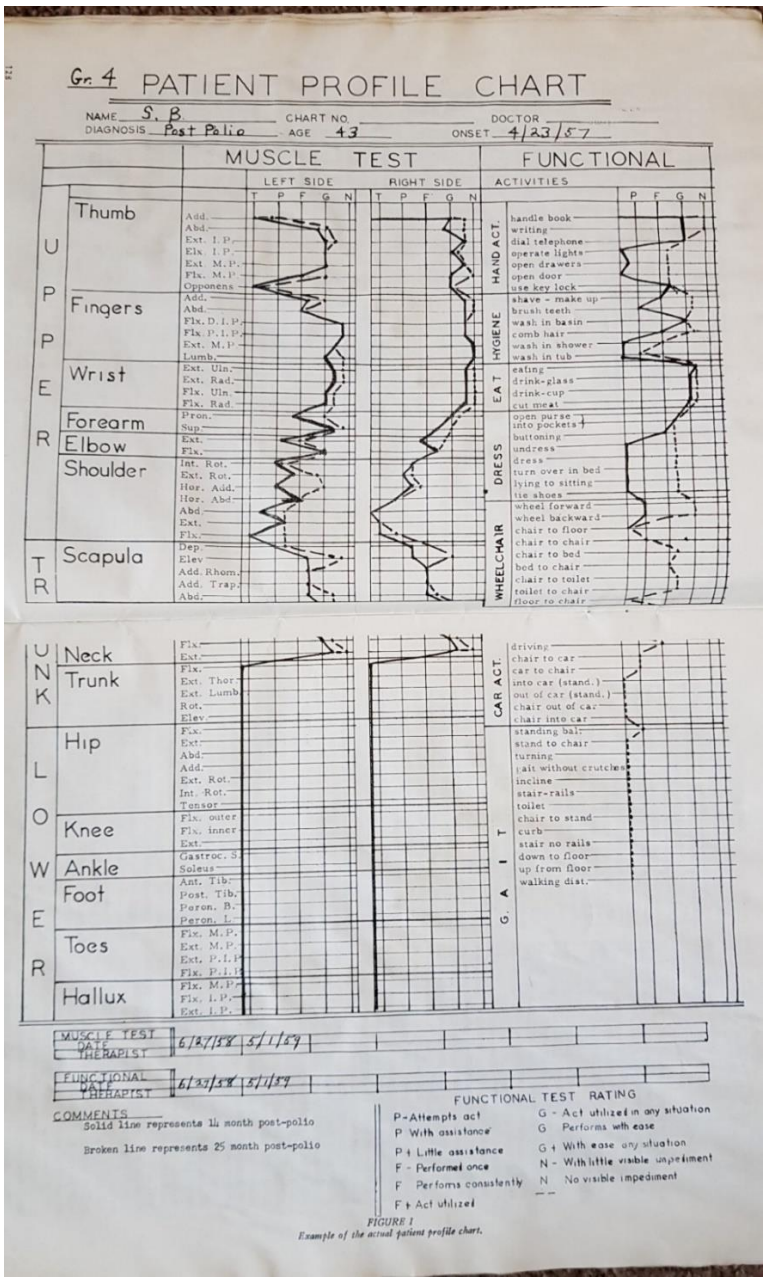

Figure 16. The patient profile chart showing muscle and a functional test depicted in graph form, giving a visual measure and dimensional quality to existing and accepted tests. From “The patient profile chart: A new method of disability evaluation” by J. W. Campbell, R. A Blanchette, O. L Huddleston, D. Rubin, T. I Humphrey & R. W. Moore, 1960, *American Journal of Occupational Therapy*, *XIV*(3), p.127. Copyright the American Journal of Occupational Therapy. Reprinted with permission.

1960s- : Person as homogenised, independent and universal

The 1960s was a time of cultural change across the Western world with more splintering in the façades of society and popular culture. For some this led to increased

freedom, but not for all[94]. In the United States the Civil Rights movement and Gay Rights movement for the LGBT community[95] shook society's morals and views on people (Egonsson, 2018; Rønnow-Rasmussen, 2019). Similarly, a second wave[96] of feminism swept across the globe that challenged political views and social ideologies (Bruno-Jofré, 2019; Diski, 2009).

The general disdain for difference was under scrutiny at a socio-cultural and at a legal level. A new critical social outlook was developing, and early proponents of critical theories opposed the authority established through earlier industrial and corporate capitalism, just as the 'post-modern' critical social theorists (e.g. Jürgen Habermas, Michel Foucault, Jacques Derrida) did with social structures. Advancements in science and technology, such as the television, space exploration, and birth control (Tone, 2001) proliferated which showed that the rules of nature could be controlled. An explosion of research brought together key proponents of general systems theory[97] around the late 1950s, who wanted to reduce duplication in theories across different fields, promote communication between experts and unify the sciences. Systems theory suggested that all phenomena are in a web of interconnected elements, called a system, that has the same patterns, properties and functioning regardless of the discipline. To understand a system a conceptual model could be constructed on a simplified scale (Dekkers, 2015), which as Godin (2017) indicated was scarcely done before the 1960s. Systems theory and modelling found its way into occupational therapy as it did in other disciplines, but systems theory was not the only change agent in occupational therapy or healthcare in general.

Healthcare changed for the better thanks to the 1960s Disability Rights movement which had gained strength off the Civil and Women's Rights movements (Shapiro, 1993). An important milestone in this movement was its stride towards independent living. Independent living was enabled with the arrival of pharmaceuticals from around

[94] For example, East Germans had little freedom after the construction of the Berlin Wall under a socialist regime based on Marxism-Lenism ideologies (Wilke, 2014). Fear of a communist invasion by people from countries like China and Russia after the Korean, Vietnamese and Cold Wars created feelings of fear and hostilities to others in America (Teichmann, 2018).
[95] The Gay Right movement experienced less success as other movements due to the moral links with sexuality. Sexual deviancy was understood to be curable by the medical profession (Field, Rollin, & Watts, 1973),
[96] The first wave of feminism is accepted as being the suffragette movement of the late 1800s/early 1900s.
[97] Ludwig von Bertalanffy, Kenneth Boulding, Anatol Rappaport (these three were founders of the Society for the Advancement of General Systems Theory in 1954), James Greer Miller, and Robert Chin.

1950, such as chlorpromazine for chronic schizophrenia[98], and the passing of laws that invigorated deinstitutionalisation. A new sensitivity to the needs of both the psychiatrically and physically unwell person emerged, but this sensitivity from campaigners could not remove the stigma reinforced by public beliefs and attitudes. Debates were strong on both sides with the quote below from a psychologist capturing some of the ideas:

> The normalisation principle contradicts the fact that most disabled people do in fact need extra help. Although there can be no question that disabled people can be treated more normally than in the past, at some point we must all come to grips with the fact that they are in fact different. (Mesibov, 1976, p. 31)

The de-institutionalisation of the mental health asylums and children's intellectual disability institutions, together with a more economically focussed hospital management system, and psychotherapeutic drugs meant it was more feasible for people to be released into the community and for normalisation to take place (Bassuk & Gerson, 1978). People with intellectual disability were brought out of their state of waiting for freedom, dressed in age appropriate clothing and given appropriate activities, whether they be craft or pre-vocational (Newman, Flynn, Dubi, & Conway, 1979).

When in hospital or medical care, the person had firmly become 'the patient' in this time era, rather than the terms used in decades before. But the patient was described as the 'difficult patient' (Peterson, 1967), a 'non-compliant patient' (Levine, 1970), an 'apprehensive patient' (Powers & Storlie, 1967), the 'dying patient' (Brim, 1970). The optimistically ontological sounding 'whole patient', in the quote below from Smith (1965) appeared as part of the overused "whole-patient" cliché which had perhaps lost its original meaning and intent:

> Illness affects all of the patient, or as the well-worn cliché states, "the whole patient." Once having accepted the responsibility for the patient's nursing care, we are not free to disregard any aspect of it, since, to the patient, each aspect is important to his comfort and to his recovery. (p. 66)

This showed that the 'whole patient' was an observed and objectified quantity in hospital care. The person was watered down to a homogenised 'patient'. The figure

[98] Used in US by 1954 to treat mania, schizophrenia, psychomotor excitement (Miles, 1956).

below (Figure 17) also captures how a person was homogenously categorised in an educational setting.

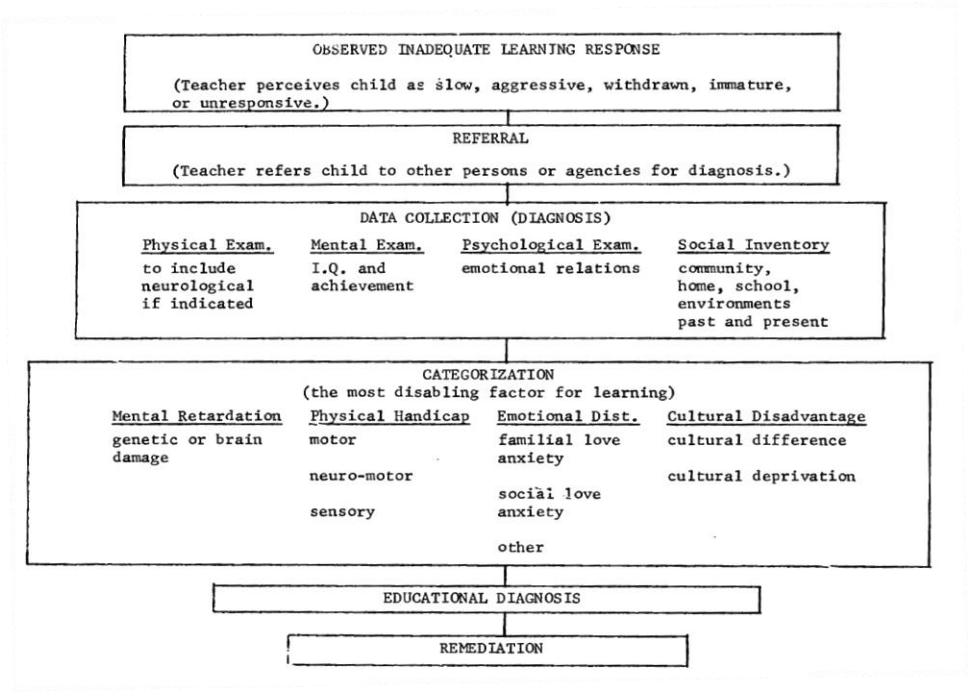

Figure 17. Conceptual model showing that the disadvantaged could be grouped according to their learning deficiencies. From “A model of the culturally disadvantaged” by R. G. Publicover, 1967, *USU Special Educator*, *2*(1), p. 22. Retrieved from https://files.eric.ed.gov/fulltext/ED022822.pdf. Copyright in the public domain.

This quote from the same text shows that across all ages and specialities, people were grouped and categorised with ever increasing complexity.

> After the data is collected, the child should be categorized in terms of what handicap or shortcoming is most disabling to the learning process in the school setting. There are four broad categories--mental retardation, physical handicap, emotional disturbance, and cultural disadvantage. For example, the examinations may have resulted in a diagnosis of educable retarded, moderate emotional disturbance characterized by withdrawal, very low language ability, lowest socio-economic group. In which category should such a child be placed? (Publicover, 1967, p. 23)

As in all the other sections, despite wide searching, the ontological perspective is largely lost from the academic writing. Examples of empathy are few and far between, with one later in the 1970s called “deprivation day” (see Figure 18) where nursing students spent a day experiencing the patient’s point of view. Some nursing students

stated that through the experience they felt ugly, or a non-person, lonely or invisible (Kauffman, 1978).

It wasn't easy to do even ordinary school chores, such as using the library, in a wheelchair. Simple maneuverability took extra effort, as this student found out.

Figure 18. A student nurse in a wheelchair experiencing deprivation day: Nurses experiencing a day in the life of a patient through simulation of impairments. From "Sharing the patient's experience", by M. Kauffman, 1978, *The American Journal of Nursing, 78,* p. 861. Copyright the American Journal of Nursing. Reprinted with permission.

Understanding the experience of the person was evidenced later in articles such as one by Bogdan (1980), who applied symbolic interactionism in their research and used the resident's own saddening words on their experiences of being labelled retarded. This is a testament to general acceptance of qualitative and narrative approaches to research and therapy, as called for later by people in occupational therapy (e.g. Burke & Kern, 1996).

Practice as rationally quantified through other knowledge bases

This final section in this chapter points to the foci for Chapter Five on the contributions from other fields, hence it is shorter than previous sections.

Practice, viewed through the research ethic, became more and more complex. Health professionals became progressively intoxicated on the seductive qualities of research and the esteem that logical, positivist approaches and methodologies held. More quantitative research was churned out of universities, research centres and through

government channels[99]. The breadth of research was vast and disciplines continued to deepen and complicate their ideas. Occupational therapy drew on many other disciplines' knowledge (Kielhofner & Barris, 1986), such as psychology (which had drawn on physics and mathematics), sociology, and systems theory. Psychology and systems theory provided occupational therapy with a seemingly reliable knowledge base, which gave the profession more credence. Furthermore, multi-disciplinary theories and the disability rights movement meant occupational therapy had legitimate reasons why engaging in occupation could heal the psyche, the physical and be good for social expectations (Laws, 2011).

The apparent effects of physical disability on the person's psychology from well before the World Wars[100] were of interest to social psychologists. Psychodynamics offered brand-new and exciting ideas that could strengthen occupational therapy's theory that engaging in occupation could bring forth a person's potential. The potential of a person with a disability to live independently in the community became a driving force in occupational therapy's tapered focus on the *essential* activities of daily living and productivity. The enjoyment of craft and craftsmanship was discarded in favour of physical movement and musculoskeletal benefits, for example this from Spackman (1968):

> Some occupational therapists of today are tending to utilize the bicycle saw as a means of mechanical exercise, the patient merely bicycling not sawing. In order to get the specific motion necessary, the patient may be found moving a sand block back and forth on a workbench. There is no sandpaper on the block and there is no project to sand. (p. 71)

Perhaps these changes were because Medicare components included occupational therapy services and the provision of equipment but with limited scope in the early days[101] (Howard, 1991; Weisz, 2014). Having a protected line of income for therapists

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[99] For example in education and public health services. Public Health Service in 1966 gave funding grants of $17.4 million to cancer, $9.5 million for heart disease, and $26 million for mental health. Whilst the sum for mental health is greater, it is for the entire mental health field. Only $12 million was dedicated to the chronic illness and aged category (Weisz, 2014).

[100] Robert Burton [1577-1640] wrote positively about the effects of deformities, lameness, crookedness, deafness, blindness on the purity of the soul in his text 'The anatomy of Melancholy' (1621) saying that it added to their souls.

[101] In the USA, because occupational therapy did not have a strong political base due to resistance to pursue licensing legislation (licencing only in 1970's), they had no influence in Medicare legislation. As a result, Medicare reimbursed occupational therapists for hospital care only if physiotherapy, speech and language therapy or nursing was the primary service. Occupational therapy became dependent on other allied professionals rather than being able to be a sole provider. However, it was not slow to take political action when licensure was established, putting its foot firmly in the door in the late 1970's by supporting

helped swing the spotlight onto the practices that could be reimbursed through Medicare, which were more often the measurable and quantified practices. Similarly, in England the Professional Supplemental to Medicine Act in 1960 ensured that occupational therapy had a firm position in the National Health Service, having staved off advances from others trying to claim a hegemony in healthcare (Hall, 2016).

The quantity of research meant people it was easier to get lost in the quagmire, especially when educators needed to filter it for students to learn. An answer to this was to devise conceptual frameworks, theories and models as espoused by systems theory (Dekkers, 2015), which provided solutions for the complex situations, for understanding apparent inter-relationships and what mechanisms played a key role in these dynamics. In nursing this started in the 1960s with Dorothy Johnson's Behavioural System Model (1968), Imogene King's theory of goal attainment (1968), and later Sister Callista Roy's Adaptation Model (1976) to name a few. In occupational therapy the uptake of systems theory appears to have come a little later, with publications based on systems theory appearing in the 1970s through the Master's theses (e.g. Baker, 1977; Burke, 1975; Heard, 1975; Liptak, 1970; Plumtree, 1977) at the University of Southern California, some under the supervision of Mary Reilly. To understand the complexity of human behaviour required abstraction of properties and identification of possible patterns. But significantly lost in the eventual development of occupation-based models is that abstraction can only have relevance, not application (Simon, 1962). Consequently, this is where the development of models begins and this chapter ends.

Conclusion

In summary, the enormous shifts in a vast array of landscapes around the turn of the century brought in modernism, which saw that traditional ideas, assumptions and ways of being were being doubted and seen to hinder progress. Some ideas radically changed perceptions of reality and people looked both inwardly and outwardly to the possibility of everything being questionable. People rebelled against the status quo, searching for an authentic response to a culture that seemed to be re-defining itself on almost a daily basis. Liberal ideas and acceptance of people with unique modes of expression challenged views of what was moral and hence sane. But industry continued to

health care legislation that might support the occupational therapy profession. Medicare was an institution driven by the American Medical Association.

dehumanise people as cogs in the mere manufacturing of products and materials for consumption.

Both World Wars led to demands in healthcare, and other areas, not experienced on such a scale before. The modernist became disillusioned with old ways and new treatments were developed to care and rehabilitate soldiers to a good and productive life. Enormous leaps were made through scientific enquiry, and medicine had many new and reliable tools to treat both the physically and mentally unwell. The remarkable evidence of the moral treatment and arts and craft successes were beginning to be ignored and suppressed. Reigning beliefs and ideologies were seen in stark contrast to empiricism and logical positivism, even when the research neglected the importance of what mattered to the person. In this way entire service fields turned their back on reality due to the power of quantifiable 'science'. Occupational therapy was not immune to the force and importance of science, and the seeming need to practice from an ontic perspective was colossal. Health care, remuneration systems, and the public demanded practices be justified and trustworthy. Hard sciences sprung up in all fields and eventually this mass needed unification and homogenisation, which systems theory was understood to be able to provide.

Scientific theories and abstraction increased, and the importance of the patient themselves who stood before the therapist faded. The human relationship and interaction between the therapist and the patient was ignored because good practice cannot come out of a theory that has distilled the person down to a homogenised view. The ontological understanding seemed to have to fight its way forward and justify itself in the face of the looming economic and scientific powerhouses that tried to squash its humanistic intents. To sum up, occupational therapy practice hid behind the mask of scientification. It lost the recognition that when therapists were face to face with a person they always came from an ontological base. This way of being with the other person would have created vaster possibilities for seeing the person, their world and occupations with a richness that has hitherto been lost through scientification. These ideas are expanded on in Chapter 8 (The ontological view). In the next chapter I expand on the important contributions that maths, physics and psychology have made to the development of occupation-based models.

Chapter 5 Contributions from other fields

> Grown-ups love figures....When you tell them you've made a new friend they never ask you any questions about essential matters. They never say to you "What does his voice sound like? What games does he love best? Does he collect butterflies?" Instead they demand "How old is he? How many brothers has he? How much does he weigh? How much money does his father make?" Only from these figures do they think they have learned anything about him.
>
> Antoine de Saint-Exupery– Le Petit Prince (1946, IV, pp. 19-20)

Introduction

The last chapter pointed to the significant contributions that certain formal and natural disciplines, like mathematics and physics, made to the knowledge development in social science disciplines, like psychology and occupational therapy. This chapter aims to elucidate those contributions from maths, physics, psychology, systems theory and with lesser focus on sociology, to the development of occupation-based models and in particular their diagrams. It shows how others' ways of explaining phenomena and human performance have engaged with occupational therapy views. Mathematics was chosen because many earlier models, diagrams and figures adopted in sister professions were based on mathematical formulae and numerical expression. Whilst initially this link appears small and intangible for occupational therapy, its strength lies in the cross connections with psychology, sociology and general systems theory. To describe how mathematical ideas came to be adopted in occupational therapy, a brief history of relevant European mathematics up to the nineteenth century is given. The subsection on eighteenth and nineteenth century mathematics leads into an applied explanation and critique of how these mathematical concepts and theorems have been adopted in occupational therapy. After the applied section in this chapter, the ideas that have permeated into occupational therapy theory and models will be discussed. The cross connections to psychology are analysed in the final aspects of the chapter, where the shifts from humanism and positivism are more clearly revealed. Even though there are some overlaps between mathematics and semiotics, as the study of signs and symbols, I stay with mathematics in this chapter prior to the next chapter which deals specifically with semiotics.

This chapter does not use logical-mathematical arguments nor full mathematical work-ups of the diagrammatic representation of occupation-based models. It is also not my

intention to take a sceptical metaphysical stance on the existence of things in relation to taxonomies in occupational therapy, or to critique the definitions and conceptual groupings in occupational therapy. More so, my stance is more pragmatic, social constructivist, where I look practically at what the categorisations enabled in relation to the model development and occupational therapy practice. My intention is to show how the history of drawing phenomena or concepts has changed over time and across different scholarly fields, and how this was adopted into occupational therapy, as revealing what lies behind the circles and lines in the occupation-based models.

A brief history in European mathematics

Mathematics is the study of quantity, structure, space and change. Its aim is to look for patterns, to prove conjectures, and to predict nature through logical reasoning and abstraction, which are the hallmarks of maths and also of philosophy. It was not until the early 20th Century that maths detached itself from the humanities and philosophical schools of thought to become a field in its own right (e.g. see university department divisions between 1900-1920). There are many remnants of mathematical history that have filtered into modern thinking over the centuries. As far back as the axioms or self-evident principles that Aristotle popularised, where nothing can be deduced if nothing is assumed, to later Kantian critical reasoning and graph theory, maths has been part of human existence to help explain the natural world.

Greek mathematics

Greek mathematics, which was considered very sophisticated at the time (e.g. the mathematical and geometric treatise of Euclid's Elements and Pythagorean geometry accompanied with diagrams), was based on deductive reasoning of observations and logic (Mueller, 1969), much like Aristotelian deductive logic or syllogism[102]. Deductive logic was the dominant form of logical reasoning until the 19th Century when modern symbolic logicians such as Gottlob Frege [1848-1925], Charles Sanders Peirce [1839-1914], and later Bertrand Russell [1872-1970] came along. Aristotelian logical thinking and analytics have had an unparalleled influence on the history of western thought, philosophy and hence by default mathematics (Mastin, 2010; Merzbach & Boyer, 2011). Logic is discussed later in this chapter in relation to

[102] Syllogism is a deductive sentence scheme consisting of major and minor premises and conclusions e.g. all dogs bark, this is a dog; therefore, it must bark.

symbolism, or how symbols themselves relate to each other in a kind of mathematical calculus. The scholarly links between these key people can be seen in Appendix F.

Medieval to Renaissance mathematics

Late-medieval (1300-1500) European mathematical development stagnated, in a time dominated by religious and astrological perceptions of the world (Bisson, 2011; Merzbach & Boyer, 2011), where the aim was to prove the existence of God. Mathematics' movement away from Christianity and scholasticism to humanism meant there was an increasing interest in the temporal and personal. There was a new sense of critical enquiry that set the stage for the beginning of the Age of Reason and modern philosophy (Floris Cohen, 2010).

An important mathematician in relation to the much later development of models and diagrams was the 14th Century French scholar Nicole Oresme [1320-1382]. Oresme was the first to graph the relationship between speed, distance and time (Bales, 1983; Goddu, 2004), putting into pictures things that were previously just numerical. Oresme believed that every structure had a psychical quality and physical quantity that could be measured, which contributed to 19th and 20th Century psycho-physics. Psycho-physics was very mechanistic and claimed to measure psychological intensities (Goddu, 2004). This stimulated research by Gustav Fechner [1801-1887], an early pioneer in experimental psychology[103] who quantified many psychological process such as pleasure and pain (Woodward, 2018). These are some of the links between mathematics and philosophies of this time that predisposed the growth of the ontic in healthcare, as discussed in the last two chapters.

The 17th Century Renaissance period saw a rapid increase in the pace of mathematical developments. Gottfried Leibniz [1646-1716] is credited, with Sir Isaac Newton (1643-1727], with the discovery of calculus, and was the first to use the term analysis situs, or topology as it would be known in the 19th Century. Mathematics was concerned with the mathematisation of nature, a vital contributor to the process of scientific innovation (Floris Cohen, 2016). The earlier abstract mathematical theorems were turned into more

[103] Fechner corresponded frequently with a young Franz Brentano [1838-1917], between 1874 and 1878 on matters to do with psychophysics and metaphysics, at a time when this new psychology was trying to establish itself as a rigorous science, in response to Immanuel Kant's rejection of both rational and empirical psychology.

realistic, and practically beneficial, mathematical science with experimentation key to accuracy (Floris Cohen, 2016).

Eighteenth to nineteenth century mathematics: The beginnings of conceptual modelling

In the 18th Century, during the European Enlightenment, philosophy was dominated by Immanuel Kant [1724-1804]. Kant moved philosophy past the Age of Reason with rationalism and empiricism at its core, synthesising the two with a fundamental theme of human autonomy (Ezorsky, 1972; Friedman & Nordmann, 2006), bringing the body under scientific scrutiny. Mathematics was dominated by Leonhard Euler [1707-1783], who presented the first theorem in graph theory which would later go on to contribute to topology. Graph theory is today used in many areas, including in psychology and sociology, hence why the title of this subsection is denoted as the beginnings of conceptual modelling. Granted, it is not the beginning, but a point of significant influence to this kind of conceptual thinking.

Perhaps better known are the Euler diagrams which are closed curves illustrating relationships between sets or groups. A Euler diagram usually consists of circles depicting sets and subsets, with shading or colour representing an empty set or indicating set boundaries (Simonetto, 2011). An example of a simple Euler diagram showing the conjunction between animals in general, animals with four legs and minerals is captured in Figure 20. For the purpose of this thesis, colouring is not discussed as I believe it was employed in the occupation-based diagrams as an aesthetic tool to show distinction between the shapes. Approximately a century after Euler, John Venn [1834-1923] wrote a book titled *Symbolic Logic* which highlighted what would become known as the Venn diagram (Venn, 1881). Euler diagrams became popular in the late 1800s to the 1930s alongside Venn diagrams. A Venn diagram is an illustration of set theory and logical reasoning[104], showing where union or intersection occur, in a similar vein to the Euler diagram.

[104] Venn criticised Euler's circles for their lack of formality and absence of algorithms in making them. Venn applied Boolean logic (using And, Or and Not) which was developed in the time between Euler and Venn.

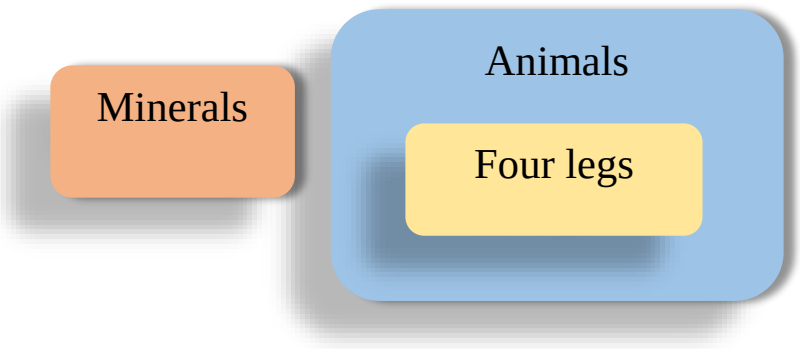


Figure 19. An Euler diagram showing the degenerate conjunction between animals with or without four legs, and mineral.

In order to determine these relationships, sets or collections of 'things' are created, and syllogistic reasoning applied. Sets have members that belong to them and an operation can combine members of a set in some way, and produce another set or 'thing' (Figure 19). Subsets, union and intersection seem to be the most used mathematical operators in occupational therapy models and their diagrams, rather than 'not a subset', complement, equality and so forth.

Nineteenth and early 20th Century mathematics again saw an unprecedented rise in the scope, complexity and abstraction of maths concepts. Albert Einstein's [1879-1955] theory of general relativity was a prime, more modern example of an abstraction of something theorised and his ideas on field theory were implemented within psychology as will be shown later. As an aside, set theory, as well as symbolic logic (part of semiosis), formed part of the 'new mathematics movement' in the 1960s (Feynman, 1965; Malaty, 1999), perhaps only coincidentally this was when conceptual modelling ascended.

The maths behind the circles and lines: A contrived relationship or rhetorical mathematics in occupational therapy

One of the mathematical concepts that seems to have been loosely adopted in the occupational therapy diagrams is set theory. The phrasing 'loosely adopted' is used here because some model diagrams are more closely linked to the mathematical process of set theory, rightly or wrongly. For example, as will be explained, the Person-Environment-Occupation (PEO) model and the original Human Occupations Model (HOM) followed by the Canadian Model of Occupational Performance and Enablement (CMOP-E) adopt a set theory process for representing concepts. As discussed in the last

section, set theory requires the establishment of sets of things, called taxonomies in occupational therapy. These are based in a science of classifying things and on the ontology of being, which will be discussed first, ahead of an applied description of set theory to the occupation-based models.

Taxonomies: A description of set theory applied to the occupation-based models

Taxonomies are named, user friendly, predictable categorisations, and describe relationships between terms, which enables easy communication between likeminded professionals. Non-metaphysically, groups are typically made of sufficiently similar qualities. Similarity is not transitive[105], in that the one thing might be like another, but not like the third. In the process of naming and categorising their differences from other things are recognised, which assists with appreciating the relation of things to each other. In some cases, people group things together that are not at all similar for the sake of utility.

The physical and social worlds do not show themselves in groups or neatly packaged with their own labels. They must be named, grouped, and categorised through people and language. The names and tools of language used are, according to Wittgenstein, multifariously and reflexively tied to "realms of discourse" (Hughes, 1977), and thus they are linked to culture. In occupational therapy, groups can be identified as categories of being[106], and the ontological structure of objects[107]. All these categories and their associated theories from an entire, in this case occupational therapy, text are drawn down to a schematic account into the diagram. Attempting to put these invisible, ontological phenomena into diagrams, and models, becomes a problem of transformation which creates gaps in representation.

Grouping things together can be done well or poorly, and tends to fall to the experts in a field (Lehrer & McGee, 1992), which in the case of occupation-based models were the early scholars, and those who subsequently adopted and adapted their meanings. The

[105] Transitive: being or relating to a relation with the property that if the relation holds between a first element and a second and between the second element and a third, it holds between the first and third elements (Merriam Webster Dictionary) e.g. If A is larger than B, and B is larger than C, than A is larger than C too.

[106] Using classical Aristotelian categories of Being parsimoniously, occupational therapy uses eight of the ten; substance (the person, objects), quality (the nature or ability of the person), relation (between people/objects), location (environmental relation), time (in relation to course of events), habit (to have), action and passion (doing unto).

[107] The ontological structures of objects would be identified as including such things as culture, spiritual, and social.

earliest formal occupational therapy classifications and definitions, in United States, came in 1979 in the form of a publication for clinicians seeking reimbursement[108] (American Occupational Therapy Association, 1979), with revisions in 1989, 1994 (American Occupational Therapy Association, 1989, 1994), and redesigned in the 2000s (American Occupational Therapy Association, 2002, 2014, 2016). Conveniently for the model makers in the 1980s, the profession had already settled on an approximate taxonomy with three components to a person (cognition/mental, affective/emotional, physical/sensorimotor), three to four aspects to the environment (social, physical, cultural, institutional), and three types of occupation (self-care/self-maintenance, productivity, leisure). While not necessarily labelled consistently across different theorists, these category boundaries worked well with simple geometric shapes, assisting in the creation and configuration of the boundaries to portray the cornerstones of the profession.

The stable, discursive grouping of person, occupation, and environment in the occupation-based models, is both materially monistic and pluralistic. It is monistic because the occupational performance of one person is portrayed, which in itself is problematic when trying to apply an idea such as co-occupation (Pickens & Pizur-Barnekow, 2009), or doing something for another well in advance of the occupation occurring, such as saving money for a child's university fund. The model's pluralism appears in the derivatives of the monists. That is, there is only one person, one environment and one thing called occupation or occupational performance. But there are plural categories of occupations and environments and multiple components to the person. Others have written about the dualistic nature of occupational theory based on a Deweyan view (Dickie, Cutchin, & Humphry, 2006; Whalley Hammell, 2013). I apply a different perspective of pluralism to the models and their diagrams, as there are often more than two categories within any set. Typically, in binary relationships, sets are in opposition with one dominating, but this is not the case in occupation-based models. Alongside this, the carving up of the units into parts is arbitrary and quixotic because some larger wholes are unbreakable singles. The dissection of the whole, a person engaged in occupation, creates ontological consequences, unless the ontological is bracketed out. The removal of the ontological is the case of most occupational therapy models, having cleaved the person, occupation, and environment from each other. The

[108] It was originally developed in response to a federal requirement to develop a uniform reporting system under the Medicare and Medicaid Anti-Fraud and Abuse Amendments of 1977 (Borst & Nelson, 1993).

ontology of humanity in practice is removed as being too difficult to capture (Lee, 1970). Furthermore, examples of how the models struggle to account for the complexity of practice appear when one person does more than one occupation at the same time, as in doing tasks associated with parenting while commuting home from work, the occupations a family does rather than one individual, or walking (physical) and ruminating over something[109] (cognitive) at the same time.

Whilst taxonomies and categorisations make certain things easy, they are flawed in many ways through such things as their ethnocentrism and relativism[110]. There does not seem to have been a conscious realist or descriptive stance in categorising occupation, person or environment based on observations made in practice. Instead, grouping in the domains was seemingly based on similarity and through consensus of those involved in the early process, who were often physicians (e.g. Sydney Licht, Adolf Meyer, Goldwin Howland). Another weakness is that a field of science, governed by a taxonomy, is at risk of incommensurability[111] during a paradigm shift if the old taxonomies are not inter-translatable to the new paradigm (Mizrahi, 2015). To illustrate, the term self-care was defined as consisting of activities like hygiene, washing, dressing. I would argue that now, this term has taken on additional activities like those people do to look after their mental health, such as meditation. Some of this incommensurability may have already been noted by some in the field (Butts & Nelson, 2007; Christiansen, 1994; Hinojosa & Kramer, 1997; Polatajko et al., 2004; Wilcock & Jakobsen, 2001; Yerxa, 1998b), which was indicative of dissatisfaction with the taxonomies, or as Yerxa (1998a) identified early on, is the oversimplification of a profession that was complex and led to limitations in practice and the development of theory (Christiansen, 1994).

Application of set theory

Euler and Venn diagrams are so common that they have become a default standard for the depiction of sets (Simonetto, 2011). For example, Urie Bronfenbrenner's ecological model from sociology (Hayes, O'Toole, & Halpenny, 2017), and the Human

[109] Ruminating, pondering, daydreaming or thinking over something is not well recognised in any occupation-based models.
[110] I am avoiding discussions on the problems of *universals related to nominalism* (metaphysical denial of abstract objects, universals and general terms, which believes that they exist only as names), *realism*, (entities of a certain type have an objective ontologically independent reality, with abstract concepts, universal and concrete objects existing independent of our perception of them and independent of their names), and *idealism* (ideas and thoughts that constitute fundamental reality, where we cannot directly know things as they really are).
[111] Having no common ground or not being comparable even through measurement.

Occupations Model from Reed (1984) are Euler diagrams with sets and subsets (Figure 20).

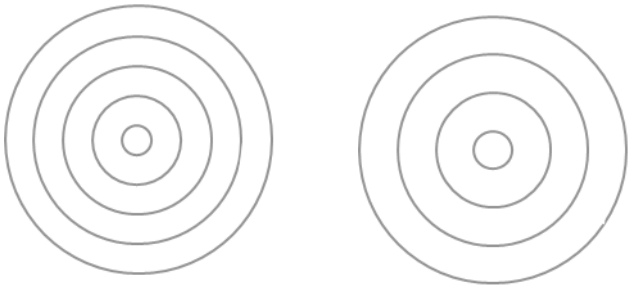


Figure 20. Basic outline of Bronfenbrenner's Ecological Model with the individual, microsystem, mesosystem, exosystem and macrosystem at each level, next to the basic outline of the Human Occupations Model with circles representing individual, performance components, occupations, and adaptation to the environment.

Occupation-based models hold some of the fundamental principles of group or set theory. That is, groups with elements inside them are closed under operation. For instance, a set of cognitive skills, a set of physical skills, and a set of affective skills can be combined (union being the operator to make the set), to 'operate' together to produce what could be described as the measurable attributes of a person. Sets are typically drawn using closed figures that are divided into zones, with an internal zone being part of the larger set (e.g. in
Figure 19, four legs is part of a larger animals zone, hence it is a subset to animals). In occupational therapy, typical sets developed are those that describe the types of occupations, the environments, and the components of a person.

Diagrammatically, occupation typically looks like what is shown in Figure 21:

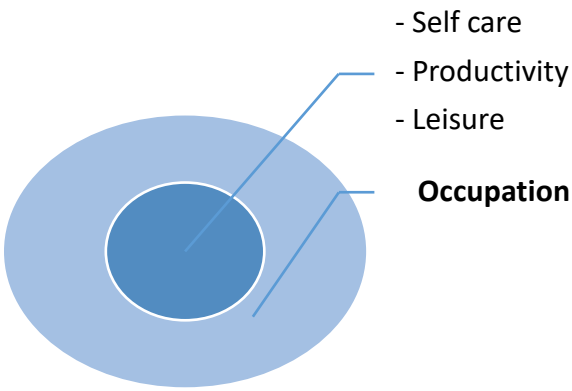


Figure 21. Set theory diagram of typical components of occupation, where self-care, productivity and leisure are subsets of occupation.

However, using set theory more accurately[112] it should be drawn as in Figure 22, given that the three subsets are not equivalent and have their own subsets of terms and definitions.

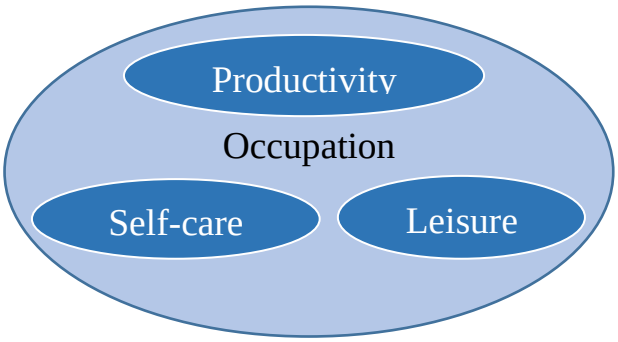


Figure 22. Set theory used more accurately to depict the typical components of occupation.

Applying some of the set theory ideas to the occupation-based models, the PEO model can be described as using a basic Venn diagram with three sets, and the CMOP-E using an Euler diagram depicting sets and subsets through shape nesting (Figure 23).

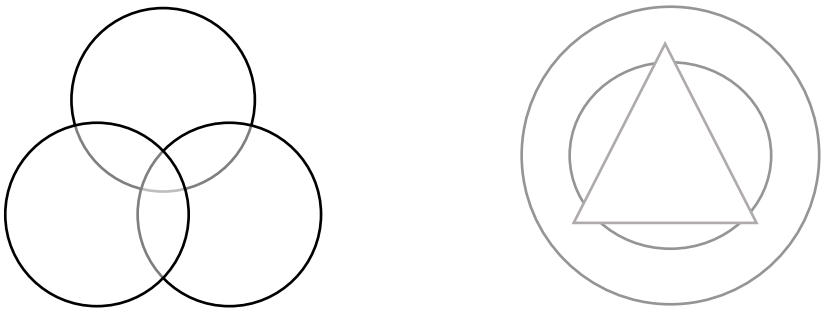
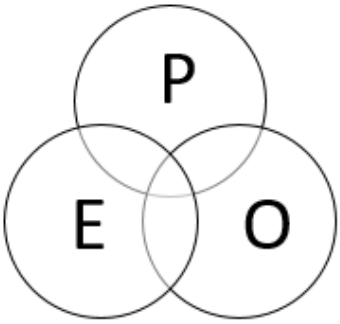


Figure 23. Basic outline of PEO and CMOP-E models as Venn and Euler diagrams respectively.

[112] A key mathematical rule is that an operation (such as intersection or union) must be defined well, for there to be one possible answer in the syllogistic process. These rules appear to have been forgotten in occupational therapy model making.

One problem with Venn diagrams is that they have limitations in the breadth of ideas that can be represented, in other words they have limited expressive power. The expression of a Venn diagram, in the proper way, would interpret the PEO model as represented in Figure 24. Furthermore, some (people, environments, occupations) are not of the other (environments, occupations, people).



Some people are occupations¶

Some people are environments¶

Some environments are occupations¶

Some people are occupations and environments¶

Figure 24. PEO model as a Venn diagram with its mathematical logical expression.

Of course, like this the theoretical representation does not make sense; it is not expressing the concept or the reality the model is abstracting. Extending the PEO model's notion of 'congruence'[113], the Venn diagram's interpretation of the PEO model falls apart even more. The shifting of the circles to be more overlapping (in occupational therapy, meaning greater fit or congruence between the parts), would mean that the above statements would read: MOST people are occupations and so forth. The theory underpinning this model suggests that the person, occupation, and environment are transacting together, with the union of all three being occupational performance, not a mathematical proof.

Hence, it is the diagram that is disanalogous to the theory and can, therefore, be rejected as misleading, not the theory (Folina, 1999). Of course, occupational therapy's interpretation of the model is very different to the pure mathematical view of the three overlapping circles. As mentioned above, the expressive power of Venn diagrams, and hence some of the occupational therapy models, is weak. Their validity and reliability are inconsistent when applied to the diversity of people's multiple realities. In this way, at both a mathematical and symbolic level, they are weak representations of the theory.

[113] Congruence in the PEO model is "coexistence of human beings and the environment, with neither dominating the other" (Law et al., 1996, p. 11). It is another way of capturing the notion of environmental fit.

As a digression, as it is not the aim of this thesis to suggest alternative model images, Figure 25 would be a better way to represent the intent of the PEO model mathematically.

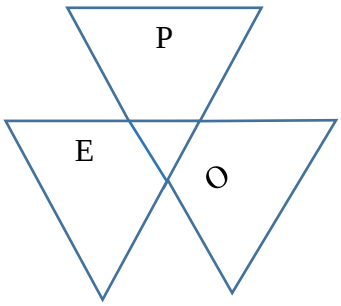


Figure 25. Syllogistic representation of the PEO model showing that the overlap between person, occupation and environment could be viewed as occupational performance.

In this suggested representation, the union of all three sets, 'occupational performance', is more favourably represented by three equilateral triangles with overlapping points. This re-drawing would remove the earlier described ambiguous description, presented by the three overlapping circles. This diagram assumes equivalence of each of the triangles in terms of quantity, quality and importance. This, again, could be argued as being too variable as it is contingent on any one of those at any point in time. More basically this kind of model inherently assumes that the person, environment and occupation are the sum total of all things to do with occupation, which I believe not to be the case, as will be shown in the last two chapters. However, this digression is here to see if there are other ways of representing existing occupational theories.

Likewise, the CMOP-E diagram is a well-formed symmetrical figure, akin to a target or Euler diagram, with a triangle in the middle whose apexes overlap both spheres (Figure 23). As stated earlier, set theory is a way of collecting 'things' together, which in the case of the CMOP-E are occupations, the components of a person, and environments. Applying the same logic statements to this diagram suggests that the environment is the cardinal set of all the subsets of occupation, person and spirituality. For the CMOP-E it would be read as:

- Spirituality is a subset of the person.
- All occupations are subsets of the environment.
- Some of the person is a subset of occupation and the environment.

Again, this is not a useful interpretation of what is seen of a person engaging in an occupation. Perhaps it is noteworthy that in this century both the Euler and Venn diagrams are more commonly used to show sets rather than propositions and syllogism (Simonetto, 2011). This model does not propose to be dynamic in its physical nature but only in the manipulation of the concepts in the user's mind. What this means is that none of the shapes 'move' to denote occupational performance as with the PEO model (Law et al., 1996). Furthermore, the CMOP-E provides an additional layer of complexity in that the 'person' triangle overlays the occupation and environment, and the diagram is presented three-dimensionally, versus the typical two-dimensional traditional Euler and Venn diagrams. Rodgers, Flowers, and Stapleton (2012) suggested three dimensional Euler diagrams can be problematic due to their complexity, and these problems are difficult to overcome (Simonetto, 2011), putting the reliability of the CMOP-E in jeopardy.

I have given relatively naïve mathematical applications to the occupational therapy models that likely themselves hold weak links to philosophical and mathematical logic. However, symbolically, the expressive power of the occupational therapy models is relatively strong in a non-sceptical manner. Occupational therapy describes the CMOP-E as a dynamic model where occupations are the bridge between a person and their larger, overarching environments and that a person's spirituality is at the very heart of who a person is (Polatajko et al., 2007), expressing the relationships more strongly than the image. The strength of the expressive power relies on the axioms and assumptions of the models as expressed in the supporting texts and literature, understood and accepted by the occupational therapist or student or scholarly user of the models. As such the model cannot be understood as a stand-alone figure. A non-occupational therapist will probably not be able to decipher the hidden knowledge within the diagram. Furthermore, taken at face value, the diagrams only show what the key terms in occupational therapy might be in a place and time, as a snapshot, rather than across the lifetime of a person's doing.

Perhaps the reason occupational therapy models, and their emblematic diagrams, have been perpetuated for decades rests on the belief that the fundamental characteristics of models must be logical to the profession. Logically then the model and diagram is either untrue, are not accurately representative of reality or are a true representative of the realities of occupational therapy. Alternatively, their perpetuation is due to increased professional complexity and the need for a more "structured theoretical model that

appear[s] to make what to do easier to determine" (Humphry & Wakeford, 2013, p. 225), or as a defensive response to external challenges on the profession's rigour, that turned into a dogma (Mocellin, 1995; Whalley Hammell, 2009). A diagram, after all, is more replicable than a long tirade of explanations on the theory of occupational therapy. Overall, since mathematics appears to provide very little, if any, logical explanation for the look and interpretation of the occupational therapy models, their symbolic interpretations must be more potent. These ideas and more are captured in the next chapter which uses semiotics to unpack what the models are trying to convey.

The crossover: Maths and psychology

There are other paths that also led to mathematics diffusing into occupational therapy in its formative years. The last two chapters on the contextual history showed how the ontic views grew in the sciences, psychology, and occupational therapy. In this section, I show more specifically how psychology drew on physics, which itself was closely tied to mathematics. Sociology, seen as a lesser discipline as it contained subjectivity (Lewin, 1939), did not feature as much in early occupational therapy discourse. Appendix F is a network diagram that shows who influenced who or had connection to another person in the maths, philosophy, physics, and psychology.

Psychology

Wilhlem Wundt [1832-1920] is recognised as the founder of the first formal experimental psychology laboratory in Leipzig, Germany, in 1879 (Teghtsoonian, 2001). Although there were many others working in the fledgling field of psychology around this time[114], it was Wundt who first began experimenting with a person's sensation[115] and consciousness. Although a critic of Wilhelm Wundt at times (Kim, 2006), William James [1842-1910], an American psychologist, was influenced by and references Wundt's work throughout his seminal work titled *The Principles of Psychology* (James, 1890). James was a naturalist[116], a humanist and an observer of human behaviour, and Darwin's theories of evolution were high on the list of

[114] Gustav Fechner published the *Elements of Psychophysics* in 1860, a year after Charles Darwin's "The Origin of Species". Fechner described his experiments for measuring the sensory experiences of a tuning fork. These seminal pieces led to a considerable shift in the science of experimentation in psychology and biology.

[115] Sensation in eighteenth century empiricism, prompted through philosophy's interests at the time, was understood to be the communication line between the mind and the outer world (Boring, 1953).

[116] James' work has been described as contributing to the foundations of functionalism, pragmatism and phenomenology (Goodman, 2000). William James, Charles Sanders Peirce, John Dewey and others were all members of the Metaphysical Club in Cambridge, Massachusetts, that pursued critical thinking on pragmatism, positivism and foundationalism.

conversation amongst the wealthy and educated in the 19th Century. Naturalists believed that natural laws and forces operate in the world and they aimed to align philosophy with science. The scientific method of observation was seen to be able to investigate all areas of reality, even the human spirit (Krikorian, 1944). In James' time, observation was beneficial because it was accessible and did not need special equipment. It was also seen as a deficient in social science and psychology (Goodman, 2000) because it lacked rigour and confirmability that 1920s 'modern' life expected of the sciences (Horan, 1987; Simon, 1991; Theobald, 1964). Modern science was proven in the laboratory through experimentation using empirical methods, which brought with it a deterministic view into psychology. Wundt had argued that separating one kind of psychology from others, and excluding experimenters from philosophy, would be dangerous (Ash, 1998), and bring psychology out of metaphysical thinking, reducing it to craftwork. Psychology emancipated itself from philosophy[117], but not without taking some of its legacy with it (Boring, 1953)[118].

Psychology and maths

From Wilhelm Wundt, a line can be drawn to Stanley Smith Stevens [1906-1973], who was instrumental in developing operational definitions in psychology, revealing the close links between key influencers in maths and psychology (see Appendix F). To draw this line, I need to briefly describe the history of some other people first, starting with Edward B. Titchener [1867-1927], an English psychologist. Titchener received his PhD in 1892, after studying the structure of mind, at Leipzig under the direction of Wundt (Boring, 1953). As a Professor Titchener mentored Edwin Boring [1886-1968], an engineer-cum-psychologist, furthering experimental psychology. Finally, Edward Boring educated and employed Stanley Smith Stevens at Harvard University as an unpaid research assistant for Boring's research (Hardcastle, 1995). Stevens' work on sensation and perception are well known, but more so are his scales on measurement. In 1946, Stevens called for the adoption of four classes of scales: nominal, ordinal, interval and ratio (Teghtsoonian, 2001), which are still used in psychological statistics today. The likely precursor to this call would have been his philosophical discussions on the nature of psychology and his readings of the esteemed and Nobel Prize winning

[117] This can be seen in 1933 when Psychology split from the Department of Philosophy at Harvard, the former becoming its own department and discipline.
[118] Some trace of political struggles between the experimentalist and the philosophers existed pre-1915 with petitions proposing that the Marburg Neo-Kantianism Philosophy Chair be appointed to an experimental psychologist.

physicist Percy Williams Bridgman [1882-1961] (see Figure 26). It is here that the crossover between physics, maths and psychology is more evident.

Figure 26. Bridgman amongst other esteemed participants of fourth Solvay Conference on Physics held in Leiden in 1924. Row #3 left to right: L. Brillouin, E. Henriot, T. Dedonder, H. E. G. Bauer, E. Herzen, A. Piccard, E. Schrodinger, **P. W. Bridgman,** J. Verschaffelt. Row #2 left to right: P. Debye, A. Joffe, O. W. Richardson, W. Broniewski, W. Rosenhain, P. Langevin, G. von Hevesy. Row #1 left to right: E. Rutherford, M. Curie, E. H. Hall, H. A. Lorentz, W. H. Bragg, M. Brillouin, W. H. Keesom, I. Van Aubel. From Visual Archives, American Institute of Physics, Image: Solvay Conference E5, by E. Segre. Copyright in the public domain.

Physics, psychology and maths

Before the life sciences changed significantly in their scientific advances, disciplines such as physics did so with conviction that changed many things in people's lives. Quantum field theory, a framework combining classical field theory[119], special relativity and quantum mechanics, emerged in the 1920s, but different attitudes towards it still existed pre-World War II. Quantum theory, relativity, indeterminacy, thermodynamics and the development of its laws, led to physics breaking away from naïve plausibility, theoretical formations or common sense. Physics sprang ahead and moved through a logical positivist process of testing and using mathematical proofs to bring science closer to 'absolute truth'. Physics and other hard sciences were interested in reduction (molecules into atoms, light into rays, space into vectors, closed reaction systems) rather than looking at the universe-as-a-whole, science looked at the parts in

[119] Field theory in the physical sciences is attributed to such people as Michael Faraday [1791-1867] and his research on electromagnetism, James Clerk Maxwell's theory on electromagnetic radiation, electricity and light, and Heinrich Hertz [1857-1894] who proved Maxwell's theory of light.

order to analyse determinacy and causality. This was, as discussed in the last chapter, a time of massive theoretical development in physics by people such as Albert Einstein.

Maths and physics influenced psychology, especially in the 1950s[120], when Stevens took Bridgman's 1927 ideas on operationalism (Bridgman, 1927) into behavioural psychology (Hardcastle, 1995). Operationalism could increase rigour and discourse through what was called psycho-physics[121]. Stevens wrote on the philosophy of science and discussed the process of defining the measurement of something that was not measurable but was indicated as existing by other phenomena (Kemble & Birch, 1970). Bridgman was also interested in the role that scientists and science played in society, which led to his publications on operational thinking in the social sciences and social psychology. However, Koch (1992) argued that Bridgman's writing had been misinterpreted and misapplied in psychology, and that operational analysis was not meant as a schema for definition. Bridgman also wrote in *The Logic of Modern Physics* (1927), "I believe that the model is a useful and indeed inescapable tool of thought, in that it enables us to think about the unfamiliar in terms of the familiar" (p. 53)[122]. He was thus an early proponent of theoretical modelling but also came to see the limitations of operationalism in complex situations such as human experience (Chang, 2009).

In the early 1930s, Stevens is understood to have moulded Bridgman's 1927 operations as applicable in behavioural psychology, in order to stamp out the threat of 'useless disagreement' to psychology's survival (Hardcastle, 1995). The outcome of this and the work of other psychologies at the time, such as those by Kurt Lewin [1890-1947] described in Chapter Four and later in this chapter, led to the uptake of a positivist[123] methodology in psychology and advanced measurement in science (Hardcastle, 1995). Koch (1992) stated that Bridgman's operational analysis was used to bring an authority and objectivist epistemology to what psychology had been trying to establish, 20 years earlier, with behaviourist John Watson. Bridgman's contribution to psychology and

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[120] Stevens edited the *Handbook of Experimental Psychology*, a seminal publication for research psychologists (1951). The preface described it as, "a technical survey that would systematize, digest, and appraise the mid-century state of experimental psychology" (p. vii)

[121] See Chapter 4 section on medieval to Renaissance mathematics.

[122] Between 1934-36, the logicians Rudolf Carnap, Morris Raphael Cohen and Ernest Nagel, as well as Alfred Tarski saw the models as fulfilment of formalized theories and axiomatic systems. These people were part of the Vienna Circle, which was discussed in Chapter Three as contributing to the positivist way of thinking.

[123] Logical positivism came into prominence in 1929 through Moritz Schlick's founding paper of the Vienna Circle. It was recognised by Willard Van Orman Quine as being extinct by the 1950s. The pressure from strong groups such as the Vienna Circle and its immense and impressive connections was a likely driver for psychology's desire towards scientification.

sociology through Stevens' adoption of his work led to a great deal of research on quantifying people's everyday existence which I will explain in more detail next as it relates more closely to what occupational therapy came to adopt in its practice.

Stevens' work on operational definitions (1935-1939) stimulated other 1930s psychologists, such as B. F. Skinner [1904-1990] and E. C. Tolman [1886-1959][124], offering operational definitions for their measurement units (Hardcastle, 1995; Tolman, 1938). Tolman pushed for increasing use of objective and deductive methods in psychology, after also being influenced by S. S. Stevens' work on operationalism (Boring, 1953; Tolman, 1938). Skinner believed that human behaviour was predictable, had 'laws', and determined by reducible independent variables. These 'laws' later became the basis of clinical behaviour modification techniques in 1970s psychiatry (Stein, 1983). The positivist tradition of measurement and reductionism was alive and well in psychology.

If measurement was King around the 1930s, then Gestalt psychology, a form of experimental psychology aimed at explaining visual perception, was the Prince. Gestalt psychology was on a similar trajectory toward measurement as other psychologies (Wagemans, 2015). Kurt Koffka [1886-1941] became very dissatisfied with the science of psychology in comparison (Koffka, 1935). Inspired by work in physics[125], Koffka wanted to bring together the "three great provinces of our world…inanimate nature, life, and mind" (Koffka, 1935, p. 10), with the central nervous system as the convergence point. Bringing science and life together through psychology, he stated that gestalt principles could

> … lay the foundations of a system of knowledge that will contain the behaviour of a single atom as well as that of an amoeba, a white rat, a chimpanzee, and a human being, with all the latter's curious activities which we call social conduct, music and art, literature and drama… (p. 23)

signalling that the complexities of human existence could be analysed alongside atoms and single cell creatures as part of a larger system. Some of this thinking came from

[124] Skinner cited Bridgman in his doctoral thesis in late 1930, possibly the first psychologist to have done so (Hardcastle, 1995). Tolman credited Kurt Lewin's topological and dynamic concepts as the "most stimulating and important ideas which have appeared in psychology in the past decade" (Tolman, 1938, p. 355).

[125] Inspired through the work of James Clerk Maxwell [1831-1879], Albert Einstein and Max Planck [18558-1947] who are noted for their work on classical theory of electromagnetic fields, general relativity theory and quantum theory respectively.

quantum field theory and physicist Richard Feynman [1918-1988], and other people from an emerging systems theory that is discussed later. To help interpret the mathematics behind quantum field theory, Richard Feynman devised a diagram in an effort to understand an equation, and to construct a representation capable of accompanying the certainty captured through mathematics. Graphical diagrams were, of course, used from before 1910 to explain things like Einstein's space-time ideas (Wright, 2013), but it was not until 1948 that physicist Richard Feynman formally used diagrams to explain subatomic events with a space-time approach (Gross, 2012; Kaiser, 2005). Feynman's graphical rules and symbols were widely accepted and disseminated internationally.

Overall, field theory appears to have advanced into psychology through key people such as Kurt Lewin, Wolfgang Köhler and Kurt Koffka (Heidelberger, 2006). Lewin, especially, is frequently referenced in the early occupational therapy texts, particularly those employing systems theory, or using ideas on the person-environment fit (Burke, 1975; Caplan & Harrison, 1993; Christiansen, 1994; Esenther, 1969; Howe & Briggs, 1982; Law et al., 1996; Magasi et al., 2015; School of Allied Medical Professions, 1972). Koffka wrote at length about plausibility of the field concept (a physical quantity or force in space-time) and the principles of isomorphism (similarity or equality) between physiological, material and conscious events and processes (Sandiford, 1936). Some contemporary critics felt that this hypothesis needed more investigation, and that the use of physics' terms was pretentious and obscured the real advances made by psychology (Wolters, 1936). Regardless, another founder of Gestalt psychology, Wolfgang Köhler [1887-1967], wrote about the strength of physics in supporting psychology's progress. Much correspondence appears to have occurred between the Gestalt school and prominent physicists (Köhler, 1959), who appear to have tried to convince others of field theory's merits in being able to explain behaviours like habit strength and drive states. Köhler, and others, believed that psychology needed to follow physics and pull away from the restrictive Aristotelian views, stating

> In order to orient itself in the company of natural sciences, psychology must discover connections wherever it can between its own phenomena and those of other disciplines. If this search fails, then psychology must recognize that its categories and those of natural science are incommensurable. (Köhler, 1938, p. 17)

Whilst Köhler extoled physics' scientification, he also saw that Gestalten, common in psychology, would breach the fundamentals of the exact science in physics. He tried to

overcome the challenge of psychological wholes and reduction in physics by looking for ‘organic units’ in physics. Köhler argued that the brain, or physical system, was only one system that developed toward equilibrium. Terms such as system and equilibrium signalled early systems theory language, with Köhler closer to making Gestalt Theory a generalised systems theory (von Bertalanffy, 1972).

Field theory also appeared in Kurt Lewin’s psychology on the ‘life space’, a topographical or planar representation (see Figure 27) of a person’s behaviour in the environment using planar or topographical maps[126] (Lewin, 1936). Lewin’s topologies used physics’ terms such as ‘force-field’, ‘interaction’ of the ‘life-space’ with ‘external stimuli’ at a ‘boundary zone’. The theory of space in Lewin’s ‘life space’ stems from Einstein’s theory of gravitation, electromagnetic forces and stress, articulated at the beginning of the 20th Century (Deutsch, 1968). The language of ‘boundary zone’, comes from systems theory, especially closed systems that determine what things are inside and which are outside the system boundaries[127]. These terms stemmed from physics, but as will be shown, some terms also flowed into systems theory (boundary zone, notions of external stimuli).

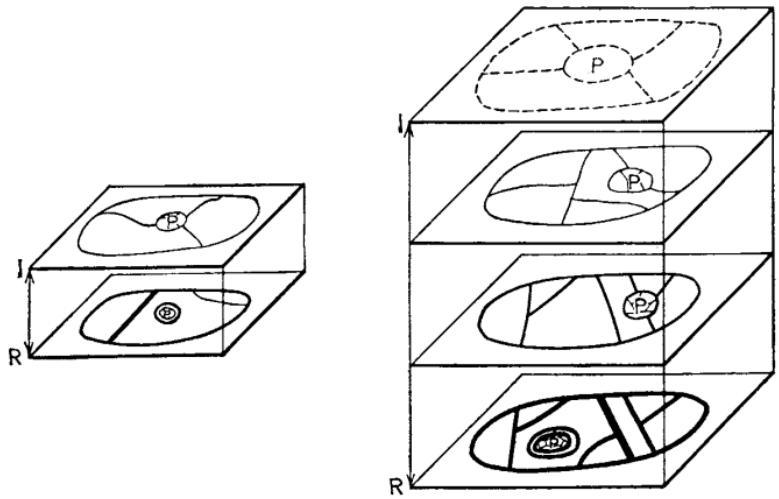

Figure 27. Kurt Lewin’s diagram for the life-space of a child (left) and an adult (right) with the different levels of reality from the real (R) to the irreal (I). In a level of greater reality barriers are stronger and the person (P) is more obviously separated from their environment. From *Principles of topological psychology* (p. 204), by K. Lewin, 1936,

[126] Some suggest this topographical map was more a graph than a map (Harary, 1969).
[127] Those that are outside are considered part of the environment. Boundaries can be difficult to identify because an open system can be very dynamic, for example when a system manages its own boundaries.

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Lewin was the primary developer of the term ‘field theory’ outside of the physical sciences, using it in psychology as a way of “analysing the causal relations and the building of scientific constructs” (Deutsch, 1968, p. 412). Lewin utilised the relatively young discipline of mathematical topology (versus Euclidean geometry), and the general theory of set points to help make “psychology a real science” (Lewin, 1936, p. vii) with objectively defined facts rather than open and uncertain concepts. As well, Lewin drew on his own earlier (1912) views that psychology should not just deal with time, but also with space. Lewin does not just limit his discussion to topology, but also hodological spaces where pathways are studied between points (Lewin, 1939).

Lewin’s work exemplifies the early use of abstracted models to describe behaviour, as well as the topology of a person (see Figure 28), which is not too dissimilar in its objectives of separating the person from the environment as the occupation-based models and their diagrams. Some more recent critics of the understanding of field theory have described that it has become increasingly vague in its application in social science (Gold, 1992).

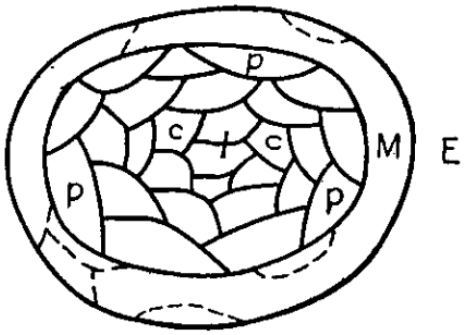

Figure 28. Kurt Lewin’s topological representation of the person where M=motor-perceptual region; I= inner-personal region; P=peripheral parts of I and C=central part of I; E=environment. From *Principles of topological psychology* (p. 177), by K. Lewin, 1936, New York: McGraw Hill Book Company. Copyright McGraw-Hill Publishers. Title in the public domain.

The topographical representations used in psychology, attributable to Leonard Euler and John Venn through graph theory (Harary, 1969), is today used in many areas, including

in psychology and sociology. The sociogram, credited to Jacob L. Moreno [1889-1974] (Moreno, 1934; Northway, 1940) also used graph theory to represent a person's social links (see Figure 14 in Chapter Four). These are often drawn as multiple circles and lines representing people and links. What these early models aimed to convey was subsets and causality, using arrows or connectors and overlapping circles. This became one of the preliminary types and sources for prediction of human behaviour in the social sciences. Maths also became a strong element in areas such as organisational theory. The 1960s is seen as the golden age of organisational and behavioural theory with mathematics supporting research in these areas (Simon, 1991).

This section has provided a description of the links between 19th Century mathematics and physics developments, and how these were adopted into psychology. The next section discusses, in a similar vein, the links between general systems theory and occupational therapy.

The crossover: General systems theory

Around the time when maths, physics and psychology were galloping ahead in their developments, biology also started toward a paradigm shift. Dissatisfied with existing explanations in biology[128], new options were being sought, tested and argued over (Drack, Apfalter, & Pouvreau, 2007). Paul Alfred Weiss [1898-1989], an engineer, physicist, mathematician turned biologist and biologist Ludwig von Bertalanffy [1901-1972] used ideas from physics' thermodynamics to identify biology's unique scientific laws. Weiss and von Bertalanffy were both influenced by Köhler and Lewin's work on 'gestalten', and their pursuit of a systems' understanding of a person, which contributed to ideas about 'general systemology' (Drack, 2009; von Bertalanffy, 1968). At about the same time as developing a systemology, Bertalanffy called for a unity of science, which the Vienna Circle had already signalled a need for in 1934 (Richardson, 2009). The idea that science could be united under an overarching science, governed by scientific laws, that could be applied everywhere on all levels in the natural and human sciences (Neurath, 1983) strengthened the scientific method's cause, drawing in more disciplines. As discussed in Chapter Four, the Progressive movement of the early 1900s carried with it the discourse of efficiency in industrialised management of systems (e.g. Frederick Taylor), leading disciplines such as manufacturing, management and economics to adopt systems theory (Shenhav, 1995). Crossovers become apparent in

[128] Debates were predominantly about mechanism and vitalism.

these early theses with clarifications on the unity of science expressed by von Bertalanffy and Weiss through General Systems Theory (von Bertalanffy, 1950; Weckowicz, 1989).

Weiss and Bertalanffy, founders of what became known as General Systems Theory (GST), saw that the life sciences needed to develop its theoretical insights and experimental sharpness in order to gain from the upswing physics had experienced before it. Adopting field theory from theoretical quantum physics, a way of constructing mechanical models of particles in physics, a systems approach was used to explain phenomena. However, the operationalism and calculation of mathematics and physics were inadequate in relation to understanding complex human systems, and theories were vague (Thelen & Smith, 2006; von Bertalanffy, 1968). Bertalanffy took systems theory, originally founded on closed systems[129], further using the ideas of open systems. Closed systems were deterministic and perpetuated a Cartesian view of the person as detached from the environment and seeking to establish equilibrium (von Bertalanffy, 1950), which biology was trying to break away from. Weiss also recognised that when things were reduced, analysed and dismembered, the relationships between units were severed (Weiss, 1971). An open system, where anything can pass into or out of it, became more accepted as a way to explain the complexity of non-mechanistic human phenomena (Drack, 2009a). The open system created a view of a person as teleological rather than as an efficient machine.

It was not until the 1940s and 1950s that formal systems theories convincingly emerged in response to the post-war challenges, such as the complexities with technology, and management and cybernetics (Rousseau, 2014). Similar to theorists in physics, mathematics, and psychology, Bertalanffy believed there were principles and laws that could be applied to any kind of system in the social sciences (Drack & Pouvreau, 2015). Unity could be brought about through generality and universality of the system concept across multiple disciplines. He argued:

> The unifying principle is that we find organization at all levels. The mechanistic world view, taking the play of physical particles as ultimate reality, found its expression in a civilization which glorifies physical technology that has led eventually to the catastrophes of our time. Possibly the model of the world as a great organization can help to reinforce the sense of reverence for the living which we have almost

[129] A closed system is where only matter passes in or out of it but not energy, which did not work for explanations of people.

> lost in the last sanguinary decades of human existence. (von Bertalanffy, 1968, p. 49)

The momentum systems theory gained in the 1950s led to the foundation of the Society for General Systems Research in 1954 across both Europe and the United States, as well as the creation of departments for its study (von Bertalanffy, 1972). Psychiatry adopted system-theoretical thinking, as well as sociology, geography, cybernetics and structural psychology[130]. In order to simplify complex realities, systems theorists used modelling as a way to show linear processes and hierarchies, for example von Bertalanffy stated:

> It is generally agreed that "system" is a *model* of general nature, that is, a conceptual analog of certain rather than universal traits of observed entities. The use of models of analog constructs is the general procedure of science (and even of everyday cognition)…(von Bertalanffy, 1972, p. 416, emphasis original)

which described the established idea that complex real-world phenomena could be modelled in systems terms (Bausch, 2002; Rousseau, 2014). Models were constructed using an 'architectural schematic' of reality, based on the assumption that there is a fundamental, orderly and explicable reality to nature, onto which all the facts or ideas were arranged, to then establish which were fundamental. Rousseau (2014), adds that this process of determining fundamentals also meant establishing what gaps existed in knowledge, an area that appears to have been forgotten.

Von Bertalanffy, Kenneth Boulding and Karl Deutsch had the most influence on occupational therapy model making. The term 'models' started to appear in many areas of occupational therapy around the mid-late 1960s. With their work increasingly cited in noteworthy occupational therapy texts, and endorsed by mid-20th Century scholar, Mary Reilly, it seems clear that this was the genesis of occupational therapy models based on systems theory. For example, Esenther (1969) stated "topological psychology, a physics model, and general systems theory are used to establish structural, organizational, and operational relationships" (p. 10). Further, many of the University of Southern California's occupational therapy masters' students clearly used systems theorists or proponents thereof in their model developments (see Table 3).

[130] Jean Piaget, Claude Lévi-Strauss and Talcott Parsons [1902-1979].

Table 3: A selection of University of Southern California Master of Arts theses that show acknowledgment of system theorists in their conceptual model development.

Thesis date	Author	Model theorist [131]
1969	Esenther	Ludwig von Bertalanffy, Kenneth Boulding, Anatol Rapoport. Also, Percy Bridgman (operationalism), Walter Buckley (GST).
1969	Baker	Ludwig von Bertalanffy, Kenneth Boulding, Karl Deutsch, Anatol Rapoport, Paul Weiss.
1970	Pezzuti	Alphonse Chapanis, Robert Chin.
1970	Liptak	Alphonse Chapanis, Robert Chin, Karl Deutsch.
1974	Hillis	Ludwig von Bertalanffy, Kenneth Boulding, Alphonse Chapanis, Karl Deutsch, Anatol Rapoport, Frank Baker (GST), James Grier Miller (GST).
1975	Heard	Ludwig von Bertalanffy, Kenneth Boulding, Karl Deutsch, Arthur Koestler, Paul Weiss.
1975	Burke	Ludwig von Bertalanffy, Kenneth Boulding, Alphonse Chapanis, Karl Deutsch, Arthur Koestler, Paul Weiss.
1977	Short	Ludwig von Bertalanffy, Kenneth Boulding, Arthur Koestler.

It thus becomes clear that both the positivist tradition and logico-mathematical views have influenced occupational therapy thinking and model making through a number of different routes.

Conclusion

A long history precedes occupational therapy's model building in the late 1960s and 1970s. In this chapter I described the mathematical history that supported the growth of operationalism and reductionist perspectives around the turn of the 20th Century. The early 1900s was also a time of great growth in areas such as physics and abstracted thinking about elements in reality that could not be seen, and in society as discussed in the last chapter. Existent ideas and perspectives were challenged and there seemed to be a transformation in the foundations of many fields. The amplified popularity from

[131] Economist **Kenneth Boulding** [1910-1993], industrial designer and ergonomics father **Alphonse Chapanis** [1917-2002], social and political scientist **Robert Chin** [1918-1990], social and political scientist **Karl Deutsch** [1912-1992], author journalist **Arthur Koestler** [1905-1983], mathematical psychologist **Anatol Rapoport** [1911-2007].

mathematics and physics spurred other scientific disciplines, such as psychology, less so sociology, and biology. I showed how psychology, through some key scholars, used mathematics and physics to strengthen their discipline's ideas. Model building became almost fashionable and an endorsed indoor sport for academics from around the 1930s, gaining momentum from the 1950s through systems theory. Likewise, I explained how biology, influenced by psychology, began to develop a general systems theory to help explain complex phenomena in both the traditional biological world, and human world. It was from here, that I was then able to show how occupational therapy clearly relied on the systems perspective for many of their models and general ideas on how to conceptualise a person's everyday activities.

The next chapter takes a side-step away from the more historical pace that the last three chapters have used. Chapter Six uses semiotics, the study of signs and symbols, to examine the diagrams as stand-alone entities of their theoretical model and the reality they are trying to represent.

Chapter 6 Semiotics: Mirrors of a practice reality

> The words or the language, as they are written or spoken, do not seem to play any role in my mechanism of thought. The psychical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be 'voluntarily' reproduced or combined. . . . The above mentioned elements are, in my case, of visual and some of muscular type. Conventional words or other signs have to be sought for laboriously only in a secondary stage, when the mentioned associative play is sufficiently established and can be reproduced at will.
>
> Albert Einstein quoted in Pietarinen (2011, p.2-3), original source Hadamard (1949, pp. 142–143)

Introduction

In Chapters Three and Four, the contextual history, I showed how people were viewed from either an ontological or ontic stance, and also how practice was espoused in academic writing. I showed that towards the beginning of the 20th Century advances made in mathematics and physics, supported through logical positivist approaches, paved a way for disciplines like psychology and sociology to legitimately defend their knowledge base. I concluded Chapter Four showing how, because of the proliferation of research, conceptual models were useful tools to capture ideas into one thing using diagrams and systems theory. Since then, images and symbols have become an increasing element in contemporary society and in occupational therapy. The use of mathematics, and more specifically diagrams, was expanded on in Chapter Five, which more closely explored the links between mathematics, physics, psychology, systems theory and subsequently occupational therapy. The above quote, from Albert Einstein, captures the link between the previous and this chapter. Einstein's hard-science and words failed, at times, in their ability to explain the difficult concepts or logical expressions in his mind. Diagrams, or images were better in capturing what the words were trying to express. Whilst mathematics provides a foundation to some models' explanation, it does not support the models and diagrams in occupational therapy, as was shown in the last chapter. Mathematics does not question whether the symbol '4' adequately captures four quantities of something, however this chapter will do just that. In doing so, it addresses the second question of this thesis: What do model diagrams reveal and neglect from practice in their use of signs and symbols?

Since mathematics appears to provide very little, if any, logical explanation for the look and interpretation of the occupational therapy models, their symbolic interpretations must be more potent, which can be explained through semiotics, the study of signs and symbols. The sideways step this chapter takes will use semiotics to unpack the diagrams, as representations of their model.

After a description of semiotics, this chapter investigates how models and their diagrams are constructed and the inadvertent mistakes that can be made in the process. This chapter springboards from the discussion in the last chapter on occupational therapy taxonomies, that were used into the construction of the diagrams, given the diagrams appear to have similar taxonomic structures. I will interpret the models as symbolic representations of empirical phenomena and as conceptual devices used in the network of activities for the production of scientific knowledge. By taking this stance I aim to deny that models show a true description of reality, especially in terms of their ontology.

This chapter on semiotics informed both journal publications (see Appendix B) on the making and unsustainability of occupation based models (Reid et al., 2019a, 2019b) as stated in the introduction chapter.

Semiotics: The theory of information carrying entities

An outline of semiotics

In this section of the chapter I mainly draw on American philosopher Charles Sanders Peirce [1839-1914]. Some terminology from structuralist Ferdinand de Saussure [1857-1913] is used (see Table 4), but little else is drawn from his work as it focussed on linguistics. I draw on their semiotic ideas as they relate to symbols, versus the meaning in spoken or written occupational therapy language per se. A more contemporary bio-semiotician, Thomas Sebeok [1920-2001] is also used to critique occupational therapy diagrams as symbols of occupational therapy practice and theory. I avoid the earlier works of John Locke [1632-1704] on representation and knowledge, and Jacques Derrida's [1930-2004] anti-semiotic, deconstructionist views, despite Derrida's influence on postmodernism. I also avoid applying Gottlob Frege's [1848-1925] analytic philosophy because his work was a little restrictive in relation to symbolism due to his linguistic analysis and logico-mathematic views. Whilst all of these philosophers were interested in language and meaning, they approached it either more

linguistically or mathematically. For this research, Peirce's ideas and more contemporary Peircean influenced work, such as Sebeok's, hold more relevance.

The theory of semiotics developed in 1868 when, founder of pragmatism, logician and mathematician Charles Sanders Peirce [1839-1914] argued "we have no ability to think without signs" (as cited in Short, 2004, p. 241). This was proclaimed as a direct challenge to Descartes' Cartesianism and the idealist views (Short, 2004). These sentiments from the late 19th century are later echoed in Sebeok's (2001) work, who contended that the ability to develop signs is a basic survival skill for not just the human species. Peirce characterised the three semiotic elements in his theory of signs as:

4. The sign which represents the object (icon, index, symbol)
5. The object which the sign encodes or represents, which may be anything real and may be imaginable, and
6. The sign's meaning, translation, interpretation or mental-act was called the interpretant (Audi, 1999; Stjernfelt, 2000).

The physical, real life entity, or referent or referential domain, is referred to using a sign. The sign could be a quality, relations, structures, items, happenings, conditions, regularities, regulations, and so on, that have meaning or interpretations. Peirce discerned three different cardinal signs[132]: an *icon* that resembles the object e.g. a hat sign for a milliner; an *index* that has an actual connection to an object e.g. smoke from a fire or disease symptom; and a *symbol* which holds the element of interpretation to be discussed further in this chapter. Icons and indexes are relatively straightforward to interpret and link to the object, whereas an occupation-based model diagram is a complex symbol requiring interpretation. Wittgenstein (1922) said that "if a fact is to be a picture, it must have something in common with what it depicts" (p. 2.16). Thus, a basic role of signs and symbols is that they represent something else, and a symbol cannot be analysed without considering what it symbolises. The interpretant (point three in the list above), is a negotiated interpretation and was understood by Peirce to be contextual, cultural and personal, because signs and symbols are a language rooted in culture and learning (Stokoe, 2000). This will be expanded on, and applied later, when I discuss a likely process of development of occupation-based models and their diagrams.

[132] Sebeok identified six central types of signs: signal, symptom, icon, index, symbol and name (2001).

De Saussure preferred the words sign, signified and signifier (Gregory, Johnston, Pratt, Watts, & Whatmore, 2009). The signifier (see Table 4.), could be such things as a sound, image, smoke or letter conveying meaning. The gestures people use in everyday life are symbols, such as the curling of a finger to gesture “come here”. The signified is an interpretation of a signifier. De Saussure also included the term signification alongside those named in Table 1, where signification is the relationship between the signified and signifier. This relationship is arbitrary and relies on language, which in itself belongs to a semiotic code. In the case of occupational therapy, models signify or interpret the real-life entity of a person or people engaged in occupations, but do not state the signification. Applying this to the Canadian Model of Occupational Performance and Engagement, the sign or diagram is composed of the signifiers, or symbols in Peircean terms, which are the nested or overlapped circles, and a triangle with a circle within it. The meaning that the sign creates is what is signified. According to De Saussure, understanding the symbol is learned and the symbol is understood as being either conventional or arbitrary in their relationship to the real-world thing (e.g. no entry road signs, recycling signs of rotating arrows, a word, a repeating siren are random).

In this chapter, the word symbol or shape, rather than diagram, is predominantly used so as to stay truer to semiotics terms. No semantic debate is intended if another word such as sign, signifier or shape is used as an alternative. These words are interchanged so as not to dull the reading of this section, but they are the diagrams that occupational therapy holds as emblems of the model.

Table 4: Semiotic elements used by Charles Sanders Peirce and Ferdinand De Saussure, with an application to occupation-based models.

Semiotician	**Real life entity**	**Sign**	**Meaning**
Peirce	Object	Sign/representamen (icon, index, symbol)	Interpretant
De Saussurre	Referent or reference context	Sign (composed of Signifiers)	Signified
Occupational therapy	A person doing occupation in an environment	Diagram composed of geometric shapes	Theories/concepts of occupational engagement

The making of a symbol

Calling a narrative description or theory a model facilitates its propagation (Godin, 2017) and can play a central role in the development of knowledge. Sometimes, the narrative explanation might be not enough or does not hold the same power of explanation as an image or diagram; or the language may be so complex that a visual image conveys it adequately enough to then rely on human perception and logical understanding to decode its message.

The occupation-based model diagrams are also arbitrary pictures, constructed with illogical geometric shapes. Thus, the models' diagram can be described as being a symbolic representation of empirical phenomena illustrating certain phenomena that allow people to look for patterns, and guide actions through their predictive powers (Sebeok, 2001). Occupational therapy axioms are portrayed by combining multiple shapes, which brings richness to the symbol, for example occupation occurs in an environment. Some group only circles or ovals, whereas others group these with triangles or arrows to express more complex ideas. However, two nested circles do not automatically represent something sits within something else in real life. This weaving together of shapes aims to connote and communicate something.

It is clear then that the models are not denotative, but rather they are connotative. That is, that there is an existential process by which the sign is extended beyond its referent to encompass other kinds of referents and is a means to understanding other things. To mediate a way to understanding the symbol, Peirce suggested that the semiotic elements exist in a triadic relationship (Atkin, 2010; Stjernfelt, 2000; Tylen, Fusaroli, Bjorndahl, Raczaszek-Leonardi, & Stjernfelt, 2014). A triadic relationship thus exists between the elements; the reference context, the model or symbol, and the signified or concept. Applying this to an occupation-based model we might see something akin to Figure 29.

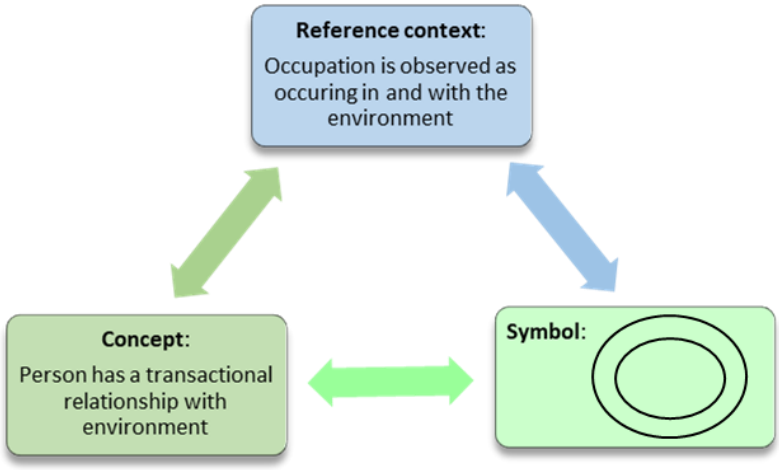

Figure 29. Epistemological triangle for occupational therapy knowledge[133]. Two nested ovals are presented arbitrarily and are not necessarily representative of a specific occupation-based model. Ovals represent a person, smaller oval, in an environment, larger oval.

Figure 30 shows an example of this triadic relationship with the reference context being the reality of a person doing an occupation in an environment; a girl floating on a lake on summer holiday.

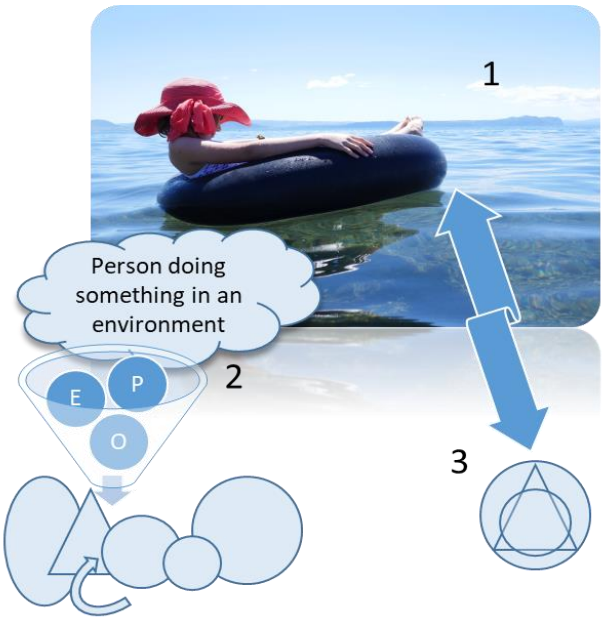

Figure 30. A basic interpretation of the Peircean triadic model making process in occupational therapy [Image author's own].

[133] Adapted from Steinbring (2006). Originally theorised by Charles Peirce as the triadic sign relation (Peirce, C. S., Collected Papers, v. 5, paragraph 448 footnote, from *The Basis of Pragmaticism* in 1906) and as Ogden and Richards' triangle (Ogden & Richards, 1923, p.11).

The concept that arises is the theory used in occupational therapy based on an assumption generated through observation and reasoning; a quiet recreational activity engaged in alone in the natural environment requiring little occupational performance resources. The symbol, a conglomeration of geometric shapes, is a representation of the observed reality of a person doing an occupation and links to the inferred concept. This is the beginning of the creation of a model and diagram, which reveals that the two go together.

This simplified figure conceals the thinking and interpretation that occurs by the model makers themselves. So, another layer exists in relation to the above figure, one of the process of model making, which is captured in Figure 31 below.

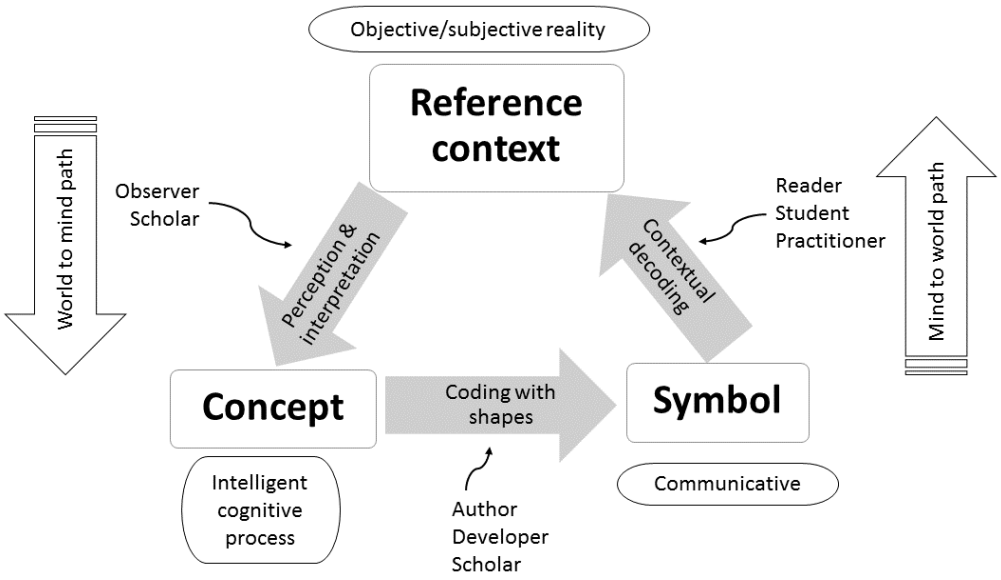

Figure 31. Semiotic process as applied to the Peirce's triadic relationship model.

In this figure, the creation and interpretation of a symbol follow different paths; one is a world-to-mind path taken by the model developer and the latter a mind-to-world path by the reader or interpreter of the model (e.g. student, practitioner). The model maker observes the world, theorises about it applying an intended concept, and adopts a useable symbol through encoding. The reference context is, consequently, both created through the concepts, and interpreted through the symbol in order to gain knowledge, predict and explicate their practice with people. These stages are now discussed in more detail, explaining what things might go astray in the process.

World-to-mind path: Model/diagram making and error possibilities

I now turn to examining the process of making a diagram and the error possibilities that might be present at the stages of model and symbol making. What needs to be examined is not only the links between the shapes, arrows and figures, but the manipulations and interpretations scholars apply when they develop the diagram.

Perception of reality

The model maker has at their fingertips all accessible sensory and perceptual qualities of the reality. This process relies on the developer's 'accurate' interpretation of the reality in the first place. This accuracy hinges on the taxonomies, discussed in the last chapter, being valid and reliable groupings of ideas, and what is unveiled by our method of questioning (Sebeok, 2001). These qualities of reality are encoded using an intelligent cognitive process to create the symbol. This encoding is captured in Figure 31 and its three-stage process of:

- noticing or observing a person engaged in occupation,
- determining a relationship between three things; person, occupation and environment, and
- what is inferred, from the noticing and determining, encoded in their language and categories (Kochelman, 2007).

This process toward encoding needs to be congruent along the entire semiotic process. That is, congruency needs to be present between the concept, sign/symbol and the reality (Sebeok, 2001). In so doing the models are dependent on the model maker's adoption of the most appropriate sign, symbol, shape and layout to appropriately convey the concepts, theory and language used about the real world. But also, that occupational therapy's method of questioning based on the positivist tradition has asked relatively uncomplicated questions; the where, how, what, who of occupations (Polatajko et al., 2007), which are what models and diagrams generally limit themselves to. The reasoning and decisions made from the point of observation, to questioning, to model development is therefore important to understand. As Peirce stated, discussing syllogism:

> All deductive reasoning, even simple syllogism, involves an element of observation; namely, deduction consists in constructing an icon or diagram the relations of whose parts shall present a complete analogy with those parts of the object of reasoning, of experimenting upon this

> image in the imagination, and of observing the result so as to discover unnoticed and hidden relations among the parts. (Peirce, 1885, p.182)

So, when an occupational therapist, in a reasoned way, states "occupations occur in a context", a deduction has been made from observation, and an analogy created by placing circle within circle to show the relations between the parts. However, I have taken a very simple axiom from the profession where the language and culturally bound thought process are relatively easy. It would be harder to explain or pinpoint in a model a statement such as; "humans strive for mastery over their environment" (Dunn et al., 1994; Howe & Briggs, 1982; Kielhofner, 1980b; Peters, 2011; Whalley Hammell, 2009; Wong & Fisher, 2015; Yerxa, 1992) or "occupations contribute to health and well-being" (Reilly, 1962; Whalley Hammell, 2009) or that "occupations contribute to life's meaning" (Yerxa, 1998b). So, not all axioms or theories make it to models or can be captured through the metaphor of a model.

Whilst occupational therapy theory is more inductively constructed or based on natural reasoning, there are many areas for this process to be confounded through cognitive biases. These include confirmation bias, belief bias, ethnocentric bias and so forth. The end point is a confounded model that 'over fits' the population it is trying to represent and one that is not culturally sensitive even within the same nation (Ashby & Chandler, 2010; Gelfert, 2011; Iwama et al., 2009; Knuuttila, 2011; Wong & Fisher, 2015). Errors can also exist if the model and diagram is based on generalisations. A particular example of ethnocentric bias in occupational therapy is that the characteristics and ideas depicted in many of the models and diagrams rest on the observations, assumptions and reasoning of the forbearers in the profession (Kantartzis & Molineux, 2011; Mocellin, 1995; Whalley Hammell, 2009). These observations, assumptions and reasons are steeped in a certain place and a time of great flux, moving from the progressive era and the roaring twenties and beyond (see Chapter Four).

Most importantly, what model and diagram making presupposes is that nature projects itself onto theory (Heidegger, 2001), and that an idea of nature can be manipulated into an object or symbol. It also assumes that nature conforms to laws, is calculable and measurable, from where all other unquantifiable characteristics like the subjective or ontological are disregarded (Heidegger, 2001). Likewise, Yerxa (1998a), as mentioned in the last chapter, expressed concern for the infatuation with measurement, acute medical care and technology and its oversimplification of theory and practice. Here I am suggesting that the entanglement of theory with models does much the same reduction

and cleaving of person from their ontological world. Through the methods of questioning discussed earlier, the diagram becomes the independent variable, so that reality becomes the dependent variable. This makes it harder for a therapist wanting to understand the every-day experiences of a person and their occupations. An alternative to this problem is discussed in Chapter Ten which reveals what an ontological perspective can bring to practice.

Intelligent cognitive process

A process of idealisation and abstraction is employed in the 'intelligent cognitive process' stage (Figure 32), to create theories and then diagrams. Idealisation distorts, and abstraction excludes some characteristics of the reference context in order to simplify it (Chin, 2011). This simplification, as Yerxa (1998a) mentioned above had begun to identify, can lead to varying degrees of fit between the model's diagrams, its theories, and the reference context (Knuuttila, 2011). Theories are generally referred to as being true or not true and helping to make sense of the world. Whereas symbols and diagrams are seen as being correct or incorrect, or useful or not useful (Sebeok, 2001). Theories are 'gathered' into the diagram, and as a result the diagrams become vessels of knowledge, based on observation, questioning, reasoning, and concept formation, as well as a process involving semiosis.

Knowledge is assumed to be 'stored' in the diagram when the model maker creates the abstract symbol based on the theory. Examples of where diagrams, or theories, fail to fully explain what is happening can be seen in recent writing on shared occupations (Jones, Hocking, & McPherson, 2017), community participation and citizenship (Fransen, Pollard, Kantartzis, & Viana-Moldes, 2015), and the cultural environment of an immigrant or refugee community on a global scale (Wright-St Clair & Nayar, 2017). Here the breakdown is in the inability of models and diagrams to account for pluralism of people, the cultural dynamics of collective occupations, and larger scale environment considerations versus simply the familiar proximal environment many models describe. The conclusion here is that a model/diagram cannot provide the access, or be a gateway, to understanding a person engaged in occupation, because the symbol used does not hold a meaning on its own, it is arbitrary.

Furthermore, the knowledge gathered into the diagram reveals what is neglected. Neglecting something occurs when knowledge, and the value of something, was already revealed and then discarded by the neglecter. Combined with this, is the notion that by

putting something into a diagram the opportunities for other things to go in is reduced or diminished because of the superiority of one over the other, let alone the effort needed to redesign a pre-established diagram. In this way, models create a duality through the language it uses. The neglected, the unthought, the forgotten, the passed over are those things that were less important or inferior to the knowledge or concepts that went into the model. These neglected, invisible gaps in the models/diagrams are the human side of practice, the subjective, and the primordial experiences of the person, the client or population. The overlooked elements are also the interactions between the occupational therapist and the person(s), and what this does for the relationship and dynamic performance of occupation in their temporarily shared environment in practice.

Lastly, as shown in the last chapters, much of occupational therapy's knowledge in the first half of the 19th Century, came from disciplines perceived as being based on an objectified science, like psychology. For example, when cognitive psychology revolutionised the dominant behaviourist views held in the 1950s and 60s (Neisser, 2014), occupational therapy had another term it could borrow, that of cognition. As such, the person's qualities named in the models are cognitive, affective, physical, mind, body, spiritual, psychological, physiological, sensory, and motor. These are useful groupings, as discussed in the last chapter on taxonomies, for the justification of more evidence based and measurable intervention approaches. I am speculating that this would have suited reimbursement needs in the insurance driven health systems where these models were developed. The adoption of terms in the models raises the question of whether the practice context and health system were a driving force behind the models' development.

Encoding to the Symbol

Diagrams become objects when placed before us in place or mind. When we look at the model as an object, we can momentarily discard the theory it is trying to portray and begin to see the parts and the sum of the parts. Occupation-based model diagrams are uniform (symmetry in figures), separatist (they compartmentalise), are associative (it does not matter in which order the operations are done), deterministic (or causal), and show little in the way of relationships, instead leaving this up to the interpreter/observer of the model. None of the models, or their diagrams, acknowledge the role of the observer of the model playing out in practice (therapist) on the dynamic interactions, as discussed earlier. Overall, the diagrams depict the environment as bigger and the person as the smaller component nested within or alongside the environment. What

occupational therapy diagrams *aim* to convey are links or relationship, and subsets. Some achieve this somewhat through their use of arrows or connectors. Overall, the complexity of the 'look' of the models ranges from the simplistic to the complicated. But at either extreme, the interpretation of the models is convoluted.

Further, processes that are contained in diagrams are approximations of reality, and they contain fictionalised entities. How occupational therapy has carved up environment in to social, physical, cultural and institutional is an example of this. If we assemble circles, ovals, and triangles to model a person engaged in occupation, there is not likely to be much that is true of one that is also true of the other. That is, the diagram is not a true representation of the things it is trying to model. As described earlier, the use of nested circles stems from Western set-theoretical mathematics. Peirce stated "…the circles by which Euler represents the relations of terms. They well fulfil the function of icons, but their want of generality and their incompetence to express propositions must have been felt by everybody who has used them" (Peirce, 1885, p. 181). This is especially true of occupation-based models and their diagrams as they are not intended to be true mathematical signs. But they do try to hold true the axioms and concepts or theories about people, human occupation and the environment.

In occupational therapy, the diagram created by the theorist must be able to create the same meaning for the interpreter/reader through their mind-to-world path (Figure 32). A reader or interpreter, a student come future therapist sees the symbol, extends and decodes the concepts and attempts to apply it to the world (Humberstone, 1992). Associations must be made between the symbol and the signified. It is about how we interpret the natural world, how we interpret the occupations, the environment and draw them. A stick figure would suffice as a signifier of a human being. The multiplicities of the environment may have pressed the developers to choose something that symbolises expansiveness, universality. What better symbol for this than a circle? As discussed above, diagrams are arbitrary representations of a reality. The functional meaning or compositional meaning may be lost in other settings, cultures, some applications or simply by someone not familiar with the internal rules of the model. Aside from this synchronic view, diachronically meanings can change over time. The meaning of the model in the period of its development may not resonate now or into the future.

A loss of resonance is felt when occupational therapists use varying definitions for terms such as occupation, everyday activity, task or environment, context, or maybe

space and place, and categories as those discussed in the last chapter. These terms and categories have different meanings across people, and the models themselves, and have changed over time. In occupational therapy, as with many other disciplines, the language contains jargon, and is meaning and value laden. The value of the model or symbol is thus only current in its timing and context; the same symbol might not be translatable into other contexts, or an era where the symbol has a different value. Furthermore, as conceptual devices, diagrams are used in the network of activities in the production of scientific knowledge, which itself is rooted in culture and learning.

Overall, at first sight, occupational therapy models are rhetorical in that they aim to make a statement rather than eliciting information. But within they also seek to generate information about a person through formal and information interaction with the 'interpreter' of the model.

Mind-to-world path: The interpreter of the model/diagram

The process for decoding a diagram follows a reverse process to the model maker who encodes the diagram. Accordingly, congruency in meaning making also hinges on the concept, sign/symbol and the reality aligning for the interpreter and is also fraught with error possibilities. A diagram or symbol is a vehicle for mental experimentation and manipulation. A meaning of the whole symbol system is created by the interpreter, for example a student, to the model by establishing connections to the reference context. That is, an observer of the diagram must make sense of the diagram; translate it in relation to real life and the theory presented in occupational therapy literature. The meaning may be different for each interpreter dependent on their disposition (Clarke, 1987), and personal and cultural context (Stjernfelt, 2000; Tylen et al., 2014). A diagram or symbol is also a conveyor of language and concepts beyond the shapes, physical words or arrows that it may contain. As many authors have said, the language of occupational therapy comes from the ideologies of white, middle class, economically stable Westerners (Kantartzis & Molineux, 2011; Kiepek, Phelan, & Magalhães, 2014), and I would add specifically Northern American, female ideologies. The exception is the Model of Human Occupation which brings many psychology terms and concepts. Here begin some of the problems, as in any translation; the meaning may not be accurately conveyed in the interpretation.

Furthermore, there is more than one way to translate something, and the axioms that occupational therapy holds true could be phrased differently based on the diagram's

presentation. That is, you could say ‘occupation is the bridge between the environment and the person’ or ‘a person must do occupations to engage with the environment’. Both have the same meaning but say it differently. However, not often is it phrased around the other way: ‘The environment draws out the occupation from the person’ or ‘the environment creates the opportunities for occupation to be done’. The meaning conveyed here is quite different but less likely because of western views that only humans or occupations have agency (Yerxa, 2000) versus non-humans (Sayes, 2014)[134]. The point is, that the meaning is lost in translation with the diagram as a stand-alone vehicle.

The complexity of the functions, such as the missing axioms discussed earlier, or relationships presented in the model are too hard to condense and thus are too hard to sort out and decode. If a person does not understand the symbol or the signified, it makes no sense and is meaningless and degenerate (Peirce, 1885), which has epistemological implications, as a heuristic process may take over. In other words, if an object H means W to an interpretant then all other combinations of these and other objects will be wrong due to the consistency error. Peirce used ‘degeneracy’ in the mathematical sense, meaning the triadic relation cannot be analysed as a logical combination of any combination of the dyadic relations and monadic relations. However, it still stands that to a person not conversant in occupational therapy, models become unintelligible. Alternatively, Peirce would say that the representation becomes clearer once the observer moves from seeing it as an image, a diagram and thereafter a metaphor (Arnold, 2011; Stjernfelt, 2000). However, it is a metaphor with a code; something that conveys a meaning, shapes practice and thinking about people’s everyday lives. Without the accompanying text or literature, they are merely diagrams derived from symbols established by social convention. Some of these social conventions in academia show that occupation-based model diagrams are just symbols of scientification (Godin, 2017), an impression of rationality and mere emblems of their theory.

Once a person has grasped the context, the pieces and their relation, they can begin to understand and consider its usability in a pragmatic sense. The transformation to understanding was explained by Peirce as the effect or outcome the sign produces in its

[134] Ideas discussed in recent times such as Actor-Network Theory from Bruno Latour, or Karan Barad’s writing (Arsenault, Darin, Smith, & Beauchamp, 2006; Laurier, 2010), suggest that non-human objects also have agency, which could imply that occupation-based model diagrams have an agency over therapy.

interpreter (Arnold, 2011; Atkin, 2010). He continued on to say that a habit may be stimulated and a new disposition induced (Clarke, 1987), called the "occupational lens". Critics of semiotics suggest that behavioural formulations of learning to language use is inadequate (Chomsky, 1959, 1967). For occupational therapy models, the complexity of the learning is great, given the parts being understood of the whole model and the supposed interactions and transactions. The process of interpretation is again shown to be fraught with error possibilities.

An outsider, not conversant in these rules for 'occupational therapy decoding', can begin to understand the diagrams by drawing on a personal analogy or link with what they do already to interpret pictures. Using the earlier example, nested circles may be interpreted based on other things that nest or hold within it a central element; a bird in a nest, a child in a cradle, layers of meaning, orbits, wholeness, whakapapa[135]. The interpretation of the symbol is unavoidably shaped by its context (Sebeok, 2001), and we begin to see that symbols address collective cultural identity with shared and individual meanings of the symbols. Likewise, the same decoding rules used for one model may not apply to another model. The interpretation of one diagram may have some similarities to another, through the shared professional axioms, but the nuances of their meaning may be lost in translation if the same rules for decoding are applied. This points to the competition created by the models and their diagrams, given the plethora trying to capture the same phenomena.

False mirrors of reality

Aside from the complexities present in the processes of making and interpretation, there are some other more general elements for critique on the diagrams. There are at least nine models attempting to capture the same phenomena in occupational therapy. Each supposedly serves a different purpose and has different construct explanations (Christiansen et al., 2015), but each makes a claim that it is a faithful representation of occupational therapy areas of interest. Since the phenomenon of a person engaged in occupation, occurs with such variability in the real world, no one model can claim to encompass all the relevant influences. But there are likely to be some consistent elements or harmony across the models and diagrams despite their seeming competition to be the most "accurate" model.

[135] Whakapapa is a Māori term for lineage, genealogy or the layers of family described in the proper way.

Harmony exists in the shared concepts of person, environment and occupation interactions as the cornerstones of the profession. On the other hand, discord exists in their diagrammatical presentation of the concepts. One model presents them as nested interdependent 'things', others as overlapping or even more autonomous entities. Disagreement also lies in the specific definitions of person, occupation and environment. Nonetheless, because there was a limited baseline to the taxonomies in the 1980s, there is some agreement in the overall meaning of the concepts. Since the models stem from similar taxonomic arrangements they perpetuate and, through their various revisions, potentially propagate the taxonomy. Likewise, at a certain point in time, no matter how stylised, models have come to appear more accurate than the real experience. Their familiarity, acceptance and endorsement in the profession has helped place the models at the forefront of explanations on what the relationships between person, occupation and environment is. The existence of models and their diagrams is seldom questioned, even when their accompanying text and theories are under scrutiny. Through this lack of scrutiny, they appear to hold some symbolic power over any explanatory power.

The diagrams, nor the models, explain the relationship between one element and another. For example, what is the relationship between the cultural environment and the cognitive aspect of a person? Although some research has been done on this specific relationship (Gutchess & Indeck, 2009; Oyserman & Lee, 2008), it is small, unidirectional, socio-psychology focussed and linked only to cognitive components. None of the occupational therapy models explain notions that culture is created through person and society (Dreyfus, 1991), rather it is a separate entity external to the person. It is left up to the interpreter of the symbols and the use of their own knowledge to determine these possible relationships. An occupation-based model only categorises the cornerstones of person, occupation, environment and perhaps occupational performance. They do not support the principal assumption of the profession that through occupation the person may change the state of their health and well-being. There is no signifier in the diagrams that shows the subjective experience of the person that the model may be signifying. It is only through occupational therapy 'training', education and scholarship that an occupational therapist comes to understand the diagrams and what they represent. Once a person learns the concepts and abstractions, they can they be transformed in their view of the world. Much like a threshold concept, the models contain implicit knowledge that is only gained through learning and practise.

In effect, a model is like the wardrobe to Narnia[136]; only those who discover it and understand what it is, will be able to use it and employ its virtues. From personal experience, the models only began to make sense when I was employed in a clinical setting where I could see the nuances, potential explanations and gaps that the models offered. It is not, however, the purpose of this research to question the use of models in practice and whether therapists employ them in their day to day work with clients and communities.

Some of the rhetorical statements that models make are held in the positions of the shapes or in the size of the environment, which promulgates the view that the environment is dominant and homogenously influences the other components. We cannot cleave the person or occupation away from the environment, and so it cannot 'look' removed in the symbol because there are larger wholes that are unbreakable singles. This creates ontological consequences when a cleaving occurs of the whole. Some of these ideas are presented in the next chapters.

Conclusion

This chapter took a side-step into semiotics to show that, symbolically, occupation-based model diagrams hold some expressive power, but that this is weak when a whole text is reduced to a single diagram. Expressive power was shown to exist when a model maker created an accurate enough symbol to capture the reality as observed, and when the reader understood the concepts, definitions and assumptions or theories the symbols communicate. This was discussed as the congruency between what the model maker aimed to convey and what the reader interprets. This dynamic process for achieving congruency was unpacked using the processes in Peirce's triadic relationship. I examined the error possibilities in the interpretation and translation between the real-world phenomena, the model makers and the symbols used, and vice versa for the user of the symbol.

My critique showed that the taxonomies, as discussed in the last chapter, are potentially a fundamental problem. These taxonomies were based on the scholars' observations of

[136] The wardrobe is the magical portal or gateway between the "real" world and the fantasy world of Narnia in C.S. Lewis' The Chronicles of Narnia. The discovery of the wardrobe enables the Pevensie children to travel to Narnia. Once discovered the wardrobe holds the possibility of ongoing use. However, the children in the story are warned that they might return to Narnia someday, but encouraged not to use the wardrobe route again. In this way the wardrobe enables discovery of the Narnian world, but it can also fail in its task. I am using the metaphor of this story to show how models are like wardrobes and can be a tool to explore people's worlds but can also cease to be useful and that other routes can be used.

people engaged in occupation, as well as the scientific questions posed by scholars in explaining their observations. The positivist tradition being a central theme across this, and the last three chapters was also reflected in this chapter through methods model makers use to develop symbols or diagrams. Most importantly, as captured by Heidegger (2001), this process already assumes that nature and explanations of how a person engages in occupation can be compelled into a theory and diagram to begin with.

Other elements of critique aimed to show that the models and their diagrams hold fragile ground when it comes to explaining occupation across cultures, time and certain ways people live their everyday lives not captured by the diagrams. The fragility of the diagrams is also felt in their abstraction, cleaving and reduction of something complex like engagement in occupation. I also discussed the competition created amongst the many English models in occupational therapy as creating uncertainty and at the same time the hegemonic position held by the models and their diagrams when they are not scrutinised together.

Finally, I showed the ontological gap present in the occupation-based model diagrams, which will be further highlighted in the next two chapters which explore the Canadian Model of Occupational Performance and Engagement and the Model of Human Occupation. But first I will introduce Tom who will help show how the models and their diagrams fail to explain the experiences of everyday occupation.

Introducing Tom

The video submitted with this thesis (for examination purposes only) is used to illustrate how each perspective (models used in Chapters Seven and Eight, and the ontological perspective in Chapter Nine) gives a very different account of what Tom may have experienced. The video is from my Master's thesis (Blijlevens, 2005), titled *The experiences of dyspraxia in everyday activities: A phenomenological study*. Ethical approval at the time of my Master's allowed for the use of participants' videos and stories for future educational purposes, such as this[137].

Tom is a 59-year-old male who experienced a series of cardiovascular issues beginning with deep vein thrombosis which resulted in a pulmonary embolism, requiring surgery, and a subsequent stroke leaving him with right side hemiplegia and expressive aphasia. He described how he drove himself to his General Practitioner's (physician) one morning, complaining of pain in his leg and collapsed in the General Practitioner's carpark, falling in and out of consciousness. He was rushed to hospital and was in acute care for about one week before being transferred to a rehabilitation facility for five months. After three months, he was still not walking but was able to do simple tasks such as pulling up socks, putting on shoes and doing up buttons. At the time of the video it was seven months after his stroke. He was living alone with home help for showering and house work. He walked with a walking frame.

Tom's occupation was as a journalist and radio interviewer. For him, speaking after his stroke was, as he described, like relearning the cadence of his voice again. Tom was a divorcee and had a partner who did not live with him. He had a daughter who lived in Australia and came to New Zealand after his stroke to help with the sale of his house and purchased his unit in a retirement village. In the 12 days prior to the video, he had lived there, about 10km from his former local community. He was not allowed to drive but bused to his local shops or reluctantly asked others in the village to take him.

Since being home, Tom found everyday tasks and speaking difficult, but he had small achievements in things like hanging out the washing using both hands. As well as, in devising a harmonious 10 step routine for dressing in the winter, and seven steps for

[137] Ethics approval at the time was granted to include the use of analysed material and video-recordings for education and/or study related professional presentations. It received ethical approval from the Auckland Ethics Committee on the 22nd of February 2003 (AKY/02/00/026) and for the amended study criteria on the 12th of January 2004 (AKY/03/02/026).

dressing in the summer[138] to ensure he had appropriate clothing on. He still described his socks as the 'fiendish, dreaded socks'. Tom found the time it took to do things frustrating and felt like his move to the unit had put him back about two months in progress with his speech and daily tasks. He described having to sit and plan since moving to a new house, so as not forget things like his keys or wallet when leaving the house for regular blood tests.

People in the retirement village had offered to help and have him to dinner, but Tom felt a sense of embarrassment at his word finding difficulty and potential lack of interesting conversation.

The video is hyperlinked here for viewing (https://youtu.be/LNNXzkb412s), with the transcript below. Tom, in the video, is seen peeling a potato, a very ordinary, every-day activity. Throughout the video he also converses about some of his experiences. I have called the video One Lousy Potato based on Tom's expression while peeling the potato.

> 0:38" You've caught me between jobs. I wasn't ready.
>
> 0:50" Well here I have a potato. A potato is relatively easy to, to uhm firm up…The thing is I can't hold it. So, I ram it down. And. And it's a process that, ohm, takes for ages. Then you got to, oh...pull the damn thing up. Oh dear. If it wouldn't mad.
>
> 1':52" It's infuriating. Because you used to do it in a matter of seconds or total of a minute to do an onion or a potato, now it takes bloody 5 minutes. It's, it's, it's forever. Anyway, here you go. Ah ha.
>
> 2':41" Almost done. Oh darn, I have a little bit left.
>
> 2':56" Well that's more or less what I call peeled. I'll just rinse that. And then I'm told you can cut it a number of ways.
>
> 3':33" So that's peeled, virtually. Good enough for the pot. It took all that time for one lousy potato. It's frustrating when that happens, but that's what happens. It's one in a long list of things you have got to take time over. It's uhm, it's just one of those things that goes on and on and on.
>
> 4':04" There's one nice lady in the barracks here asked me if I would like to have dinner with her. Great!

[138] Tom's 10 step winter routine was to count the clothing items he put on; underwear, singlet, shirt, pants, jersey, one sock, other sock, 2 shoes and a jacket. In the summer it was reduced to seven steps by excluding the singlet, jersey and jacket.

Chapter 7 The Canadian Model of Occupational Performance and Engagement

Introduction

In Chapter Six I used semiotics, the study of signs and symbols, to unpack how models are brought into existence through their model makers. The next two chapters examine two specific models, namely the Canadian Model of Occupational Performance and Engagement (CMOP-E) followed by the Model of Human Occupation (MoHO). In the journal publications, from my thesis, I also looked at the Person-Environment-Occupation and the Person-Environment-Occupation-Performance models, however, I have not dedicated a stand-alone chapter to these as the overall argument is the same across them. I have chosen to separate the CMOP-E and MoHO because they have somewhat different genesis stories. Even though they both come from a systems point of view, the MoHO does so more potently and warrants more consideration for this fact. Chapters Three to Five can be considered complimentary to this chapter because the contextual history covered earlier supports and sits underneath the analysis covered here. At the conclusion of this chapter I offer an assessment of Tom using the CMOP-E model.

The CMOP-E is a preeminent model used as a guide for client-centred practice. It builds on the research and writing of Elizabeth Townsend for the Canadian Association of Occupational Therapists and its profession (Canadian Association of Occupational Therapists, 1997, 2002). The CMOP-E began life in North America as Reed and Sanderson's 1980[139] Human Occupations Model (Law et al., 1990). What precedes the 1980s start is an important seeding history that led the growth of the model to where it is today. The Canadian Model of Occupational Performance (CMOP), an earlier version of the CMOP-E, was developed as a professional collaboration and not through single authorship. Thus, I begin this chapter with special attention to the rise and strength of the Canadian Association of Occupational Therapists (CAOT). This will reveal the professional and societal factors that led to the model's development. I draw on Canadian and United States literature given the story of pre-war occupational therapy is similar between the countries (Burnette, 1923). I then describe the Human Occupations Model (HOM), not to be confused with Kielhofner's Model of Human Occupation

[139] I was only able to source Reed and Sanderson's 1983 text for this chapter. The model itself did not change between 1980s and 1983, as seen in the document from Department of National Health and Welfare & Canadian Association of Occupational Therapists (1983) which the CMOP is based on.

(MOHO; 1985, 1995, 2002, 2008, 2017), and examine components of the model and how these came to be conceptualised. My aim in this section is to reveal how some of the model building was done on shaky ground with assumptions, confusion of ideas and extrapolation from fields not related to occupational therapy. In this chapter I use the concept of the environment to exemplify areas of strength and weakness rather than examining all aspects of the model.

The Canadian Occupational Therapy Association

The Canadian Occupational Therapy Association (CAOT) was established in 1926 and developed most prominently in Toronto. It was well established in the 1930s as a result of such things as:

- The positive therapy effects of occupational therapy during and after WWI
- Recognition through the press and public meetings of the Ontario Society of Occupational Therapy, attended by about 300 people in 1922 (Springle, 1922)
- The obvious worth of occupational therapy as shown by alluring offers from the United States for ward aides in order to feed the increasing need for females to help wounded soldiers returning from the front (Friedland, 2011).

The CAOT advanced its standing and esteem, despite the effects of the 1930s Depression. It did so through such things as the establishment of programmes for handicapped children through the Toronto Board of Education, through representatives travelling to Shanghai and Scotland pre-1935 to establish their first programmes and institutes in those countries, as well as consulting to the Canadian Department of Health in 1933 (Friedland, Robinson, & Cardwell, 2000). As early as 1935, the Canadian Journal of Occupational Therapy[140] had publications stating that data ought to be accumulated as a scientific basis before the profession could advance with efficient treatment or even be recognised (Friedland et al., 2000), recognising that to get ahead research had to support practice. Perhaps this drive was attributable to the research funding awarded to the University of Toronto from the mid-late 1920s, with sums as large as $600,000 (Shorter, 2013), equivalent today to approximately $7.8 million, showing the strength and desire for research.

[140] Frequent (>2 publications) authors to the journal across the 1930s and 1940s were Helen LeVesconte, Muriel Driver, Florence Wright, Isobel Robinson, Peggy Langley, and the various Presidents (Dr Goldwin Howland, Dr Alexander Primrose). Many contributors were medical doctors or psychiatrists.

Into the 1940s the association continued to lobby and advocate for its therapeutic (versus diversional or recreational) services to be used in sectors such as the Department of Personal and National Health and the Department of Defence (Cockburn, 2001a). Through the Department of Defence and Canada's strong cultural orientation to the United Kingdom (Shorter, 2013), the association served through the British War Office as well as contributing to the Department of Health of Scotland, British Emergency Medical Services. These achievements all came before the association had won its home-based battle to have occupational therapists enlist as officers in its own country in 1943 (Cockburn, 2001a). The close of the 1940s has been described as a time when the profession became firmly established in Canada, in part attributed to the strong vision and dedication for 22 years of its first President, prominent neurologist Dr. Goldwin Howland[141] described as Canada's first consulting neurologist (Shorter, 2013).

The 1950s and 1960s was a significantly transformative time for occupational therapy. For example, when cognitive psychology revolutionised the dominant behaviourist views held in the 1950s and 60s (Neisser, 2014), occupational therapy had another term it could borrow, that of cognition. As such, the person's qualities named in the CMOP-E, PEO, and PEOP models are cognitive, affective, physical, mind, body, spiritual, psychological, physiological, sensory, and motor. These are useful groupings for the justification of more evidence based and measurable intervention approaches and thus for reimbursement in the insurance driven health systems where these models were developed. Alongside these advances, public recognition (e.g. Fleury, 1965) of the value of occupational therapy increased, with the CAOT being called to advise the government and other organisations[142] (Cockburn, 2001b). Occupational therapy recognised that to stabilise practice, the profession needed to articulate and expand its own research foundations. Research funding in general stepped-up in early 1950s with many different sources offering funds and, as discussed in Chapter Four, the 1950s brought in an epistemological schism.

Since the late 1960s many reasons existed for health care professionals to critically review and systemise their practices, to stride alongside the many other advancements

[141] In 1944 Dr Howland published in the Canadian Geographical Journal about occupational therapy showing his support and the profession's wide reach around the time of the world wars.
[142] Organisations such as the National Advisory Committee to the Federal Government on the Rehabilitation of Disabled Persons, and the Canadian Welfare Council to name a couple.

in healthcare and things wider afield[143]. The increasing costs of health care[144] and accountability of healthcare professionals are also seen as reasons for the shift in professionals to critically review their practice. In Canada the critical re-examination was driven by such things as an increase in chronic disease prevalence, as penicillin and antibiotics ended the acute communicable disease epidemics and death from post-operative infection (McColl et al., 2003). Poliomyelitis rehabilitation leapt up in the 1950s as cases surged (Dunn, 1952) and effective treatments were expected in all facets of healthcare. The Canadian Journal of Occupational Therapy had higher numbers of publications on rehabilitation, and topical issues on such things as research into shoulder support in poliomyelitis. As discussed earlier, this can be attributed to the developments and dualistic views in medicine and the push for occupational therapy to prove itself through the burgeoning scientific method. The swing from a British model, that Canada had historically aligned with, to an American model with research having primary importance, was beginning to be noted in the 1960s (Shorter, 2013) with increased insistence on multi-disciplinarity in university departments and health services. However, there was limited funding and research beyond the professional boundaries of medicine to professions like occupational therapy.

The Human Occupations Model (Reed and Sanderson, 1983)

The Human Occupations Model (HOM), called the Occupational Performance Model by other authors since then[145], was inspired by the American Occupational Therapy Association. It set the individual in the centre of model, with the occupational therapist's key role being the management of adaptive behaviour needed to perform occupation (Figure 32). The aim of the simplistic shape of the model seems to have been to sort out the increasingly complex areas of practice that were already identified in the profession. The complexity was beginning to be seen in the daily living skills, performance components and to some extent what was understood about physical

[143] Mass communication for example via television, technological advances in all areas of health, such as medical imaging, electronics, pharmaceuticals and a more astute consumer are also attributed to the profession's scrutiny of its practice (CAOT, 1991).
[144] The 1950s saw hospital care costs double (Moseley, 2008).
[145] The Occupational Performance Model described in the 1983 Guidelines for the client-centred practice of occupational therapy (Department of National Health and Welfare & Canadian Association of Occupational Therapists, 1983) references Reed and Sanderson (1980) first edition text which I have not been able to locate via library avenues. However, the 1983 version, as noted in an earlier footnote, shows the same model.

environmental barriers. This simplification, as has already been discussed, sat within the systems theory[146] views of abstraction and generalisation (Dekkers, 2015).

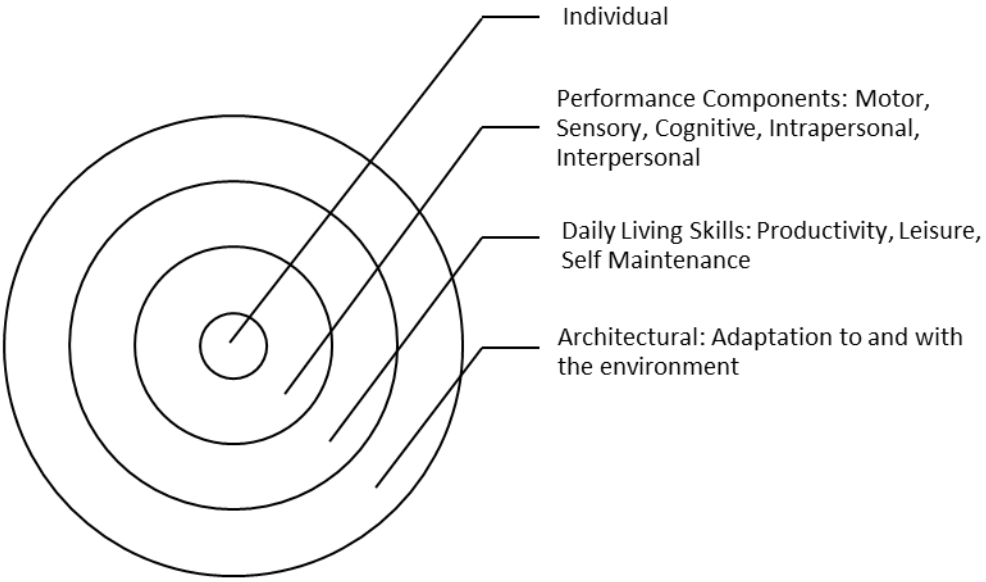

Figure 32. Human Occupations Model adapted from Reed and Sanderson 1983.

Reed and Sanderson wrote a remarkable piece of work that has contributed to substantial areas of occupational therapy understanding about the person, the occupation and eventually to richer understandings of the environment[147], but it also contained many assumptive and at times confusing and overlapping statements.

The second section of the book began with a clarification of which models of practice were discarded, although the authors did not always describe the reasons for their abandonment. For example, they stated that occupational therapy was not vocational therapy, but continued to explain that occupational therapists taught work skills and self-care and leisure which vocational counsellors do not. The authors were seemingly trying to defend the discarding of a model based on what else the therapist could do in therapy. Discarding the diversional/busy work model was justified as due to service constraints and time pressures, versus a lack of fit with the profession's philosophy. Likewise, and closely linked, was the abandonment of handicrafts as a therapeutic medium because of cost and limited link to a person's independent living requirements.

[146] The term model in the Reed and Sanderson (1983) glossary references well known systems theorist and psychologist James P. Chaplin (1975).
[147] Ideas and thinking about the environment were not as developed as those coming from the bio-medical and psychological disciplines.

The seeming confusion in the text appeared to herald a change in the profession's scope of practice from an arts and craft focus to one concerned with a person's independent living. Furthermore, because of the attempts to shift the profession's reputation away from recreation and craft activities, as well as increased service funding for return to home and work, leisure was no longer a priority in standard practice.

From around the 1980s and into the 1990s, the profession was clearly uneasy about being regarded as diversional, recreational, and occupying people's time without the benefit of therapy associated with it (Polatajko et al., 2007). Generic or performance models that Reed and Sanderson suggested were being explored by the profession were the Individual Adaptation Model, Moral Treatment model, and the Role Behaviour Model. From my further research into these, they models were not relevant to the development of the Canadian Model of Occupational Performance (1997) but did lead to other models. To establish what occupational therapy was, Reed and Sanderson (1983) described it as providing

> …service programs to assist individuals in meeting their human needs through the performance of those occupations…which will lead to satisfying and productive lives. The major purpose is to develop and maintain the individual's capacity, throughout the life cycle, to perform with satisfaction to self and others those occupational tasks and roles essential to productive living and to the mastery of self and the environment. (p. 9)

The majority of this quote was paraphrased from the definition of occupational therapy given in 1972 in the American Journal of Occupational Therapy, as cited in Hopkins (1978), which stated that the fundamental concern of occupational therapy "…is the capacity, throughout the lifespan, to perform with satisfaction to self and others those tasks and roles essential to productive living and to the mastery of self and the environment" (p. 27). Here we begin to see what Mocellin (1995), and more recently Whalley Hammell (2009), described as being the substitution of authority for evidence without due regard for the validity of statements about the core assumptions of our profession. A statement from one esteemed professional body about occupational therapy was taken up by other distinguished authors and in this process the assumptions made gained esteem and credibility. However, it could also be described as building on and contributing to an expanding field of professional ideas. Regardless, the quote indicated that a person was made up of many parts that contribute to their capacity. This quote was like all other descriptions of occupational therapy sources across the decades

(see Appendix G for a sample of environmental definitions). From this perspective, ideas on the relationship between the concepts and categories could begin to be explored more fully.

Reed and Sanderson (1983, p. 68) listed their assumptions about a human being as:

1. A biopsychosocial and spiritual being
2. A unified whole
3. An open system energy unit
4. Having capacity for thought and sensation
5. Having needs
6. Having responsibilities
7. Having potential
8. The sum total of his experience
9. Having basic rights.

Overall, this list used much of psychology's gestalt principles, where a person was a unified whole and more than just the sum of its parts. But it also held a lot of systems theory ideas, or a biological base to them, with a strong leaning towards systems adaptation. So, whilst assumption number one may seem ontological, it stated that the life force had structure, function, pattern and organisation that developed across the lifespan, revealing itself as stemming from a systems perspective that changes and is comprised of organised subsystems. Point two also came from a systems theory point of view, where the person interacted with the environment as a total being. So that even though the person had been reduced to their performance components, these interacted in their entirety within an environment.

Reed and Sanderson' focus on adaptation built on the work of previous authors. For example, King, (1978) wrote about the 'adaptive response' being organised at the subcortical level, showing the medical scope of practice in occupational therapy at the time. Likewise, a thesis written in the mid-1970s by one of Mary Reilly's students described adaptation as a "complex process that changes or elaborates the organism's structure to meet environmental demands with the least discomfort to the organism….[it] possesses anticipatory as well as reactive components*"* (Heard, 1975, p. 5). Heard accurately captured this from early work by Buckley (1967) on society as a complex adaptive system. However, Buckley explained this in relation to

cybernetics[148] where adaption to a changing environment was a lower process and that true feedback control loops more importantly made self-regulation and self-direction possible. Once again, we see strong links to open systems theory.

Reed and Sanderson's focus on adaptation was captured in the statement on the unique aspects of occupational therapy as "methods of adapting a person's behavior to human and nonhuman environments or adapting the environment to a person's needs" (p. 9). Interpreting this reveals an appreciation of a bidirectional relationship between the person and the environment, and clearly stated that a person and their environment can have reciprocal influence on each other. What methods a therapist employed for such adaption is not discussed in the text. But in the next sentence they diminished this claim by advancing the idea that a person can adapt to an environment because as humans we have the capacity to change, and still more confusingly that therapy should focus on adapting the environment. This predominant focus on the strength of the environment was a concept carried all the way through the iterations of subsequent models into the CMOP-E (Townsend & Polatajko, 2013).

Reed and Sanderson had a strong focus on the term adaptation and that humans must achieve a state of adaptation and health. Given the following definitions, it is unclear what a 'state of adaptation' looked like. Across the text adaptation was defined as:

- The adjustment of an organism to its environment
- The adaptation of the person or equipment for performance
- Environmental adaptation is "structural or positional changes designed to facilitate independent living and/or increase safety in the home, work or treatment setting, i.e. the installation of ramps, bars; change in furniture heights; adjustment of traffic patterns (Standards, 1978)" (p. 241).[149]

The word 'adaptation' was an area of conceptual development and applied predominantly to the environment. Yet, in the textbook's third edition, the authors stated, "Occupational therapy is interested primarily in individual adaptation" (p. 76) within an ever-changing environment. Coming back to the phrasing 'state of adaptation' it was still unclear what this might be. Assuming all people possess a variant of this

[148] Cybernetics looks at the communication structures and automatic control structures in machines and living systems.
[149] This quote is also used in the glossary for defining assistive/adaptive equipment with the inclusion of wheelchair modification (p. 236).

state, is it then a person's *potential* for change, or the *ability* to change and adapt, or that they can *effect change*, or that *adaptability* is the penultimate state therapists should strive for with their clients?

Reed and Sanderson's book saw that of one of the benefits of occupational therapy services was therapists' ability to provide a graduated environment (Figure 33), ranging from the 'structured and safe' clinic environment to 'unstructured and normal risk' environment of the community (p. 18)[150]. This claim reveals that practice was more therapist and safety focussed than client centred. What Reed and Sanderson were possibly trying to convey was that the clinic environment was more controllable for the therapist versus the community. As in Chapter Four, this shows that even the environment that occupations and people engaged in needed to be categorised, standardised, measurable, and made ontical.

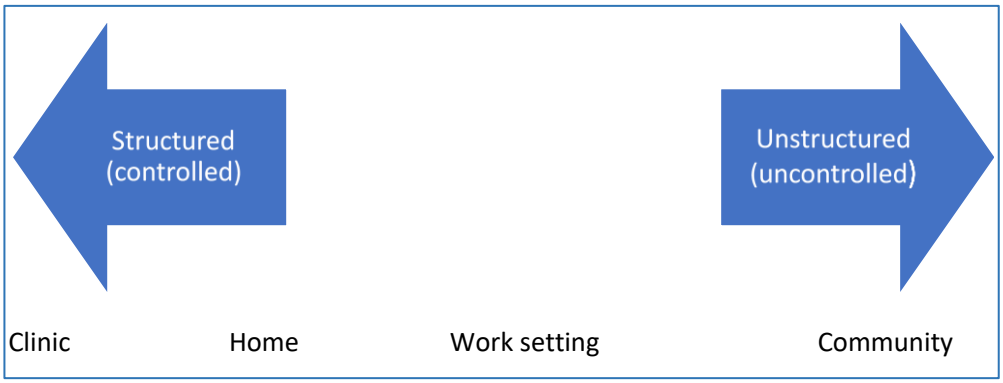

Figure 33. Interpretation of Reed and Sanderson's (1983) range of structured to unstructured environments.

The clinic as a more controllable space made research easier, with more noticeable effect on a person's behaviour, and this was another reason for the profession's move toward a hospital/clinic dominant practice setting versus workplace or community/population settings. A different view is that because of the self-care, productivity and leisure occupations taxonomy, as well as health-care funding, therapists focussed on where these occupations typically occurred (home and work). Another explanation could be that the milieu model, popularised through hospital environment management ideas and 'psychologically hygienic atmospheres' (White,

[150] I argue that the idea that the community presented an unstructured environment of normal risk is subjective and a person cannot claim where on the continuum an environment presents as structured or unstructured for people.

1972), raised occupational therapy's interest in the environment, given milieu therapy's strategy of replicating 'normal' living situations. However, some of the conflicting messages in this text are, for example, the authors' explanation that the understanding of the environment[151] is fundamental to the occupational therapist's role, and yet the environment focus is missing in the section on evaluation and assessment, which only focuses on the component skills and occupation categories. In summary, the Human Occupations Model had a simple diagram with convoluted explanations that showed the shift from a concern for the person and their occupational experiences and desires, to one focussed on measuring adaptation in a limited repertoire of environments. This early scientific grip, and overlooking of the person, was carried through into the subsequent variations of the model, beginning with the 1991 Guidelines for Client Centred Practice (Canadian Association of Occupational Therapists, 1991).

The Canadian Association for Occupational Therapists Guidelines for Client Centred Practice (1991)

Overall, the CMOP development has a significant history situated within high level processes with the Department of National Health and Welfare and in conjunction with various task forces developing guidelines for practice[152]. The eventual development of the CMOP was jointly sponsored by the Canadian Health and Welfare Department and the CAOT in the late 1980s and early 1990s (Townsend, Brintnell, & Staisey, 1990). As discussed earlier, the proactive culture of the CAOT had permeated into the wider profession from the time of the World Wars and continued into the 1970s and 80s. The organised and strategic development of the association supported the development of the Canadian Model of Occupational Performance (Canadian Association of Occupational Therapists, 1991, 1997).

Between 1980 and 1993, five guidelines and one outcome measure advocating for client centred practice were developed through various organisations. Amongst these documents was the Occupational Performance Model (originally the HOM, as described above) that also served as the basis for the CMOP. Contextual influences on the development of this model included important Canadian health care reports such as those from 1981 on the obstacles faced by Canadians with disabilities, and the

[151] Environmental problems are theorised as stemming from sociological problems through interactions with other people and the environment and are called environmental changes.
[152] Another example of its high esteem is from 1973, when the Canadian Association of Occupational Therapists' (CAOT) document for standards of occupational therapy services was adopted by the Canadian Council on Hospital Accreditation (Townsend et al., 1990).

1986/1988 health promotion frameworks. These frameworks and documents had in turn been prompted into development by the World Health Organization's Classification of Illness, Disease, Impairment and Handicaps (ICIDH-1) (Canadian Association of Occupational Therapists, 1991), and a generally stronger consumer voice in health. In response to these changing social processes, occupational therapists began to clarify their body of knowledge. The terms in the Model of Occupational Performance (see Table 5) were also used in the 1983 guidelines for client centred practice of occupational therapy (Department of National Health and Welfare & Canadian Association of Occupational Therapists, 1983), showing just how little change had occurred over the 11 years between the 1980 HOM and the 1991 guidelines.

The Model of Occupational Performance adapted from Reed and Sanderson (1980) described health as the balanced integration of the four performance components. The diagram (see Figure 34), was published in the 1991 Occupational Therapy Guidelines for Client-Centred Practice (CAOT).

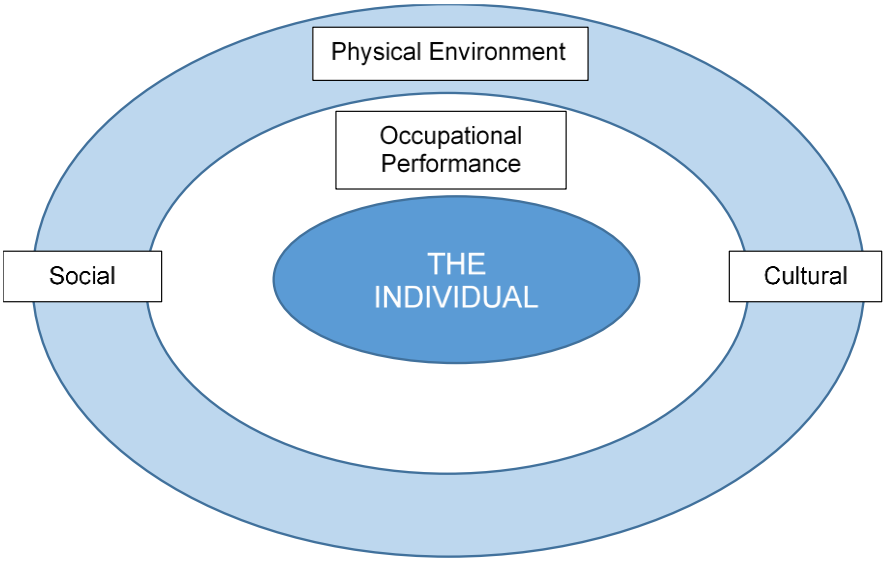

Figure 34. Interacting elements on the Model of Occupational Performance (CAOT, 1991)

The preface to the documents described the changes being observed in the profession, such as the shift to understanding the environment as more than adapting the physical environment, but also about changing environmental features of social policy, socio-economic conditions and family dynamics. The concluding statements to this preface were a list of questions on the challenges for updating the guidelines; the first question

was “how can we depict the interconnections between an individual and her/his environment?” (p. ix), revealing the difficulties being encountered in the diagram making. The details of the diagram were explained further in the body of the guidelines (see Table 5).

Alterations and important preservations to the originating diagram included the:

- Removal of a ring of concepts through the amalgamation of the individual as comprised of the mental, physical, socio-cultural and spiritual components.
- Adherence to the three-part categorisation of occupations as self-care, productive or leisure, and
- Categorisation of the environment, with a strong emphasis on home, workplace and acceptance by culture/society.

Table 5: Model of Occupational Performance terms used in diagram and text, with detail about the environment added from the Appendix in CAOT (1991) which gives examples of what an occupational therapist should consider in therapy.

Area	Term in model	Definition in text (some examples from appendix A in CAOT text)
Performance Components	Individual Mental Physical Socio-cultural Spiritual	Mental = cognitive, affective, volitional functions. "Mental individuals have the capacity to reason and to adapt. Through interactions with the environment and with people, individuals develop a sense of self" (p. 17). Physical = motor and sensory. "Individuals satisfy needs for food, safety, sex and self-care" (p. 18). Socio-cultural = beliefs, value systems, developmental stage and life situation. Emotions and feelings are experienced during interactions with others. Spiritual = individuals are concerned with nature, meaning of life and their purpose and place in the universe.
Areas of Occupational Performance	Leisure Self-care productivity	"These areas are predicated on the interaction of the individual's mental, physical, socio-cultural and spiritual performance components" (p.16).
Environment	Physical Social Cultural	Performance components are integrated by engaging with the environment in a reciprocal way. Acknowledgement that therapists are also paying increased attention to the economic, political and legal environments. Physical = outdoor/indoor wheelchair access, location of rooms inside home, flooring type and condition Social = relatives or significant others at home, day/night assistance availability, companionship, friends/supports, transportation. Cultural = interests of others in household or friendship group, work expectations, family role expectations, behaviour expectations, activities requiring participation for acceptance, attitudes to sickness/disability, remedies/local medicine for sickness/disability.

Assessment and treatment in the CAOT Guidelines (1991) did not extend much past what Reed and Sanderson proposed. Assessment in the guidelines was primarily interested in the performance components, for example figure perception, grip strength, which had already been researched in psychology and physiatry respectively. Assessments that took it a step further and examined the areas of performance (self-care, productivity and leisure) exposed the disconnection between occupation and the environment by assessing people's ability versus how a person engaged with the environment. In much the same way as Reed and Sanderson stated, CAOT stated that adaptation and activity are the central concepts in occupational therapy, that adaptation had a long history in the profession and was understood as the basis for intervention. Adaptation in the 1991 guidelines was about adapting to a disability, routine or lifestyle (self and environment), to gain independence with an internal locus of control (Townsend et al., 1990). Nothing was mentioned in the guidelines that specifically involved the environment and adaptation. Furthermore, the intervention guidelines section of the document makes no mention of the environment, instead taking a focus on the performance components and the eventual outcome of this on the occupation. These show that the measurable, and hence explainable in occupational therapy, was now even stronger than in previous decades and the person was reduced to largely mental and physical components.

Spirituality, and the socio-cultural performance components, got closer to an ontological understanding of being, but still reflected the mind-body dualistic paradigm. Spirituality was described as "the need to explore meaning in life" (Townsend et al., 1990, p. 72), and when combined with the socio-cultural and mental components became motivation. So, the spiritual element is a combination of person and environment that geared itself toward a psychology focused construct – motivation. This connection between person and environment seemed to lose itself over the iterations of the model and did not include time in any particularly emphatic way. Thus, the guidelines were created with good intent and through a thorough process of evaluation and consultation. What it lacked was the thoughtful consideration of the underlying philosophical processes such as positivism, operationalism, scientification and how these changed the way a person was seen in the healthcare domain and how it changed where the emphasis for occupational therapy was placed.

Canadian Model of Occupational Performance (1997)

In 1992 an impact study was conducted to determine the usefulness of the 1991 Occupational Therapy Guidelines for Client-Centred Practice. This study revealed that, amongst other things, therapists wanted to have the language and model of occupational performance clarified. Rather than updating the original documents released to therapists, the Canadian Model of Occupational Performance was developed through extensive collaboration in and outside of occupational therapy. This well-planned step meant that all key stakeholders had a say in the model's validity. The *enabling occupation* textbook, which included the Canadian Model of Occupational Performance, was launched in 1997 and is still regarded as a landmark document contributing to the growth of the profession.

The model used much of Reed and Sanderson's Human Occupations Model but claimed to *not* capture the environment as being external to the person (see Figure 35). Instead it presented the environment as being in a relationship with the person and with the occupation. The person's choices, organisation, performance and satisfaction in occupations was shaped by the person-environment relationship. This idea of a reciprocal person-environment relationship remained steadfast through to the 2013 version. The connection between the person-environment was shown in the model by the overlapping triangle and outer circle. What this relationship looks like or its functions is still unclear. Similarly, the occupation-environment relationships suggested occupation shapes and is shaped by the environment. This idea was captured by Reed and Sanderson through the open system idea, but perhaps not emphasised as well in the CMOP.

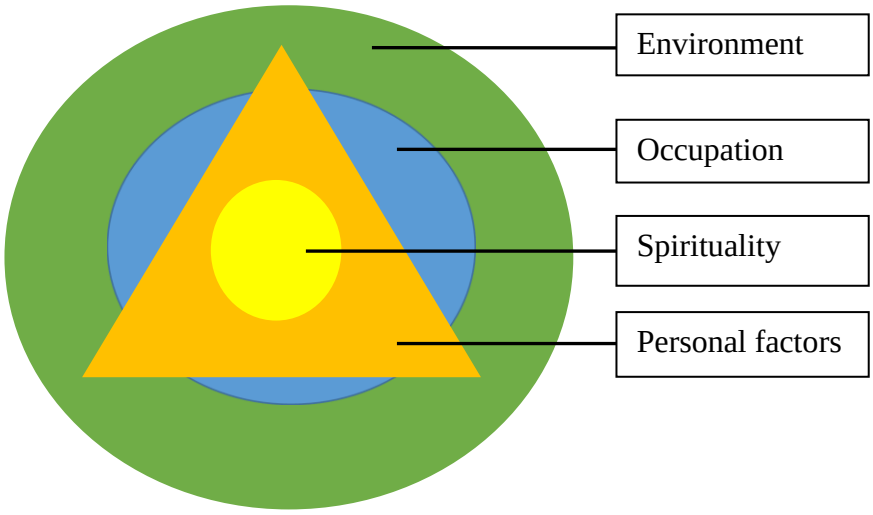

Figure 35. Depiction of the Canadian Model of Occupational Performance adapted from Canadian Association of Occupational Therapy, 1997

The environment is mostly written about in small pieces as it relates to the topic at hand for that chapter. A few examples include "…client resources lie in environmental conditions" (p. 72) or "What were the benefits of client participation in occupational therapy for society?" (p. 115), "Are some settings more or less conducive for enabling occupation?" (p. 147). These tentative statements and questions showed that the profession still did not have a good grasp on the role the environment played in occupation.

One clear limitation in this representation is that it only tolerated an occupation to occur when there was direct interaction between the person and the specific environment that occupation was in. It did not 'tolerate' indirect influence from another space or place or time. For example, a teenager may have their mother's voice from the earlier phone conversation in the back of their mind when driving home on a stormy night to 'drive carefully and watch out for cyclists caught in the rain'. This interaction from another time and space could influence the performance in the here and now for this teenager. Drawing on this example, we also see that the model does not capture the dynamic of time and that the model overlooks the way occupation is experienced in everyday life. It took another six years before the next revision of the model.

The Canadian Model of Occupational Performance and Engagement (CMOP-E 2007; 2013)

The CMOP-E, the next and current revision in this model's life, is the sequel and companion to CMOP with over 60 Canadian authors. This version does a tremendous task in raising more complex notions like diversity, individualism and collectivism, language, economy and regulation in relation to the sociocultural concept of justice. This model recognises that practice has become far more complex than the 1997 version showed. The way person and environment are distinguished as being different from the older versions are captured in Table 6 below, however the differences are slight if any. The models' diagrams are explored using some basic elements of image composition and visual perceptual cues, such as Gestalt principles, to understand these theory pictures are trying to communicate.

Table 6: Depiction of the person and environment between the 1997/2002 CAOT guidelines and the 2013 CMOP-E. Adapted from Townsend, E., Polatajko, H. (2007). *Enabling occupation II: Advancing an occupational therapy vision for health, well-being and justice through occupation*. Ontario, Canada: CAOT Publications (p. 6)

	1997/2002 CMOP guidelines	**CMOP-E**
Person & Occupation	Person presented at the front implies that occupational therapy's primary concern is with the individual, not occupation or environment[153]	The person has contemplative priority over the environment and occupation. Occupation as both a core domain of concern and also the concept that delimits concern for people and the environment. The orthographic representation is not done correctly[154].
Environment	CMOP with environment at the back implies that the environment is external to occupations and persons and is of secondary concern	CMOP-E side slice shows the environment as larger than other elements, and it depicts occupation, persons, environment, spirituality as interconnected.

[153] The principles of art composition state that objects in the centre of an image at the front are considered the main subject. This is known as the rules around use of positive space versus negative space (Hrkach, 2011; Simonetto, 2011b)

[154] An accurate projection of its cross section would not show the purple hemisphere because the triangle completely dissects it. However, for the sake of discussion, I will adopt the projection as accurate.

In this next section, I continue to approach the diagram as an image of something and interpret its look and configuration using art theory and semiotics. The composition of the CMOP-E has the fundamental look of the original CMOP. It is a stand-alone, axially symmetric three-dimensional figure. The grouping of 'things' in the CMOP-E is much like the other models; the environment, occupation, and person are separated monistic components, which indicates difference and the existence of internal and external processes or things (Dekkers, 2015; Gilbert, Boulter, & Rutherford, 1998; Gold, 1992). Connection appears to be conveyed through tightly nested, disproportionate figures, showing one sits within the other; the spirit sits in the person, the person in the occupation and the occupation in the environment. The person, the environment and the occupation, or occupational performance are each presented as separate from the others using solid lines. The uneven placement of the shapes within each other (not flush), suggests the person component should have contemplative priority for the therapist over the occupation and environment, as explained in Table 6. The final shape present in the diagram is a smaller, embedded, light yellow circle centred in the triangle (spirituality). This central circle has what appears to be an imperceptible outline and shadow which may indicate it is a cylinder traversing through the hemispheres, but this is not clear.

Putting spirituality (Egan & Delaat, 1994) at the nucleus of the triangle seems to perpetuate the idea that spirit exists within a person and is removed from any connections to the outside world, despite the newer theory stating otherwise (Polatajko et al., 2007). I avoid using the term *core* to state its location, so as not to express spirituality as being fundamental or essential. It almost appears like a Christian worldview is perpetuated within the model through the division between the earthly (environment) and the heavenly (spirituality); the separation of the body, mind and soul. The use of circles and triangles and their connection to sacred meanings supports this idea (Lawlor, 1982; Lemanski, 2019; Lima, 2017). This critique is further reinforced through Descartes' partitioning of matter and mind, Newtonian mechanics on space and time, more contemporary quantum physics and positivist sciences as a basis to occupational therapy thinking.

This separation of the body, mind and soul also reinforces positivist science as the basis of occupational therapy thinking (Joubert, 2010; Kinsella & Whiteford, 2009; Peters, 2011), and negates cultural perspectives where spirituality is a part of language or environment or the occupation (Smith, 2017). The position of the shapes, or the size of the environment, promulgates the view that the environment is dominant and

homogenously influences the other components (Lima, 2017). These underlying premises are not present in other cultures, such as the Māori of New Zealand/Aotearoa or the First Nations of Canada (Baillie et al., 2016), where spirituality can be found in the occupation (Smith, 2017) or the environment because people are one with the environment (McNeill, 2017). Furthermore, occupational therapy literature describes this model as dynamic where occupations are the bridge between a person and the larger, overarching environments and that a person's spirituality is at the very heart of who a person is (Polatajko et al., 2007). In fact I would suggest that the concept of spirituality is not well thought through from a philosophical perspective as it relates to occupational therapy. Others have held similar views that it needs more research from a therapist point of view (Egan & Swedersky, 2003) or from a person perspective (Maley, Pagana, Velenger, & Humbert, 2016; Schroeder et al., 2016).

The dynamic nature of the CMOP-E exists in the manipulation of the concepts in the user's mind rather than in its physical nature. That is, none of the shapes 'move' to denote occupational performance, as with the PEO model (Law et al., 1996). It is only through mental manipulation that this understanding occurs. Perhaps this is something positive that this model offers, that through its mental manipulation a story is created about the client through interpretation of the parts, and the underlying dense theory.

The environment consist of the social, cultural, institutional and physical layers. The changes between the earlier conceptualisations of the environment in 1997 and the 2007 texts are that time exists, and that there can be change in these environments over time. The 2007 version groups the four environments into the physical and social factors, with the institutional and cultural environments seen as special parts of the social environment. There is acknowledgement that each affects the other and together they are affected by and affect occupation, but how is not made clear. Examples are given of how the environment plays out with a person's occupation; a gardening scenario is given to illustrate the physical environment. This is literal and looks only at the objects and setting the gardening occurs in and the influence of the other environments on the physicality, so much is left to interpretation.

The CMOP-E briefly touches on the notion that the environment plays a pivotal role in the relationship between occupation and the health of individuals and societies. Townsend and Polatajko (2013) stated that "…we are only concerned with the occupational person and the occupational influences of the environment; those aspects

of person or environment that are not related to occupation are beyond our scope" (p. 24). This very broad statement allows for many interpretations from narrow to highly inclusive views of what influences occupation, which does allow for multiple applications. In critique of this, it gives the impression that the environment influences the person's occupations and not in a reciprocal fashion where a person can have an influence over their environment. It also gives the impression, as discussed in the last section, that the environment is only influential when a person is engaged in an occupation within it and not indirectly or diffusely. For example, a person may have limited occupational choices but may also not be aware of this limitation or what should be a choice for them, i.e. through policies that may exclude participation in an occupation. In other words, a person may not know they are less privileged if they have not seen what is available to others who are more privileged. In this way the influence on occupation from the environment is indirect and unnoticed. Furthermore, Townsend and Polatajko mention the term occupational history, where a person's occupations can change over time. But this is still in the context of a person's progress from occupation to occupation over the course of their lifetime, rather than the indirect way time may shape a person's occupations. For example, a person may start quilting, having learnt this was an occupation undertaken by a respected ancestor. Perhaps in stating the boundaries of their scope for the text, Townsend and Polatajko have negated or diminished the effect that the bigger environmental context can have, exerting indirect influence over a person's occupational choice, organisation, performance and satisfaction. By not seeing that the world, time and being are all wrapped up in one, the model itself misses a key part of how a person exists in the world.

CMOP-E's broad scope about the environment does take a further step towards drawing in more detail on which aspects of the environment affect occupation or enable social change in communities, organisations and populations. The claim is that enabling social change at the macro level targets "…social structures, systems, culture, and the built and natural environment" (Townsend, Cockburn, Letts, Thibeault, & Trentham, 2007, p. 155). However, it does not lend itself easily to groups or people who are alienated or occupationally deprived by the society they are in *because of* the occupations they engage in. The CMOP-E provides a view of the person or groups as involved in occupations that support health and society versus the occupations that are less favourable or not socially sanctioned (Twinley, 2012), such as tagging or graffiti-ing (Russell, 2009), or occupations associated with addictions (Gish, Kiepek, & Beagan,

2019; Kiepek, Beagan, Rudman, & Phelan, 2019; Kiepek, Phelan, & Magalhães, 2014; Sy, Bontje, Ohshima, & Kiepek, 2019). Here we see tensions arise between a person's occupational choice and the desire for occupational therapy to enact social change. For instance, a person may choose to be homeless and so occupational therapy's drive to eradicate homelessness might not be successful.

To capture the changes that have occurred over the course of the model's development, I analysed the terms and their descriptions/definitions, and how they have emerged or merged over time. The red arrows, in Table 7, show how the concepts have merged or split over the versions and shifted in their 'location' in the model. Noticeable in Table 7 is the enduring terminology of the occupation or performance components (self-care, productivity and leisure). The personal factors have stayed much the same through splitting and recombining concepts. In contrast, the broader more expansive idea of the environment, from the 1983 model, disintegrated into the physical, social, cultural and then institutional parts and then reconstituted into fewer categories.

Table 7: Change over time in the development of the concepts in CMOP-E. Red arrows show where concepts have moved across the model versions.

Concept	**1983 Reed and Sanderson HOM**	**1991 CAOT OPM**	**1997 CAOT COPM**	**2013 CAOT CMOP-E (2nd ed.)**
Person	Individual	Individual	Individual/person	Individual/person
	Sensory	Physical	Physical	Physical
	Motor			
	Cognitive	Mental	Cognitive	Cognitive
			Affective	Affective
	Intrapersonal	Spiritual	Spirituality	Spirituality
	Interpersonal	Socio-cultural		
Occupation	Self-Maintenance	Self-care	Self-care	Self-care
	Productivity	Productivity	Productivity	Productivity
	Leisure	Leisure	Leisure	Leisure
Environment	Adaptation to and with the environment	Physical	Physical	Physical
		Social	Social	Social
		Cultural	Cultural	(cultural + institutional)
			Institutional	

Conclusion

Much history precedes the inception of the Canadian Model of Occupational Performance and Engagement as it is known today. Some of this history I captured in Chapters Three, Four and Five on the contextual history and how practice changed either in response to, or alongside the view of the person changing. These chapters also showed what the significant contributions were to ideas in occupational therapy practice. This chapter has examined the CMOP-E alone and has found that over the course of almost 40 years, little has changed in the concepts portrayed through this

model. Concepts have merged or split off to be joined with other concepts, but the overall look and feel of the model, as well as its diagram, have not changed despite the recognition that practice recognises the complexity in people's lives more readily. Overall this model considers a person and environments through abstracted categories that leave little room for understanding the everyday experiences of occupation or ontological nature of a person engaging in their world. I capture the ontological view in Chapter Nine after also looking at the Model of Human Occupation in the next chapter.

An assessment of Tom using CMOP-E

Assessment of Tom using CMOP-E headings

Using the headings of the CMOP-E this would be my fundamental assessment of Tom.

Occupation: Cooking a meal (D630 on the International Classification of Functioning, Disability and Health, 2001). Because he lived alone, we can assume his meal preparation was for one person and that the meal would likely have been functional versus meaningful, such as a dinner occasion with a social demand that might require a more complex meal outcome. We do not know from Tom if he had overall life goals or aspirations for himself and his engagement in occupations. Given his recent move, we could assume that he was still establishing his routines, and familiarising his occupations in his new home environment.

Self-care: Tom had a self-devised strategy for dressing revealing some occupational mastery, adaptation and independence. Dressing took half an hour which he was not satisfied with and socks were difficult and performed with one hand. Tom chose socks that were loose at the top for easy pulling on. He was able to tie his own shoe laces.

Productivity: Tom is engaged in the task of peeling a potato which sits within the activity of preparing a meal which would be considered part of a cooking occupation. Tom did not work. Since his stroke, Tom's repertoire of occupations had narrowed significantly and he may have felt a loss of identity in not being able to return to work and perform his usual roles and patterns of behaviour.

Leisure: Tom discussed few leisure occupations which may have enriched his day-to-day life. One Tom mentioned was having dinner with others in the village. The village he was in did offer numerous formalised opportunities for leisure occupations, but he may not have had enough time in the village to familiarise himself with these.

Person: We know a little about Tom's occupational history. We may assume that he was raised in a family that could afford to send him to gain a qualification in journalism or English for his subsequent job. Tom presented himself as well dressed and talkative about his task and the frustrations experienced in his performance. He is in an occupational transition point in his life, brought on by the onset of his disability. This transition occurred at Tom's micro, meso and macro levels and led to occupational loss

(e.g. work, body function) which may have impacted on his health and well-being through social and emotional damage. This likely would have affected his level and style of participation in the wider community and reduced his engagement with others.

Cognitive: Tom appeared to have difficulty locating the potatoes and peeler. This could be due to his eyesight, or visual perceptual difficulties such as figure ground subsequent to his stroke. It may have been due to some memory issues around locating objects, also suggested by his discussion about leaving keys behind. This would only be confirmed if further assessment was done. Tom's speech showed the effects of his expressive dysphasia. Tom's dressing technique indicated that there was capacity for new learning and new habits to be formed to help with his overall occupational behaviour.

Physical: Tom's voluntary bimanual upper limb movements were hampered by his right hemiplegia. His right arm appeared to have some flexor pattern spasticity and/or shortening of musculature around the shoulder girdle, and hand joints. His elbow appeared to be able to straighten to about 170˚. He was able to flex his elbow to bring his hand into the task and he could release his grip but his movements were slow and stiff with clear weakness in all his right upper limb movements. In the observed task, dyspraxia did not seem to be affecting Tom significantly. He was able to mobilise in his home unaided but used the walking frame outside. He was able to transfer independently from sitting to standing.

Affective: Tom's speech seemed a little flat throughout the task, which possibly indicated a lowered mood. Tom may have experienced depression often associated with a stroke. His downcast mood could also have been due to recovery fatigue and a change to his occupational balance brought on by the change to his patterns of time use. Combined with his physical difficulties, Tom may have found it hard to experience 'flow' during his occupational engagement thereby limiting the growth of his satisfaction with his capacities. He may also have felt alienated due to his changed physical appearance, speech, and newness in the village. He did not appear to be experiencing any anxiety in the observation or through what was said. It was not clear whether Tom also experienced mental illness of any sort.

Environment: Overall, there seemed to be optimal fit between Tom and his physical environment despite him experiencing some minor difficulties in using the chopping board. However, from a motivation and interest point of view, there was a lack of

environmental fit given Tom was simply peeling a potato and this activity is not generally considered a meaningful one.

Social: At meso level in his social environment, his previous occupation was as a radio interviewer and was a divorcee. In Tom's micro environment we can state that he had a partner but lived alone and had a daughter who lived in Australia. It is unclear from what we know if Tom's partner is available to support him the way he needs at the moment. The retirement village offered opportunities to expand his social network of friends and potential supports. This was indicated by his statement about having dinner at another resident's place. The macro environment structures have enabled Tom to sell his home, and purchase a retirement village unit and to be supported by the state as he is no longer able to work or drive.

Institutional: Also see macro social environment above. As Tom is still of working age (under 65 years), we can assume that he now receives government social welfare or supported living payments. The village he lives in provided many amenities and services such as a bus service all included in the costs of 'purchasing' a unit on the site. Tom was able to access the public health system giving him tax-payer funded access to emergency and rehabilitation care in hospital and the community. We can assume that Tom received a high user community services card after his stroke allowing him free or subsidised healthcare and medicines. This may bring some peace of mind to his ongoing health and well-being concerns.

Cultural: Tom lived in suburban New Zealand on a peninsula known for attracting a 'retired' community. Tom was of European/New Zealand descent and likely held many of the westernised views of individualism, independence and personal responsibility. Aside from this we do not know what Tom's values or beliefs or perceptions were per se.

Physical: Tom lived on his own in a small 2 bedroom, single storey, level-access, retirement village unit. He was doing his meal preparation in his home kitchen which was compact and enabled his performance to be effective and efficient. He used the peeler and knife safely and appeared to have only minor issues with the one handed chopping board. He was able to overcome the problems it presented and continued with the task to completion.

Spirituality: We could say from what we see and hear about Tom that he had a drive to survive, to keep going. He also seemed to find meaning in being able to give back to someone else (researcher, health professional community), through sharing his stories and demonstration of his performance.

Speculative assessment based on current information:

Tom had some capacity and competence to engage occupations, but was hampered by his hemiplegia and speech difficulties in social interaction. Tom's visible right hemiplegia was a hindrance to performing occupations with optimal performance and satisfaction. His right upper limb would have needed some further rehabilitation to either restore some more function or maintain his current range of motion and strength to prevent increased spasticity and possible contractures. Because of these limitations, Tom may have been less inclined to engage in social occupations which might have matched his identity prior to his stroke, or because of the time needed to complete his usual pattern of behaviour, he may have felt fatigued.

Tom's performance in his kitchen, whilst not unusual for someone in a new home, seemed to indicate some level of either visual perceptual or cognitive issues which would need further observational assessment or standardised test. This is supported through his statements about the self-monitoring required to remember to take things with him when leaving the house. Tom appeared dissatisfied with the speed of his task performance due to a lack of mastery over the objects being used which might benefit from some retraining or adaptation. In this environment, he appeared safe with mobilising and there were no obvious safety issues to be identified. Tom appeared in relatively good spirits and was able to talk whilst doing the activity.

Chapter 8 The Model of Human Occupation

> *What is MOHO?* Quite simply, MOHO encompasses these four elements (volition, habituation, performance capacities, and environment) and explains how a person engages in occupation as a result of the dynamic and reciprocal interaction between them. (Taylor, 2017, emphasis original)

Introduction

This chapter, like the last, takes a closer look at the Model of Human Occupation and uses the environment as a central thread for analysis. Chapters Three to Five, on the contextual influences on the initial model development, support this chapter as with the last chapter. However, some specific history pertinent to my discussion on the Model of Human Occupation is covered, as well as some key authors who may help uncover where the model's main framework and concepts came from. As with all the historical elements in this thesis, I start at, or close to, the beginning and progress to the current standpoint. Again, at the conclusion of the chapter I offer an assessment of Tom, this time using the MoHO model.

The Model of Human Occupation, first published through a series of four articles (Kielhofner, 1980a, 1980b; Kielhofner & Burke, 1980; Kielhofner, Burke, & Heard, 1980), is today one of the dominant occupation-based models in occupational therapy (Ashby & Chandler, 2010). The above opening quote captures succinctly what the model is, and what it centred on since its inception. Its first authors Gary Kielhofner, Janice Burke and Cynthia Heard (Kielhofner & Burke, 1980; Kielhofner et al., 1980) had been developing their key concepts and literature as precursors for this model since the mid-late 1970s-1980 (Lena Haglund et al., 2000; J. Lee, 2010), as Masters students under the supervision of Mary Reilly at the University of Southern California. They published a series of four articles explaining the model in 1980 The MoHO provides a synthesis of major theories used or developed by occupational therapists, as well as psychology, anthropology and sociology theories present at the time. The model has had a significant amount of research conducted on it and with it, compared to other occupation-based models, both in the United States and abroad in the United Kingdom and Scandinavia (Haglund & Kjellberg, 1999; Kielhofner, 1984; Lee, 2010; Lee et al., 2012; Lee, Taylor, Kielhofner, & Fisher, 2008), with an entire chapter dedicated to the evidence for practicing from it (Taylor, 2017). Many assessments have spawned from the model that contribute to further research and corroboration of the model's worth for

clinical practice. To date, fourteen assessments are available with varying revision dates from 1998 to as recent as 2014, but I will not be exploring these in this thesis.

This chapter begins by describing how the model appears to have developed in the 1980s. I use the term *appears*, as it is less evident than that of the CMOP-E, but it has a clear genesis point. I will mainly stay focussed on the earlier versions of the model as these set the foundation for what the model is today. Following this is an exploration of two key terms that appear throughout the model versions, with a brief foray into 1930s and 1970s psychology to show where these terms came from. I believe the strong links to psychology are present due to Kielhofner's qualification in psychology prior to gaining a degree in occupational therapy. However, there are glimpses of something akin to an ontological perspective in some of the ideas. My intention in this chapter is to show how a model based in systems theory cannot explain what it means to be a person engaging in occupation. Alongside this critique, the ontological gaps in the model and its diagrams are shown. Where the last chapter primarily used semiotics to comment on its diagrams, this chapter will focus more on the systems theory angles.

The model development: Person is a system

In the 1970s some key occupational therapists questioned whether occupational therapy was functioning with an adequate theoretical base (Gillette, 1971; Johnson, 1973; Mosey, 1970; West, 1968; Yerxa, 1978). A call went out to advance the theory base to include an understanding of man's ability to function in his environment. Some saw this as the 'derailment of occupational therapy' through the profession's relationship with the exacting sciences of the medical model, its alignment with rehabilitation and the devaluation of arts and crafts (Shannon, 1977). However, I will show the uptake of this call was tremendous.

Gary Kielhofner [1949-2010] was one of many students[155] at the University of Southern California (USC) completing their Master of Arts (Occupational Therapy) in the same faculty as Mary Reilly, who herself had an interest in child development (see Appendix D for the MoHO links). Reilly was interested in developing an occupational behaviour theory and saw that models presented a tool for conveying knowledge (Reilly, 1962). Reilly, as well as Jean Ayres, has been attributed with developing conceptual frameworks on normal human beings, not those with disabilities (Peters,

[155] Kielhofner came to the occupational therapy programme and was one of eventually more than 90 students at USC completing theses, at the time Mary Reilly was either present as tutor, or examiner.

2011), and some of their early work influenced their students. Some of the work that the occupational therapy students completed is in Table 8, many of them acknowledging Reilly's guidance in their work. The bolded words in Table 8 reveal the clear links between their overall focus on the key constructs and concepts as proposed by Mary Reilly's occupational behaviour paradigm. The fundamental tenets of the occupational behaviour model were the centrality of development through play and work, that humans needed to have competence and mastery, the nature of occupational roles and the relationship between health and human adaptation (Van Deusen, 1988). Reilly, whose connections with USC started in the late mid-1960s, argued that occupational therapy research should focus on notions of achievement and mastery, creativity, abilities, habits, skills, motivational states, interests, adaptation, and activities as a whole in a rehabilitative milieu with a focus on work-play processes (Reilly, 1966a, 1966b; Van Deusen, 1988). These terms are a mixture of the values inherent in arts and crafts as well as the language of psychology, behaviourism and rehabilitation. The belief was that if normal roles were understood, then dysfunction could be addressed in therapy.

Reilly's students' theses all followed a similar structure, which included introducing the topic, stating the assumptions, the hypotheses, problem statements, defining terms, limitations, methodology, thus reflecting the research standards at the time. It seems that these models developed using the research methodologies to hand at the time, which were based in a quantitative paradigm. Each contained a chapter on the structure and organisation of the model building process, explaining the units and underlying systems theory influence. The general system theory is a logico-mathematical discipline applicable to all sciences concerned with systems. Each also contained chapters testing the model using a case method design. Some research, such as that by Matsutsuyu and Burke, was carried on to the development of assessment batteries based on their own theses' model. Having read these theses, they appear to have seized on a common method without necessarily considering the philosophical assumptions that underpinned it[156], and whether they fitted occupational therapy's views of what it means to be a human being. As Leonard (1989) stated "to consider a methodology without an ontological commitment to a view of person is to beg the question" (p. 41), and so the

[156] A search for the truncated word 'philosoph' in all the theses listed in Table 8., showed that this word appeared in only one of them using it to explain their research stance. Less than 10 others contained the word, but in relation to the history of moral treatment or in the title of references.

MoHO set off on a course supporting the Cartesian view of the person existing and responding to an environment separate from them.

Kielhofner eventually became the sole author on what became the Model of Human Occupation (MoHO)[157]. In developing the MoHO, it would seem that Kielhofner not only drew on his and Burke's work (1975), but also on that of Sweeney (1969), Moorhead (1969), Matsutsuyu (1968), Robinson (1975), Larrington (1970), Heard (1975), Dunning (1972), De Renne (1975), and potentially some others whose work I have not been able to directly source. Regardless, it seems that the MoHO is based on an extensive research base that is situated well within the general systems theory, given this is the predominant underlying model used for the content and construction of the models in the theses tabled below.

Table 8: A sample of Master's of Arts (Occupational Therapy) theses from the University of Southern California completed under the mentorship or assessment of Mary Reilly. Bold fonts indicate the key terms that have pervaded occupational therapy and specifically the MoHO.

Date	Author	Title
1967	Shannon, P.	**Work adjustment** and the adolescent soldier
1968	Matsutsuyu, J.	An assessment of **interests**
1969	Sweeney, C.	An assessment of **occupational choice**
1969	Moorhead, L.	**Occupational history**: An exploratory study
1970	Wirth, F.	An investigation into the **body-image model** and the use of drawing to elicit information regarding that model in occupational therapy
1970	Pezzuti, L.	An exploration of adolescent feminine and **occupational behaviour**
1970	Larrington, G.	An exploratory study of the **temporal aspect of adaptive functioning**
1970	Liptak, J. S.	An eclectic **developmental model**
1972	Dunning, H.	**Environmental** occupational therapy

[157] Work on the model continues posthumously through people such as Renée Taylor, researchers and a team of dedicated people at the MoHO Clearing House (https://www.moho.uic.edu/default.aspx).

1972	Parent, L. H.	The effects of **environmental deprivation** on the patient **behaviour**: An exploratory study
1973	Black, M. M.	The evolutions of **social roles**: a perspective on fantasy
1974	Hillis, D. K.	**Occupational role system**: **Expectancies** and performance
1975	De Renne, C. A.	A **general systems theory approach to occupational therapy intervention** with the physically disabled
1975	Heard, C.	**Adaptation** in the chronically disabled: A model of **occupational role acquisition**
1975	Gold, F.	The moral **development and play** of the child with minimal brain dysfunction
1975	Paulson, C.	Delinquency and **occupational choice**
1975	Robinson, A	An exploratory study of **rules and competent behaviour**
1975	Gary Kielhofner[158]	The evolution of knowledge in occupational therapy: Understanding **adaptation** of the chronically disabled
1975	Burke, J. P.	A model of occupational behaviour: The evolution of **role, personal causation and socialization**
1976	Schneiderman, L.	**Habit restructuring for daily adaptation** of the disabled
1977	Short, J. E.	Occupational therapy in **role dysfunction**

A model of human occupation 1980: The proposal

In 1980 Gary Kielhofner, Janice Posatery Burke and Cynthia Heard were involved in writing four articles (Kielhofner, 1980a, 1980b; Kielhofner & Burke, 1980; Kielhofner et al., 1980) proposing that the profession, being at a crisis point, needed a commitment to a single paradigm and conceptual framework based on human occupation. The opening statements of their first article drew on Mary Reilly's idea that a model is a representational, thinking tool with its usefulness based on its ability to order, categorise

[158] To date it has not been possible to locate an original copy of Kielhofner's thesis despite searching the USC archival site and through personal communications with other scholars.

and simplify complex phenomena (Reilly, 1962). This, I believe, was a mistake. It set the profession on a course that, until now, has not been significantly challenged and perpetuates a Cartesian view of a person as an uninvolved self, with a separate mind and body, in the external world. Reilly's messages, however, were consistent with many other disciplines expounding the benefits of conceptual modelling at that time, which perhaps made it difficult to steer away from the popular view. The assumptions expressed in Kielhofner and Burke's (1980a) introductory article were that:

- humans have innate tendencies and capacity to explore and master their environment
- through exploration and mastery man is able to symbolise
- occupation is a central aspect of the human experience
- the ability to find challenge and meaning in occupations is a powerful adaptive response.

Kielhofner and Burke wrote considerably about the role of the environment in their explanation of the input and outputs of the behavioural model, and their first article gives the sense that the environment was a critical element in occupational performance (Kielhofner & Burke, 1980). The system was seen to be adaptable to the environment through the reorganisation of the subsystems, consistent with views of general systems theory (Jenkins, 2013; von Bertalanffy, 1950a, 1972). General systems theory is described as the basis for the model, with the human represented as an open system (see Figure 37) The intention of the model was threefold, to:

1. provide a way of bringing various facts and approaches into a single perspective
2. provide a logical basis to include other concepts and practices
3. be a thinking tool to aid decisions on the relevant and appropriate concepts and techniques for a given situation.

Models based on system theory could be used for prescription, description, explanation, or prediction (Dekkers, 2015), where the latter three appear consistent with the intentions of the MoHO. Through the above intentions, Kielhofner was well placed to call for the field of occupational therapy to draw together those who generate and organise knowledge, and its clinicians who operationalise it in practice to make practice viable for the future. However, there were important aspects of practice that were not brought into the MoHO perspective with the same level of importance; that of people's

experiences, versus the objectified ‘subjective experiences’ that many health disciplines adopted.

The model and systems theory

In the next sections, I analyse how concepts, ideas and constructs in MoHO progressed to its current version to see if the they are congruent with general systems theory or extrapolated with questionable validity. The term ‘system’ or ‘unit’ is mostly used in relation to the person or individual as represented in the MoHO as a system. Systems theory, as discussed in Chapter Five, was heavily based in mathematics and physics, which were powerful sciences influencing biology in the 1940s and 50s. Systems theory (general, open and dynamical systems theories), dominant at the time in biology, was a way of explaining the processes and characteristics of living organisms (von Bertalanffy, 1950a, 1972). However, the operationalism and calculation of mathematics and physics inherent in systems theory is inadequate in relation to understanding complex human systems, such as in the MoHO.

Open systems were seen as aligning themselves with the basic philosophies of the profession; that through occupation and interaction with the environment a person could change their ‘sick minds’, ‘train attention’, and ‘return a person to normal society’ (Dunton, 1915). The MoHO and many other works in occupational therapy heavily reference biologist Ludwig von Bertalanffy and social economist Kenneth Boulding, as discussed in other chapters. Boulding’s suggested systems sat on a hierarchy of 11 systems in total. This hierarchy placed the human system in the top echelons, just below social and transcendental systems, where meaning, values and symbolism are the most important (Dekkers, 2015). However, meaning cannot be captured when it exists in the relationship between people and things. That is, people live in meaningful spaces where the space and place makes a person, or as Leonard said “world [environment] is both constituted by and constitutive of the self” (Leonard, 1989, p. 43).

System boundaries and environmental feedback

Already discussed in Chapter Five, systems contain boundaries that determine what things are inside and which are outside the system. An open system allows anything to pass into or out of it, whereas a closed system only permits matter to pass in or out of it, but not energy such as robotics or cybernetics. Sociologically, the utilitarian view of the closed system was criticised as too limiting (Bausch, 2002; Boulding, 1956; Rousseau, 2014) since the environment is seen to play a part. Along came open systems theory

which offered a non-mechanistic way for explaining human behaviour and thought, and created a view of a person as teleological rather than as an efficient machine. But, boundaries can be difficult to identify because an open system can be very dynamic, for example when a system manages its own boundaries (e.g. in organisations).

The original MoHO model described the human being as an open system with the environment, outside the boundary of the system, providing a feedback loop (Figure 36). An open system sees the environment as having a relationship with the system but is not part of the system (Dekkers, 2015). This view is fundamentally different from a non-Cartesian view of the world, and gives the sense that humans transcend nature, are masters of their environment and that the environment is there to serve people; this is how the MoHO describes it. The system in the MoHO is comprised of the information and the subsystems of volition, habituation and performance in hierarchical order. As a bio-physiological entity or organism, it is clear that there are systems at play within a body (cardiovascular system, endocrine system, skeletal system etc.). Taken as a psychological entity, other systems can also be identified (perceptual system, cognitive system, learning etc.). However, at a non-Cartesian, non-reductionist level, a human is more than just a system of conglomerated subsystems. Systems theory cannot account for the everyday, taken for granted experiences, the ontology of an individual's life.

The environment, in the first edition model, was made up of "external objects, people and events that influence the system's action" (Kielhofner & Burke, 1980). These three elements assimilated in the open system toward the ultimate goal of mastery and exploration of the environment, that in turn led to a triple outcome of creating a physical and symbolic environment, and one that transforms both itself and the environment (Kielhofner, 1985). The language of mastery and exploration were consistent with Reilly's sentiments some 20 years earlier (Reilly, 1962). However, the delineation between the environmental feedback and intake is not clearly described in the MoHO literature, and is sometimes portrayed with an arrow and sometimes not, as in Figure 37. Feedback, from a systems theory point of view, is described as the consequences of action on the results of the systems own output. If feedback is action on output, then in the MoHO it is the action on the mental, social and physical aspects of occupational behaviour, which seems like a double up of concepts. Instead, feedback is shown to be the thinking that occurs based on what the consequences of the systems actions were. Weiss (1969, 1971) was clear that when a unit is analysed, then all the effects of that unit is seen as 'actions'. By deliberately understating the wider field, these actions are

revealed as being 'interactions'. A wider field in systems theory and occupational therapy accounts for the environment. Here we begin to see an extrapolation of systems theory thinking to fit the needs of an occupational theory. Feedback is from the environment, thus intake is the information a unit has about the environment, which is congruent with the human system shown as a thinking and doing entity. Nevertheless, the model is weakened when questions such as 'what is the experience of a phenomena in everyday life?' are applied.

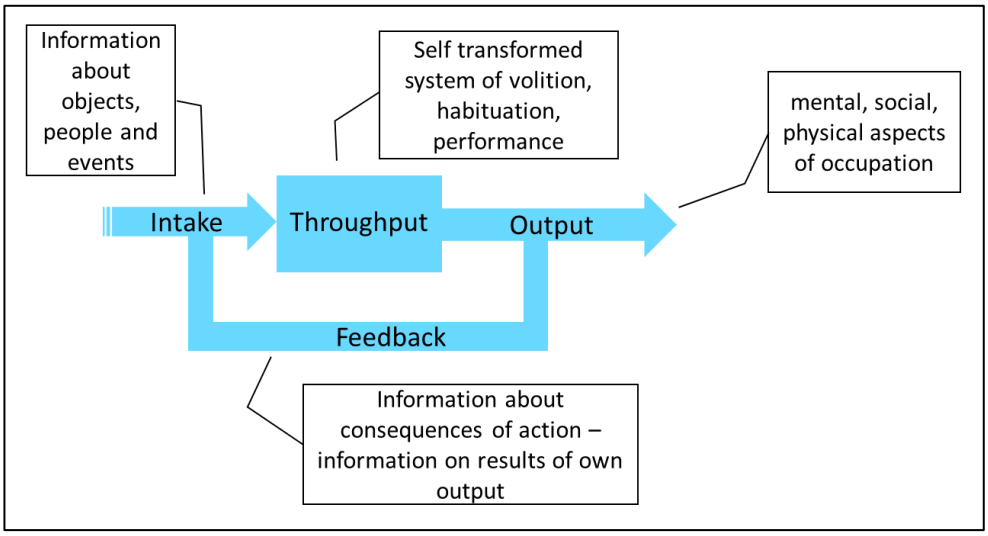

Figure 36. The human being as an open system with intake portrayed as information about objects, people and events. Output is the occupational behaviour. The environment provides feedback for throughput, to the subsystems of volition, habituation and performance in hierarchical order. Adapted from Kielhofner & Burke (1980).

Adaptation: The parts do not predict the behaviour of the whole

In addition to the above critique, the MoHO stands on tenuous ground when the model is thought of as an adaptive system, even though many of the USC theses had adaptation as a central theme (see Table 8). The general systems theory sees humans as adaptive agents existing with a bidirectional interaction with their environment[159]. The person is seen to seek elements in the environment that satisfy survival and well-being needs (Morgan & Smircich, 1980). However, this contextual approach is predominantly concerned with the unidirectional view of how the person adapts to the environment, not how the environment and person evolve together. For example, some environments will not create a simple causal relationship, and any such association is unfounded (e.g.

[159] Von Bertalanffy credited W. Ross Ashby (1954) for the work in *Design for a Brain* in which he attempts to solve the problem of the nervous system's unique ability to produce adaptive behaviour.

thinking about an upcoming exam environment can create current time stress; doing twice as much activity will not lead to twice as much health or strength). Furthermore, systems theory does not adequately explain the coupling of two or more systems, such as what occurs in co-occupation (Pickens & Pizur-Barnekow, 2009) or simple acts of parenting a child while doing another occupation. Thus, general systems theory is limited in explaining how dualistic, triadic, serial or any other permutation of relationships between systems, as parts of a unit's environment, account for change in any one of those systems.

Furthermore, there are limited ways of determining the relative strength of systems or subsystems if we want to identify the shifts or adaptation in the organism, in this case a person. Moreover, Kielhofner and Burke proposed that to understand the system a person must know its socio-culturally determined patterns of change that occur over time, such as the patterns of childhood, study and adult life (1980). However, the temporal aspects of systems theory, as in the MoHO, are predominantly linear in relation to an occupation at a lower level, or human development at a higher level. Overall, the MoHO can be critiqued as being a very simplistic view of the patterns of life, which does not account for the complexity and richness of how people experience their everyday worlds.

To explain the complexity, systems theory describes humans as complex open[160] or adaptive systems with nonlinear responses (Dekkers, 2015; Thelen & Smith, 2006). Nonlinear responses exist because these systems are full of near immeasurable interdependencies, as complex adaptive systems are not necessarily understood by having a perfect understanding of its subsystems. Explaining how the whole works by looking at the parts is difficult at the least[161]. Complex adaptive systems hold their complexity either internally (from many interdependent elements), or due to the emergence of unforeseen behaviour (requiring elaboration and new knowledge) (Dekkers, 2015). With a complex system it might appear that complex interventions are needed, but simple is possibly better (Taleb, 2012) giving the 'less is more' principle certain traction. One thing remains very clear, that the environment does not tolerate passivity. The environment requires constant action and activity, even to find peace and

[160] The ideas from complexity theory sit close to those of chaos theory (Bausch, 2002; Capra, 2007; Shenhav, 1995), and is a topic on the fringes of occupational therapy (e.g. Ikiugu, 2007; Royeen, 2003), but this will not be discussed here.
[161] On a side note, tornados are complex systems because whilst their behaviour is known, it is difficult to predict their exact behaviour, so how can this type of modelling be accurate in a human system?

rest through minimising certain demands and stimuli in the environment and enhancing those that promote rest. An example might be moving to a quiet room, closing curtains, getting ready for sleep or making a cup of tea.

Adaptation would be the best description of what occurs when the environment is at odds with the system. Von Bertalanffy (1968) discussed adaptive behaviour in his writing as occurring when the environment changes from what is expected. More often than not, as in biological systems, environmental change is gradual allowing for reasonable system changes back to its steady state. Rapid change, on the other hand, might mean adaptation is not possible. A contrasting view, not often considered in occupational therapy, is that some systems or people will benefit or thrive on disorder and stressors in the environment. Through stress, some systems become stronger and better, rather than breaking down or deteriorating through a process called hormesis. Proposed as being more fragile, the subcomponent may become weaker or die off, allowing the complex, less fragile system to become stronger. For example, a cell or even a person may die, but the larger organism or family or even society will adapt and persist. Thriving on adventure, risk and uncertainty is what has been termed the antifragile (Taleb, 2012), where the systems get better rather than merely being resilient or robust. In contemporary occupational therapy, this discourse could be in the 'inspirational' stories that reveal the power of occupation or those where a person has overcome adversity.

Applying some systems terms to the MoHO

In the first edition of the model, Kielhofner used many of von Bertalanffy's and Paul A. Weiss' terms such as subsystems or components (originally called subordinate systems), equifinality, hierarchy, negative entropy, purposefulness, steady state, differentiation, modularisation and centralisation. These terms have roots in the science of physics, chemistry and biology, extrapolated through systems theory to social, economic and political fields to explain such things as human behaviour. I did an extensive analysis of how these terms were applied in the MoHO. Examples of terms adopted and adapted by Kielhofner from systems theory, as highlighted in Appendix H, are purposefulness, potential and spontaneity, with deviation away from the systems theory definitions and descriptions. However, it is worth noting that words such as purposefulness have a long history in occupational therapy and their meaning is commonplace to the profession and may not need explanation.

Function

Whilst Kielhofner describes and defines numerous terms in accordance with the general systems theorists, he fails to apply some of them to a person as a system in the model, or in the same way that systems theorists had defined them. For example, the term function in early systems theory is about the mathematical use of the term. That is, function is transformation of an input into the output, often designated by symbol f. Function, in systems theory, is also about how something can be used or what purpose it fulfils, for example, the function of a car is transport, and electricity is energy. Subsequently the question that arises is what is the function of a human? A non-metaphysical answer would be, to become a bigger human. There is very limited use of the term function in systems theory as it is understood in contemporary occupational therapy; as the gerund 'functioning' or working in a proper or particular way. Dekkers (2015) describes function as a rather abstract description of the output of a process, a contribution of the system to its environment, which is also not the same way that Kielhofner has employed it.

Entropy

Likewise, the systems theory term of negative entropy is a misnomer, as entropy can never be less than zero. A more likely explanation of negative entropy is that it is, in a simplistic view, about increasing order. Interaction with the environment is what leads to negative entropy, or increasing order. From a physics point of view, negative entropy has been described as potential energy in an organised system or as the "…entropy deficit of an ordered subsystem with respect to surrounding chaos" (Quarati, Lissia, & Scarfone, 2016, p. 1). Ideas of an ordered and disordered system were not applied in the MoHO, nor did it acknowledge that for a disordered system to become ordered, energy must be put in, thereby obeying the laws of physics and thermodynamics. From a therapy viewpoint, this can be hard to describe. Simplistically, a disordered subsystem (broken bone) would interrupt the order of the entire system (human), requiring energy input into the system to re-establish order and a steady state creation (nutrition, use of crutches, compensation with other limbs which in turn would increase energy expenditure from the person and external modalities such as the application of ice packs etc.). However, this is a relatively straightforward application of some of these constructs and would be harder to apply to something like low self-esteem as a disordered subsystem.

Steady state

The processes described within systems theory, and particularly in the MoHO version of systems theory, have a reliance on stability in the environment. Overall the environment we live in presents regularities, rhythms and a certain amount of predictable repetitiveness such as day/night and seasonal cycles. However, there are times when it is disordered and irregular. Understanding the system's responses becomes more complex when the disorder sits within the environment itself and is affecting the system. For example, the sudden disruption through earthquakes or other natural disaster, drought, or the outbreak of war. There are no theories describing such things, nor which subsystem is going to adapt in response to environmental disruption, or even how. The systems theory fails to account for any causal explanations when the environment is no longer regular and predictable in relation to humans. Thus, as discussed earlier, the predictive nature of the system as a model is unconvincing, as systems theory, in all its varieties, does not describe how *humans* may maintain a steady state during such extreme 'external' events.

The importance of environmental influences

The environment in the 1985 edition was primarily based on the writing of Roann Barris (1982) who used the early MoHO articles (Kielhofner, 1980b, 1980a; Kielhofner & Burke, 1980) to expand the emerging body of knowledge to a theory base for occupational therapy. Barris (1982) explained, "the process of choosing and occupying settings is based on continuing resonance between the human system and the environment" (p. 643). Barris suggested that a person initially has urges to seek out and explore novel settings that are compatible with their interests and values, and that environmental press, population density, the availability of objects and their properties shape the habituation and performance subsystems. Overall, Barris' contribution is unclear in the MoHO and her work[162] does not present well defined open systems ideas, but the ideas of the person, as made up of subsystems, being affected by their environment is clear.

Thus, the environment concepts formed from various contributions from the early 1980s into the 1985 version. These varied contributions might explain why the environment section of the MoHO seemed to lack the overall systems theory focus, despite it being key in the feedback process for performance. For Kielhofner, the open systems theory

[162] Authored books and articles in the field of psychosocial occupational therapy practice.

created a vast field of opportunity to show the complexity of human behaviour and to "…make the clinicians aware of the many levels of function that are potentially involved in disability" (1985, p. 10) through the explanatory tool of hierarchical phenomena. The environment was understood to be a place of constant change, with the system and environment existing as a dynamic network of inseparable relationships (Kielhofner & Burke, 1980). These views show attachment to the behaviourist perspective. It is a perspective with causal explanations for the self and world as objects, and the environment as 'out there', away from the person, and containing entities that might create different behaviours, or occupational performance.

That the environment is external to the person is a common view held within all of the dominant models in occupational therapy. However, the important influence of the environment on the effect of the system thrust this element into much greater visibility. Around this time, the environment was explicitly woven into occupational therapy teaching at places like the University of Columbia (1988), a preeminent institution at the time with many important faculty members[163]. Their Master's of Science programme emphasising modalities such as orthotics. Adaptive equipment was present, but also architectural changes, microcomputers, environmental control units, group dynamics and the family system, augmentative communication and modification of the physical environment. The emphasis was on adapting the physical environment to the person. Having examined the Columbia University course guides from 1941-42, 1950-1951, 1962-1963, there was no environmental focus included in the teaching programme before this time (Columbia University, 1941, 1950, 1962). Furthermore, in line with open systems thinking, occupational behaviour was seen as being directed to and influenced by the environment. Open system processes in relation to the person were those that were arousal-seeking[164], matching interests and values, adapting to press, and range expansion (Kielhofner, 1985). The environment in the MoHO was, and still is, conceptualised with core layers of objects, materials or artefacts of daily life (see Figure 37).

Each layer had a dimension of complexity attached to it, signalling that not every idea had been crystallised in the model. Alongside this, the environment chapter is difficult to navigate with competing, complex statements, inconsistent word use and ideas left

[163] Members included Janet Falk-Kessler, Cheryl King, Barbara Neuhaus, P. Millar, and Ann Mazur-Robinson.
[164] The concept of arousal likely stemmed from Dunning (1972) and Parent (1978) who did research under Reilly's guidance.

half-finished. The objects layer had the dimensions of availability, complexity, flexibility and symbolic meaning. All these dimensions, according to the MoHO, are measurable, and ontic in nature. A capitalist, western worldview is supported through the explanation that the symbolic meaning dimension is about power, prestige, status and independence. For example, Kielhofner wrote, “In adulthood, possessions are often a manifestation of power and independence” (1985, p. 48). Naming or categorising the dimensions within these layers potentially led to a limited view of the interactions or could be due to a limited view or desire to explain something that is complex, individual, and sometimes even magical.

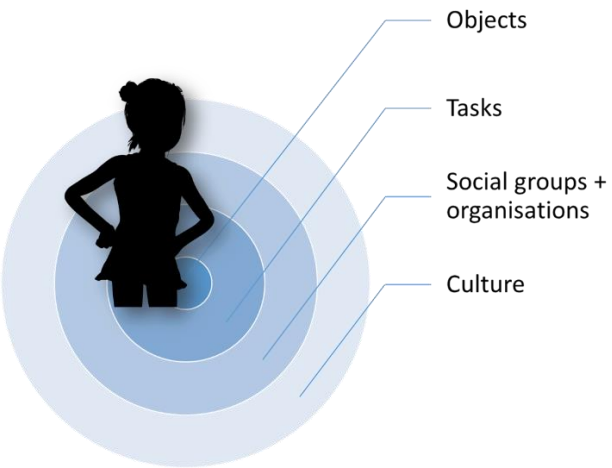

Figure 37. Model of Human Occupation environmental layers and the human system
Modified from Kielhofner (1985, p. 43).

The 1985 textbook gives a comprehensive explanation of the various contributions to press and arousal that each dimension of the environment offers. It clearly indicates the shift from a general open system to one where each layer of the environment “has special attributes that illuminate the system/environment interaction” (Kielhofner, 1985, p. 45). The layers described as a hierarchy influenced a person’s decision to encounter surroundings and subsequent performances within them. This is in accordance with the systems view that the environment is the feedback, input to the organism. The outer layer determines the groups that are available and valued by the person, groups choose and arrange the tasks and likewise tasks define what objects are used and how. Constraint occurred from lower levels onto higher levels, which implied that the higher levels were superior, more powerful. The term constraint also suggested this action must go to the next adjacent, subordinate level and ignored the idea that an object can influence or create a culture. For example, turntables transformed the music on traditional 1970s vinyl records into percussive beats, extended breaks and scratching

that became the culture of hip-hop; or a modern example of cell phones with their hand-held social chat rooms that use a language of ‘text-speak’.

The very early, broad, abstract view was developed further in the subsequent second edition text book (Kielhofner, 1995). Which brought social-psychology’s terms of press (Murray, 1938) and affordance (Gibson, 1979) into the realm of occupational therapy. These terms are still in use to date in occupational therapy but not to explain personality, as was Murray’s original intent with the term press (Pervin, 1968). Within psychology, these terms are commonly linked to organisational or vocational behaviour rather than to explain many situations, as in occupational therapy. More discussion on the evolution of these terms appears in the next section, but what this shows is that there was more reduction of the environment into a position of power over the person, by giving it the characteristic of agency. Additionally, the concepts of the environment have stagnated and become shadowed by research on occupation.

The model: Versions four and five

Little has changed in the depictions of the environment over 32 years of the model development. Table 9 shows the evolution of the MoHO with the overall consistent elements of the physical and social environmental features. The cultural feature appeared early in the first edition and has remained since then but has grown somewhat in its conceptual complexity. The only other new development in the model is the introduction of the political and economic features from the third edition, perhaps in response to other models, such as the Canadian Model of Occupational Performance describing this aspect (Law, Polatajko, Baptiste, & Townsend, 2002) and a growing interest in occupational justice issues.

Table 9: Key terms associated with the editions/versions of the MoHO and what change or influence there was to these and other terms/concepts. The italics delineate the term from the previous version of the model.

MoHO version	Key terms linked to environment	Change and influences from previous versions or literature	Other associated notions/concepts used in the text
1980 Kielhofner & Burke	Physical, social and cultural setting External objects People Events	Overall model influenced by Dr. Mary Reilly's theory on occupational behaviour. Influenced by Robinson (1977) article on play and rule acquisition for competent behaviour.	Exploration and mastery of environment is predominant phrasing used. Person viewed as having the potential to impact on the environment.
1985 1st edition	Culture Social groups/Organisations Tasks Objects (Explicit description of these dimensions given in this edition)	*People* from 1980 publication has become *social groups*. Culture and tasks included in environment. Unclear if tasks stems from *events* in 1980 publication. A person was part of their native environment but also part of the therapeutic environment in therapy.	Arousal that changes in relation to environmental conditions. Performance and press Hierarchical view where higher levels influence and organise lower ones. However, lower levels also constrain higher levels. These influence both decisions and performance. History of environmental interactions of client important.

1995 2nd edition	Physical (natural, built, objects) Social (Occupational forms[165], social groups) Behaviour settings is the intertwining of spaces (home, neighbourhood, school/workplace, and gathering/recreation sites), objects, occupational forms and social groups that join and are a meaningful context for performance.	*Objects* bundled into term *physical* environment. However, in the Work Environment Impact Scale (1998), *objects* are a separate construct. Social psychology terms of press and affordance appear, but are not applied as per the original intent from their primary source. *Social environment* = social groups and occupational form in the School Setting Interview (1999)	Press and affordance. Pressing and affording which together explain influence of environment on behaviour. Culture concept incorporated but explained on the periphery of the social and physical environment. Environment promoted as being of vital importance in people's lives.
2002 3rd edition	Physical (objects, natural and built spaces) Social groups Occupational forms Culture (larger factor influencing both physical & social features)	*Economic and political* features not given as much explanation as other areas. More recognition of the inseparability of person and environment given. Centrality of environment in change process shown – but seems to have lost focus of the person having an influence on environment as in 1980 publication.	Occupational settings (as in 2nd edition behaviour settings). Press and affordance notions still present but reframed as environmental opportunities, constraints, support and demands = termed environmental impact

[165] The term task used in the first edition was altered to occupational forms, a term Kielhofner acknowledges as being borrowed from Nelson (1988).

	Economic & political (larger factor influencing freedoms & resources)		Features influence motivation, organisation, and performance of occupation.
		The School Setting Interview version 3.0 published in 2005	
2008 4th edition	As above	Chapter begins with statement that shows some link to reciprocal relationship between environment and person. No change in overall view of the environment and other notions since 3rd edition. Influenced by general literature on marginalisation from social, political and economic opportunities.	All headings are the same as 3rd edition with extra items on cultural views of disability and political and economic conditions but with limited scope e.g. cultural views of disability drawing on examples from film casting and political/economic constraints for people.
5th edition Taylor	Physical (spaces, objects) Social (relationships, interactions) Occupational (interests, qualities, funding and availability)	Appears to be a 'rearrangement' of the same ideas. Social groups and economical/political factors now arranged in levels around the person, with a simplification of the immediate person-	Dimensions interact with person and across each other at all levels. Environment is central in change and adaptation Opportunities and resources

	The above three dimensions exist at immediate, local and global societal levels Economic, political, cultural, geographical, ecological aspects exert an influence	environment interaction to the direct actions of a person.	Demands and constraints Culture is embedded in every dimension and level of the environment

The fourth edition, from 2008, depicted the majority of constructs not in typical line drawings such as a target or Venn diagram, but as images of a person engaged in an occupation with explanatory arrows of the constructs at play for that person (Figure 39). This was a positive move away from the reductionist views that held the model's images up to this point[166]. However, the single construct still depicted as a target diagram is the environment. The environment was drawn with political and economic conditions and culture having an overriding dominance and influence over other environments and the person's occupational life (Figure 38). Whilst the 2008 figure had diffuse boundaries and no solid lines, the environment is still depicted in a mathematical set theory way, perpetuating a reductionist view that many in the 1960s and early 70s were attempting to step away from through the use of systems theory.

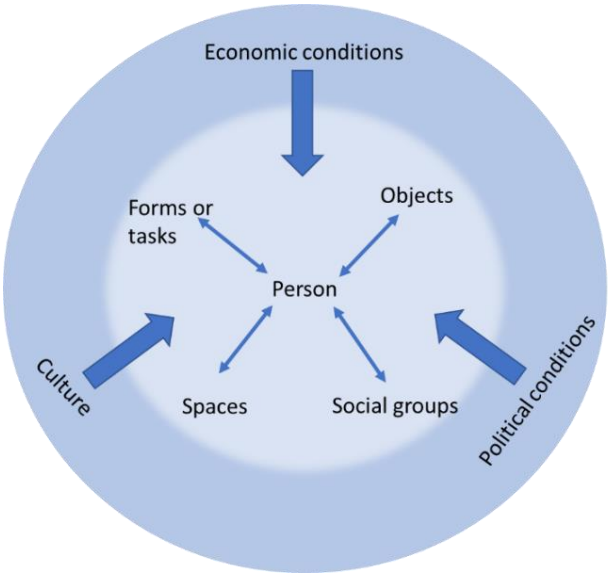

Figure 38. Model of Human Occupation dimensions of the environment. Adapted from Kielhofner (2008, p. 87).

The current 2017 version of the model (Taylor, 2017) continues to hold the view that people can change variables in their contexts, which have the physical and the social elements as central features across the levels as represented in Figure 39.

[166] The more open, person focussed images were also present in the third edition, but not to the same extent as in the fourth and fifth edition.

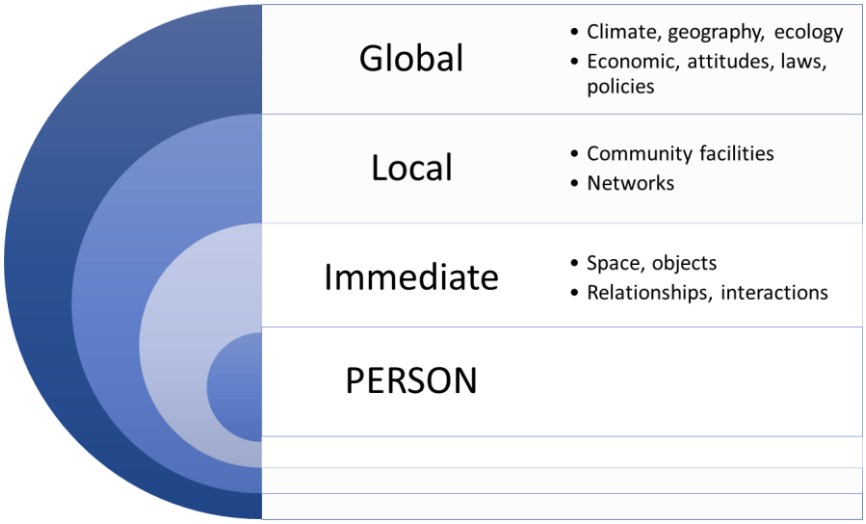

Figure 39. The environment in the fifth edition of the MoHO with examples of the bullet points showing the physical and social elements respectively at each level of the environment. Adapted from Taylor (2017, p. 98).

It also continues to hold onto many of the notions discussed above, and present them in reductionist, systems and mathematical ways. This fifth edition of the model devotes an entire chapter to explaining the interaction between person and environment from the dynamic systems point of view. A large element of this is about the thinking and feeling that a person experiences in the process of doing occupations. What this, and all of the above discussion, shows is that the MoHO (and all other occupation-based models) have forgotten that we exist in the world in a taken-for-granted, a priori, way before we ever think about it. There are glimpses of an ontological perspective in the notions of narratives and metaphors as relating to meaning, but these too are made ontic through temporal graphs and implications for the success of interventions. Other examples of the ontological come through in the explanations about the embodied nature of occupation (as per Merleau-Ponty), habits of style (as per Dewey) or the taken-for-granted elements of habituation that can only be reclaimed "by reencountering the world with one's altered condition [allowing] a new relationship to the world to emerge and once again become familiar and taken for granted" (Taylor, 2017, p. 65). Also this fifth edition discusses the notion of the lived space and lived body as an element of the subjective experience of performance capacities. It is curious to read that the "mind and body are seen not as separate phenomena, but as part of a single, unitary entity – namely, the lived body" (Taylor, 2017, p. 79), and yet the model has taken on an entirely separated

mind-body understanding of occupational performance, mixing up two very different world-views.

Overall, the development of the MoHO shows that the concepts of the environment have not changed significantly and most importantly have perpetuated the false idea that there is a privileged position of objectivity in healthcare.

Press and affordance

As discussed in Chapter Four and Five, psychology prospered around the 1930s and 1940s with its focus on measurement and conceptualisation of consciousness and behaviour. Two terms adopted into the MoHO were press and affordance. Whilst there are many terms used in the MoHO, I have selected these, as they appear to have the longest and strongest history with the model. Other terms such as personal causation and volition came out of research conducted through Reilly's students (see Table 8). These terms appeared in the second edition of the MoHO (Kielhofner, 1995), and have since morphed into constraints and opportunities in later model versions. Press was a term developed in the late 1930s but that gained momentum in the 1970s with other social psychologists.

In the 1930s, Kurt Lewin described a quantifiable relationship between behaviour and the person in their environment (Lewin, 1943) which could be written as a formula[167]. This and other theories contributed to the start of social psychology, as described in Chapters Four and Five. Social psychologists were interested in many areas, one of them being the relationship between a person and their environment. The environment in Lewin's view was the life-space or the momentary life situation that encompassed not only the physical environment. One of Lewin's critics was Henry Murray [1893-1968] who built on the earlier work of Lewin. Murray theorised about the fit between the individual and his environment (1938). From the critique of Lewin's work, Murray coined the terms 'press' as a way of explaining personality (Pervin, 1968), and developed a theory of personality that included a theory of unconscious processes, needs and press. Press was originally defined as "a directional tendency in an object or situation" with qualitative and quantitative aspects (Murray, 1938, p. 118) and later as the environment which contains facilitators or obstructions to meeting a person's needs and the degree to which they frustrate or gratify (Pervin, 1968). Murray's work was

[167] B=ƒ(P,E) where B=behaviour, P=person, E=environment

built on by Lawton and Nahemow in the Ecological Model of Aging (1973) where press was defined as "aspects of the environment that act in concert with a personal need to evoke behaviour by the subject" (p. 621). Press was also used as a basis for research on motivation (e.g. David McClelland's achievement theories) and organisational management (e.g. Richard Boyatzis' competence as a human resource). So, along the way the term 'press' has been applied to different fields to suit different research areas, and the strong link to personality that it originally set out to explain appears to have been forgotten. The MoHO took a less 'pure' view from Lawton (1980) who had introduced the term to gerontology. Lawton suggested an environment had the means to support or hinder a person's physical aging process[168], by either pressuring the person or due to a drop in the person's competence (Lawton, 1974b). Primarily, this theory was about understanding the environmental fit between aging person and environment as implied by Lewin's 1936 equation (Ahmad, 2010; Byrnes, Lichtenberg, & Lysack, 2006; Caplan & Harrison, 1993; Hunt, 1975). What Kielhofner explained in the MoHO was that press was the expectations of demands or the environment on the person. Even though the term is close to its original intent, it comes from an empirical tradition of social psychology, once more revealing that occupational therapy's base sits on that or measurement, positivism and science.

Another term that found its way to the MoHO in particular was 'affordance'. Psychologist, James Gibson [1904-1979] coined the noun and defined this concept as all action possibilities latent in the environment (Gibson, 1977). Affordances are visual structures of information about the environment, and so relate to visual perception. Affordance developed in the context of an ongoing debate between the cognitivist and ecological psychologies. Gibson rejected earlier psychology theories on 'stimulus-response' for explaining visual perception, and instead proposed a theory of active perception (Gibson). In this ecological theory, the perceiver makes sense of illuminated surfaces and actively perceives their value or meaning (e.g. a chair is sit-on-able, or has sit-ability). As with the term press, affordance has taken on new meanings in different contexts. Gibson's framework and ideas in itself created an affordance for other thinkers to cascade off (Mace, 2005). In occupational therapy, this led to the idea that a person could perceive things in the environment for occupational performance. Kielhofner's interpretation of this term aligned more with its original intent and he saw that a

[168] Lawton (1974) drew on Craik (1973) who clearly outlined the pressing nature of the environment in environmental psychology research.

person's action or performance depended on their values, interests, roles, habits, capacities and personal causation.

The introduction of press and affordance into the model can perhaps be explained by the influence of the mechanistic paradigm and the biomedical model of health where illness or dysfunction were seen as quantifiable and deductive (Kielhofner, 2004). This view is supported through the research done for Chapters Three to Five.

Conclusion

This chapter, the final one looking at the specific occupation-based models, explored the Model of Human Occupation. I used a common thread of the environment as the reference point for some of the critique. My explanation on the seeding history of this model was kept closer to its genesis, given it started with ideas from a few key people, as opposed to the Canadian Model of Occupational Performance and Engagement that had a longer history situated in the association's affairs. My aim with this chapter was to reflect on the links between the model and its foundational systems theory ideas. Through this, I showed these links were small and the ontological gaps large.

In its development and re-visioning, over the course of 32 years to date, this model took the phenomenon of a person engaging in occupations and complexitised it, weaving a web of Cartesian mind and body terms, systems processes and layers around it that are at times incomplete, and other times confusing to grasp. The complexity of the systems theory as a basis for explaining what it means to be a person in the world was overlaid on the notion that a person is made up of an assemblage of variables or subsystems, which in effect invalidates the familiar self-forgetting manner in which people engage in their contexts. The conclusion I draw is that the simple and self-evident everyday mode of being in the world no longer speaks to us because our ability to be amazed is all but drowned out by the scientific tradition. Even though the model tugs at the edges of an ontological perspective, it never fully apprehends it. The early choices made in occupational therapy, as it responded to what was going on around it, pushed the profession to unquestioningly follow a scientific path. This was a path intent on trying to discover the epistemological answers to what it means to be an occupational being, not realising that the questions should always have been ontological given the philosophical base on which occupational therapy rests and fits with. If only Shannon's (1977) voice and views, at the start of this shift, had been loud enough to withstand the drive of science and objectification, then the profession may have realised that

knowledge about what it means to be an occupational being emanates from persons who are wanting to understand other persons already in our shared world.

An assessment of Tom using the MoHO

Assessment of Tom using MoHO headings

Using the headings of the MoHO (5th edition), with italicised and bracketed words indicating key terms from MoHO, this would be my fundamental assessment of Tom.

***Volition*:** Tom explained that small success, like hanging out the washing with two hands, made him feel like he was good at something, but his performance in the video showed he did not feel good at peeling a potato (personal causation). This was shown through the emotional expression of frustration as he *experienced* difficulty with the tools and potato. Tom's frustration shaped his *anticipation* of other tasks when he explained, "It's frustrating when that happens, but that's what happens. It's one in a long list of things you have got to take time over".

It also appeared that persevering for this "one lousy potato" was not worth it (values) for Tom on that day. Regardless, he *controlled* himself and faced the challenge by putting in some more *effort*. Tom also showed he could persevere with difficult task in other areas, such as his example of the strategy for dressing. This showed that Tom had strong *values*, possibly through the *cultural milieu* of being a journalist, in independence and a *sense of obligation* to ensure he was presentable when leaving the house (personal conviction). From this, it might be that Tom experienced abilities from day-to-day as variable and potentially unpredictable, which affected how much *enjoyment* he got from his everyday activities. Prior to the stroke Tom was an accomplished radio interviewer, but since his stroke Tom's *sense of capacity* diminished and he no longer felt like he could do the simple job of cooking a meal. Even though having a good meal was something he *valued*, his own abilities diminished his *interest* in pursuing this task, as expressed at the end "There's one nice lady in the barracks here asked me if I would like to have dinner with her. Great!".

Habituation: Tom's regular, taken for granted, *routine* of a working week was disrupted suddenly due to this health. These patterns were a reflection of the *roles* that Tom had prior to his stroke. Since his stroke and moving house, Tom's *habits* and *roles* have been shattered, even down to the routines he may have had in relation to his interaction with this community. Taking time to do things was something he said needed to be woven into his daily routine in order to ensure his performance was as expected.

Performance capacity*:* From an objective point of view, this information would be the same as discussed in the application of the CMOP-E, but under slightly different headings of: musculoskeletal, neurologic, cardiopulmonary and other body systems, as well as mental or cognitive abilities. From a subjective point of view, Tom expressed some of his *know how* in relation to the peeling when he said, "Well here I have a potato. A potato is relatively easy to, to uhm firm up" but then in the next instant he described his experiences of his *lived-body* and said, "The thing is I can't hold it. So, I ram it down. And. And it's a process that, ohm, takes for ages. Then you got to, oh...pull the damn thing up. Oh dear". These expressions showed that Tom was experiencing the world differently through his body and through the space around him.

Environment: Tom's *immediate physical* context had recently changed when he came out of hospital, stopped working and moved house. All these affected his socialisation and the roles he previously held. This, it could be assumed, had an impact on the *objects* and *physical spaces* Tom used, the *relationships, occupations, interactions, activities* and the *opportunities* or *expectations* for doing. When Tom peeled the potato, the chopping board *constrained* his performance. Even though this board was there to create an *opportunity* for performing his occupations independently, it seemed to create many obstacles.

Tom's *local context* became harder to access and participate in. Whilst he may have a sound understanding of the *global context* due to the *culture* of his previous job, he may not have had all the capacities needed to share opinions on topics previously in his remit. Tom has had several aspects of health funding for resources made available to him, such as his time in rehabilitation, adapted equipment and formal home-help support.

Tom did not have *immediate social supports* in his home, aside from the formal home help. Although he talked about other people in the retirement village, it appeared that the connections in this *social network* were still forming. Connections with the rehabilitation team were severed some time ago and Tom was under the care of his GP once again. Due to his speech/communication difficulties, Tom found it difficult at times to express himself clearly to others.

Other: Tom's *resilience* relied on his knowledge about the condition, his coping skills, and the support he received from others. It appeared that Tom had strong coping skills

and an understanding of the condition, but the social support dimension was lacking and this might have influenced his *occupational adaptation*.

Speculative assessment based on current information:

Tom had some capacity to perform everyday occupations within the home, as well as the resilience to persevere through setbacks. He seemed to have lost interest in some activities, and this could be linked to the loss of roles, moving to a new home and community, as well as his impaired physical capacity. His loss of interest in some occupations could also be due to his anticipation that difficulties could present themselves within the steps, or in the use of the objects and a decreasing sense of self-efficacy. Tom seemed to have established a routine in his new home as his environment appeared ordered, and he factored into his daily tasks that he needed to plan and take time in doing them. He seemed to have made some connections in the village, even though his immediate social environment was lacking in support. The assessment of his performance capacity, as seen in him peeling the potato, was the same as with the CMOP-E evaluation.

Chapter 9 Ontological views: Practice as lived

> Just as repetition reinforces repetition, change begets change.... Sometimes the only way to find out where you fit in is to step out of the routine. Because sometimes, where you really belong was waiting right around the corner all along. (Captain Burnham, Star Trek: Discovery. 2017; Season 1, Episode 7)

Introduction

This quote, expressly chosen from an unlikely source, reveals my personal and philosophical journey with its twists and turns to get to something that was just around the corner. This something I know has been there, I have been peeking at it since the beginning of this research, but holding it at bay, like a child who knows where the presents are hidden in the house. By holding my anticipation, I have been more able to make a stand with my own independent views on the literature covered to date in my writing in other chapters.

My argument reaches its culmination in this chapter. Having answered the first two questions of my thesis, across Chapters Three to Six, through the contextual and developmental history of occupation-based models, I turn to answering the third question of my thesis, as covered in the introduction chapter:

3. What perspective can bring back the things that matter in practice about a person's everyday doing that have hitherto been overlooked?

In Chapter Four, the contextual history showed how the world around the model developers in the 1980s gave impetus for those developments. The contributions from other fields, outlined in Chapter Five, presented what other knowledge was key in the contextual history and what was adopted in the models. Chapter Six on semiotics, whilst not a historically driven chapter, was an opportunity to carefully examine the models from a perspective not seen before in occupational therapy. From a diagrammatical stance, semiotics revealed the fragile nature of models and the precarious ground they are built on. The most important conclusions of all the preceding chapters is that occupational therapy's theories and models fail to represent the experiences of the people occupational therapists encounter in practice. Positivism and scientific assumptions may disclose something conclusively important about things. But scientific

interpretations of reality have become so dominant in our world that the poetic and humane interpretations of 'what is' is increasingly forgotten or ignored. In this chapter I reveal the ontological absence that exists in the occupational therapy models. As this chapter will reveal, the meanings and ideas that have lasted for decades have very tenuous connections to the lived experience of everyday life. This chapter will show the lived experience of the everyday through phenomenological philosophy, by using the experiences of a person, in the presence of a therapist, as he encountered his every day after a stroke. Existential phenomenology, specifically Heidegger's philosophy, was chosen to inform and enlighten this chapter, because it severs the ontic stance that currently holds sway in occupational therapy. References to Heidegger's *Being and Time* (Heidegger, 1962) will be given in the form of 'MR page number: H page number', where first page number refers to the widely used Macquarrie and Robinson English translation, and H the original pagination in Heidegger's German writing.

The ontic, ontological and phenomenology

Interpretivism argues that people do not experience the world out there as detached, as captured in the occupation-based models and theories. So, to challenge positivism and its reign in occupational therapy and models, I chose interpretivism, as discussed in the Methodology Chapter. Positivism has a greater connection to the ontic, what is there or 'thinghood', and the least connection to the ontological. These ontic views, whilst having been useful to the profession's development, have taken control in occupational therapy with observed, measured, recorded 'knowledge' as a commodity that can be passed on (Flood, Hocking, Smythe, & Jones, 2019; Heidegger, 2001), and hinder the humanisation of human beings. More specifically, the models presume we know what will be important to the person. They propose and impose the questions a therapist should ask in their assessing and measuring, thereby putting the 'client' into a preordained position in the therapist's understanding. The models have been made to organise knowledge in a deliberate aesthetic design to measure, predict and control the world of the person. Some of this knowledge in occupational therapy is reasonably insightful, but at the same time such a view does not perceive what it has missed and disregarded in its narrow understanding of people's experiences. I accept that there is room for positivism and the ontic, but not by placing wholly authentic experiences into the shadows. In an ontological approach, the occupational therapist listens and watches, to open the disclosing of what is meaningful for the 'client'.

Broadly, ontology is a branch of metaphysics and studies what there is, what exists and what reality is made of. More specifically, it seeks to address the questions 'what is existence?' and 'what is the nature of existence?' Heidegger's main interest was ontology, and for him the method of ontology was phenomenology. He made the distinction between the being of things and human beings as existence. To Heidegger, Being itself is not an entity or a thing or an idea. In this way he followed a way of thinking that was not metaphysical at all (Dreyfus, 1991; Rae, 2010). For Heidegger, Western philosophy, synonymous with metaphysics, had come to wrongly think of, through social constructs or the posits of language and culture, humans as the ones who fix or control the meaning and uses of things. This could be thought of as the "onticisation" of Being (by regarding Being as being). As he puts it:

> The question of Being aims… at ascertaining the a priori conditions not only for the possibility of the sciences which examine beings as beings of such and such a type, and, in doing so, already operate with an understanding of Being, but also for the possibility of those ontologies themselves which are prior to the ontical sciences and which provide their foundations. *Basically, all ontology, no matter how rich and firmly compacted a system of categories it has at its disposal, remains blind and perverted from its ownmost aim, if it has not first adequately clarified the meaning of Being, and conceived this clarification as its fundamental task.* (MR31: H11, emphasis original)

Heidegger's ontology tries to understand the meaning of Being as it is seen in-itself, not as we might think it is meant to be seen out there. For example, we see the person (Jack) with a driver's licence, who has years of experience, nearly cause an accident. From an ontic perspective his driving ought to have been safe, but when his phone rang, he momentarily became distracted and did not notice the danger ahead. Ontologically he was thrown out of his expected competence by attending to his phone call rather than the road ahead. Heidegger's ontological view seeks to understand the deeper meaning in people's existence, also emphasising that language was the tool through which the question of being could unfold (Korab-Karpowicz, n.d.). Heidegger not only thought about the meaning of Being but also how a person encounters things (rather than in a detached, theoretical, metaphysical way), and what a person's particular moods bring to their encountering of the world. People interpret their everyday experiences in relation to the world (Sheehan, 2015), for nature and experience are fused in our actions (Todes,

2001) and this is the essence of existential phenomenology. For example, Jack could have been awaiting a phone call from his oncologist with the results of his latest scan. Whereas usually he safely coped with phone calls while driving, this call demanded his urgent attention. Heidegger's work was wholly about the phenomenon of meaningfulness and its source (Sheehan, 2015). Heidegger's fundamental term, Dasein[169], is that being in which any being is constituted and he uses this entity to access being. In Heidegger's Being and Time, temporality is the fundamental meaning of Dasein's being and Dasein's past, present and future are all rolled up into one. Jack remembers the long, hard experience of chemotherapy, and with both dread and hope thinks ahead to the possibilities of the results about to be spoken. Within that mix of emotions, so much happened in his brief moment of distraction. As he watched the previously unnoticed car approaching in his direction, time hung as if frozen.

Since, humans are both ontic and ontological, where the ontic roots us to place and time, our access to the ontological is mediated by the ontic in a back and forth process (Dreyfus, 1991). That is, there is something[170] in nature that underlies or explains, but this ontically focused 'something' does not make sense of our way of experiencing the world. In occupational therapy this 'something' that does the explaining are the theories or models on the relationship between person, occupation and the environment as depicted in things like models. Here the theoretical explanations of another person are an external representation of the world, overlaid onto the person's everyday being through their doing an occupation. When reality is constructed out of theories on occupation, the person and environment, the existence of personal meaning is suppressed. In this way, occupational therapy continues the forgetfulness of Being and the models drive out other possibilities of revealing and even conceals the revealing of what comes forth into appearance. Had an assessment of Jack been done after he completed his chemotherapy, it likely would have deemed him safe to drive.

The interpretivist paradigm, on the other hand, seeks to understand the way people experience the world, with Heidegger's phenomenology taking us most deliberately to ontology, to the genuine experiences, the meaning of being and the things that matter. The meaning of Being was always there before the existence of models. In using

[169] Da-Sein is literally translated as There-Being. It is the Being as 'ontological being'. The ontological being is the being that asks 'who am I' of itself. For Heidegger, Being is the lit up place, the clearing the 'da' in which beings appear and disclose themselves as what they are (Sheehan, 2015).
[170] The something here refers to things such as measurements of space (metres, units) or time (seconds, shadow length).

Heidegger's phenomenology, I am uncovering what was always already there around the corner. The meaning of Being was always there and can never be taken away, but it is constantly overlooked, and occupational therapy's models perpetuate this overlooking. The things that matter are the elements that have been substantially rendered out of view or forgotten through overuse of the scientific paradigm in the occupation-based models.

Searching for the ontological

A Heideggerian or phenomenological view would not use the word 'model' to capture the engagement of a person in an occupation in an environment. However, to determine if any aspects of the models contained ontological qualities, I looked for homologies between Heidegger's notions and two occupational therapy models; the Canadian Model of Occupational Performance and Engagement (see Table 10) and the Model of Human Occupation (see Table 11). Naturally, this proved difficult as the tables dishonour the depth of Heidegger's views on existence and the meaning of being, given the interrelatedness of concepts and how they cannot be viewed in isolation. Nonetheless, the tables go some way to showing the interpretative space between the terms employed in occupation-based models and Heidegger's philosophy, which views people as 'being-there', for being always happens 'somewhere', and these cannot be separated. That place is unique, interpreted by each person through his or her own pre-understandings (Pernecky, 2016). Similarly, the tables dishonour the depth of Heidegger's views on existence and the meaning of being, given the interrelatedness of concepts and how they cannot be viewed in isolation.

The models' conception of people and their engagement, as already discussed in Chapters Four and Six, is grounded in a metaphysical, ontic, positivist view where people are objectively and scientifically observed. The heterologous conceptions or descriptions of a person doing something in an environment points to fundamental differences in their philosophical movements and views. On the one hand, the models suggest that a person (made up of measurable characteristics), engages with the world (through either leisure, productive or self-care activities), in an external world (that can be objectified and categorised). But life is lived; it is not a play that we stand by and observe. The Heideggerian perspective regards life as being about intentionality (Gadamer, 1989), and closer to an understanding of a person's engagement with their world from an interpreted vs theoretical stance. Put very crudely at this point in the chapter, Heidegger sees that there are three modes of being; substance, equipment and

humans and these modes have one thing in common, that of time. Crudely put because Being is not a self-evident concept. To understand this, a process of seeking is used to understand a meaning of Being that is meaningful to occupational therapy. Table 10 and Table 11 show that at this point there is little link between one perspective and the other.

The tables show that the models (CMOP-E and MoHO) present an ontic viewpoint versus the ontological Heideggerian interpretation of a person's everyday experiences of, at this stage, fictitious people. Heidegger would argue against offering a de-contextualised category such as those presented by the occupation-based models. Rather he would suggest questions that point to the ontological perspective through which a richer interpretation can be gained of the person's everyday engagement in occupation.

Table 10: An example of a comparison of Canadian Model of Occupational Performance and Engagement terms and Heideggerian questions. This example presents an older adult who has returned home from a hospital admission.

CMOP-E	**Heideggerian questions and potential responses**
Consciousness	My insights come from the synergy of mood, mind, feeling…
Environment	How is it feeling being here?
	I am 'here' on this cold, wet day, alone, feeling miserable
Social environment	Who is with you/ who are you thinking of?
	Mary has not yet arrived. I am waiting for her, worrying. She is on my mind.
Physical environment	How does this 'space' work for you?
	I am trying to open a jar of jam. I can't get it loosened. I try it in the door frame.
Cultural environment	Do you feel you can be yourself here?
	I grew up having jam on a slice of toast at 3pm for afternoon tea. It was how things were done.
Institutional environment	How constrained or enabled do you feel?
	I did not enjoy my stay in hospital. I'm worried they might put me in a rest-home.
Person	Who are you?
	I am 'me'. I have been shaped by my parents, grandparents, the world I grew up in, my work life, my friends, my faith. Not many people know me well.
Physical	How does your body let you (or not) be you?
	My body does not let me do what I used to do. I am very slow.
Cognitive	How do you work things out?

	I remember things from the past with great clarity but have trouble remembering where I put things
Affective	How is your mood?
	I usually wake up feeling good, but then when I try to do the things I want to, I quickly become despondent. Growing old is not fun sometimes.
Spirituality	Do you feel the presence of God, or a sense of a higher power?
	I wouldn't say I pray much, but God is never far away.

Table 11: An example of a comparison of Model of Human Occupation terms and Heideggerian notions. This example presents a shy child who has had difficulties making and keeping friends at school.

MoHO	Heideggerian questions and possible responses
Volition	What do you feel like doing today?
	I really do want to go and play with the other kids
Personal causation	What can you do?
	I'm positive I can make friends this time, but it makes me feel nervous.
Values	What feels 'right' to you?
	My mum tells me that good friends are hard to find, but at the moment any friend is hard to find.
Interests	What captures your attention?
	I like to climb trees 'cause it gets me up high and away from the meanies
Experience	Tell about how it used to be or what you used to do?
	At my other school I had lots of good friends. This school feels different. Everyone already knows each other

Interpretation	How did you come to understand that?
	I don’t think I’m ever going to be liked by the other kids.
Anticipation	What are you looking forward to/dreading?
	It’s almost play-time, what will I do and who will want to play with me today?
Choice	How do you see your choices?
	I’m going to play on the jungle gym today, that’s where some of the other nice kids play
Habituation	Tell me about what you did yesterday?
	I’m pretty slow getting ready for school in the morning. Mum gets a bit grumpy.
Habits	Do your normal routines run smoothly?
	I sing when I’m sitting by myself at lunchtime, it makes me feel safer.
Internalised roles	What do you say to yourself?
	I don’t think I’m a very good student, the teacher tells me off a lot. Mum tells me I’m going to be a star one day.
Performance capacity	How well did you do?
	I remember that other lady saying I should try smiling more and asking interesting questions. That’s really hard to do.
Environment	What is it like being ‘here’?
	I’m sitting on the mat in the classroom, its crowded but I feel quite lonely.
Subjective experience	How did you feel/see?
	I told a joke and it felt good, and they laughed, but they were laughing at me

Environmental opportunities and resources (physical and social)	What do you think you might do? There's a space right there on the floor next to Sam, I'll go and sit there.
Environmental demands and constraints[171] (physical and social)	What feels too hard? I'm being told off again because I'm daydreaming, but I'm not, I'm just thinking about play-time.
Physical environment (spaces, objects)	How does this space make you feel? I keep looking at the clock, it tick-tocks loudly. It's almost play-time. .
Social environment (groups, occupational forms	Who do you enjoy being with/who do you miss? I wish mum would come and pick me up earlier. I like how we play together. Everyone here has their own group of friends already.

[171] Demands and constraints are conditions that place limits or strongly direct action such as time, laws, regulations, job requirements, social norms. As well as physical barriers such as fences, walls, steps.

Encounters with the world

In this section, I take steps to move from what has, up to now, been an ontic stance in other chapters, to the ontological perspective. I do this deliberately to show how a return to making the ontological more visible could happen, because in the lived experience of everyday life we are always ontological. I will access the ontological through a more objective or standoffish view first. The first part is more of an 'application' of Heidegger's notions and ideas to reveal a different understanding of the world and people's encounters in the world. The second part makes a deliberate step into the ontological realm. It is immersive, provides a description and brings a strength of resonance to an everyday encounter experienced by Tom, who was introduced in earlier chapters as an occupational therapy 'client'.

An explanation of how Tom came to be so central in my thesis needs to be given at this point. In opening the door to start this chapter I considered using a piece of writing like pieces from Flowers for Algernon (Keyes, 1959) or The Bath (Frame, 1983), or poetry, or first person accounts or recollections of people touched by some of life's difficulties, such as first-person accounts of mental illness, or grief and loss (LeCroy & Holschuh, 2012). But these did not provide what I was hoping for, which was something more akin to how a therapist would encounter a person in their day-day practice. It occurred to me that I had video footage from my Master's thesis completed in 2005, on the lived experience of dyspraxia for older adults after stroke. As stated earlier, ethical approval had been given for use of those participants' stories and videos in future educational situations. Using video interpretation, I reveal how the ontological perspectives can provide a richer, deeper understanding of the person and their dealing with the world around them to show the phenomenology of an everyday experience, and makes the argument for an ontological perspective more palpable than a piece of writing or art. Tom was, as the quote at the beginning suggests, also just around the corner. Tom was one of my last participants in my Master's study and his stories were poignant.

My intention in watching Tom this time was to appreciate his experience from a deeper ontological perspective, to understand Tom's Being-in-the-world. After more than 10 years since my Master's research, I watched Tom with fresh eyes for this analysis. While watching the video, I remained open to my thoughts and feelings, as this was a third kind of knowing present in this interpretation (see Appendix I). I grappled with the challenge in this former process because of the tension in how I can know what Tom is experiencing from my outsider's point of view (a second-hand kind of knowing), and

what his own basic kind of knowing is (primordial). This challenge and tension I will try to clear up as this chapter proceeds.

Transitional interpretation: The structure of world

We cannot know what Tom experienced prior to, or during his stay in hospital but we can certainly gain insights into how things may have been since his stroke by watching the video and listening to him. Using Heidegger's phenomenological concepts and tenets to consider Tom from an outsider's perspective, we begin to appreciate his experiences quite differently as compared to the usual occupational therapy models. In the next section I reveal a 'transitional' interpretation of Tom's performance in the video and from what he said. So, I use the more ontic-existentiell[172] stance at this point in the chapter before moving to the ontological-existential, philosophical point of it.

Peeling a potato is a common, relatively every-day activity for many people (Kearney, 2010). It is a skill that we may learn as a child *alongside*[173] an older person in the kitchen. It is part of a culture or custom, that we are socialised into without much thought, aside from not peeling away too much, or doing it safely. This creates a style of existence before we even think about it, a mostly pre-ontological way of being. As a child, we learn the 'rules' of how to peel, how to hold the peeler and potato in just the right way to carve off the potato skin. As we grow, we take it as given that we know how to hold a peeler and knife and use them. We forget what it was like to first come across a peeler, and having never seen one used, figuring[174] out how to use it effectively for its purpose. In average everydayness, we act towards the objects so that they may dissolve from view and the potato, for example, just becomes 'peeled' and ends up in the pot. Over the course of our lives we develop the know-how to use the objects and our-whole-selves effectively for the purpose of an activity. The task of peeling a potato no longer has any 'rules' in the everyday world, and the act, the objects and world become transparent. This is what Heidegger would describe as *primordial intentionality*; an absorbed coping or dealing that is holistic and takes in the referential whole of equipment (tools, bench, room, sink, pot), and is both the furthest away from us, and our way of Being, and nearest to us, and our being. At this point, a meshing of

[172] Heidegger uses the word existentiell, which is about facts, thinghood and the ontic. This is distinguished from existential which is the ontological understanding.
[173] Alongside: in being alongside another, there is a sense of familiarity with that person, with whom a person dwells (MR80: H54).
[174] I use the word 'figuring' here to capture the thinking process that might occur in making a peeler intelligible from a present-to-hand to a ready-to-hand kind of way.

skills and practices occurs that allows the self and equipment to disappear. To be good at peeling, we first must notice and direct our attention to the shape of the potato. Aside from the *conspicuous*[175] nature of a potato's curves, crevices, bumps and sprouting buds, so that the peeler can be *freed* (MR118: H85) to do its thing. Peeling a potato is not a difficult task and is generally not given much thought.

Tom starts by saying "You've caught me between jobs. I wasn't ready". Through this statement of "you've", we encounter the presence of myself as the videographer. This is a clear presencing of *other*. How Tom goes about doing this task in his kitchen is potentially contingent on how accepting he is of the videographer in his kitchen. It might also reveal a *facticity*[176] about how a person 'should' act in their home in the presence of another. This statement about not being ready captures Heidegger's notion of *thrownness* and *befindlichkeit*[177] (discussed later). Thrownness is the haphazard and unknowable nature of Dasein that connects the past with the present and is a character of human finitude. Or more simply, it's an awareness that Tom finds himself somewhere, different from where he was in the past as a person (now with the effects of a stroke, and in an unfamiliar kitchen), shared with the videographer and already in a *mood* (stimmung) of not being ready for the task.

Mood is also shared and creates an atmosphere (MR176: H137) that people can be attuned to, because we are always attuned to the world through our thrownness. Merleau-Ponty (1968) called this inter-corporeality, through which sociality emerges. Being in a mood brings Dasein before its thrownness (MR389: H140), a bringing together of the past and future between people. Maybe Tom remembers another experience of being videoed, those memories colouring his mood. Not being ready could be interpreted as a kind of *anticipation* (vorlaufen). To Tom's mind, he was anticipating something different to what unfolded in the moment of the video, he was not ready at that particular time or encounter. This vorlaufen is what is described as Dasein and its being towards possibility ahead of itself (being ahead of oneself). So maybe Tom was not ready because of the timing of my visit, or Tom is not ready because of his recent move to this apartment and things not being in their rightful place

[175] Heidegger's three modes of disturbance stop everyday doing and the transparency of everyday dealing or coping with the world. Progressively these are conspicuousness, obtrusiveness and obstinacy.
[176] Facticity is differentiated from factuality. Facticity is the characterisation of Dasien's Being gained through the social-cultural world. Factuality are the brutal facts (MR174: H135).
[177] Befindlichkeit (left in German as there is no single English word for it) is a sense of how one finds oneself, reflexively, affectively and contextually. "The condition of affective familiarity with a given context of meaning and its contents" (Sheehan, 2015, p.161).

in the kitchen and him not being familiar with the space. Alternatively, Tom's sense of time since his stroke and being able to anticipate the day may be experienced differently. The temporality of Tom's thrownness is therefore revealing itself.

In the video, Tom moves to get the potato and peeler. The kitchen has not gained a sense of *familiarity,* or reliability of actions for him as we see him briefly hesitate at the pantry looking for the potato and rummaging through the kitchen drawer to locate the peeler. Heidegger says that *familiarity* becomes transparent, that world or *worldhood* is transparent in familiarity. However, Tom only moved into this home less than a fortnight ago. Furthermore, the *Self* must *forget* (a special kind of forgetting) itself, lost in the world of equipment, if it is able to actually go to work and manipulate something. In his hesitancy at the pantry and rummaging in the drawer (both appropriate *places*[178] for the things to belong), Tom is experiencing what Heidegger would call a *mode of disturbance*. This mode of disturbance is the *obstinacy* of the peeler in the drawer, with the other cutlery in the drawer acting in an *obtrusive mode of disturbance*. Throughout most of Tom's potato peeling, we see the *conspicuous* mode of disturbance[179], as will be described.

For Tom, the potato, peeler, knife and chopping board have all become conspicuous; he notices them and describes the potato's qualities in relation to other things e.g. onions, or that it is 'relatively easy'. The narration of his actions is either Tom's inner dialogue or he is explaining to me as the observer what it is like. However, Tom is clearly in an ontic moment within parts of this task, as he describes properties, qualities of the potato and chopping board. Tom can be observed in the video looking closely at the potato as he moves the peeler awkwardly around it. He is quite obviously focussed on the equipment at hand rather than the end goal.

Everyday Dasein has understanding of the world and itself within this world (Inwood, 1997). This understanding of the world opens up a range of possibilities which give meaning to our everyday experiences. So, if we have understanding, then the things we do within the world have meaning. Conversely, an experience seems meaningless when it is not understood and is unintelligible. Heidegger says that there is no Dasein without equipment, and equipment is something-in-order-to- for Dasein, which in this instance

[178] Equipment has its place, and the place defines itself as the place for this equipment (MR136: H102-103). This place is closer to us than if the equipment was just lying around somewhere. The place brings readiness-to-hand closer to us on a background of familiarity, of organising things and dealing with them.
[179] Something is conspicuous only in and for the activities in which it is being manipulated. Disturbances have the capacity to expose totalities and therefore worlds.

is for sustenance. Potato peeling usually uses one or two main pieces of *equipment* (peeler, knife) which have been designed for the act. A person peels a potato *towards* the end goal of putting it in a pot in their kitchen, *for-the-sake-of* having a meal, which as mentioned before, is for-the-sake-of providing sustenance. Furthermore, the "in-order-to" makes something *ready-to-hand,* as the concern for the equipment subordinates itself. The peeler and its properties disappear from conscious view as the end goal of a 'peeled potato in the pot' affirms/declares itself. However, as expressed earlier, the end goal only becomes apparent again when Tom announces that it is "more or less peeled" and "good enough for the pot". But even in these statements there seems to be a resignation that the job was not done as he might usually do it. Certainly, Tom indicates that this is not how he would usually use the equipment, as he finds it infuriating.

Moments before announcing that it is good enough, Tom says "Oh darn, I have a little bit left". In this statement we hear that Tom has overlooked some aspect of peeling. That there has been a lack of *care* about the matter at hand. Care (sorge) is being concerned or minding about things for one's own sake or people for their own sake (Sheehan, 2015). This concept also carries with it a sense of temporality in that Tom was already ahead of himself in his peeling the potato fully, and returned to see that the potato was not fully peeled, exclaiming "oh darn, I have a little bit left [that I had not intended to leave there]". As Sheehan states "We are an existential movement that is ever thrown-ahead-and-returning, stretched out beyond ourselves while still present to ourselves and the things we encounter" (Sheehan, 2015, p. 168).

These objects (peeler, knife, bench, room), including ourselves, have significance to us and associations to one another in order to make them useful. Heidegger tells us that equipment has to have *suitability* (for the job), be *functional* in the totality of other equipment, and be *appropriate* (socio-culturally). In other words, it must have properties that are suitable and appropriate. Tom, having received advice, uses a Swedish Cutting Board that is designed for one-handed food preparation, such as peeling and cutting. But equipment is only equipment in the totality/wholeness of other equipment (functional), and so the board gains a property of being 'something' to peel and cut on. As I will unpack, this totality is not there for Tom. The Swedish Cutting Board is a *thing* that an occupational therapist has supplied Tom to provide a path towards recovery and being able to do activities with fewer difficulties. The cutting

board's *equipmentality*[180] should be in-order-to to help Tom peel with one hand; to make it less troublesome to use a peeler and knife. Herein, the board's equipmentality is in terms of its belonging to other equipment (peeler, knife, bench, room etc.). Equipment only shows itself "…in dealings cut to its own measure" (MR98: H69) and our relationship to it becomes more primordial to it the more we use it. In using the board, its manipulability is uncovered (not through just looking at it), and for Tom the board seems to need a lot of manipulation, making it *unready-to-hand.* The board also loses its equipmentality in relation to the other items that Tom must use. The static position of the board and potato "rammed" onto the spikes means that Tom must move himself around to use the peeler (rather than the potato being manipulated in hand), the knife grates on the spikes as he cuts. So all the items of equipment lose their equipmentality in the presence of the other equipment, and the property of being 'something' to peel and cut with is tenuous. As we see Tom peeling, we could say he is using the peeler *circumspectively*[181]. We could say the peeler is too blunt or the spikes are too gripping on the potato. This makes it contingent (a feature of the situation relative to Tom), of what it is too blunt or too gripping for? Is it too gripping/blunt for Tom or the job? The in-order-to of manipulability and the usability is thus conspicuous. The task becomes conspicuous to Tom, but he goes on coping and continues to peel the potato. Tom's everyday dealings continue to be a concern for the work of getting something ready for dinner. As Heidegger says, "the work bears with it that referential totality within which the equipment is encountered" (MR99: H69-70). The board then is obstinate in its purpose of being an adaptable one-handed cutting tool that is meant to provide "power and precision when preparing food" (www.etac.com). Tom's encounter with the potato and equipment overall seems to slide in and out of the ready-to-hand and a de-situated present-to-hand intelligibility of the board having spikes that do not help the task (MR101: H71).

When Tom announces that "a potato is relatively easy to, uhm firm up…" he is using a value predicate "relatively easy". That is, he starts to regard the task in an ontic manner, a theoretical kind of way. This is an *aspect*[182] of the task and makes it conspicuous and situational by revealing the thing in its own unique way. Usually a person stops paying attention to the properties and aspects of a task when they start using the equipment, and

[180] MR97: H68
[181] Circumspectively means a skilled possibility of concerned discovering (Heidegger - History of the concept of time p. 174). An ability to recognise what action a situation calls for (Bernasconi, 1986).
[182] An aspect is about holism. It can't be defined in isolation.

it is something that might usually appear when someone is learning a new skill with phrasing like “that was hard to learn”, or “that was a mess”. But as we will see, the conspicuous nature of peeling the potato raises the conspicuousness of many other activities in his day. Tom also tells us in this sentence that he cannot hold the potato, announcing a dysfunction[183]. It seems Tom is in a world not made up of equipment that is useful, but as objects that become something-to- with a realm of possible objects for doing things with.

Tom’s way of *dealing* or *coping* with the potato and the cutting board is to “ram it down”. So, Tom uses the spikes (rams the potato) in-order-to-peel the potato towards-the-goal of putting it in the pot in this kitchen/home. *For the sake of* having a meal because Tom has *taken a stand on being* a ‘home-maker’. But this last point might not necessarily be the case, unless this task is significant or meaningful to Tom. Heidegger suggests that to express yourself you must take a stand on your own being and to do this you must use equipment.

We catch glimpses of Tom’s mood and affective dispositions (stimmung and befindlichkeit respectively), in some of the things he does and says. We often don’t know what mood we are in, but it can colour the way we go about our everyday dealings and our communication. We are always already in a mood and they settle in and can dominate a person. Whereas, befindlichkeit (more literally ‘finding-oneself’), captures a sense of context (temporality included), reflexivity and feelings. At the start, Tom states he wasn’t ready, revealing that he found himself unprepared, possibly and not unsurprisingly, bringing a sense of *anxiety* to the encounter. This affective disposition seems to dissipate as he gets on with the task, and certainly toward the end he appears more uplifted when he talks about the other people in the village offering him meals. As Heidegger said “a mood of elation can alleviate the manifest burden of Being; that such a mood is possible also discloses the burdensome character of Dasein, even while it alleviates the burden” (MR173: H134). Ordinary moods disclose our meaning of things and the context that gives such meaning (Sheehan, 2015). So, Tom’s jubilation and expression of relief at the occasional invitation to have a meal at another person’s house discloses the burdensome nature of how he ordinarily experiences cooking a meal for himself and potentially the whole world of domestic tasks.

[183] Merleau-Ponty and Van Manen talk about praxis and lived-body respectively which may shed some more light on the experiences of body in the every-day, but for this thesis are only be acknowledged here in this footnote as an area for further exploration.

Through Tom's words we begin to see the struggle he faces in his day. He tells us how 'mad and infuriating' peeling this potato is, and that this usually simple task takes five minutes. Even his description of the 'lousy potato" shows the experience of this single task in Tom's day. Tom finds himself face to face with a lousy potato which is just one in a series of potentially 'lousy' things in a day. It is lousy because he has to plan how to do the task, manipulate and almost battle with the equipment, only to find it is not done as he had anticipated, having taken almost five minutes to peel what would ordinarily have taken 20 seconds.

Phenomenal world

The last section focussed mainly on trying to show what Tom's experiences of the world may be. This section aims to interpret how Tom makes sense of his being, to think beyond this to find what still lays in the silences and to discern what matters. There is little focus on the actual peeling of the potato because the peeling is just a channel to understanding his meaning of being. This interpretation required me to move back and forth between reading the text and watching Tom, and letting the overall interpretation and details push out what was significant (Dreyfus, 1991).

Tom was a mere 59 years old at the time of his stroke, an age when many people are still active in their employment and have a strong sense of contribution to the wider context of life. Tom worked in radio interviewing, a profession requiring skills of being prepared and planning for a line of questioning that may lead to answers of value, answers from the heart or about things that people may not want to readily disclose (Beaman, 2000). Tom was likely able to interpret others' body language, words and silences, and had been inquisitive in his conversation with a confidence to be persistent when needed. For Tom, it mattered to be able to do his everyday tasks without difficulty, hesitancy and untimeliness, for this was his way of being in the world. In what would have felt like the blink of an eye, the stroke robbed him of all this. Tom stopped work, unable to drive or hold the conversations needed of his profession, even finding it embarrassing to talk to others in the village. His day no longer pivoted around meeting people, conversing with them, being part of a lively team of journalists. Instead his everyday was foreign, predominantly locked to the village he lived in and his local community that he accessed via bus. The sense one gets from this is a feeling of confinement, being forgotten by those from his previous way of life and of being an invisible stranger in his new community with no believable connection to ever having been an interviewer. There was also no way back to this previous life and this brought

the finitude of life for Tom staggeringly close. Tom became a man living on his own, having faced death in his doctor's parking lot, and was thrown back into a chaotic existence, his life disrupted with an unknown way of being. Whilst the finitude of life was brought so close less than a year prior, it was also moved away from him and its inevitable possibility keeps it close at the same time. Since then, he needed to come to grips with life and living, echoed by Sheehan (2015), who states our "inescapable need of meaning is both the passing remedy for and the surest sign of our mortality" (p. 114). The collapsed meaning in Tom's life signalled his mortality and he needed to fight for his meaning in life to prevent it slipping toward death again. Tom may have asked himself, 'Why did Death not take me? Instead of throwing me back here with nothing in my life but emptiness, hardship and disconnection to what I had before'. Tom may have come to the realisation in his confrontation with Death, that his life had been not what he expected and now he was much less able to change who he was. Heidegger says that the aim of being is to throw off the veil of thrownness (entwurf auf). To take death in terms of life, to see it for what it is and make it one's own. But this is tough when who you are, your life, your Being, is not what you remember anymore, and so Tom's first phrase of "I wasn't ready" may reflect that he was not ready for the shackles that life threw at him with his stroke.

One might expect, when there is a stranger (videographer) in your house, that the general conversation and disposition would be rather animated. But as Tom peeled to potato, there was a lack of vitality in his manner, with little expression on his face. Perhaps his sombreness was because peeling a potato is a simple and mundane task and many people would not approach it merrily. But it could also be reflective of his everyday mood since his stroke. With the resultant dyspraxia, Tom's body became unready-to-hand, in what Van Manen (2016) described as the lived body and Merleau-Ponty (1962) as the embodied movements. Regular, mundane tasks were easy one day and the next they were effortful, problematic, and disorganised, despite knowing how to do them. Tom has "no means of knowing the human body other than that of living it, which means taking up on his [sic] own account the drama which is being played out in it, and losing himself [sic] in it" (Merleau-Ponty, 1962, p. 198), and so he must go about each day with the uncertainty of whether the dyspraxia will haunt him or not.

Heidegger tells us that moods are the background on the basis of which things matter to us (MR176: H137). When our moods are downcast, the world seems less bright and all our encounters with it have a sombre shade and not much matters or excites us. There

may have been many things that contributed to Tom's downcast mood, with little that mattered, least of all potatoes! Especially when peeling this potato was just a small part in the accumulation of all his everyday things. It is also just a thing whereas Tom's mood could reflect his increasing loneliness. Although Tom had a partner, (I will call her Mary) he did not weave her into his introduction story in a distinct and firm way. This unstable relationship came after the first 'failed' marriage. Perhaps in this season of struggle Tom is more alone than ever. This time it is much harder as he has also lost his work connections and his busy life. Tom may have felt his 'lack' of a partner with a sense of grief. He may have thought 'if only I had been there for Mary rather than working such long hours. If only my wife and I had gone to counselling and worked through our issues. Perhaps I might not be so alone now?' There are always layers of meaning underpinning every mood, some reaching far back into our past.

Heidegger says that when we are in a bad mood, we become blind to ourselves and the environment veils itself (MR175: H136). In its veiling we lose the ability to see opportunity and any possibilities for doing are no longer disclosed (p. 176). For Tom, his mood and subsequent veiled environment prevented him from seeing different ways of using things, including using the chopping board. This was also echoed in his statement "And then I'm told you can cut it a number of ways", where we might question why he needed to be told how to cut a potato when he was such an independent man prior to his stroke. Perhaps, in his loneliness, Tom pulls in the support and advice of the healthcare professional, as a way of feeling connection and closeness to another human being. The professional is his only hope to learn these taken-for-granted skills. Likewise, the visit from me as researcher/videographer may have been both an opportunity to seek advice and a time of companionship.

Before his stroke, Tom would have needed to go through his daily routine efficiently to get to work on time and sort out a meal at the end of the day, for at least himself, unless it was done for him. A meal might have been as simple as meat, potatoes and vegetables. But since the stroke his daily structure and routine have been lost, and Tom becomes lost in his own being, trying to find his routine again. The loss of a routine and structure leads to a change in doing across space and time. Since the stroke Tom experienced time and space as paradoxical, fluctuating and inconsistent. He described this task as "…one in a long list of things you have got to take time over. It's uhm, it's just one of those things that goes on and on and on". Hurrying to be efficient was just not possible anymore. The general demand for efficiency from everyday life, from work

and from society is conceivably detrimental to Tom. In this state, time and space are experienced through doing (Dreyfus, 1991). In Tom's world, time was ever present with three seemingly malicious faces. One of time going slowly or dragging as he does things, where the day seemed to loom out in front of him like a barren desert. The second spiteful face is where time was so fleeting and there was not enough time in the day to do all the things he needed to do; it seemed to slip through his hands like grains of sand in an hourglass. Time's third face was the mysterious one, the one that lurked in the shadows. It was the future. Not the one he dreamt about or anticipated, but the unknown time that could bring with it a good day or a very difficult day. Since his stroke, time dragged on and on, but at the same time, he described having to take time. An exhausting mistrust existed between what was taken *by* Tom from time and what was given to him in return. Tom had to take more time, but time did not seem to relent much in its march toward the next task that must be done.

Nevertheless, in his stride against time's march, Tom came up with some of his own strategies. In the introduction we learnt about Tom's stepwise process for dressing with 10 items in the winter and seven for the summer. This stepwise process, whilst with solemn aims, was a playful way of regaining his skills and care for his time use during dressing. At some point Tom saw an opportunity to *play* within his doing. Perhaps strategies of trying this and trying that were born out of his past experiences of striving to get to the essentials in an interview, or that he was brought up in a culture of 'never give up'. Pulling that strength out of the past helps him in his now. These were some of the small successes Tom experienced in regaining a sense of control over space and time, and a sense of self. This strengthening in Tom's sense of time and the space around him is gained through doing, where our Being is stretched into the world and the world is drawn into our Being (MR101-113: H71-82). So, at some point there must have been some space for play, an opportunity that presented itself and allowed Tom to try something different. This highlights the fluctuating nature of space as well, with its ability to create an atmosphere of fun and energy. Heidegger talks about moods always being part of the world and that people are attuned to these, where some things are close, and some are far in the ability to be grasped by a person. Tom at some point had space and time that let him grasp a new way of dressing.

Throughout his days, Tom faced many hurdles and struggles. Some of these struggles were practical and demanded his attention and care, such as dressing with "the fiendish socks", which seemed to have some cruel intent not to be slipped on his foot. Others

were the everyday practical struggles of doing things mostly with one hand. In Tom's way of dealing with the peeling, there did not seem to be an 'anger' or resentment to his right arm/hand that did not take part in the task. He made no comments about his body aside from a resigned: "The thing is, I can't hold it". His arm seemed to just 'hang there', mostly forgotten (aside from being a clamp or vice), while Tom is totally turned toward the potato and using the peeler. Heidegger says that when one is "absorbed in the thing one is handling" (MR420: H368-369), it is brought close and care makes itself known. In this absorbed care, the present falls away and forgets itself and Tom's arm seemed to have already become part of his way of being, at least for that moment.

Voicing that he cannot hold the potato announced that Tom had noticed an observation of himself. Tom noticed me noticing him and declared what he may have seen in my eyes, a concern, a curiosity. Van Manen says that the objectifying look that does not centre in the person's landscape brings the body as object to the fore and makes it hard for a person to focus on what they are doing (Van Manen, 2014). Tom's sense that he was being objectified may have brought in the mistakes and frustrations in the task.

Other practical struggles are about the space he was in. The space of a new home can be strange and eerie with an interior that has leftovers from the previous occupant, curtains, colour choices, perhaps and old paint pail in the garage corner. This spirit that is left behind must be cleared out by using the home and the tools we might find in it, by opening windows, sweeping, and putting our own things in. Tom's home that felt unfamiliar or unhomely (umheimlich) to him. Finding the routine and structure in his world still needed unpacking and settling into their rightful places. To be surrounded by the ordinary objects that bring fondly remembered images of the past makes a home feel like shelter and comfort. Even Tom's presence had not found a home here yet, in what felt more like the unvarnished space of a hotel room. This unhomeliness created a fragile basis from which Tom could grow a steadfast routine and habits. When space is familiar, doing is settled and familiar. Only through time would Tom develop his routine and habits again, forming a space for new opportunities in being and the creation of meaning. Home is not only where a steadfast routine can be created, it is also the place we retreat to when sick or recovering. It is a place to be nurtured, cared for and to feel secure in (Tuan, 1977). Familiarity of place and doing brings with it the warmth in these things. Yet for Tom his home is a place of struggle, of bareness as though he was just a visitor to this place, like he was a visitor to the hospital, and rehabilitation unit, waiting for his time to go 'home'.

Toms seemed to bounce between a sense of despair and resignation in living with the frustrations, and a determination in getting on with it and using what opportunities presented themselves. We hear this when he said “So that’s peeled, virtually. Good enough for the pot. It took all that time for one lousy potato. It’s frustrating when that happens, but that’s what happens”. We hear the frustration in his words, as well as the resignation in his last four words that things just happen to him. But the ‘what’ in his statement could be a lot of things. Perhaps it is Tom’s way of dealing with yet another thing that happened in his life; a divorce, a child moved overseas, a stroke, a body that does not work, a lost job, the necessity of using a walking frame, an absent partner, a forgotten house key on a trip to the doctor, a village of strangers. These are profound losses Tom shared in the encounter and would have come with some regrets. Life could not be returned to and done over again. But there were other losses; perhaps like walking the beach, a spontaneous excursion to the movies, a trip to reconnect with his daughter, the thrill of meeting a new interviewee. Alongside comes the dread that his body would give him another stroke. With these losses in mind, Tom may have stopped to ask himself “what have I done with my life?”. It may be that Tom’s despair and resentment at his regrets were now released through the obstinacy of the objects around him as expressed through anger with the chopping board of “pull the damn thing up”. His words of anger in the video, brought on by his mood at the time, are perhaps symbolic of his anger at not having done things differently before his stroke. As stated earlier, Tom needed to fight to bring meaning back into his life after his stroke, despite death presencing itself so closely to him in the parking lot. But things that just “happen” show the unfolding nature of life. The unfolding brings forth what was heretofore hidden to create Tom’s what-for and so be self-enabling in his acts of becoming (Sheehan, 2015).

In the midst of the exhausting queue of uncooperative daily challenges, Tom rejoiced in his achievements along the way. In the preamble, Tom told of his success in hanging out the washing with two hands, and his aforementioned dressing victories. For a grown man to exalt these as significant shows the twofold burden of his Being. To most, these are trivial tasks, and so Tom’s revelling in being able to do it two-handed shines the light on the burden of his every day, and also reveals the possibility of doing it again. Tom’s achievement revealed the possibility for hopeful anticipation, a projection to the future, where the hard-earned triumph of pushing his efforts forth into the world may come out and help firm up the resolve to carry on. Regardless, Tom’s future successes

in his tasks will never be the self-forgetting, unnoticed relation to the world. Because of his stroke, each moment Tom does something he will come to discover his body, his arm announcing itself as an encumberant, limp object that can only be used as a tool to clamp clothes onto a line or hold a potato. Yet, as he masters skills it may be that his body readjusts to again become forgetful in the everydayness of 'getting on with it'. With this, his hand may again become a hand as a hand-shaker in moments of meeting people, an arm for giving and receiving a comforting embrace.

A conversation with Tom

Throughout my interpretation, I used the word 'perhaps', because we cannot know everything about Tom and understand how his past has shaped who he is and what he may become in the future. In 2004 I had this encounter with Tom for the purpose of understanding the lived experience of dyspraxia after stroke. Now, I return to the 'data' with a much deeper appreciation of the need to be attuned to the ontological 'being' of Tom. If I could go back into that situation, I would have a conversation that was more open to where Tom wanted to take me. I would listen respectfully and know that when he started talking about people or times that had nothing to do with peeling potatoes, I would begin to understand what lay behind so as the be closer to accessing the phenomenon of living in his world.

Conclusion

This chapter has been the culmination of my argument, setting out to answer the third question of my thesis. Chapters Three to Six showed that questions of being can be evaded, overlooked, we can accept that things exist, and turn away from questioning towards everyday matters. The example of Tom, as a previous client of occupational therapy, was a conduit to help the ontological come forth and bring a depth of knowing about the person. In this chapter Tom helped reveal that as humans we first exist in a world, we encounter the world, surge up in it and thereafter define ourselves. I showed that through listening and being open to the person, the richness of what lies beneath the words, expression and way of being in the world is revealed. I have shown that with an ontological view we can begin to understand what people may experience in their lives, as they go about their day to day activities and engage with the objects and people around them. The phenomenological or ontological perspective has the strength to cross cultures and generations because in the end we are all human living in the world. If we are truly open to 'other' it is their experience of what matters that comes to the fore.

Chapter 10 Conclusion: Tying the threads together to make it matter

> The simple hardly speaks to us any longer in its simplicity because the traditional scientific way of thinking has ruined our capacity to be astonished about what is supposedly and specifically self-evident. (Heidegger, 2001)

Introduction

As the quote above captures, in essence, I went back past the science that overlays the models, to be astounded by the simple meaning of what it means to be a human engaging in occupation in the world. The intent of this thesis was to uncover how occupation-based models and their symbolic representations were developed, and to determine if they still hold a place in occupational therapy going forward, given what is known about how people engage in their world. I asked the following overarching questions to guide my research:

1. What was the contextual history that led to the development of occupation-based models?
2. What do the diagrams representing the models reveal and neglect from practice in their use of signs and symbols?
3. What perspective can bring back a person's everyday doing, the things that matter most to them, that are currently overlooked?

The extent to which this study has answered these questions and implications for the future are brought together in this chapter.

Summary of findings

This research could have used assessment, policy, treatment protocols, or health system analysis as the subject matter to focus on. But the choice to use occupation-based models at its heart was strategic, because much of practice hinges off these hegemonic devices, such as the profession's assumptions and theories, but also assessment and treatment practices. To analyse the occupation-based models, this thesis used an eclectic array of methodologies and methods. By reviewing approximately 200 years of occupation(al) therapy history from the perspective of how people were viewed and how practice was espoused, I was able to show that occupational therapy has moved progressively toward scientification and applied many of the hallmarks of science to its

practice. That is, occupational therapy has moved from controlled observation, measuring and pattern recognition, to categorisation, conceptualisation and abstraction into generalised models, to represent how a person engages in-their-world. Others in the field have also charted the rise of the ontic, albeit with different terms such as rationalism, paradigm shifts, empirical scholarship, epistemological transformations to name a few (Crepeau & Wilson, 2013; Hocking, 2007, 2008; Hooper & Wood, 2002; Kielhofner, 2009; Laws, 2011; Mocellin, 1992; Peters, 2011; Shannon, 1977). I do not suggest that science should be abolished, but instead that it be used wisely and appropriately, at levels where interpretations and meaning do not matter (Leonard, 1989). Whilst some scholars have tried to suggest ways of overcoming epistemological challenges through self-authorship (Hooper, 2006), the person still sits outside of their vision and the focused is still on the science of practice. Yerxa (1998) even warned the profession about its infatuation with measurement, acute medical care and technology and its generalisation of theory and practice. She also warned of the behaviourists' gift of "oversimplification…by which inherently complex phenomena are reduced to parts or fragments which are more easily seen, understood and/or controlled" (p. 5). She called this the hobgoblin of the profession, which has become part of the occupation-based models and diagrams. Occupation based models, their diagrams and even things like our understanding of culture have homogenised people and distilled cultural practice down to rules that no longer regard the person as an individual (Davis-Floyd & Davis, 1996; Seguna, 2014). The drive for this, as shown in the historically focussed chapters, was a need for efficiency and standardisation of practice so that people were treated in a safe, manageable, justified, measurable, sanitised and procedurally driven way. This controlled kind of practice had the risk and uncertainty taken out of it, and thereby maintains satisfactory relationships with health funders in places like the North American context. Practice of this nature was also in the interests of the health profession and health services that could use therapists as a commodity for service delivery with maximum output. This conclusion is echoed by people like Mattingly and Lawlor (2001) who describe that "the power of any particular diagnosis is not necessarily linked to its impact on a patient's overall health, but rather on its symbolic (and economic) capital" (p. 49).

Simply doing what seemed 'right for the person' was seen to lack rigour and could not be substantiated in a world becoming dominated by accountability, efficiency and measurability, and rules for prescription (e.g. Chester, 2017). Occupation-based models

and theories were proposed and then 'tested' through research. But there are intrinsic limits with research and testing as they are only ever able to show if the results agreed with the theory, and what corresponded between results and theory. Heidegger (2001) said that nature can only project onto theory, in this case with the model makers as intermediaries, which is then researched to get results about the theory, not about the nature. It was thought, rightly in that time, that an increase in scientific knowledge would lead to increased understanding of the richness, complexity, diversity and vast variability of occupations, people and environments. The idea that there is this other world out there that is separate from us and can be captured through a truthful search through theory is flawed to begin with, in what Husserl called the 'natural attitude' (Sawicki, n.d.). Put simply, science and technology are unable to answer the human side of existence. Science's dogma is that everything that is real in nature can be turned into an object, that it conforms to laws, and thereby can be measured and calculated (Heidegger, 2001). More than half a century has passed since the scientific paradigm sat at occupational therapy's table, and paradoxically science has done the opposite. The realisation that science has limits is growing and, whilst logical positivism may have cleared confusion and haziness in earlier days, sole reliance on this way of seeking 'truth' will lead to untenable consequences. Verification, such as that found through logical positivism and empiricism, is only possible for a small portion of things the profession needs to say. The diversity present in the world requires a different way of talking and a humility in not claiming we know how a person engages in their occupations in their world.

The history of ideas and the analysis of model's diagrams using semiotics showed how specific sciences and the ontic perspective have pushed their way into occupational therapy. Science and the ontic perspective's strength persuaded the profession to drive toward theoretical scholarship and created abstract theories and diagrams that, in the end, tell a therapist nothing about the person who might be sitting with them. Models, as a form of technology, drawn out of many decades of positivist science do what Heidegger calls 'enframing' (Heidegger, 1977). Models enframe a person's reality into abstracted theories and diagrams and place a person in standing-reserve like commodities, such as was discussed in relation to the commodification in the industrialisation period. A model, or the process of creating a model, orders reality as though that order was already there, and imposes an image of the person's performance, their occupations and environments. In doing this, models and their diagrams conceal

the person and their reality and make them a measured and replaceable resource. Heidegger sees that letting beings be the beings they are is more informative (Heidegger, 2001), and thus can contribute much to practice.

Heidegger also described that technology does 'thinging' or are things that thing. Occupation-based models as 'thing-ing' objects exist because they and their diagrams have presence. Thinging gathers materiality, conceptualisations and modes of practice[184], and the models and diagrams 'be-thing' therapists through their conditioning. The gathering by things shrinks distance and time, and brings near those things that may have been far from grasp (Minar, 1999). But, this nearness of the thing to understanding does not bring an understanding of the person, that the thing tries to portray, any closer. As long as therapists, scholars and so forth, who regularly encounter a model are socialised to respond to it in a certain way, their practices are organised around the model or thing and they do not get closer to understanding the person before them. In this way the model and its diagrams as technology 'thing'. Technology looks to manipulate nature, to impose on it, to undermine the ontological integrity in multidimensional ways (O'Brien, 2004), and dislodges man from the earth (Spiegel, 1976), disconnecting us from the real struggles in humanity.

The crux of the thesis is that, through the scientification process described above, practice has dehumanised, homogenised, sanitised and generalised its ideas and overlooked a fundamental part of nature, that of being human. It is time for this omission to be recognised, and for education and practice to reignite and awaken the human and ontological perspective into its every day so that the profession can more easily articulate and relate to what means to *be* an occupational-being.

Ontological principles of practice

Occupational therapy, I believe, fits with a Heideggerian perspective. This perspective, put very simply, is a phenomenology about a person's everyday 'coping' in their world through interactions with people (in their presence and absence), the use of objects, or equipment, and anything else that 'matters'.

[184] Gathering is the gathering of the Fourfold in Heidegger's terms – earth, sky, mortals and divinities – which I have expanded to be earth = materiality, sky = enlightenment through conceptualisations, mortals = therapists' modes of practice, and divinities = mood and dwelling in a situation that lead to model making activities, akin to culture.

Recognising that occupational therapy so often offers ‘equipment’ or assesses the environment, I begin with that lens. Through using equipment and engaging with the world, a person takes a stand on what it means to exist. This captures the cornerstones of therapy: the person(s), their occupations and environment. Occupational therapists often use observation of everyday activities or occupations, making it possible for us to get closer to the pre-reflective experiences, or as Van Manen stated “the living moment of the now” (2014, p. 57). To this end, to advance an answer to question three in my thesis, and to guide the profession toward a way of articulating what it means to be an occupational being, I offer some principles for occupational therapy practice. I stress the word ‘some’, as a full account of these principles would take many more pages. I leave this to my subsequent publications to uncover. It is not a ten-step guide or method or a ‘how to do ontological practice’, but some thoughts on how to tune into an ontological way of being a therapist.

Principles in Heidegger’s way of thinking is the “from-where” something begins, becomes and is knowable (Heidegger, 2001). It is changeable in its becoming, through things like the back-and-forth interpretation that should happen between a therapist and person, hence why this section is also not able to deliver a pre-set method for practice. In my thinking, what begins in ontological practice is a care or concern for the person the occupational therapist sees. This is not the kind of concern that is focussed on personal agendas where the person is objectified, such as in assessment outcomes, reimbursement justifications, or what evidence supports possible interventions. Instead, it is a concern or a disposition of wonder about the uniqueness of the person in ‘their’ context, and the meaning of Being an occupational being; this is the “from-where something begins”. Such a concern sacrifices the therapist’s own requirements and preconceptions (Fiumara, 1990), and enfolds and nourishes the Being of the other person. This may seem obvious but is not so easily achieved. I have struggled with letting go of, or unlearning the occupational lens created through such things as ‘model-thinking’, for it brought such a clear direction to my understanding of practice. To now say that the mandate of an occupational therapist is “being together with a person” leaves the questions of ‘how’ with no sense of what might emerge in each encounter. It is to want to step off the firm hard ground into the land of possibilities.

In ‘concern’ for a person, a therapist must recognise that both themselves and the person have been ‘thrown’ into the world and thrown together. The person has potentially been thrown into changes through their health, or suspended life-world circumstances, as

well as their original ‘thrownness’ into the world and culture, at a particular time. ‘Who they are’ has shaped in a myriad of ways. Again, it requires more than just a recognition that there are differences in our sameness, it requires the therapist to also recognise that there is sameness in the difference; about being two Beings brought together for some reason. As Van Manen suggested, understanding insights into our ordinary existence can “help to understand in what ways existence can be disturbed or extraordinary” (2002, p. 61). In this moment of seeking understanding there is a need to let the world of ‘practice obligations’ fall away and to be authentically present.

Being present, easier said than done, requires an attentiveness to and valuing the language, and the unfurling interpretation of what is revealed through the person’s saying, doing, and looking. Again, this is not about the act of producing speech, or the exactness of words, but about listening for the nearness of a person’s words to their being. Heidegger (1971) said, language speaks. It speaks of pain, joy, vulnerability, anticipation, frustration, ambiguity and so forth through the words, silences, meanings and things like tone, inflection, duration. These illustrate, they gift a story and point to the meaning of a person’s Being, beyond what dictionary definitions may say about a word. Such as the example of Tom peeling a potato, the language gathers the experiences encountered in the doing, and speaks about a deeper meaning of being-in-the-world. Only through listening can what is spoken become visible. Listening occurs when the sound of stillness is heard, when hearing is held back and responding is attuned to the simple onefold of their shared space and care (Heidegger, 1971). Alongside this, therapists should recognise that there is an asymmetry to their own language in the form of jargon or tick-boxes on clinical records that is based in a Cartesian perspective. Heeding this asymmetry in both verbal and non-verbal language can open opportunities for things that may have been invisible to become visible in the relationship between a therapist and a person.

Another principle, often overlooked in occupational therapy, is remembering that the therapist brings forth a ‘being-with’. When a therapist is with another person, the context is transformed, and this being-with shapes many things such as what the person experiences, does and says. Being attuned to what the therapist themselves bring to the context, whether that be a clinic or any other setting, through their mood, actions, words, and so forth. These human qualities in what becomes a shared space, calls for the therapist to transcend the concrete boundaries of practice and calls for a being-there where the two Beings intersect on a level of shared understanding.

Not only are the principles of how a therapist might interact with a person important to consider, but also how occupational therapy focusses on objects, be they therapy tools or adaptive equipment, and the environment. As discussed earlier, occupational therapy's unique position in healthcare allows us a glimpse into the everyday-lived experiences of being in the world and the equipmentality of things that belong to the person and those that belong to therapy. Here lie the possibilities of seeing objects and environment not as discrete 'things', but as 'things-in-order-to…' or in the totality of equipment. In considering the everyday things a person uses as ready-to-hand and present-to-hand, as described in the last chapter with Tom, or as part of the fabric of things in person's world, the possibility arises of understanding the person's resolve on who they are. These bring the entirety of the world closer to what a person does and thereby what it means to them. Most importantly, therapists need to consider what the equipment they bring with them means to 'this' person in the context of their every-day life.

It is not enough for a therapist to just 'think' or 'feel' these things, or an attitude toward practicing from this perspective. There needs to be a follow through and an obligation to transmit this way of seeing a person's unique and meaningful aspects of their life to the rest of the healthcare team. My earlier points on the language or communication between a therapist and person suggested that the medicalised or service based clinical records and forms (Rentmeester, 2018) leave little room for an 'occupational therapy story' about the person. However, it is not entirely impossible as Blijlevens and Murphy (2003) showed in their attempts to refresh clinical note writing in a way that gave more scope for therapists to write about the person as an occupational being. Some of these challenges are discussed in the section below on the threats to igniting an ontological perspective.

There are many things I could discuss on the principles of a practice based in an ontological perspective. Van Manen (2014) helps in keeping a more simplified version of phenomenology in view. By considering and reflecting on the core elements of Heidegger's, and other phenomenologist's, work, namely the lived body, lived space, lived time, lived things and lived other. These existentials are universal themes in everyone's life world as well as mood, language and dying (Van Manen, 2014). A therapist who is attuned to hearing the person's experiences of these existentials is opening their practice to the principles of ontology. As I said at the start of this section, I believe occupational therapy has a fit with the Heideggerian or phenomenological

perspective because of its desire to both listen, observe and reflect on a person's lived experiences. There may be some who call this type of practice untruthful, or unscientific, but the counter argument is that second-hand interpretation exists in all areas of practice, from epistemology to ontology, from occupational therapy assessment to authentic caring. Rather than there being another interpretive filter based in science and the ontic between people, ontology creates a path for letting oneself be seen in the light of our shared humanity. Ontolgoy lets Being show itself from itself. In this way I am supporting Heidegger's truth as aletheia, the state of not being hidden (Morris, 2014; O'Brien, 2004; Van Manen, 2014), or unforgetting (Dreyfus, 1991)d, as opposed to veritas, which is understood as justice or righteous truth. Thus, a therapist should attempt to un-conceal/reveal and unforget/evoke the truth hidden in the everyday experiences, such as what was shown by Tom as he went about peeling a potato.

Limitations of this research and future directions

In the methodology chapter I outlined some of the limitations to this research. These were positioned around the 'timeframe net' I cast to capture the historical data. In taking a relatively large, almost 200-year period, I could not dive as deeply as one that might have spanned just 50 years. The balance between breadth and depth, I believe was fair, in that I was able to show the significant scientific contributions to occupational therapy knowledge from its early days and the ontological shifts prior to the profession's inception. However, as with all history, it is an incomplete puzzle. If I had more time with this puzzle, I would use an intellectual history approach. This would deepen the contextual research to not only be about the ideas, but also of the thinkers who espoused those ideas. An intellectual history approach would extend beyond the history of ideas and allow for wider information gathering and interpretation processes. The pluralism in an intellectual history method would start with the words and aim to reveal such things as social movements, culture, lives at the time, discord in a community, role changes, or the general uptake of research that shaped ideas and knowledge. However, the trade-off is minor given these approaches are considered sister disciplines.

In this research I have used the CMOP-E and MoHO to illustrate and elaborate on my argument. Had I also addressed some of the other influential models in practice my argument would be stronger merely through sheer quantity, as the models all aim to essentially do the same thing. I explained, in the Introduction Chapter, my reasons for restricting the research to these two models only. Had I gone beyond a superficial consideration of the Kawa model, my thinking about the implications of the study for

the future may have been different[185]. Applying the same methods to the Kawa model would be a worthwhile exercise for further research to explore the balance between the ontic and ontological in this model. Likewise, extra depth would be gained in not just exploring the models and diagrams alone, but also the assessments that springboard from them.

One thought that struck me as I progressed in my thesis was that perhaps I had given the models and their diagrams too much status, that I had raised them up to a level where they do not actually exist in practice. This came down to some of my initial assumptions that models provide a threshold or a lens for therapists to see the world through, as a basis for practice. Perhaps this is not the case, but the models reviewed here are internationally known, used in non-English speaking countries and have large literature bases behind them. It is because of these reasons that there are implications for both education, and theory and practice.

Implications for education

Models and their diagrams have a semblance of being more teachable, when complexities and diversity is reduced to manageable chunks of information and re-imaged into a bite sized picture for a classroom. Equally, the abstraction created in the models and diagrams can create confusion (as it did with myself as a student) on what the connection to real-life is. The tension between educating therapists for the likely health-system they will be employed in (job-relevant) or educating them to be open to the possibilities of each person's unique occupational way of being (client-relevant) is not easily resolved. Pressures and expectations from industry or employer stakeholders can press educational settings to teach certain things or teach in certain ways. So, in this section, I can only speak on the implications for education in Aotearoa/New Zealand, my home country, versus the many layers of Northern American education and health systems. Teaching the practical skills and techniques of therapy, as well as the underlying knowledge to these, are important in order to do the technical work. But theory and practical know-how are pointless if the craft of relationship is missing. There is an underlying and very viable possibility for fostering an ontological view in education. To the extent that educators take up the argument in this thesis, they will be challenged to discard teaching practices based on models and shift the focus to what it means to *be* a 'doing-human-in-the-world'. It is crucial that the profession leaves

[185] I acknowledge that this model is situated in a Japanese cultural context and this is a culture beyond my experience.

‘doing’ the way it is seen, without trying to reduce it to something else as models have tried to do. Instead, attention must be paid to the question: to what extent ‘doing’ refers to other phenomena to which it essentially belongs? as was shown in Chapter Nine with Tom. It requires a shift in language and focus from a teaching point of view. Pragmatically, narrative approaches (Riley & Dall’Acqua, 2019), the use of metaphor (Hanne & Kaal, 2018) or body-pedagogies (Kelly, Ellaway, Scherpbier, King, & Dornan, 2019) may enable a shift in focus from occupational performance to that of Being. Engaging students with storied accounts of disability or personal challenge so they may see the eventfulness of care from the person’s perspective, rather than the routine of practice from their own (Mattingly & Lawlor, 2001), may help open up students’ hearts before minds. A phenomenological and specifically a Heideggerian perspective in teaching will provide bright illumination for future occupational therapists on the meaning of everyday life.

Implications for theory and practice

The need to be able to say how occupational therapy works is so strong and has been present for many decades, and perhaps the profession is getting closer to being able to do this, but gaps still exist. For other health professions, it is clear what their tasks are and what their tools for practice are, but occupational therapy deals with a richness and diversity which cannot be captured through positivist science, techniques, formulae, or theory alone. To recognise diversity, in its broadest sense, a diverse range of perspectives must be used, such as the one being argued for here.

Threats to reigniting the ontological

This research tackles a subject that, I guess, sits close to the heart of many occupational therapists who would like to defend the status quo. Destabilising the first-world hegemony of occupation-based models, driven by North American networks, will not be easy given the years of training, tradition, pride and ownership attached to the models. Some of this resistance was already felt during this study through the journal manuscript review process. Enabling a systems wide change, in scholarship and in education, to one with a critical regard for models will be hard because of bureaucracy and institutional barriers within work settings. These barriers are greater due to health systems, clinical governance and reimbursement models that press for measurable, quantifiable and reasoned justification for intervention (Foye, Kirschner, Brady Wagner, Stocking, & Siegler, 2002; Howard, 1991; Jongbloed & Wendland, 2002; Orton & Hocking, 2017; Paterson, 2010; Walker, 2001). It will be a seemingly insurmountable task for therapists

wanting to effect change, unless a community of scholars and therapists agitate the status quo, to do justice for the people and communities they serve (e.g. Egan, 2018).

Shifting the views of larger scale health settings that are dominated by an ontic, bio-medical view will also need a shift in how practice is done. The need to explain what practice is, mentioned above, sits within an 'occupational performance' network (e.g. self-care, productivity, play, cognition, physical, affective, volition etc.) consisting of assessments, interventions and evaluations. Assessments, like many currently in use, that come at an understanding of the person from an outsider's perspective, do not get close to revealing what it means to exist in the world. As was explored in the last chapter, Dasein means to be a Being constantly engaged in the tasks and activities that are cared about. Assessments that analyse a person's occupational performance imply that this performance is fundamental to our knowledge of the human being. It implies that what a Dasein cares about in their every-day doing is their performance, and that the true and real relationships amongst people is a correlation between performance processes. The idea that understanding a person can come through examining their performance components does not resonate even with occupational therapy's belief that meaning is created through a person's doing, being, becoming and belonging (Hitch, Pepin, & Stagnitti, 2018; Hitch, Pépin, & Stagnitti, 2014; Wilcock, 1998, 2007). Every person is a unique Dasein who is thrown, through birth, into a unique socio-cultural context, gender, social status and so forth. The facts of their situation influence their choices about what occupations they care to engage in. There are no assessments in occupational therapy that explore this. Assessments are the first step in 'enframing' (Heidegger, 1977), by driving out every other possibility of revealing the person, and then by pointing to what the most appropriate interventions might be. Interventions aimed at overcoming performance limitations have merit from an everyday doing point of view, for what is occupational therapy without the therapy. But ontologically, what occupational therapists could aim for is the self-forgetting state of a person (Heidegger, 1962), so that the person may recover and reclaim themselves as their own and not just as a notion of what it means to be a 'healthy and functional' person.

Supports to reigniting the ontological

Leading on from the assessment focus in the last section, there are small changes that bring the uniqueness of person into practice a little more. The Canadian Occupational Performance Measure also (COPM) aims to be a client-centred subjective measure and the Perceive, Recall, Plan, Perform (PRPP) assessment (Chapparo & Ranka, n.d.) makes

a start to understanding the person, as the person chooses the assessment tasks. These challenge the therapist to know more about the person, what they do and how they do it, and to honour what they experience and think about their performance. The occupation the person chooses in the PRPP is embedded in their life, their culture, their routine and their home. Even though both these tools rely on measuring occupational performance, and its various taxonomies, they herald a shift in assessment practices that could move the profession away from standardised measurement of time, space, performativity to one that listens to the person and what they care about.

At a bigger level I draw on what Heidegger once wrote:

> "Cells" of resistance will be formed everywhere against technology's unchecked power. They will keep reflection alive inconspicuously and will prepare the reversal, for which "one" will clamor when the general desolation becomes unbearable. From all corners of the world, I now hear voices calling for such a reflection and for ways to find it – voices that are renouncing the easily attainable effects of technology's power. (Heidegger, 2001, p. 283)

This seemingly revolutionary call for uprising from Heidegger, not in a demonising way of technology or sentimentality for the past, appears to be gathering in momentum. Finding a way past the technological and capitalist driven economies is supported by such large scale ideas as welfare economics (e.g. Nussbaum, 2010; Nussbaum & Sen, 1993; Sen, 2009). This is seen in countries like Aotearoa/New Zealand where the 2019 national budget was called the Welfare Budget (Treasury, 2019), recognising that economic growth does not guarantee improvements to the living standards and well-being of real people.

At a smaller, but no less significant level, the spotlighting on Western colonisation and wrongdoing toward indigenous nations has raised to the consciousness the different ways of being and their importance. For example, in Canada the First Nations are being honoured and their needs more deservedly considered in healthcare (Canadian Association of Occupational Therapists, 2018; Truth and Reconciliation Canada, 2015). In Aotearoa/New Zealand, bicultural practice is a requirement for registration as an occupational therapist and appears in such things as research ethics applications. Applicants are required to consider the Māori perspective, to highlight that there are tensions in the worlds and that research must be balanced across different worldviews. For example, the notion of whanaungatanga (a sense of belonging) is an important Māori value and is expressly drawn on in research approaches where relationships may

otherwise have been very distant and clinical. Bi- or multi- cultural practice pushes us towards the ontological, to view the different perspectives that other people hold. For example, the Māori worldview (te ao Māori) acknowledges the interconnectedness and interrelationship between all living and non-living things, and so seeks to understand these in their totality, not just as parts. In this world view the person is not seen in isolation but in the totality of time, people, places and care. I would argue that the Māori worldview aligns more closely with a Heideggerian view than that of the traditional Western view, which is encouraging for those occupational therapists and people needing care in Aotearoa/New Zealand.

The limitations of the traditional Western dualistic view have also been discussed within occupational science literature. There has been increasing discourse on the supporting philosophies for the profession such as those calling for a transactive or Deweyan view (e.g. Aldrich & Cutchin, 2017; Barber, 2006; Cutchin, 2007; Dickie, Cutchin, & Humphry, 2006), as well as phenomenological approaches to the body (Bailliard et al., 2018), or where different constructs to well-being may re-conceptualise the profession (e.g. Hayward & Taylor, 2011).

These discussions show that some in the profession are not satisfied with the status quo understanding and that a more humanised view is needed. The call to a much more humanised health care service is not just an occupational therapy phenomenon. It is also present in medicine with people such as Robin Youngson and others (e.g. Egan, 2018; Fernando, Skinner, & Consedine, 2017; Heath, 2016; Twohig, 2003; Wood, 2004; Youngson, 2014; Youngson & Blennerhassett, 2016) promoting compassion in healthcare, based on the belief that healthcare practices have become so depersonalised that an almost activist approach is needed to bring back the genuineness of relationship and human contact. A humanised explanation of the power of occupation can be found in non-theoretical texts also. For example, Hayama (2014) who is not an occupational therapist himself, wrote a small book about the successes therapy brought to the lives of people who came to his day-centre[186]. Among many of the poignant statements he makes about occupational therapy lies this:

> …you can't help but be smitten with the power of occupation and the individual's power to live. Watching first-hand as a person's spirit comes through after enduring all of that, there is an elegant beauty there that rivals anything you would feel….Of course occupational therapy is

[186] Hayama, an accounting lectuter, established the Keyaki-Dori Day Service Centre in Fukuoka Japan, after experiencing a stroke and personally feeling the benefits of occupational therapy.

> a kind of therapy, but to me it seems like more. It means that person's very own way of life. And when I talk about your way of life, I don't just mean *a* way to live, but specifically the way *you* live….It is our job, then, to see, feel, understand and absorb this fully. (pp. 15-16)

Hayama superbly captured that being smitten starts from the heart and can penetrate the soul. He also showed that there is more to occupational therapy than helping people with a way of life that might come from books or others. By understanding with our hearts occupational therapy practice has the potential to help people's presence re-emerge through what Mattingly and Lawlor (2001) described as the miracle of taking care.

A call to act with intention

As this thesis has progressed, it has felt more like a driving wedge in a split that was already there in occupational therapy scholarship, a split that seems like it is growing. What this thesis has done is not deliberate on arguments such as those on taxonomies or to correct past theories, but to take the things that most occupational therapists agree on and to challenge the underlying structures and open a space for progress of thought. Instead of looking at the world differently, I have looked differently at the way in which the profession looks at the world, by exploring the tension between the ontic and the ontological as the underlying structures. As I have shown, over the course of the profession's existence, the strain between the ontic and the ontological has swung toward the ontic.

Through this thesis, I am calling for a reversal of the hegemony of the ontic, to restore the balance and bring ontology back into the light. This, perhaps a grandiose plan, will slow and hopefully stop occupational therapy's slippage into more devoid technologically focused practices that have forgotten about what it means to be a human being in a world. It will shift our view to the person as always doing something, as pointing or intentional toward something and engaging with the world through using everyday equipment for the sake of Being, becoming and belonging. Phenomenological ontology resonates and has a harmony with the fundamental philosophies of occupational therapy. Both give importance to time and space; both see that people become who they are through the equipment or things in their world or as part of their culture. Both see that by using things, doing things we care about, habits are formed, and this frees us to move towards ways of being that are meaning giving in our everyday lives.

At a personal level, this thesis has been part of my life for about six years. It has travelled on holidays with me, has woken me at night, and made me cry in happiness - mostly when it made sense. It has changed me to be more compassionate and open, to see the world and how people engage in it in a different way. I have revelled in almost every minute of it, and so I do not want to see this just go onto a shelf and collect dust. Meaningful change requires an ongoing commitment to continue my thinking and scholarly writing on the harmony between Heideggerian phenomenology and occupational therapy practice. There are avenues for showing the connection between the 'doing' focus of occupational therapy and the 'being-in-the-world' of Heidegger's phenomenology through our constant engagement with the world and everyday objects. The discussions on alternative philosophies is not over yet as this thesis has shown, and there are many opportunities for these discussions to be had.

Writing, or presenting at conferences for international reach is one way to challenge other's thinking, but how much this will effect any change is difficult to know. But change could be achieved through leading others to experience and recognise the value of the ontological in practice and to not see a person as "this or that human being" (M. Heidegger, 2001). In teaching, undergraduate students could be encouraged to be open to the potential that lies within the therapist and client relationship, to go beyond the knowledge that is valuable for technical practice, and to 'listen' for the existential phenomena that point to what occupational therapy cares about. This kind of practice has the potential of getting closer to the client's experiences themselves and of exciting and bringing meaning to both the therapist and the client. As a long-standing lecturer, and ex-Programme Leader in the Department of Occupational Science and Therapy, I have a voice that others may listen to. Our current changes toward a bi-cultural curriculum will open up opportunities for bringing different world-views to the fore in the programme, teaching contextually relevant content and shape how teaching is done.

Furthermore, there are now several academics in the School with interests in phenomenology, which makes Heidegger's call for 'cells of resistance' towards the ontic stronger. Ongoing inter-professional discussions and cross-pollination of ideas might see the School's strength as a hub for phenomenological and post-graduate research and writing grow. At the moment, I am not supervising any post-graduate research students, but in the future I will be sure to ask questions that challenge their thinking toward the philosophy of practice, the underlying assumptions, or questions that seek to find where the ontological structures are in their own research.

Conclusion

This study began by uncovering an entirely novel history of occupational therapy. One that went beyond the typically descriptive gaze of others', to a history of the nature of being. Through my research I have shown that across the history of occupational therapy, the human or ontological side of practice has had to fight to be seen past the scientific paradigm and the abstracted theoretical models that have had dominion over occupational therapy practice. Through this history, and by diving into a semiotic consideration of the models and their diagrams, I showed that practice has become homogenised with people reduced, levelled down and turned to something that fits the abstracted and distilled theories or the rules of practice. It is time for the hegemony of theoretical, ontically driven models to be discarded and to be seen as un-foundational to the philosophies of occupational therapy.

If "the task of the craftsman is not to generate the meaning, but rather to cultivate in himself the skill for discerning the meanings that are already there" as Dreyfus and Kelly stated (2011, p. 209), then I believe I have done this. I discerned that the meaning of everyday doing for people has become lost, perhaps not completely in the face-to-face practice, but the importance of it in the theoretical thinking is lost and regarded as least important. But the possibilities for a rebalancing of the ontic and ontological is conceivable given the dialogue abounding in occupational therapy and wider fields. In closing, I have, as said earlier revelled in this study. It has challenged me to the core in my knowledge and understanding and feeling of what it means to be an occupational therapist. I began this study as a scientist and leave it as a phenomenologist. It is now time for me to go and release the occupations I put on hold or diminished while this thesis existed in my life, while others read and digest my words.

> People who have not been in Narnia sometimes think that a thing cannot be good and terrible at the same time.
>
> C.S. Lewis, The Lion, the Witch, and the Wardrobe (1950, p. 123)

My thesis showed that what has been acclaimed as 'very good indeed' over decades of occupational therapy theory and practice, also has the potential to impact the clients of practice in a 'terrible' way. Therein lies the challenge.

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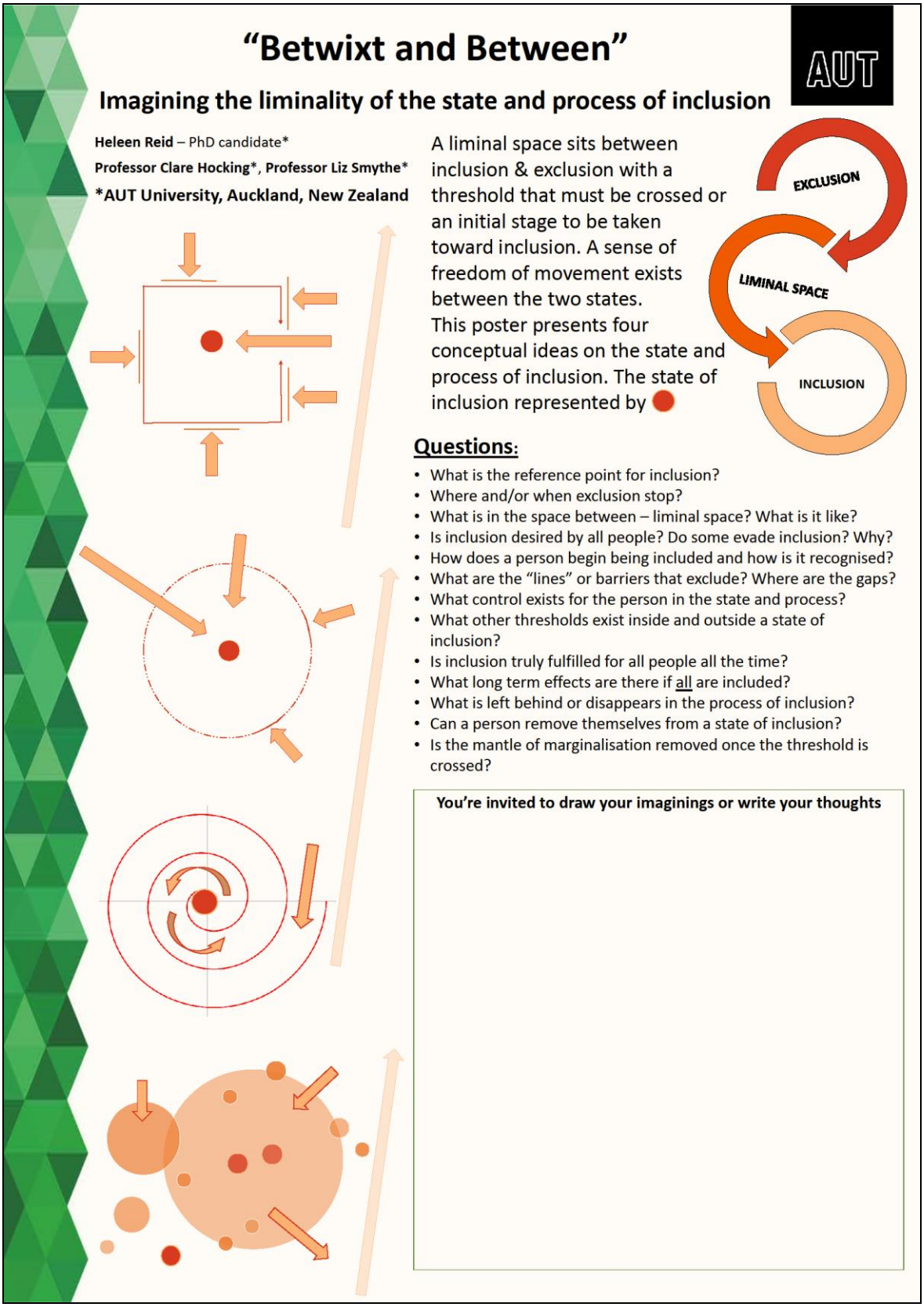
Appendix A - ASOS Poster Presentations 2016



Reid, H., Hocking, C., & Smythe, L. (2016). *Betwixt and between: Imagining the liminality of inclusion*. 7th Australasian Society of Occupational Scientists Symposium, Auckland, New Zealand 21st - 22nd April 2016. (poster presentation).

Difficult footing in occupational therapy for inclusion & participation

AUT

How does occupational therapy connect its practice philosophy to the ideals it aspires to?

Heleen Reid – PhD candidate*
Professor Clare Hocking*, **Professor Liz Smythe***
***AUT University, Auckland, New Zealand**

Background:

Little importance has been given to the history of occupational therapy practice and how it has established a difficult foundation for the goal of inclusion and participation.

Methods:

A history of ideas approach critically examining the extent to which inclusion is fostered in the fundamental assumptions in occupational therapy philosophies, models, approaches.

Findings:

Over the last 40 years, the profession's views have continued to create subtle or obvious pockets of exclusion through normative views and its ideas have not kept up with shifting perspectives about human rights, disadvantage, and discrimination.

Professional statements/assumptions:

1. ***Values are beliefs and commitments about what is good, right and important to do.***
2. ***People are motivated to choosing occupations and adapting to the environment.***
3. ***Habituation is the process for organising actions into patterns and routines within a relatively stable environment.***

Critique:

- Models cater to the privileged and/or people with acceptable moral, legal and ethical integrity.
- Models privilege occupations that are "good" with a positive societal contribution or accepted by society as a whole.
- Western-centric models are difficult to apply to other cultures.
- Adaptation is assumed to be normative, desired and achievable by all.

Theoretically excluding those:

1. Perceived to choose what is <u>not</u> socially good, right and important to do e.g. taggers, drug users, street racers, stay at home mothers, homeless, alcoholics...
2. With no choice options or capacity or who choose the "wrong" option e.g. profoundly disabled, street children, incarcerated, child soldiers, refusal of assistive devices or adaptation, unrealistic goals, prefer dependence...
3. In an unstable social order and/or changing physical space where patterns and adaptation are difficult or not able to be established e.g. natural disaster, refugees, war contexts...

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Reid, H., Hocking, C., & Smythe, L. (2016). *Exclusion in occupational therapy*. 7th Australasian Society of Occupational Scientists Symposium, Auckland, New Zealand 21st - 22nd April 2016. (poster presentation).

Appendix B – Articles for publication

Permission gained from journal editors to use published articles for thesis.

Article

Canadian Journal of Occupational Therapy
2019, Vol. 86(4) 313-325
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The making of occupation-based models and diagrams: History and semiotic analysis

Le développement des modèles et diagrammes fondés sur l'occupation : Histoire et analyse sémiotique

Heleen A. J. Reid, Clare Hocking, and Liz Smythe

Key words: Conceptual models; Occupational therapy; Ontology; Semiosis; Theory.

Mots clés : Ergothérapie; Modèles conceptuels; Ontologie; Sémiose; Théorie.

Abstract

Background. Models provide a structure for organizing knowledge and facilitating learning and are upheld by occupational therapy as epitomizing the cornerstones of its practice. **Purpose.** This article briefly examines the scientific history of occupation-based model development in the 1950s before addressing the process of conceptual model making in occupational therapy. Using the theory of semiosis, it explains and takes a critical perspective on conceptual model building in occupational therapy. **Key Issues.** Since the surge of development in the mid-1970s, models have grown and undergone some revision. However, while the profession has often contested the definitions of its core terms, it has not challenged the accepted models and diagrams that present the constituents of practice. **Implications.** Examining the processes of conceptual model development from a critical, semiotic point of view foregrounds models in the historico-theoretical literature and brings into scrutiny a model's relevancy in current practice.

Abrégé

Description. Les modèles proposent une structure pour organiser des connaissances et faciliter l'apprentissage et ils sont considérés en ergothérapie comme des symboles des fondements de sa pratique. **But.** Cet article examine brièvement l'histoire scientifique du développement des modèles fondés sur l'occupation dans les années 1950, avant d'aborder le processus d'élaboration des modèles conceptuels en ergothérapie. À l'aide de la théorie sémiotique, l'article décrit et jette un regard critique sur la construction des modèles conceptuels en ergothérapie. **Questions clés.** Depuis l'élan de développement du milieu des années 1970, les modèles ont évolué et ont été révisés. Toutefois, bien que la profession ait souvent contesté les définitions de ses termes fondamentaux, elle n'a pas remis en question les modèles et diagrammes reconnus qui présentent les composantes de la pratique. **Conséquences.** D'un point de vue sémiotique, l'examen des processus d'élaboration d'un modèle conceptuel permet de mettre les modèles en relief dans la littérature historico-théorique et de jeter un regard critique sur la pertinence d'un modèle pour la pratique actuelle.

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Occupation-based models, as defined by Cole and Tufano (2008), are an organizing technique to help with "categorising ideas and structuring approaches to thinking about complex problems" (p. 61) and are usually expressed symbolically as figures and diagrams. The function of occupation-based models is to broadly depict a relationship between people, human occupation, and the environment. As such, they can be characterized as "conceptual models," in that they represent concepts and assumptions, as distinct from practice models, which prescribe approaches to remediate specific areas of dysfunction (e.g., Toglia's [2011] Dynamic Model of Cognition). Occupation-based models are intended to inform occupational therapists across diverse practice contexts, and while each holds true to the profession's axioms about the person, occupation, and environment, different interpretations of those concepts and the relationships among them are laid out in antecedent texts.

In this discussion, we focus primarily on the diagrammatic representation of the profession's occupation-based models (from here also called a diagram) and argue that these have become obsolete through their rigidity and simplicity. We commence by reviewing the historical contributions to model development in science and in health disciplines, which reveals connections to occupational therapy's uptake of model development among occupational therapy scholars. Following is an applied critical analysis, guided by semiosis, of the diagrams developed as representations of the profession's occupation-based models. The diagrams presented in some of the profession's best-recognized texts are easily brought to mind: Canadian Model of Occupational Performance (Canadian), Person-Environment-Occupation Model (Canadian), Model of Human Occupation (American), Person-Environment-Occupation-Performance Model (American), Occupational Adaptation Model (American), Ecological Model of Human Performance (American), Kawa Model (Japanese), Occupational Performance Model–Australia (Australian), and Biel Model (Swiss).

At least nine of the diagrams in the literature depict person/occupation/environment and the relationships between these concepts using circles, ovals, triangles, arrows, and rectangles. These symbols are grouped together to express more complex ideas and relationships and to signify the real-life entity of a person engaged in contextually located occupations (see Figure 1).

Before the 1960s, the word *model* rarely appeared in the literature (Godin, 2017). Theory was described in a linear fashion in prose capturing causal sequences derived from observations. Those accounts are a stark contrast to the complex and unpredictable nature of occupation recognized today (Cox, 2017). When occupation-based models were developed, the intention was to guide practice, delineate areas for assessment, distinguish occupational therapy from other professions, and "act as a unifying basis for the profession . . . [that would be] critical in describing its rationale" (Krefting, 1985, pp. 176–177). However, the diagrams accompanying occupation-based models seem to have taken on a life of their own. In the general sense, the diagrams are symbolic representations of empirical phenomena illustrating certain phenomena that allow people to look for patterns and guide actions through their predictive powers (Sebeok, 2001). As conceptual devices, diagrams are used in the network of activities in the production of scientific knowledge.

There have been glimmers of realization that practice may not easily condense into diagrams (Madsen & Josephsson, 2017) spurred on by the discussion around a Deweyan perspective (e.g., Cutchin, Dickie, & Humphry, 2006; Laliberte & Huot, 2013) and recent discussion of Hannah Arendt's ideas in occupational science (Jansson, & Wagman, 2017, 2018). However, questioning the models (see Creek & Feaver, 1993; Feaver & Creek, 1993; Reel & Feaver, 2006) has not gained the momentum needed to disturb their dominance in practice. This article puts the spotlight on the process of conceptual model making and begins to question if the diagrams satisfactorily portray occupational theories. This analysis is guided by semiotics, the study of signs, symbols, and the things they connote. Using intellectual history methods, primary and secondary sources were identified by tracing back through the current literature on the occupation-based models. Diagrams in other disciplines, such as early-1900s psychology texts, were also located and analyzed for their links to their associated models and their influencing ideas. Due to the rapid transformation of the profession in North America in the first half of the 1900s, and the rise of occupational therapy models in the 1970s, which now have international influence and impact, the American and Canadian literature predominates in this article, with special focus on the models that rely heavily on symbolic representations.

Background

History of models in science. Stemming from the ancient Greeks, Western science has always sought to explain the natural world in models and categories and by generating rules (Lindberg, 2010). Ancient Greek philosophers were analytical and interested in control of the environment and others (Nisbett, 2003) because people were seen to have agency over things. The Greeks saw people and objects as separate from their environment and able to be categorized and explained using logical rules (Goddu, 2004). Thus, the rules of logic and analytics applied to the natural environment came to be used to explain behaviour. People and objects were also seen as having imbued properties, which if identified could help control their behaviour (e.g., a falling object was described as containing gravity). Aristotelian thought patterns resurfaced in the philosophies of the 17th and 18th century British empiricists, such as John Locke and David Hume (Audi, 1999). Empiricists contended that all knowledge comes from sense experiences, especially perception, and evidence (Hatfield, 2012; Richardson, 2009a). Rationalism, on the other hand, relied on reality having a rational structure that could be grasped through mathematical, logical, and deductive principles (see Table 1 for definition of terms used within this article).

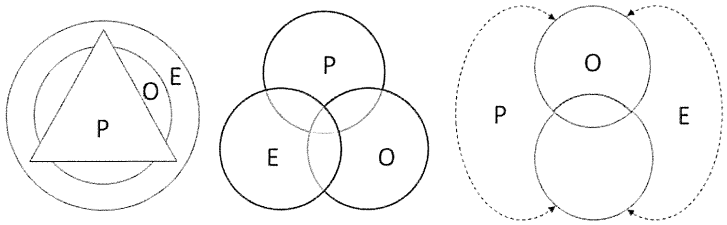

Figure 1. Models best recognized by occupational therapists. P = person, O = occupation, E = environment.

Remnants of mathematical history have also filtered into modern thinking, in particular the abstract presentation of ideas as mathematical symbols. The 18th century mathematician Leonhard Euler presented the first theorem in graph theory, which would later go on to be the origin of topology (Rodgers, Flower, & Stapleton, 2012) and make an appearance in early-1930s psychology and sociology. Euler diagrams are linked to set theory in mathematics, which grew in popularity in the late 19th century to the 1930s (Mumma & Panza, 2012) alongside the Venn diagram (see Figure 2). A Euler diagram usually consists of circles depicting sets and subsets. A Venn diagram is an illustration of not only logical reasoning but set theory determined through logical positivist thinking.

Logical positivist thinking is a movement that developed out of the combination of the contrasting branches of philosophy, empiricism, and rationalism (Richardson, 2009a, 2009b). Logical positivism opposes metaphysics, especially ontology, considering it as meaningless. Instead, it supports the idea that all knowledge and science can be unified through verification of facts. These positivist views continued into the early 20th century with such organizations as the Vienna Circle pushing for a separation from philosophy and the scientification of physics and math. Logical positivism flourished in the 1920s to 1930s in Europe and in the 1940s to 1950s in the United States, with the late 1920s to 1930s seeing a great deal of literature, debate, and theory development in math, physics, biology, and psychology. Physics and other hard sciences were interested in the reduction of molecules into atoms, light into rays, and space into vectors. Rather than looking at the universe as a whole, science was looking at the parts to analyze determinacy and causality. Alongside those developments, early-20th-century mathematics again saw an unprecedented rise in the scope, complexity, and the abstraction of math concepts (e.g., Einstein's theory of general relativity).

Pressure from strong groups, such as the Vienna Circle and its immense and impressive connections, was a driver for more scientifically inclined professions, such as biology and psychology, to aspire toward scientification (Burnes & Cooke, 2013; Hatfield, 2012; Wagemans, 2015). Mechanization, categorization, operationalization, and measurement are all activities in the scientification of a discipline, with models as symbols of scientification (Godin, 2017) and an impression of rationality. Psychologist Kurt Koffka was dissatisfied with the science of psychology (Koffka, 1935) and was inspired by Clerk Maxwell, Albert Einstein, and Max Planck in physics. Koffka proposed Gestalt phenomena should be treated in terms of field continua (based on physics' field theory). This field theory also appears in Kurt Lewin's psychology on "life-space," which is a topographical representation of a person's behaviour in the environment using planar or topographical maps (Lewin, 1939). His work exemplifies the early use of abstracted models to describe behaviour. Lewin, a contributor to occupational therapy knowledge (Noreau & Boschen, 2010), and Wolfgang Köhler believed that psychology needed to follow physics and pull away from restrictive Aristotelian views (Köhler, 1920/1938; Lewin, 1939). The topographical representations used in psychology, attributable to Leonard Euler and John Venn through graph theory (Harary, 1969), are today used in many areas, including in psychology and sociology (Firey, 1950). The sociogram, credited to J. L. Moreno (Loomis & Pepinsky, 1948; Moreno, 1934; Northway, 1940) also used graph theory to represent a person's social links. What these early models aimed to convey was subsets and causality, using arrows or connectors and overlapping circles. These early models and graphs became one of the preliminary types and sources for prediction of human behaviour in the social sciences (Bell, 1964) and could be considered an emblem of postmodernity.

History of models in health science. Prior to World War I and until World War II, occupational therapy enjoyed a relatively self-effacing arts-and-craft focus in mental health (Licht, 1949), with psychology included in the curriculum from the 1930s (e.g., University of Toronto, 1937). The content in occupational therapy curricula was based in the experimental, behaviourist, and psychoanalytical perspectives of the time (e.g., Allen et al., 1944). The subsequent postwar physical rehabilitation focus in health care was a boon for allied therapies and created shifts in occupational therapy education (Loughlin, 1949). The balance in education shifted toward more recognized human sciences versus arts and crafts (e.g., Columbia University, 1942; Hooper & Wood, 2002; Presseller, 1984) as occupational therapy strove to gain the prestige and recognition of the medical profession. Around this time, key authors, like Licht (1947), called for clear, acceptable terminology stating that the failure to develop a theoretical basis for occupational therapy's procedures and objective

Table 1
Glossary of Key Terms

Term	Definition	Source
Empiricism	Growing in the 17th- and 18th-century Age of Reason and Enlightenment, empiricism is the view that all knowledge stems from sensory experiences and evidence relying on inductive reasoning. The scientific method is considered empirical and seeks to find universal truths.	Crotty, 1998
Gestalt psychology	A form of experimental psychology developed in the early 1900s that aims to explain (visual) perception in terms of shapes and forms (e.g., laws of similarity, closure, similarity).	Ash, 1998
Logical positivism	A theory supporting the systematic reduction of all human knowledge to verifiable statements through logical scientific analysis. Developed by members of the Vienna Circle in 1920s and 1930s.	Pearce, 2015
Metaphysics	A fundamental branch of philosophy that deals with many concepts, including but not limited to existence, knowing, time, space, world, objects, identity and change, necessity and possibility, religion and spirituality, determinism, and free will.	Crotty, 1998
Ontology	A branch of metaphysics that seeks to answer the question, "What is the nature of 'being,' reality, and change?" by finding out the profound significance of experiences as they reveal themselves to existence.	Scotland, 2012
Postmodernism	A movement beginning in the 1950s that has a pluralistic style as a reaction against modernism. Characteristics of postmodernism are complexity, vagueness, diversity, openness to meaning, interconnectedness, and revival of traditional elements.	Weinblatt & Avrech-Bar, 2001
Rationalism	A philosophical movement from the 17th-century Age of Reason, linked to mathematical methods, deductive reasoning, intellect versus intuition, sensory experiences, or religion.	L'abate, 2012
Vienna Circle	A group of early-20th-century philosophers, mathematicians, and physicists who regularly met to discuss logical empiricism and logical positivism, with the aim of making philosophy scientific through logic and the unity of science.	Richardson, 2009a

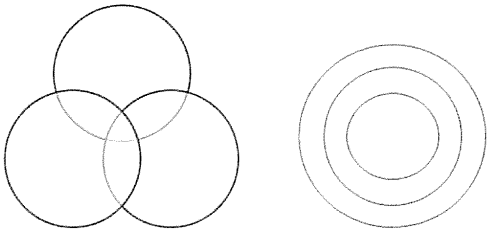

Figure 2. Venn and Euler diagrams that show sets and subset in mathematics.

proof of its effectiveness was its chief weakness. Criticism such as this supported the need for a scientific movement in occupational therapy, a consolidation of knowledge, and the development of definitions, taxonomies, measurements, and, later, models. This is an example of the early appearance of the positivist tradition in the profession that created a platform for a reductionist perspective (Kielhofner, 2009).

The 1950s and 1960s were a significantly transformative time for occupational therapy, as they were for many health professions. By the late 1950s, medical services became a social institution, not just a profession (Gaudette, Tysinger, Cassill, & Goldman, 2015; Stevens, 1996). In Canada, public recognition of occupational therapy increased in the 1950s (Cockburn, 2001), and the establishment of the American Occupational Therapy Foundation in 1965 boosted research efforts in the profession, which had been slow up until then. Credited with this change is the greater sophistication in knowledge and practice, along with the continued demands from other professionals for occupational therapy to rationally explain its value to Medicare and Medicaid third-party reimbursers and policy makers. To keep in favour with the health care funders and reimbursers, occupational therapy and its interventions homogenized as the profession tried to untie itself from its earlier arts-and-crafts image. With occupational therapy's foremothers having walked the profession alongside medicine, occupational therapy was placed in a secure position, in rehabilitation. Nonetheless, the call came from the increasingly scientific medical profession for occupational therapy to explain how occupations were curative as well as explain what populations would benefit from therapy.

The 1960s saw a great deal of theoretical discussion and development across many fields. Biology and economics grew, with significant authors, such as social economist Kenneth E. Boulding and biologist Paul A. Weiss, taking up ideas based in earlier systems theory (Boulding, 1956; Drack & Apfalter, 2007; Rapoport, 1997; von Bertalanffy, 1950a, 1950b; Weiss, 1969, 1971). Paul A. Weiss, a biologist and a founder of general systems theory, saw that the life sciences needed to develop its theoretical insights and experimental sharpness to gain from the upswing physics had experienced before it (Weiss, 1971). To simplify complex realities, general systems theory used modelling as a way to show linear processes and hierarchies (Cilliers, 2001; Gilbert, Boulter, & Rutherford, 1998). With their work

increasingly cited in noteworthy occupational therapy texts and endorsed by mid-20th-century scholar Mary Reilly, it seems clear that this was the genesis of occupational therapy models based on systems theory. It thus becomes clear that both the positivist tradition and logico-mathematical views have influenced occupational therapy thinking and model making through a number of different routes.

The term *model* started to appear in many areas of occupational therapy around the mid-to-late 1960s (Boulding, 1956; Callender & Cohen, 2006; Chapanis, 1965; Godin, 2017; H. Lee, 1970; Suppes, 1960). Mary Reilly (1962), alongside other occupational therapy contemporaries, has been credited in calling for a more systematized description of occupational therapy practice. The growth in professional standing, alongside strong academic voices in the 1960s to 1970s, such as Mary Reilly (Peters, 2011), led to calls for a commitment to a single paradigm and conceptual framework to unify concepts and theories based on human occupation (Kielhofner, 1980a, 1980b; Kielhofner & Burke, 1980; Kielhofner, Burke, & Heard, 1980). Reilly was interested in developing an occupational behaviour theory and saw that models presented a tool for conveying knowledge (Reilly, 1962). Reilly presented to the profession the idea that a model is a representational, thinking tool with its usefulness based on its ability to order, categorize, and simplify complex phenomena. Occupational therapy models began coming to life in the 1970s, with a burst of activity in the early 1980s (Krefting, 1985). Reilly's students at the University of Southern California created 10 models in their master's theses (Baker, 1977; Burke, 1975; Esenther, 1969; Heard, 1975; Hillis, 1974; Liptak, 1970; Pezzuti, 1970; Plumtree, 1977; Short, 1977; Wirth, 1970). Further model development and discussion followed in the 1980s and beyond (e.g., Barris, 1982; Chapparo & Ranka, 1991; Horan, 1987; Iwama, Thomson, & Macdonald, 2009; Joosten, 2015; Kielhofner, 1980a; Kielhofner & Burke, 1980; Law et al., 1996; S. Lee, Taylor, Kielhofner, & Fisher, 2008; Matuska & Christiansen, 2008; McKay, 1976; Mosey, 1980; Sieg, 1974; Woodside, 1976). Theoretical thinking and modelling in terms of mathematics, psychology, and general systems theory became business as usual for occupational therapists and have been on the profession's radar for 50 years.

The Conceptual Model as a Symbol: The Semiotic Process

Semiotics is the study of symbols, and conceptual models are symbols that represent a theory. Semiotics developed in 1868 when Charles Sanders Peirce argued, "We have no ability to think without signs" (Short, 2004, p. 241). Contemporary semioticians still agree that the ability to develop signs is a basic survival skill not just for the human species (Sebeok, 2001). Peirce proposed three different signs: an icon that resembles the object (e.g., a hat sign for a milliner), an index that has an actual connection to an object (e.g., smoke from a fire or a disease symptom), and a symbol that holds the element of interpretation.

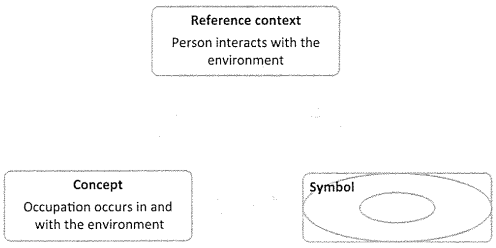

Figure 3. Epistemological triangle for occupational therapy knowledge. The symbol here is arbitrary and for illustration purposes only.

The three semiotic elements in Peirce's theory of signs are placed into a triadic relationship. The triad consisted of the (a) object or reference context, (b) model or symbol, and (c) concept or symbol's meaning (Atkin, 2010; Stjernfelt, 2000; Tylen, Fusaroli, Bjorndahl, Raczaszek-Leonardi, & Stjernfelt, 2014). By applying Peirce's triadic relationship to an occupational therapy model, we might see something akin to Figure 3.

The reference context, in simple terms, is the reality of a person doing an occupation. The concept that arises is the theory, an assumption generated through observation and reasoning. The symbol is a representation of the observed reality of a person doing an occupation and links to the inferred concept. This is the beginning of the creation of a model and diagram.

The creation and interpretation of a symbol follow different paths; the first is a world-to-mind path and the latter a mind-to-world path. The creator observes the world, applies an intended concept, and adopts a useable symbol or diagram through encoding. The interpreter pursues it in the other direction, extending the meaning beyond its referent to encompass other kinds of referents. That is, there is a process by which the diagrams are not denotative (precise, literal) but more connotative (contains associated meaning, is implied). We have captured this in Figure 4.

Until now, we have highlighted the diagram as a stand-alone object, purposefully neglecting the role of the model maker. However, the process of making a conceptual model and the contributions of the model maker to the representational meaning need to be considered, because signs and symbols are a language rooted in culture and learning (Stokoe, 2000). Furthermore, it is not the links between the arbitrary shapes, arrows, and figures that need scrutiny but the manipulations and interpretations of a person engaged in occupation (world-to-mind path) that model makers used in developing the model. Also needing to be considered are the manipulations and interpretations (mind-to-world path) that are generated by those who use the model to gain knowledge, predict, and explicate their practice with people.

The analysis of the process for developing a conceptual model is captured in this article as a synchronic snapshot. The contributions of the historical agents, early observers of occupation, proponents of the profession who postulated facts, and theorists who wrote the assumptions, will not be woven into this discussion. While acknowledging their contributions, we purposefully set them aside to concentrate on the observer of the reference context, the model maker.

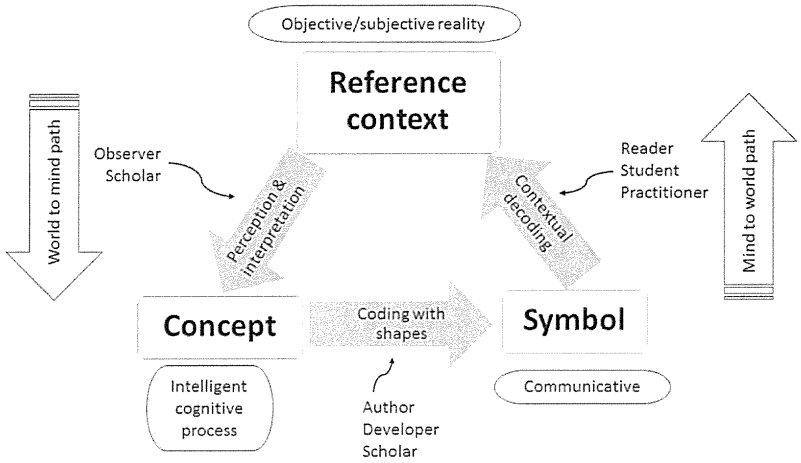

Figure 4. Semiotic process as applied to the Peirce's triadic relationship model. Adapted from Steinbring, 2006.

The Model Maker's Coding: An Intelligent Cognitive Process Toward a Communicative Symbol

Model makers have at their fingertips all of the cognitively accessible sensory and perceptual qualities of reality. From there, a three-stage process ensues where model makers first notice what they observe, in this case a person engaged in occupations within an environment. Second, there is what they say about what they notice; there is a relationship between person, environment, and occupation. The third process is influenced by the way the experience is encoded in their language and categories (Kochelman, 2007), what they infer from what they say about what they notice. The process of coding and meaning making undertaken in the making of a model needs to be congruent along the entire semiotic process (Sebeok, 2001). Congruency hinges on the concept, symbol, and the reality aligning. The coding, and subsequent decoding by the user, implies that there are unambiguous linguistic and semiotic rules whereby "messages" can be translated between the parts of the triad (see Figure 4). The messages need to be what the model maker and user have, in fact or by assumption, totally or in part, in common. That is, the meaning made by the model maker is the same as the meaning made by the user. Congruency is therefore dependent on the model maker having adopted the most appropriate symbol, shape, and layout to convey the concepts, theory, and language used about the real world but also that in the first place, the model maker has accurately interpreted the reality. Without the accompanying text or literature, conceptual models or diagrams are merely pictures, established by social convention, with some words attached. A stick figure is iconic and would suffice as a signifier of a human being, but a circle, oval, arrow, and triangle are more arbitrary. Our point is that the meaning can be lost in coding the model as a stand-alone vehicle.

A specific example is that the placement of one circle *in* another implies that occupation occurs *in* an environment, as with a container (Aldrich & Cutchin, 2017). The multiplicities the profession has created for the environment possibly press the model maker to choose a geometric form that symbolizes expansiveness, universality. That concept is symbolically captured in Western thought with a circle. Furthermore, a richness can be brought to the symbol through contact with other symbols. However, two nested circles do not automatically represent something as sitting within something else in real life. Nor does it accomplish the requirements of mathematical set theory, as with a Euler diagram.

This nesting of one circle within another is about expressing relationship rather than one thing being a subset of another. However, there is more than one way to *encode* a relationship. That is, one could say, "Occupation is the bridge between the environment and the person" or "A person must do occupations to engage with the environment." Both have the same meaning but say it differently. It is not often phrased around the other way—"The environment invites the occupation from the person"—aside from the dated and extrapolated concept of environmental press (Murray, 1938). Possibly the aforementioned Aristotelian views persist, that humans have agency (Yerxa, 2000) but nonhumans do not (Sayes, 2014). Inherent in nested circles is a symbolism that requires understanding of metaphor and the potential rhetoric being conveyed. A circle implies wholeness and universality, as well as being a line drawing that creates a boundary, cleaving the person and occupation away from the environment. A further consideration is that the way occupational therapy has commonly carved up the environment into the social, physical, cultural, and institutional needs to be recognized more consciously as arbitrary and a generality rather than a universal reality. A double problem exists in occupational therapy where

the words used, such as *occupation*, *everyday activity*, and *task*, or *environment*, *context*, *space*, and *place*, have themselves different definitions. Likewise, the commensurability of conventions and codes between models may not exist. Going further, the carving up of the units into parts is arbitrary and quixotic because some larger wholes are unbreakable singles. For example, the whole person is broken into the cognitive, affective, physical, and spiritual. The cleaving of the wholes creates ontological consequences, unless the ontological is bracketed out. The removal of the ontological is the case of most occupational therapy models, having cleaved the person, occupation, and environment from each other. This cleaving leaves behind a model that is an approximation of practice, having removed what is too difficult to capture (H. Lee, 1970).

The model maker then uses reasoning from the point of observation to construct the theory and symbolic model. While occupational therapy theory is more inductively constructed or based on natural reasoning, there are many areas for this process to be confounded through cognitive biases, such as confirmation bias, belief bias, and ethnocentric biases. The end point is a confounded model that generalizes the population it is trying to represent (Gelfert, 2011; Knuuttila, 2011) and is not culturally sensitive even within the same nation (Ashby & Chandler, 2010; Iwama et al., 2009; Wong & Fisher, 2015). Another bias may be that the model is based on hasty generalizations, perhaps in an attempt to defend itself from epistemological questioning (Hammell, 2009, 2011; Mocellin, 1995; Yerxa, 1992). An alternate explanation, not intended as unappreciative, but more a reflection of a time when the concepts and theories were being stabilized, is that the reasoning and arguments presented appealed to ignorance, referring to the general occupational therapy population possibly asking, "Is it more likely or less likely that the academics developing these models know what they are doing?"

A further problem in occupational therapy is that many of the models, characteristics, and ideas rest on the observations, assumptions, and reasoning of our forebears in the profession (Hammell, 2009; Kantartzis & Molineux, 2011; Mocellin, 1995). These observations, assumptions, and reasons are steeped in a certain place and time of great flux, moving from the Progressive Era and the Roaring Twenties and beyond. This insight highlights again that models are societally and culturally bound to a particular time and place. The meaning the model held in the period of its development may not resonate now or into the future or across cultures. The development of the model itself by its authors presents another area for investigation, where the author moves from reference context to concept to symbol (see Figure 4).

Much is written on the perceptual process in concept and model making (Jenkins, 2013; Knuuttila, 2011; Stokoe, 2000), so when occupational therapy, in a reasoned way, states, "Occupations occur in a context/environment," a deduction has been made from observation and a metaphor created by placing a circle within a circle to show that relationship. However, we have taken a very simple axiom from the profession where the language and culturally bound thought process are relatively easy. We would find it harder to explain or pinpoint in a model the statements "Humans strive for mastery over their environment" (e.g., Dunn, Brown, & McGuigan, 1994; Hammell, 2009; Howe & Briggs, 1982; Kielhofner, 1980b; Peters, 2011; Wong & Fisher, 2015; Yerxa, 1992), "Occupations contribute to health and well-being" (e.g., Hammell, 2009; Reilly, 1962), and "Occupations contribute to life's meaning" (e.g., Yerxa, 1998). Not all axioms or theories make it to models or can be captured through the metaphor of a model.

The Symbol

The symbols chosen for a model do not hold meaning on their own; models are arbitrary pictures. Therefore, a model should have an implicit contextual carryover that allows it to communicate its meaning and allows it to get past a mere labelling and arbitrariness. Sebeok (2001) suggested that models do not depict reality but show what is unveiled by our method of questioning. Occupational therapy's method of questioning, based on the positivist tradition, has asked relatively fundamental questions: the *where*, *how*, *what*, and *who* of occupations (Polatajko et al., 2013). The models themselves will be more extensively examined in another article.

The User's Decoding: Applying the Symbol in Context With Another Reality

The process of decoding a diagram follows the reverse process as the encoder and is also fraught with possibilities for error. In this case, the newcomer to the model could be a student or a therapist seeing a new diagram for the first time. The translation of the sign's meaning or negotiated interpretation was understood by Peirce to be contextual, cultural, and personal (Stjernfelt, 2000; Tylen et al., 2014), in much the same way as described above. However, the complexity of the functions or relationships presented in the diagram may be too hard to sort out and decode. If a person does not understand the symbol, it makes no sense and is meaningless and degenerate (Peirce, 1885), which has epistemological implications, as a heuristic process may take over. Peirce initially used *degeneracy* in the mathematical sense, meaning the triadic relation cannot be analyzed as a logical combination of any combination of the dyadic or monadic relations. However, it still stands that to a person not conversant in occupational therapy, models become unintelligible, especially when trying to apply them to another context.

Peirce would say that the representation becomes clearer once the user moves from seeing a model as an image to seeing it as a diagram and thereafter a metaphor (Arnold, 2011; Stjernfelt, 2000). However, it is a metaphor with a code, something that is amalgamated into a context with deeper meaning than what the diagram can convey. Thus, only an "insider" who has learned the implied meaning given to the symbols and their relationship by the particular community for which they were designed can use them effectively. Here begin some of the problems, the problems present in any translation, those of miscommunication and inaccuracies in the meaning borne in the interpretation of meaning. Using the earlier example, nested circles may be interpreted based on other things that nest or hold within it a central element: a bird

in a nest, a child in a cradle, layers of meaning, orbits, wholeness, or lineage. The interpretation of the symbol is unavoidably shaped by its context (Sebeok, 2001), and we begin to see that symbols address collective cultural identity with shared and individual meanings of the symbols.

Once a person has grasped the context—the pieces and their relation—he or she can begin to understand and consider its usability in a pragmatic sense. The transformation to understanding was explained by Peirce as the effect or outcome the sign/symbol produces in its interpreter (Arnold, 2011; Atkin, 2010). The outcome in occupational therapy is the learning and habit stimulation with a new disposition (Clarke, 1987) called the "occupational lens." Occupational therapists begin to look through an occupational lens using the symbols and conventions that have acquired primacy over reality due to their familiarity. For occupational therapy models, the complexity of the learning rests with parts of the whole model and their definitions being understood and the supposed interactions and transactions. In summary, a user, a student–cum–future therapist, sees the symbol, extends and decodes the concept, and attempts to apply it to the world (Humberstone, 1992). A meaning of the whole symbol system is created by the newcomer to the model by establishing connections to the reference context. The meaning may be different for each observer, dependent on his or her disposition (Clarke, 1987) and reading of the associated text, and also very loose fitting in its generality.

Conclusion

This article appraises the hegemonic occupation-based conceptual models from a fresh point of view. By looking at the models from a semiotic perspective, with a historical slant, their relevance and reliability have been brought into question. The early contributions of positivist philosophy, mathematics, Gestalt psychology, and systems theory have been revealed by tracing the idea of a model back to the early days of the profession. Irrespective of whether the "look" of the diagram is simplistic or complicated, a diagram holds a visual code exclusive to those on the "inside" of occupational therapy and only those who can decode the meanings through a combination of shapes and symbols. A diagram is a conveyor of language and concepts beyond the physical shapes, words, or arrows that it may contain. The same symbol may not be translatable into other contexts or era, where the symbol has a different value. In this way, the symbol is value laden, temporal, and context bound. Just as mathematicians have not questioned whether the symbol *4* adequately captures four quantities of something, occupational therapists have not questioned whether these shape combinations adequately capture the model and associated theory. We join Krefting, who in 1985 called for the profession to be critical of its models given rapidly changing practice areas, but we now take it a step further and call for an emancipation from the rigid restriction offered by the models. As stand-alone objects, the diagrams are not worthy representations of the profession. Models and their diagrams, as we have shown, are filled with inconsistencies, gaps, and errors; however, rather than redevelop or revise the current models, we suggest a complete overhaul and a return to "what matters" in the moment for the people(s) with whom we work. By returning to 'what matters', the profession may create the momentum needed for an epistemological transformation shifting the current paradigm to a more ontological one that has been absent in many parts of the profession.

Key Messages

- Diagrams have become an implicit part of the profession, with little question over their historical roots, role, or legitimacy.
- The functional meaning or compositional meaning may be lost in other settings, cultures, or some applications or simply by someone not familiar with the internal rules of the diagram.
- Complete abandonment of the models is needed to create the paradigm shift the profession needs and to disrupt the epistemological views held by the profession.

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Book Reviews

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As with the first edition published nearly 15 years ago, this second edition aims to explore the many perspectives on occupation and celebrate the strong theoretical foundations of occupational therapy. The editors note significant changes between texts, including new contributors, revised content, and a different publisher. The editors are clear that the intent of this text is to introduce the reader to an array of perspectives. While there are a few contributors from outside of the United States, this text is quite rooted in an American perspective.

Each chapter author begins by reflecting on her or his life and work as an occupational therapist (and researcher and/or educator) to contextualize the chapter's content and draw the reader in through personal narratives. I applaud the use of case applications throughout the text to bring to life the application of theory in practice.

The first couple chapters serve to introduce the reader to the rich history of occupation and its inherent complexities, which are foundational for occupational therapy practice. The following chapters generally explore one of the perspectives on human occupation. Perspective is applied quite broadly and includes the discipline of occupational science (chapter 3); conceptual models, like the Model of Human Occupation (chapter 5); a practice process model, the Occupational Therapy Intervention Process Model (chapter 10); and a therapeutic approach, the Cognitive Orientation to Daily Occupational Performance (chapter 8). While a strength of this text is the breadth of "perspectives" explored, at times these perspectives feel a bit fragmented from each other. Rationale for not only why these perspectives were chosen but how they relate would add cohesion. The chapters exploring conceptual models and therapeutic approaches are well written, comprehensive, and easy to follow.

A few chapters on occupation piqued my interest. Chapter 1, "The Complexities of Occupation," starts with a thorough review of the history of occupation and occupational therapy and offers a useful translation of the founders' assertions into current interpretations for practice. The authors explore how the use of the term *occupation* for occupation as means and occupation as ends in therapy is problematic. They assert it creates an "ambiguous and confusing" (p. 11) understanding of occupation and suggest that occupation be the means and occupational performance (not engagement) the outcome. The space taken to explore this perceived "paradox" of occupation as means and ends is curious, as this paradox has not been soundly established in the broader literature.

Much of chapter 3, "Occupational Science," is focused on outlining and providing examples of the "four levels of occupational science research" (p. 41). This framework is not widely used, and using much of the chapter to explore it is a bold choice. The author does well at describing research at each level (basic to applied) and how it can inform occupational therapy. Yet, a rich exploration of the perspectives that occupational science offers on the nuanced relationship between occupation, health, and illness is not realized.

Chapter 4, "Occupation as Goal," explores the "pluralistic clinical reasoning process" (p. 80) applied to enable occupation. The introduction is rather confusing. The authors assert that occupation-based occupational therapists (whom they portray as "monists"; p. 66) are "guided by one construct [occupation]"

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ARTICLE

The unsustainability of occupational based model diagrams

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ABSTRACT

Background: Occupation-based models are generic explanations of occupational engagement. Their associated diagrams are conceptual tools that represent the key concepts and their interrelationships, which have withstood substantial shifts in the profession's knowledge base and scope over the last 30–40 years.

Aims: We aim to bring into question the sustainability of the diagrams used to represent models.

Methods: Intellectual history and semiotic analysis are combined as tools for examining the history of selected occupation-based models and the convention of representing them diagrammatically. Our critique employs a hermeneutically inspired semiotic technique to scrutinise the diagrams as stand-alone symbolic objects.

Results: We argue that the rigid categorisation and oversimplified structure of diagrams keeps the profession pinned to dated perspectives based in positivism and dualism, bypassing the real, lived experiences of people. Our critique highlights the ontological absences from diagrammatic representations of occupation-based models.

Conclusions: The continued practice of depicting models with diagrams needs to change, to create space to integrate other theory and perspectives, such as a more fundamentally human, ontological perspective.

Significance: An ontological perspective is important for practice to advance past the dualistic or pluralistic stance the profession has held for decade, to understand how people experience their world rather than how the profession sees a person's world.

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Introduction

This article is based on doctoral research that used an intellectual history methodology to understand the history of occupation-based models developed to explain people's engagement in occupation. The analysis revealed that in the 1960s–70s, as in other disciplines [1], models to explain the thinking behind practice began to appear in the profession's literature. The diagrams accompanying those models presented summaries of the key concepts and their interrelationship, and were perceived to be a way of easily representing the knowledge and proclaiming a rationality or a vague mathematicity of practice [2,3]. Conveniently for the occupational therapy model makers in the 1980s, the professional literature had already settled on an approximate taxonomy that had about three components to a person, four aspects to the environment and three types of occupation [4–7], although not necessarily labelled consistently across different authors. These category boundaries [8,9] worked well with simple geometric shapes (circles, rectangles, triangles), assisting in the creation and configuration of the diagram's boundaries to portray the cornerstones of the profession in a symmetrical layout.

There are at least nine occupational therapy models attempting to capture the complexities of peopled engaging in occupation in a context [10]. Each has a slightly different purpose, offers a different explanation of the key constructs within the model [11], and makes a claim to be a faithful representation of occupational therapy areas of interest. Apart from the Kawa model, which uses a pictorial representation of water flowing down a rocky riverbed, a simple geometric diagram was developed to represent each model's key concepts, arranged to indicate the relationships between them. For clarity, our study was concerned with the diagrammatic representations of the models, rather than the concepts that lie behind them.

Given the conceptual overlap and structural similarities in the diagrams (primarily, overlapping circles), we selected three to become the focus of this study: the Canadian Model of Occupational Performance and Engagement (CMOP-E), which

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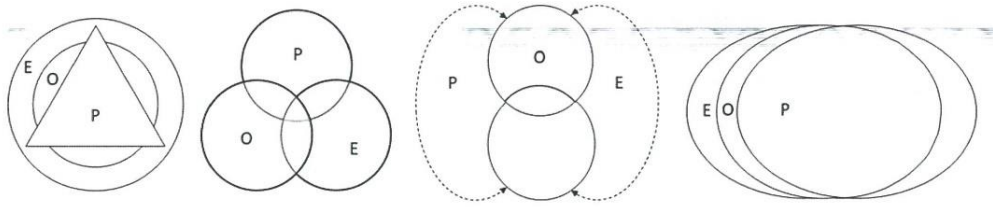

Figure 1. Adaptations of the occupational therapy practice models' diagrams.

began life as the Human Occupations Model [12], the Person-Environment-Occupation Model (PEO) and the Person-Environment-Occupation-Performance Model (PEOP). The familiar diagrammatic representations of the models are shown in Figure 1. Our selection was based on the breadth of their associated research and their dominance in practice and education. Each of these models is commonly presented as the vehicle for shared understanding in the discipline's practice literature [13–16], is used by academics [17,18] and, through specific focus on parts of the model, is the basis for assessment of clients [18–22]. In the discussion that follows, we also make reference to an early version of the Model of Human Occupation (MoHO), from the time before Kielhofner discarded the use of a diagram to illustrate the theory as a whole.

Methods

Our research was informed by two processes. Firstly, intellectual history methods were used to trace primary and secondary text-based sources back from the current literature to the early 1900s, to understand the development of the models and the knowledge base or paradigms that sit behind them [10]. Alongside that, we used semiosis, a deconstructive study of symbols [10], to apprehend the messages and probable interpretations of the diagrams themselves. This article presents some of the findings from the semiotic process.

The interpretation in this article discusses the diagrams as stand-alone objects, rather than the transactional nature or lack thereof in the diagrams and theory. Using everyday examples to reveal real experiences of practice that the models and diagrams neglect to account for, we boldly argue that what is missing from the diagrams is a sense of reality. In opening this discussion, our purpose is to extend the profession's thinking about the place, meaning and usefulness of models and their associated diagrams in occupational therapy practice and scholarship.

Results

Taken simply as a picture or emblem of their particular theory, all occupational therapy diagrams have symmetrical configurations, and rely on a limited repertoire of relatively empty shapes. The conceptualisation and conversion of complex ideas into a diagram requires the reduction of a vast quantity of text into, at times, a primitive diagram with simplistic arrangements [10]. As such, the diagram becomes a distillation of certain extracted, dense theory. Most model diagrams are deterministic or causal in nature, especially in the case of models based on systems theory such as the MoHO, where one subsystem change is said to affect another subsystem. The deterministic nature makes the overall diagram and components associative, creating an implied relationship between each component. We propose that admiration for the diagrams themselves and their familiarity in the profession has helped them to take a primary position over their reference context or reality, hereby gaining symbolic power.

Canadian Model of Occupational Performance and Engagement (CMOP-E)

The composition of the CMOP-E has developed over time to look like a stand-alone, axially symmetric three-dimensional figure. The grouping of 'things' in the CMOP-E is much like the other models; the environment, occupation, and person are separated monistic components, which indicates difference and the existence of internal and external processes or things [23–25]. Connection is conveyed through tightly nested, disproportionate figures, showing one sits within the other; the spirit sits in the person, the person in the occupation and the occupation in the environment. The CMOP-E could be described as three figures pressed into each other, inaccurately captured in the orthographic projection. The uneven placement of the shapes within each other (not flush), suggests the person component should have

contemplative priority for the therapist over the occupation and environment. The final shape present in the diagram is a smaller, embedded, light yellow circle centred in the triangle (spirituality). This central circle has what appears to be an imperceptible outline and shadow which may indicate it is a cylinder traversing through the hemispheres. Putting spirituality [26] at the nucleus of the triangle, perpetuates the idea that spirit exists within a person and is removed from any connections to the outside world, despite the newer theory stating otherwise [27]. This separation of the body, mind and soul reinforces positivist science as the basis of occupational therapy thinking [28–30], and negates cultural perspectives where spirituality is a part of language or environment or the occupation [31]. The position of the shapes, or the size of the environment, promulgates the view that the environment is dominant and homogenously influences the other components. Again not a premise present in other cultures, such as the Māori of New Zealand/Aotearoa [32] or the First Nations of Canada [33].

Person-Environment-Occupation (PEO)

The PEO model takes the form of a parodic Venn diagram. It contains three equal sized, overlapping circles. The person, environment and occupation make up the content of the circles, where the union of all three represents occupational performance. The addition of the 'lifespan' tubular, segmented rod (representing ongoing development) alongside the main diagram and the arrowhead give it a temporal dimension. A proper Venn diagram is an illustration of both logical reasoning and set theory, showing where union or intersection occur. The occupational therapy theory behind this diagram tries to convey that the person, occupation and environment are transacting together with the union of all three being occupational performance. This 'reading' of the diagram varies from how Venn diagrams are interpreted in mathematics. In mathematics, the PEO Venn diagram would indicate a proof of 'some people being occupations', 'some environments being people' etc. With reference to the PEO model's notions of congruence or environmental fit, the Venn diagram interpretation of it falls apart even more, aside from other research dismissing this idea [34] or furthering it [35]. Hence, it is the use of a Venn diagram that is disanalogous to the theory and the diagram can be rejected as misleading, as opposed to the complexity within the written theory [36]. As with the CMOP-E, the PEO model is individualistic, a critique supported in the literature discussing transactional theory [37–39]. In our opinion, it would be the least expressive, most simplistic of the diagrams, and is probably the most ambiguous representation of occupational theory.

Person Environment Occupational Performance model (PEOP)

Our description of the PEOP diagram is briefer, as it does much the same thing as the CMOP-E and PEO models. Again, there is symmetry in its design, with the person, occupation, and environment holding equivalence in size and hence importance. This diagram appears a more complex picture of the person, occupation, environment relationship. In the PEOP diagram (2005 version), the location of the 'person' oval in opposition to the 'environment' oval suggests competition, perpetuating the idea that people strive for mastery over their environments through occupation [40–42].

Since its development, a shift has occurred in its representation with the introduction of a 2015 revision. The long bidirectional arrows that previously indicated the influence or force exerted by person and environment on occupation and performance have gone. Instead, there are now three overlapping ovals and a number of text boxes to the side like a graph legend [43]. The modification of the original PEOP diagram to its current simplified format, to our eyes, creates difficulties for interpretation and user friendliness, in spite of the authors describing the change as creating a more intuitive practice model. The "perfectly aligned" (p. 52) intersection of the ovals represents optimal occupational performance, participation, and well-being as with the PEO diagram. Once again, without the accompanying text this diagram lacks explanatory power and yet the diagram is front and centre of the text and held up to be the emblem of its theory. As with the other models, the key components are person, environment and occupation, with the addition of a narrative for beginning interactions with clients. This is a good step towards acknowledging the role of the therapist, who employs the model and diagram in practice in good faith. But simply attaching a new idea without regard for the foundational knowledge expressed in the diagram exemplifies the divergence between the theory and diagrams.

Discussion

Theories are generally referred to as being true or not true and helping to make sense of the world, whereas

models are seen as being correct or incorrect, or useful or not useful [44]. "Knowledge" based on observation, questioning, reasoning, theorising and concept formation is distilled into the model and diagram through a process involving semiosis which creates the nested, overlapping symbols as in Figure 1 [10]. The model maker uses an 'intelligent cognitive process' to convert their interpretation of reality into a concept and then into a symbol here called the diagram. A process of idealisation and abstraction is employed in the 'intelligent cognitive process' stage [44,45]. Idealisation distorts and abstraction excludes some characteristics of the reference context in order to simplify it [46]. This simplification can lead to varying degrees of fit between the model and diagram, and its reference context [47].

Much of occupational therapy's knowledge in the first half of the nineteenth century, came from disciplines perceived as being based on an objectified science, like psychology [10]. For example, when cognitive psychology revolutionised the dominant behaviourist views held in the 1950s and 60s [48], occupational therapy had another term it could borrow, that of cognition. As such, the person's qualities named in the CMOP-E, PEO, PEOP models are cognitive, affective, physical, mind, body, spiritual, psychological, physiological, sensory, and motor. These are useful groupings for the justification of more evidence based and measurable intervention approaches, and thus supports reimbursement in the insurance driven health systems where these models were developed [49,50]. The adoption of terms in the models raises the question of whether the practice context and health system were a driving force behind the models' development. But at a certain point in time, no matter how stylised, diagrams have come to appear more accurate than the real experience as they are upheld as being scientific, accurate and true. The diagrams continue to be endorsed through their appearance in professional writing, research, teaching and application in practice [15,18,51], regardless of the scrutiny placed on their theory.

We suggest that the entanglement of theory with diagrams reduces and cleaves the person from their world, a similar view supported in the last 1990s [52]. In making this claim, we assert the irrelevance of the model as they are represented, and that they are from a time gone by. For example, many diagrams present an associative (or deterministic) relationship between the separate entities of the environment and the person. They suggest that there is connection between all parts, both within the concept groups and across them. But in looking at the subcomponents, it is unlikely there is a direct link between an institutional environment and a person's cognition that impacts on performance, making the model's and diagram's claim to this relationship false. Of equal concern are impacts on people, environment and occupations that are not depicted, such as the spiritual connection to the land and water that is created through shared traditional occupations and oral histories of a community. An occupational example like this cannot be explained through the diagrams, revealing inaccuracies in the associative relationship claims.

The amount of information concentrated into a diagram, is indeed minimal. If we assemble circles, ovals, and triangles to model a person engaged in occupation, the diagram is not a true representation of the things it is trying to model [53]. Further, processes that are contained in diagrams are approximations, and fictionalised entities exposed through historical hindsight [2]. They blend material and non-material, which seems to erroneously represent the reference context. Examples of where diagrams fail to fully explain what is happening can be seen in recent writing on shared occupations [54], community participation and citizenship [55], and the cultural environment of an immigrant or refugee community on a global scale [56]. Here the breakdown is in the inability to account for pluralism of people, the cultural dynamics of collective occupations, and larger scale environment considerations versus simply the familiar proximal environment many models and their diagrams describe.

In the process of deciding what goes into the diagram as key words or relational concepts, certain parts are neglected as with the categorisation of self-care, productivity and leisure [57]. Neglecting something occurs if knowledge about it was already revealed and then discarded by the neglecter. This process suggests divergence, and the rhetoric proposed here is that the visible parts are superior to the invisible parts of the diagram, such as meaning [58,59]. Here the gaps in the diagrams become evident. The neglected, the unthought, the forgotten, the passed over are those things that were seen as less important or inferior to what knowledge or concepts went into the diagram. These neglected, invisible parts in the diagrams is the human side of practice, the subjective, and the primordial experiences of the person, the client or population. The invisible parts are also the way the occupational therapist interacts with the person(s) and what this does for the relationship and dynamic performance of occupation in their

temporarily shared environment. Further, the invisible parts include the transactive relationships between the elements, not show diagrammatically.

Approaching diagrams from a less representational, realist stance supports their existence for their pragmatic value. As stated earlier, a diagram is a vehicle for mental experimentation and manipulation, becoming a tool for knowledge validation and potentially useful for learning basic concepts. It is also a potentially useful rhetorical tool, in that it is an effective means of communicating a lot of information, as long as the reader has the 'insider code' on the taxonomies and theories to understand it [60]. The insider code is so fixed to the subjective worlds of the developer, their taxonomy and their language, that it can create current day errors [10]. In the case of the three models discussed here, they may have been adequate for 1980s and 1990s practice contexts that were their initial reference point. However, when the physical and temporal reference point that inspired the development of a model changes, its symbolic representation can become redundant because the knowledge it is attached to is unconnected.

Conclusion

In this article we have shown that occupational therapy diagrams hold some expressive power, but only when the reader has a firm understanding of the concepts, definitions, assumptions and theories they employ. Amongst the three models discussed here, and many other models, competition is created through their discord and harmony. Harmony exists in the shared concepts of person, environment and occupation interactions as the cornerstones of the profession and the depiction of their relationship. Discord exists in their diagrammatical presentation of the concepts. One model presents them as nested interdependent 'things', others as overlapping or even more autonomous entities. The occupational therapy profession does not seem to question the perpetuation and existence of the diagrams, which are accepted as being accurate representations of the model and a person's real experience when engaged in an occupation. The oversimplified representations captured in the diagrams lack recognition of the complexity of practice as we know it today or the advancing knowledge, and can thus be described as a picture of nothing [2].

The diagrams reveal elements of what is known in occupational therapy research, its ongoing assumptions, and reveal invisible, ontological gaps. It is the invisible gaps that are the human side of practice; the subjective and the ontological. In a phenomenological sense the thing-ness of the thing [61], the humanness of the human engaged in occupation, remains concealed and forgotten. As well as the essences of the environment such as its aesthetics, comfort, mood, agency or spirituality, let alone how a person relates to the environment.

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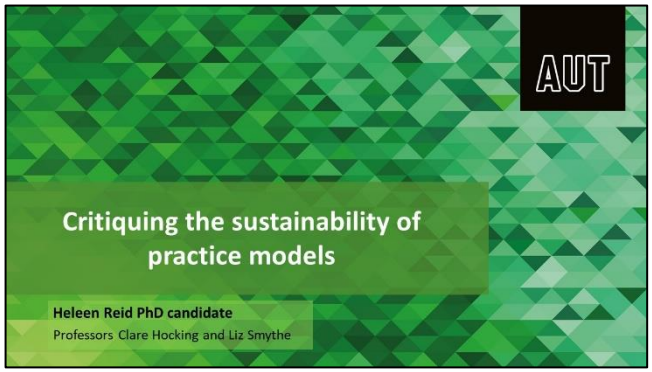
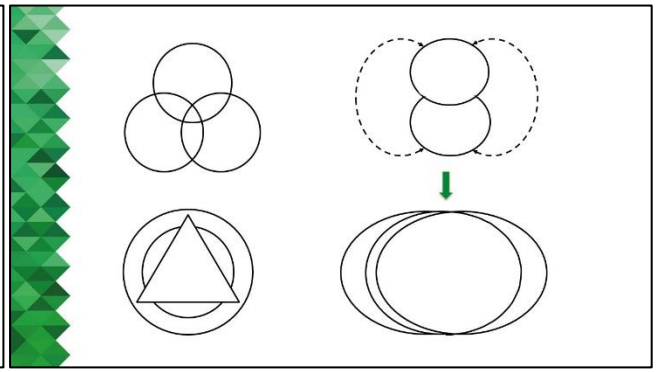
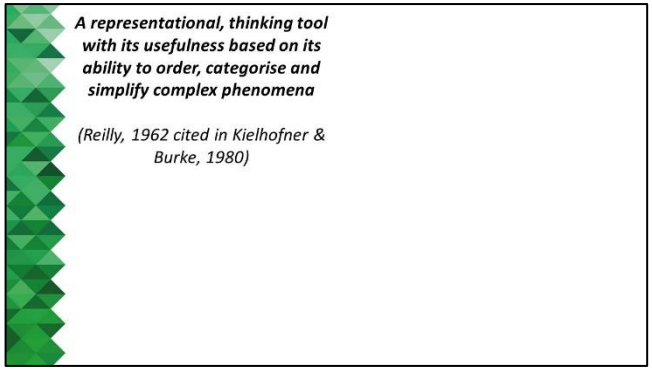
Appendix C –Conference presentations

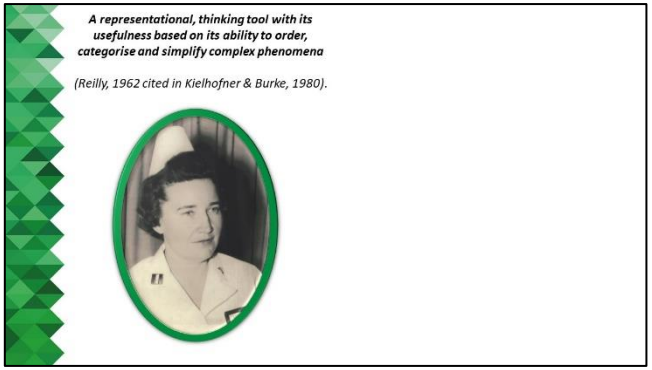
Slides from the two presentations I did at the Canadian Association of Occupational Therapists Conference in Vancouver Canada 2018.

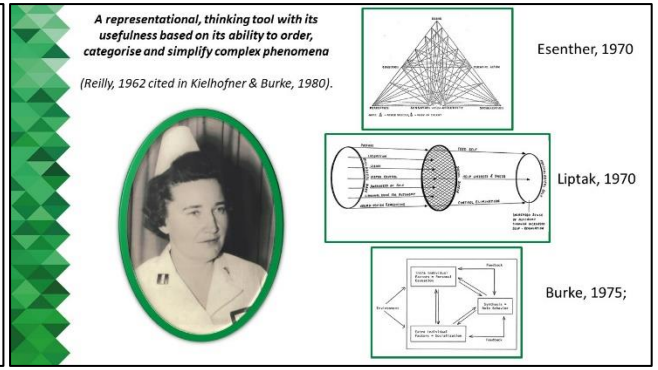
Reid, H., Hocking, C., & Smythe, L. (2018). Critiquing the sustainability of practice models. Canadian Association of Occupational Therapists Conference, Vancouver, Canada, 20th – 23rd June 2018. (oral presentation).

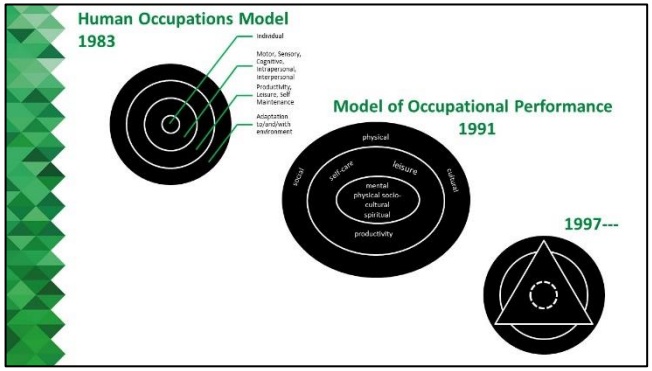


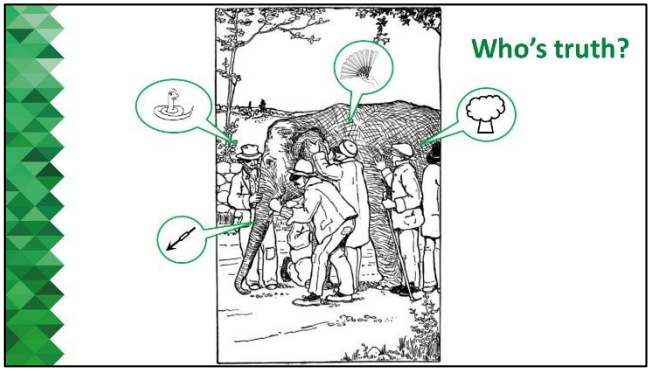


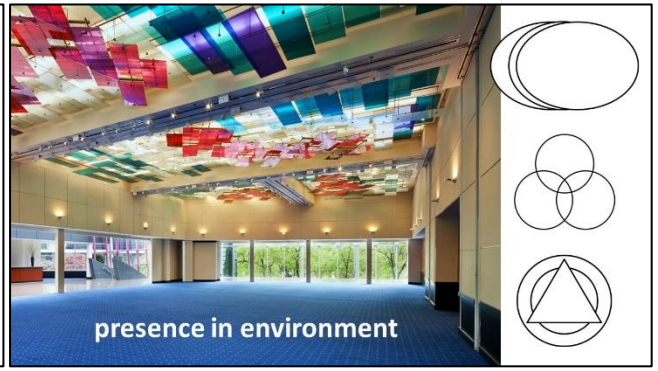







Human Occupations Model
1983
Individual
Motor, Sensory, Cognitive, Intrapersonal, Interpersonal
Productivity, Leisure, Self Maintenance
Adaptation to/and/with environment
Model of Occupational Performance
1991
physical
social
self-care
leisure
cultural
mental
physical socio-
cultural
spiritual
productivity
1997---


Who's truth?


presence in environment


time and distance


Finding
oneself
How you are
Amidst the
circumstances
of being
situated

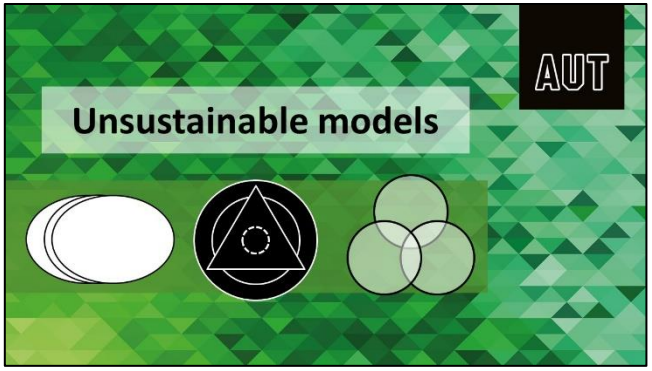

un-ready-to-hand
1
2


ready-to-hand
1
3
4


present-to-hand
1
5

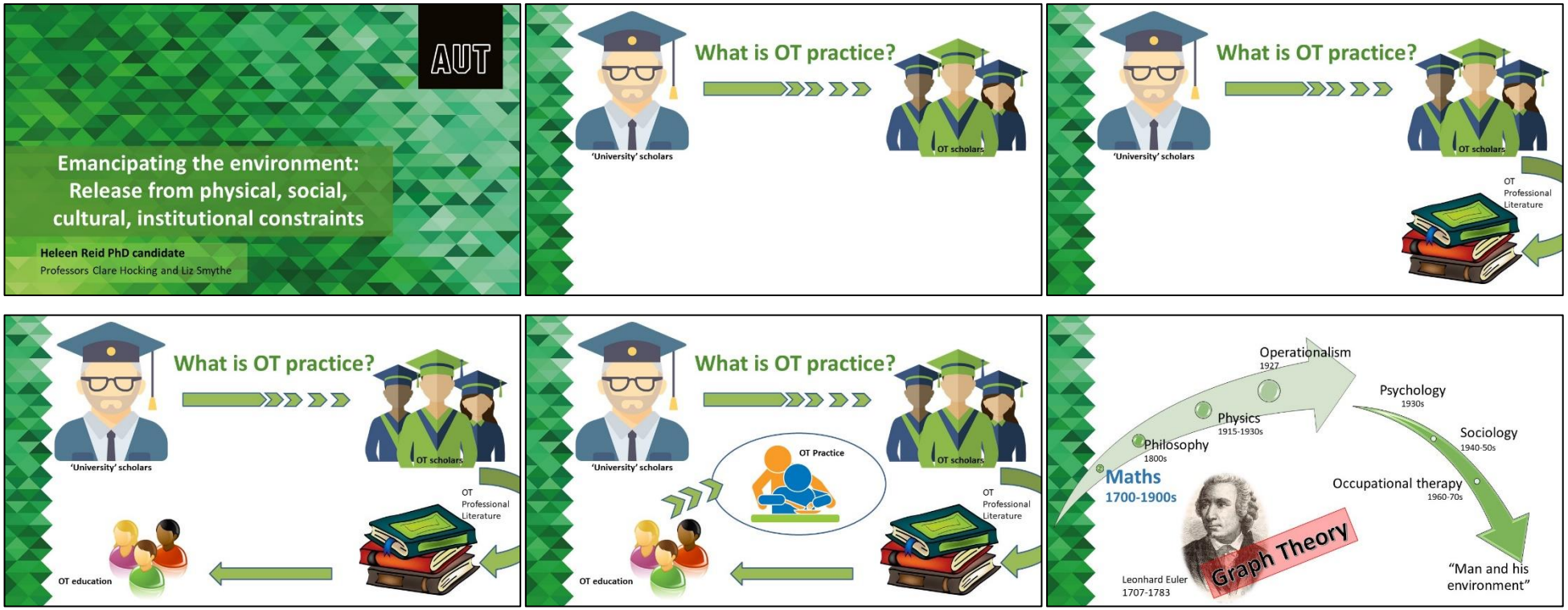

breath and divinity

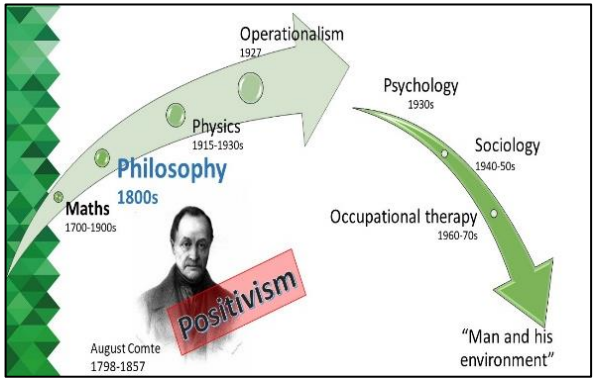

life-force
and
tradition
Hā
Aroha

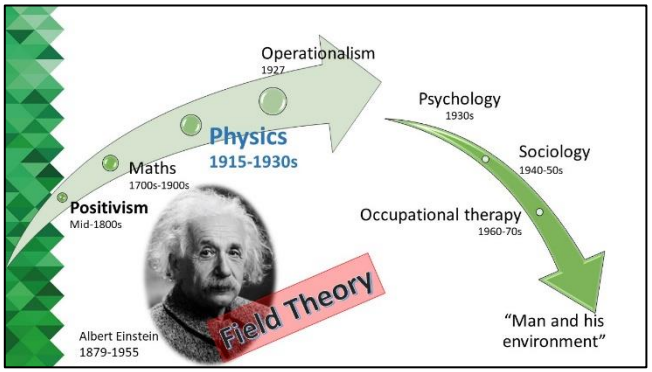

AUT
Unsustainable models


Heleen Reid
hreid@aut.ac.nz
AUT
Ngā mihi mo to manaakitanga mai
Thank you for your kindness

Reid, H., Hocking, C., & Smythe, L. (2018). Emancipating the environment Canadian Association of Occupational Therapists Conference, Vancouver, Canada, 20th – 23rd June 2018. (oral presentation)




Operationalism
1927
Psychology
1930s
Physics
1915-1930s
Sociology
1940-50s
Philosophy
1800s
Maths
1700-1900s
Occupational therapy
1960-70s
Positivism
"Man and his environment"
August Comte
1798-1857


Operationalism
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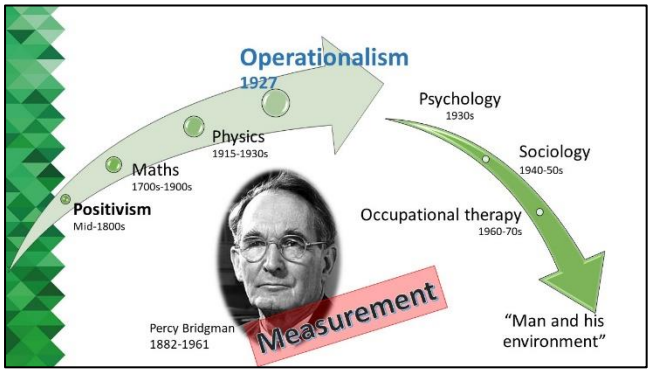
1915-1930s
Sociology
1940-50s
Maths
1700s-1900s
Positivism
Mid-1800s
Occupational therapy
1960-70s
Field Theory
"Man and his environment"
Albert Einstein
1879-1955


Operationalism
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Psychology
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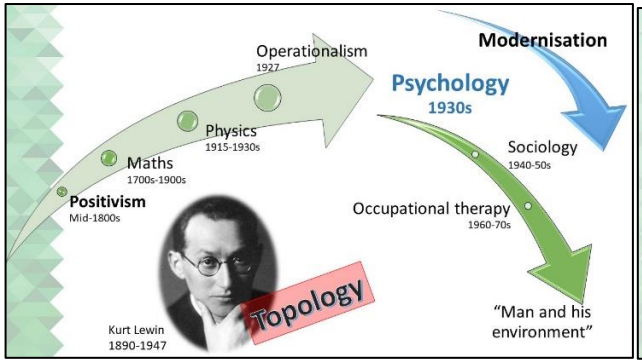
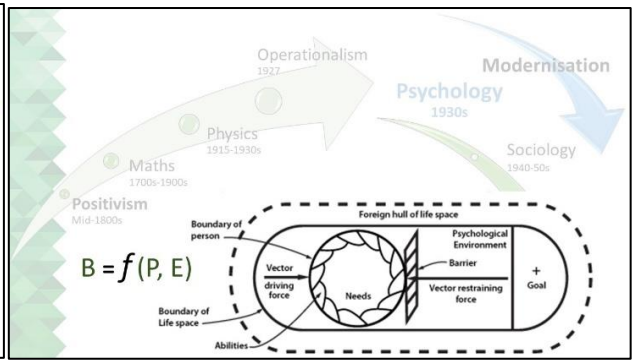
Physics
1915-1930s
Sociology
1940-50s
Maths
1700s-1900s
Positivism
Mid-1800s
Occupational therapy
1960-70s
Measurement
"Man and his environment"
Percy Bridgman
1882-1961


Modernisation
Operationalism
1927
Psychology
1930s
Physics
1915-1930s
Sociology
1940-50s
Maths
1700s-1900s
Positivism
Mid-1800s
Occupational therapy
1960-70s
Topology
"Man and his environment"
Kurt Lewin
1890-1947


Operationalism
1927
Modernisation
Psychology
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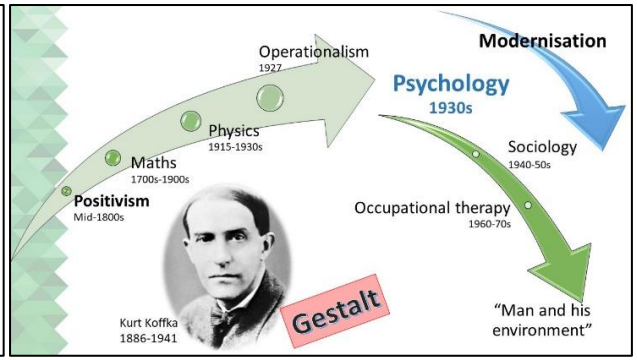
Physics
1915-1930s
Sociology
1940-50s
Maths
1700s-1900s
Positivism
Mid-1800s
B = f (P, E)
Foreign hull of life space
Boundary of person
Psychological Environment
Barrier
Vector driving force
Needs
Vector restraining force
+ Goal
Boundary of Life space
Abilities


Modernisation
Operationalism
1927
Psychology
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Physics
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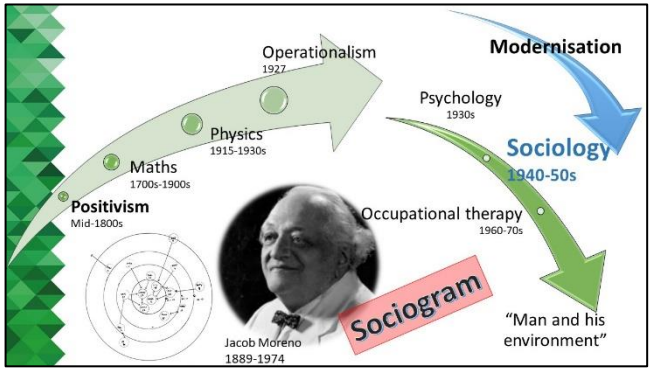
Sociology
1940-50s
Maths
1700s-1900s
Positivism
Mid-1800s
Occupational therapy
1960-70s
Gestalt
"Man and his environment"
Kurt Koffka
1886-1941


Operationalism
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Modernisation
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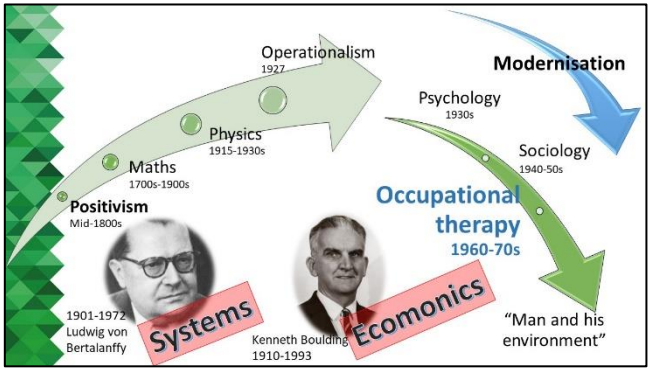
1930s
Physics
1915-1930s
Sociology
1940-50s
Maths
1700s-1900s
Positivism
Mid-1800s
Occupational therapy
1960-70s
Jacob Moreno
1889-1974
Sociogram
"Man and his environment"


Operationalism
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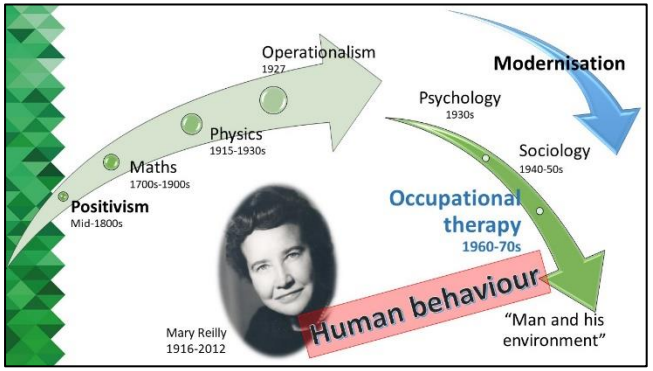
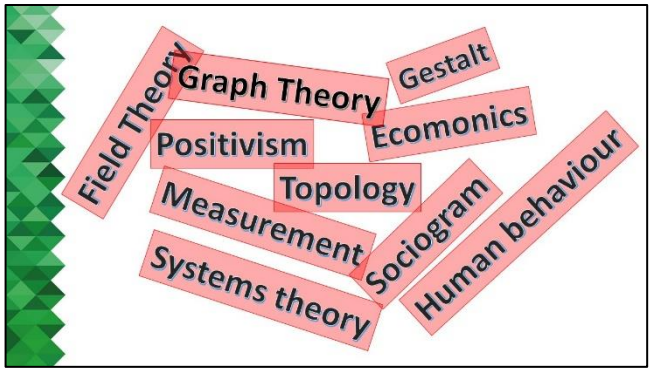
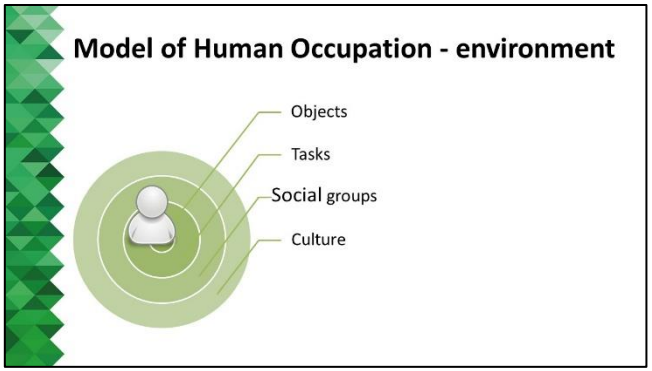
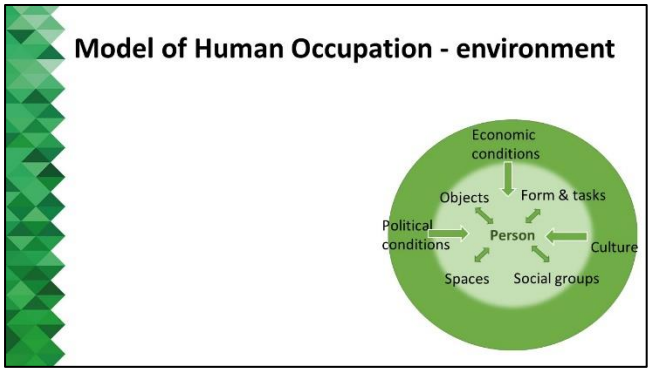
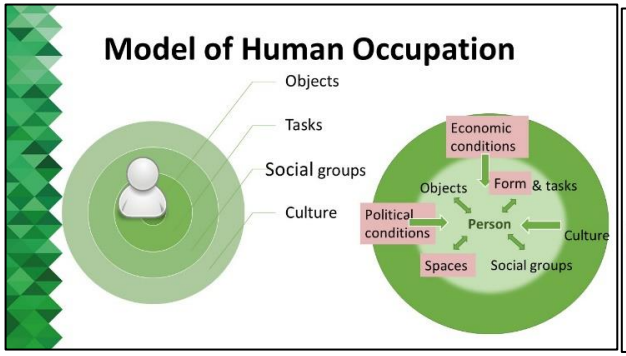
Modernisation
Psychology
1930s
Physics
1915-1930s
Sociology
1940-50s
Maths
1700s-1900s
Positivism
Mid-1800s
Occupational therapy
1960-70s
1901-1972
Ludwig von Bertalanffy
Systems
Kenneth Boulding
1910-1993
Ecomonics
"Man and his environment"


Operationalism
1927
Modernisation
Psychology
1930s
Physics
1915-1930s
Sociology
1940-50s
Maths
1700s-1900s
Positivism
Mid-1800s
Occupational therapy
1960-70s
Mary Reilly
1916-2012
Human behaviour
"Man and his environment"

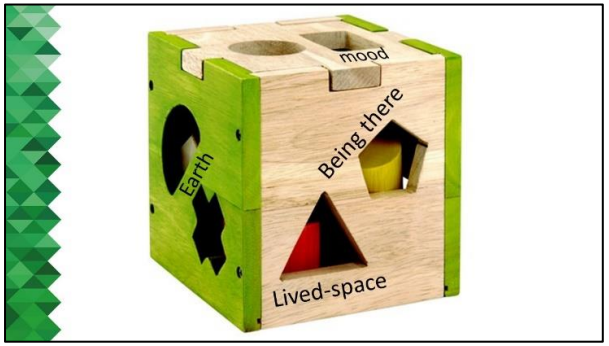

Field Theory
Graph Theory
Gestalt
Positivism
Ecomonics
Topology
Measurement
Sociogram
Human behaviour
Systems theory


Model of Human Occupation - environment
Objects
Tasks
Social groups
Culture


Model of Human Occupation - environment
Economic conditions
Objects
Form & tasks
Political conditions
Person
Culture
Spaces
Social groups


Model of Human Occupation
Objects
Tasks
Social groups
Culture
Economic conditions
Objects
Form & tasks
Political conditions
Person
Culture
Spaces
Social groups


The Old and the New – Do Things still Fit?
institutional
social
cultural
physical
mood
Being there
comfort


mood
Being there
Earth
Lived-space


Environment
what matters

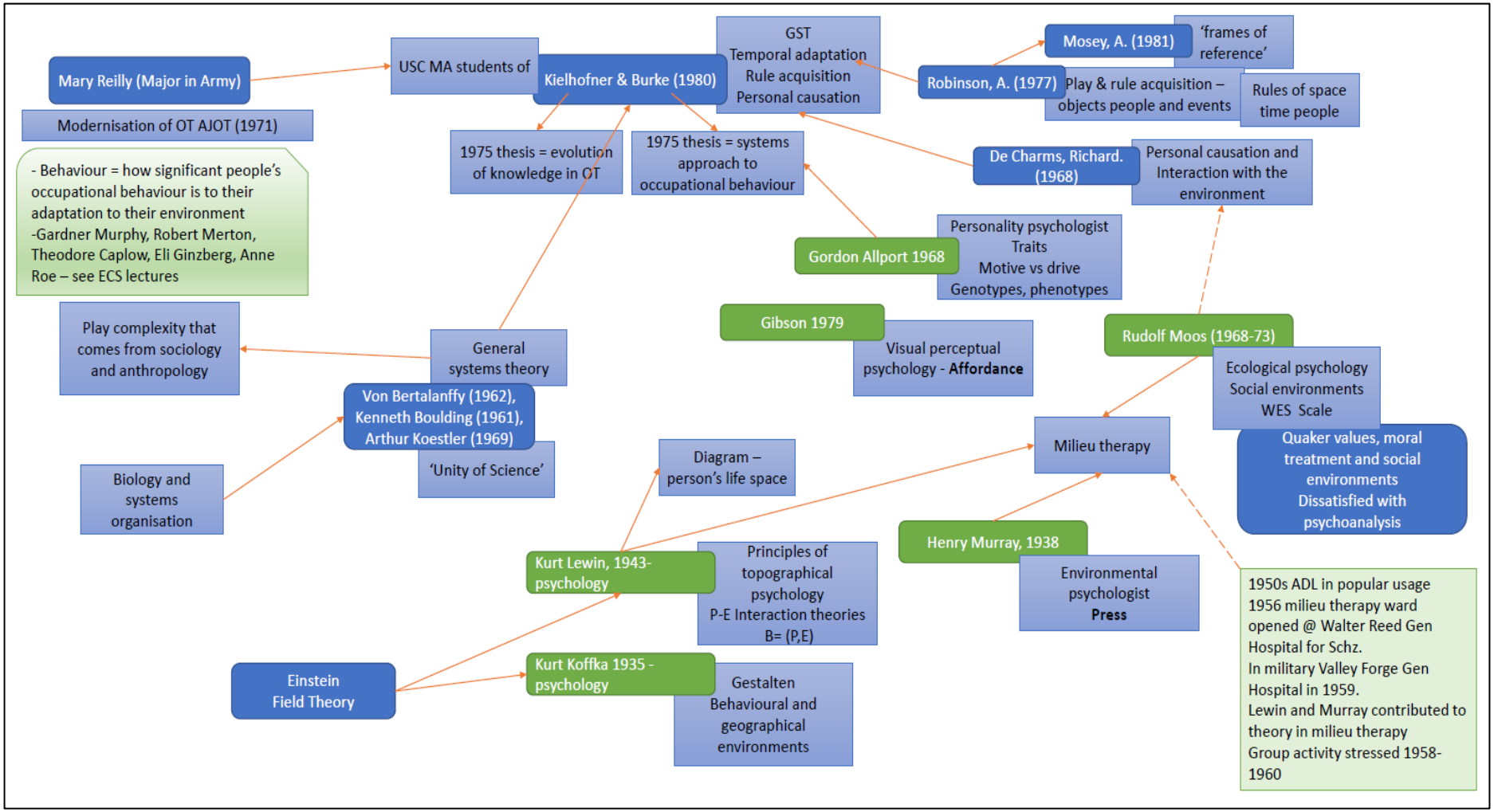

Environment
what matters
'in the moment'


Environment
what matters
'in the moment'
what's 'there'


Environment
what matters
'in the moment'
what's 'there'
which is always unfolding

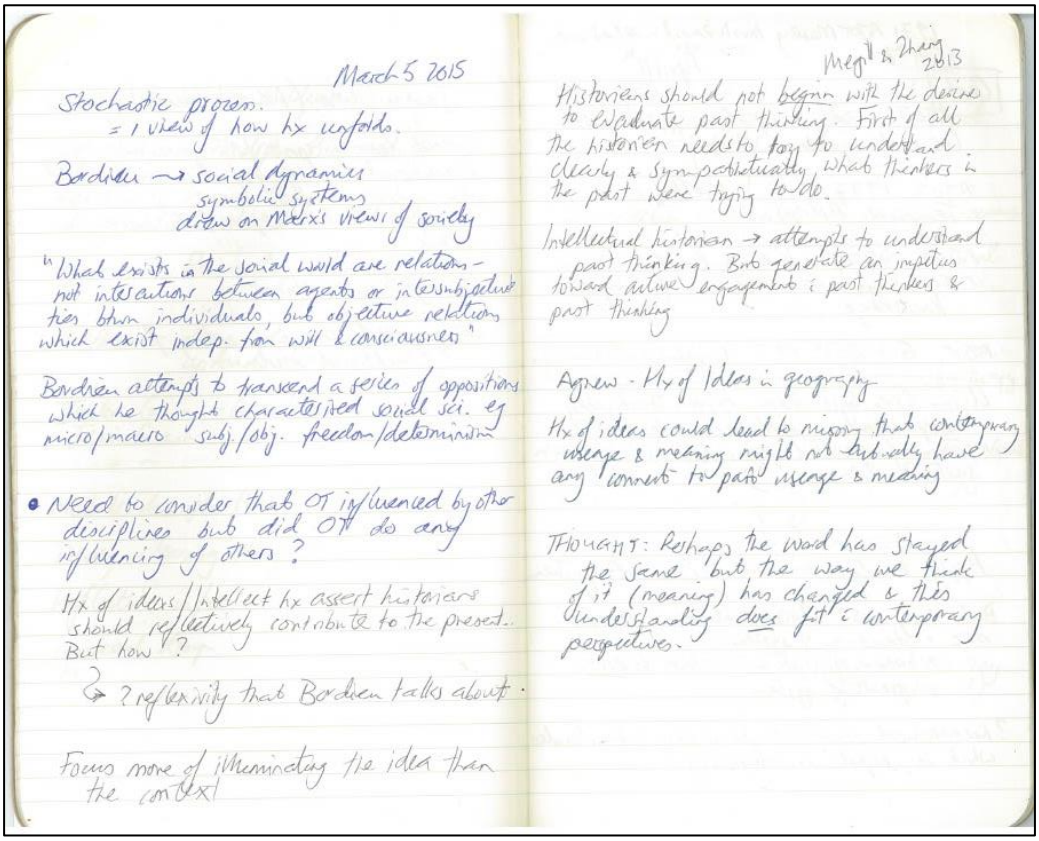

Heleen Reid
hreid@aut.ac.nz
AUT
Ngā mihi mo to manaakitanga mai
Thank you for your kindness

Appendix D – Model of Human Occupation links



Appendix E – Sample of PhD journal entries

The last two images capture the reality of completing a PhD with a child, where the journal was seen as a shared scribbling book.



March 5 2015

Stochastic process.
= 1 view of how hx unfolds.

Bordieu → social dynamics
symbolic systems
drew on Marx's views of society

"What exists in the social world are relations – not interactions between agents or intersubjective ties btwn individuals, but objective relations which exist indep. from will & consciousness"

Bordieu attempts to transcend a series of oppositions which he thought characterised social sci. eg micro/macro subj./obj. freedom/determinism

• Need to consider that OT influenced by other disciplines but did OT do any influencing of others?

Hx of ideas/intellect hx assert historians should reflectively contribute to the present. But how?

→ ? reflexivity that Bordieu talks about.

Focus more of illuminating the idea than the context

Meg 1 & 2 May 2013

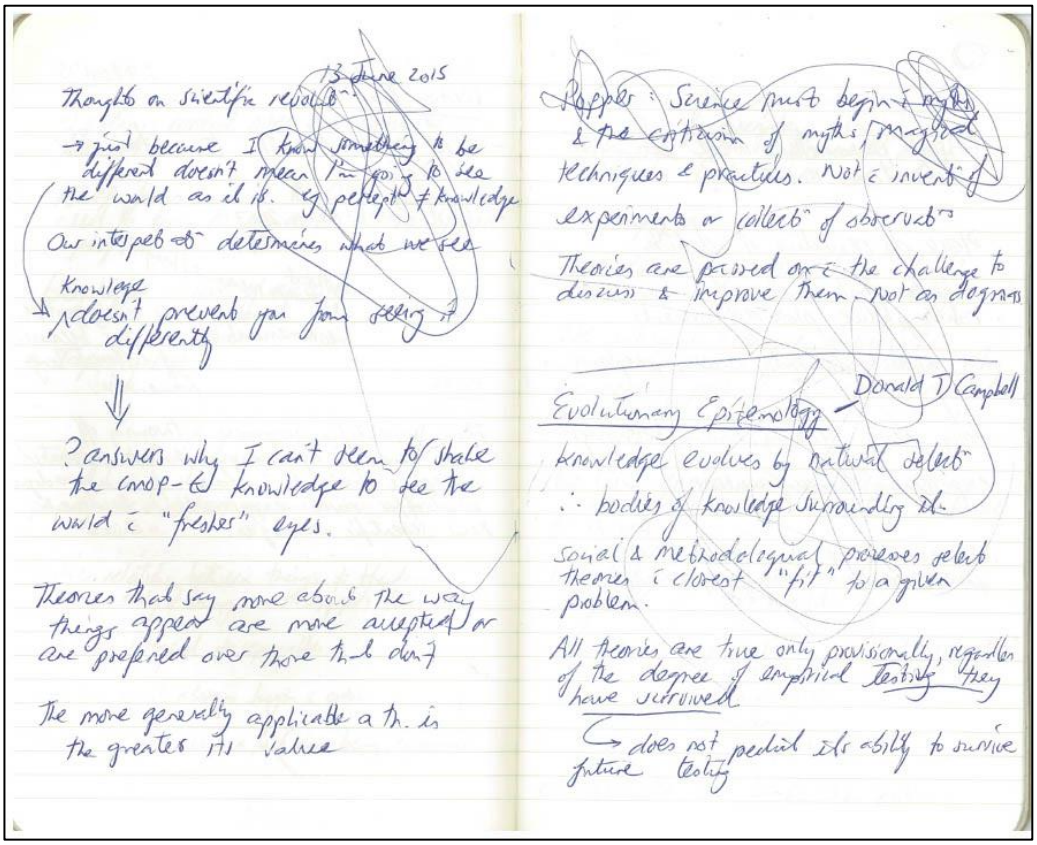
Historians should not begin with the desire to evaluate past thinking. First of all the historian needs to try to understand clearly & sympathetically what thinkers in the past were trying to do.

Intellectual historian → attempts to understand past thinking. But generate an impetus toward active engagement i past thinkers & past thinking

Agnew - Hx of Ideas in geography

Hx of ideas could lead to missing that contemporary usage & meaning might not actually have any connect to past usage & meaning

THOUGHT: Perhaps the word has stayed the same but the way we think of it (meaning) has changed & this understanding does fit i contemporary perspectives.



13 June 2015

Thoughts on scientific revolutions

→ just because I know something to be different doesn't mean I'm able to see the world as it is. eg perceptn ≠ knowledge

Our interpretn determines what we see

Knowledge doesn't prevent you from seeing differently

⇓

? answers why I can't seem to shake the cmop-ℓ knowledge to see the world i "fresher" eyes.

Theories that say more about the way things appear are more accepted or are preferred over those that don't

The more generally applicable a th. is the greater its value

Popper: Science must begin i myths & the criticism of myths, magical techniques & practices. Not i invent of experiments or collectn of observatns

Theories are passed on i the challenge to discuss & improve them – not as dogmas

Donald T Campbell

Evolutionary Epistemology

knowledge evolves by natural selectn

∴ bodies of knowledge surrounding th.

social & methodological processes select theories i closest "fit" to a given problem.

All theories are true only provisionally, regardless of the degree of empirical testing they have survived

↳ does not predict its ability to survive future testing

From S/V. August. 2024

How is the env. understood in relat^n to person, occup & health

View of env. in early days as handling a piece of craft material (natural)

Some public health moves eg John Snow but this was about "I would die" vs. person as i a disability

disability rights = consumer driven

vs. health professional ↳ feminism consumerism

philosophy of OT has Δ = joiner between hx & Δ ideas & applicat^n

Now situatedness of env. has Δ'ed so the environmental ideas do not fit

Moved from modern → post modern

what we know = good

v. relational cp for Q & not generalisable

Thesis is about creating Δ:
- Hx ideas
- practical ideas
- tools to help students.

Avenues for OT practice has broadened. eg schools, OT, vs. early days view was OT = gd for medicine in a medical realm.

Characteristic shift mod → post mod. medicine → participation

e-book - what are the expectations of millennials? Ask students.

? series of articles that challenge theory eg useful vs. unuseful perspectives of env. from anthro/soc/ψ modern/post modern perspectives of env.

articles could be published = online reading

Interactive tool that opens the possibility for Δ

Photography → EYES OF THE HEART abbeyofthearts.com

Photos from different perspectives eg sitting, lying, under

'A journey into your neighbourhood' Kairos

The space between env. & doing
? about adaptat^n
possibility
restriction

we can't choose some things eg gender, place, awareness.

Exclusion to OT (not necessarily about disability)

Paradigm/philosophical assumpt^n
Occupation → health
↳ excl those who can't do occupat
excl. those whose occupat ≠ healthy
implies there is something wrong to be fixed/remediated through occupat^n ie — + occupat → health

choice can lead to the answer or possibility to do more than what env. will allow.

Models
From view point of wellness
individual
western

binary thinking has privileged civilized white men (perpetuating & legitimising their sup. status)
↳ = post structuralist criticism (post phenomenologists)

Value statements used perpetuate binary, (imperial & paternal views.
↳ good, right, important, meaningful

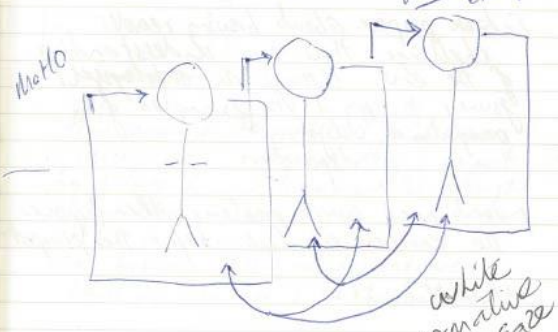
singularity, isolat^n, dependency, peripherality

OT overall Models

models - exclude gps.

WHO does it exclude

what are you excl. from



Puts the person (mind-body) within the environment. Env. = out there.
Parts of the person engage (tips of Δ).

does OT & client speak the same lang.

Bridges between person env = physical setting (univ. design, ergo) what comes through = productivity & self care + play. ~~eg prayer for~~

Barriers down = how people get off bus & wipe bum - intimate barrier / privacy barrier so broken down.

Atul Gawdhi - Being mortal.
↳ Valerie WSC.

Aim is environment as - home / private
which is opening up room for occupation possibility

⇒ commOT
⇒ ergonomists
⇒ RHN

Come @ it i a position. eg that @ homeness is important.

Next s/v.

Models "extracting essences"
messy / exquisite

To what degree is it possible to extract essence of an transaction (or problem) in a few vs. many "equations"

To what degree do the "answers" to those transactions give you insight into the real experience and/or components

need to tighten link between theory dev. & testing of the theory

we have general practice models but theoretical models may not align
eg MoHO & then using Vygotsky

Weiss

Systems.
If a subsystem Δ's or is broken then to reach equilibrium, many other subsystems must 'know' what to do to gain equilibrium.

So in a model like MoHO then - the subsystems (assumed to be the full complement of subsystems) must 'know' what to do to put person back in balance i.e. with being integrity, identity & unity "one equilibrium state to another"

↳ assumes there is 1 or more equil. states?

Polytonic systems i.e. more than just a physical Δ to distort system - could be emotional, physic, chemical, spiritual or electrical...

"Every living organism (p.18) displays both kinds"
↳ probabilistic thinking of network theory & deterministic treatment of linear reaction chains.

A proper balance between the 2 because an organism depends on both adaptability & efficiency

Total system variance is less than the sum of all component variances.

Adaptation (p29) is process of becoming adapted & state of being adapted

Model is only as good as the expertise that lies behind it

s/v Dec. PhD.

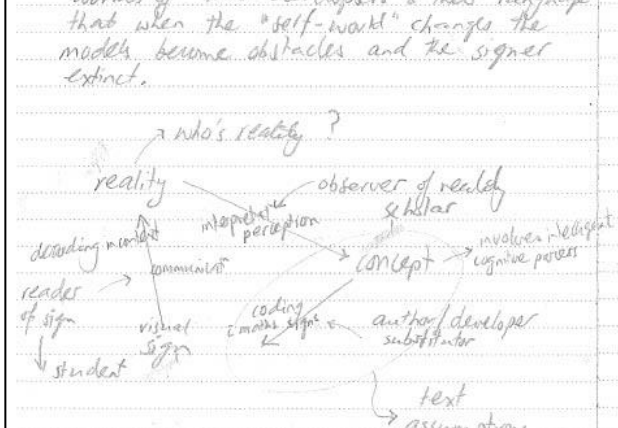
Current discourse

ontic pragmatic ontological

chaos
critical view hegemony
mindfulness

practice architecture
Kemmis

models are so fixed to the subjective worlds of their developers & their language that when the "self-world" changes the models become obstacles and the signer extinct.



coding + decoding imply there are unambiguous rules whereby messages can be converted

The code needs to be what the developer & reader have, in fact or by assumption, totally or part, in common.

Reader looks @ model & amalgamates it to their context. The interpretation is unavoidably shaped by context
↳ plays cardinal role.

The sign – soft data – the implied relationship between concepts = the hidden symbol/sign
hard data – the shape, position

? semiotic ideation ? zero sign

Actors involved in OT models
- early observers of 1900's
- proponents of profession who postulated facts
- theorist who wrote the assumptions
- developer of symbol based on past, present & future expectations.
- readers of model
- the person the model is 'applied to'

- What does a circle mean? What does 2-3 overlapping circles mean? What does a circle nested in another mean, what does the A overlaying mean? etc. etc.

Arrows mean direction, progression, movement time, location/position

A model is (hope) a glimpse view to future

structural semiotricians look @ relative arbitrariness of signifiers

social semiotricians emphasise diversity of interpretation & cultural + historical contexts

all representations are systems of signs they signify rather than represent p.160

A sign addresses somebody p.186
sign addresses us in particular codes

not every reader is the ideal reader in the mind of ~~of~~ the maker

subject position for OT in model is varied
eg in occupation = interviewer / observer / Ax
environment = observer / Ax / interpreter
person = Ax, interviewer

For an OT to say "I see what it means" ~~the~~ it simultaneously slips us into a place as subject & puts us in a place of knowledge p.189
↳ to its meaning

textual context + social } modes of address

The model is a node in a network the frontiers of models are never clear cut. They are caught up in a system of theories, research.

intra textuality
↓
between the models codes and the text that describes it

intertextuality
↓
need to know other models in same 'series'
expectations are established based on past experiences of other models

Bricolage. (p.205)
'Builds ideological castles out of the debris of what was once a social discourse' (Levi Strauss)

methodology section in Chandler on semiotics. ie semiotic analysis limitations p.222

"words fail us" in representing experiences
But models exhibitate it.

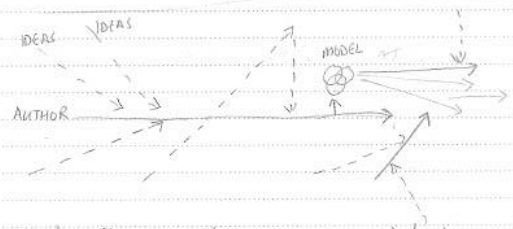
"Those who cannot understand them & the systems of which they are a part are in the greatest danger of being manipulated by those who can." p.225

understand the language of the past.
Translate words & values of past within the wider culture

cross reference to what other sources were saying to find out any obscurity, filter or disguise of one writer.
↳ = agenda

must
Filter contemporary interpretations & possible misinterpretation & mistranslation

Hxal brain - starts to make connections whether in sleep or while cleaning the kitchen



Maybe I've given too much 'agency' to the models raising them up to a plane/level where they don't belong
↳ ? limitation to my research

? Mehen OT model.

Philson library acquisition list for OT.

Vaigd - Husserlian phenomenology

Gadamer - uses history to frame present tradition, background context

Reinforcement breeds repetition. Change begets change.
(Star Trek Ep.)

Being & Time.

Foreword
Time is what makes the question of the meaning of being possible

Hermeneutical phenome seeks to reveal that which lies concealed in the everyday openness of the world

We deal i things constantly, by perceiving + thinking about them - but also by not thinking about them, by using them, taken them for granted & ignoring them in various ways.

Nature in which we dwell is where we live in the world.

xix
We inhabit a world by occupying social roles, & presumptive identities, practicing ways
→ norms, ways, means, purpose

subsistence ontology — not authentic selves (?)

Being is holistic (not atomistic)
① objects/substances — presence-to-hand
② equipment
↳ readiness to hand = a way of being — self sufficient

unreadiness to hand = → not a property of the substance
↳ it is a situated holism

③ Humans aren't objects/equipment ⇒ Dasein
⇒ Existence - Taking a stand on its mode of being have things to com... stand on its (by its using equipment)

Dasein Nis to take a stand on it what it means to be a human being, in this particular culture
= existence

modes of being ≙ modes of intelligibility.

p.32 'Dasein understands itself in its Being, and that to some degree it does so explicitly.'
Dasein in its Being, has a relationship toward that Being - a relationship which itself is one of Being

→ My stand on being a Dr means I have to do the PhD. It has to manifest itself & uses equip.
(↳ relate to Being means I have to manifest it)

Heidegger goes back to Aristotle's view of substance vs. Kantian objects

The dasein in us is whatever it is about human beings that makes them make their being an issue for them.

Our way of being is to make our being an issue for us ≙ existence

Are we ontological or pre-ontological?

Custom + culture is our nature. We are socialised into it. (like OT students into OT)
↳ doesn't require thinking about.
We have a style of existing before we even think about it. Mostly pre-ontological

convergence of Heidegger + Wittgenstein

The most basic kind of knowing we have is knowing how to cope i things, knowing how to do whatever we need to do.
p.118-119

absorbed coping

In 'dysfunction' things go from "~~some~~ to write on" it becomes "something to write on" when you need it.

Dasein is the world existing in (?existingly)

p.94 (world - 4 types - universe (categorial)
realm of possible objects - things that don't relate to us
(ontic) - things that are where in (eg business world)
- worldhood
↓
= structure of the background of any world

Lecture 4 p.97-99

In our scope of coping we encounter the world around us.

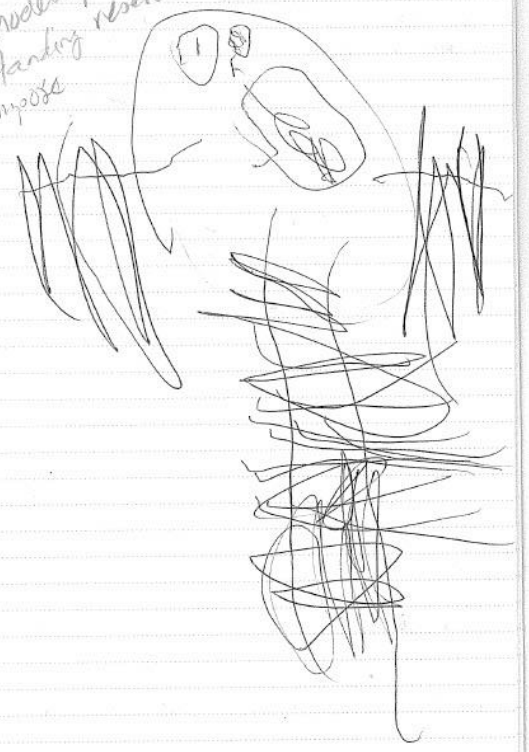
Umgang = translated as dealing w coping

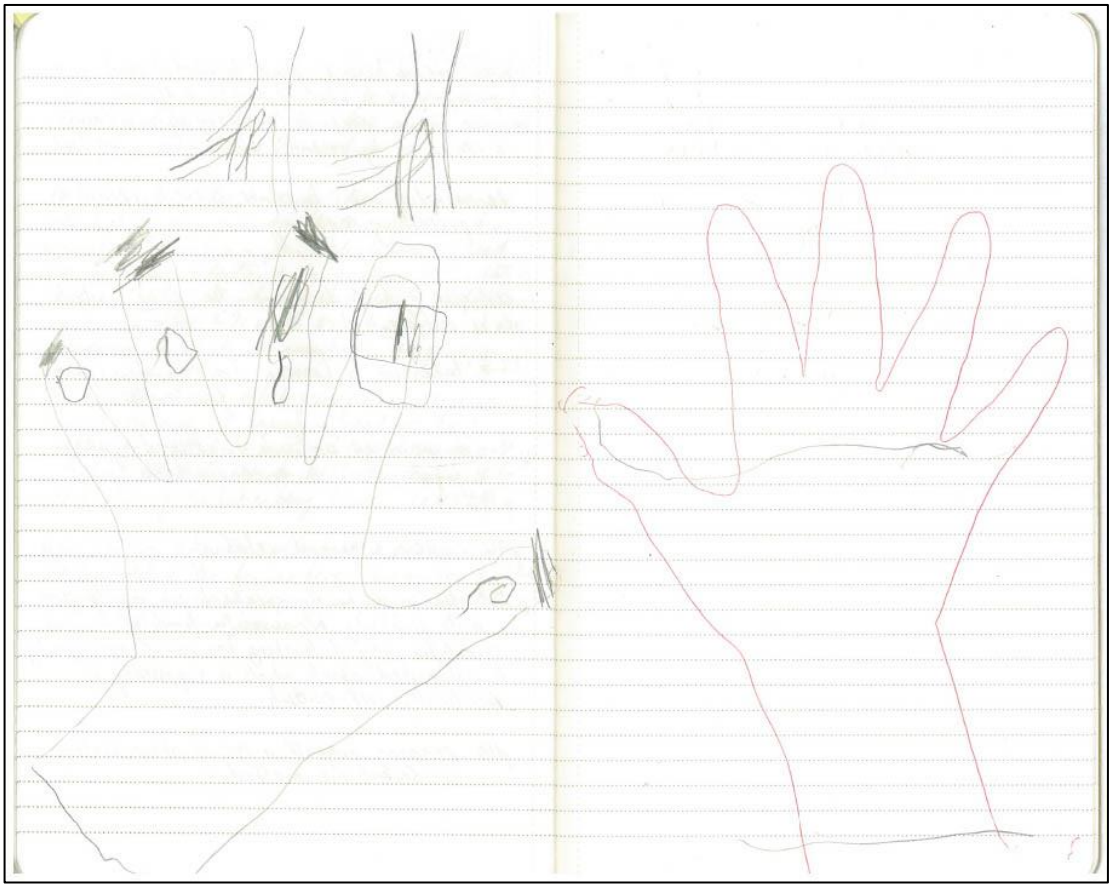
Equipment is only equipment in the totality of other equipment. wholeness (heelhed)

A bridge is equipment vs. a tree that has fallen down over a stream w it is used as a bridge. Unless a road is built up to the tree or a sign put up.

models put people in standing reserve. - Technology article

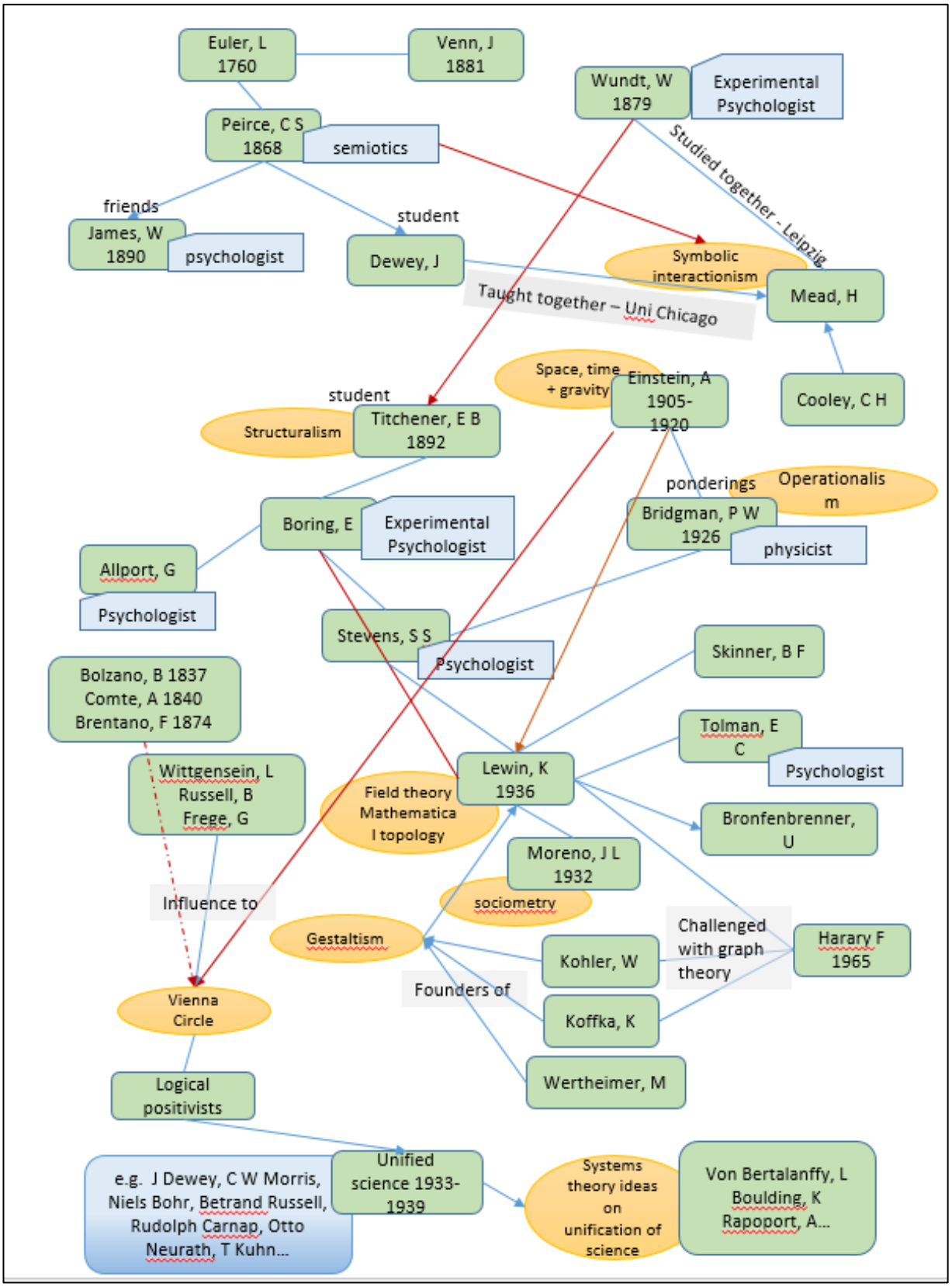
& impose





Appendix F – Links between contributors from other fields

Links discovered in my reading on the authors who contributed to the development of models in occupational therapy.



Appendix G – CMOP-E environment definitions

A sample of definitions from key authors of occupation and/or occupational therapy with emphasis on the environment component over the 40 years since the environment became more prominent in occupational therapy

Author	Definition: Occupation and/or environment	'Environment' in definition
Occupational therapy (1972) as cited in Hopkins (1978).	Its fundamental concern is the capacity, throughout the lifespan, to perform with satisfaction to self and others those tasks and roles essential to productive living and to the mastery of self and the environment (p. 27).	Environment is seen as something that needs to be mastered by the individual in order to have satisfactory role and task performance. Focus on: Individual and physical environment
Howe & Briggs (1982)	Both humans and their environment are interconnected, joined in shaping each other (p.322). …a person responds to the environment with overt behaviour, or "output". This behaviour is then fed back to the environment, which in turn responds again to that behaviour, producing further feedback that serves as new input for the individual (p. 323).	Environmental layers = immediate setting (residence, neighbourhood, family, other continuing contacts), social networks (peer groups, social clubs, organisations, religious groups, shopping resources, transportation, institutions of health, education, welfare etc.), ideological system (societal and cultural values) Focus on: Individual in social system where life tasks and roles are carried out. Recognition of reciprocal relationship between environment and person.
Reed & Sanderson (1983)	Occupational therapy is the study of human occupations (self-maintenance, productivity and leisure) and the management of the adaptive behaviour required to perform these occupational functions (p. 5).	Adaptive behaviour is seen in response to the environment. Focus on: Individual where all occupations are determined by the environment

Clark et al., (1991)	Chunks of activity that are normed in the lexicon of the human culture, that are characterized by active participation, and that hold personal and social cultural meaning (p. 300).	Elements of social and cultural environment alluded to through recognition normalisation of activities and sociocultural meaning. Focus on: Individual linked to society
Law (1991)	Environments are defined as those contexts (situations) which occur outside individuals and elicit responses in them….The study of environmental factors and their effect on occupation is complex. Environments can both help and hinder satisfactory occupation.	Alludes to environment influencing a person. Focus on: Individual
Christiansen, et al., (1995).	Occupations can be broadly explained as having both performance and contextual dimensions because they involve acts within defined settings (p. 1015).	Broad statement about occupations occurring in a setting. Focus on: Individual or applied to multiple people
Townsend (1997)	Occupation is groups of activities and tasks of everyday life, named, organized, and given value and meaning by individuals and a culture; occupation is everything people do to occupy themselves, including looking after themselves (self-care), enjoying life (leisure), and contributing to the social and economic fabric of their communities (productivity) (p. 34).	Social and economic contributions to the person's own community. The community is regarded as a recipient of the occupations people engage in. Focus on: Individual with a vague connection to wider society, economy and community.
McLaughlin-Gray (1997)	Occupation is perceived as "doing" by the individual, is goal-directed, carries meaning for the	None

	individual, and is repeatable (p. 16).	
Golledge (1998)	Occupations are the daily living tasks that are part of an individual's lifestyle (p. 102).	None
Yerxa (1998)	Occupation may be organized into a view of the human as a multileveled, open system acting upon and responding to the environment over a developmental trajectory, from birth to death. At the cultural level occupation refers to the units of organized activity within the ongoing stream of human behavior that are named and classified by a society according to the purposes they serve. (p. 366)	Humans acting on and being influenced by the environment over their lifetime. Occupations classified within a sociocultural environment. Focus on: Individual within a culture and society
Baum & Christiansen (2005)	Occupation is engagement in activities, tasks, and roles for the purpose of productive pursuit, maintaining one's self in the environment, and for purposes of relaxation, entertainment, creativity, and celebration (p. 548).	Occupation is for purpose of maintaining of oneself in the environment. Focus on: Individual
Wilcock (2006)	Occupation provides the mechanism for social interaction and societal development and growth, forming the foundation of community, local, and national identity because individuals not only engage in separate pursuits, they are able to plan and execute group activity to the extent of	Occupation is tool for social development and interaction Focus on: Individual and societal at community, local, and national level within an international perspective.

	national government or to achieve international goals for individual, mutual, and community purposes (p. 9).	
Kielhofner (2008)	Occupation is the doing of work, play, or activities of daily living within a temporal, physical, and sociocultural context that characterizes much of human life (p. 5).	Temporal, physical, sociocultural context. Focus on: Individual within a society and culture. NB: “much of life” could be considered ambiguous or ethnocentric.
Carlson, et al. (2012)	1. Occupation is ‘‘doing’’ that is purposeful and goal directed. 2. Occupations tend to be performed consciously and intentionally. 3. Occupations are temporally, historically, and socio-culturally situated. 4. Occupations tend to be personally meaningful within the context of situated lives.	Social cultural situatedness of occupation. Meaning created linked to context of people’s lives. Focus on: Individual within a social cultural context.

Appendix H – Comparison of systems theory terms and the Model of Human Occupation

Over leaf is a table comparing key systems theory terms, their mathematical or physics origin and their application in the first edition of the Model of Human Occupation (1985).

A comparison of key concepts from general systems theory as they appear in Von Bertalanffy's (1950; 1968) general positivist realms, and the first version of MoHO (Kielhofner, 1985).

Term	General systems theory	Physics/science/mathematics	MoHO (1985)	Consistency with original meaning
Subsystems or components	subordinate systems implying that a hierarchy exists with control or authority of higher systems	Elementary units whose characteristics remain unchanged.	Subsystems which are a self-contained systems within a larger system	yes
Equifinality[187]	The same final state reached from different ways. Equifinality is at the basis of organic regulation and is the consequence of the steady state.	Closed systems cannot have equifinality. The final state of a closed system depends on the initial conditions or the course of the process. Adaptation in a state determined system is impossible.	"The openness of the open system is represented in the ability of the system to achieve different states and to achieve them through different pathways, a property referred to as equifinality" (p. 8). This flexibility is critical to human's ability to adapt to varying environments and to overcome disruptions of the	yes

[187] Hans Driesch uses the phenomenon of equifinality to questionably "prove" vitalism (entelechy) and that life is not governed by physiochemical laws. This theory has generally been abandoned (Drack, 2009a).

			human system to achieve desired end states.	
Hierarchy[188]	Ordering of structures (parts) and functions (processes)[189] where higher levels presuppose lower ones which can be expressed through language, semi mathematical matrix theory ideas, mathematical logic, graph theory. Intimately connected with differentiation, evolution and the measure of organisation not expressible through entropies, or information. The living organism is a hierarchical order of open systems	Mathematics has pre-ordered sets or a hierarchy of operations e.g. multiplication before addition. Based on positioning ordering of higher and lower parameters, laws, operations (superposition).	Hierarchy of structure and function where different systems must translate one form of energy into another.	yes

[188] Nicolai Hartmann's four laws on the levels of reality (matter, life, mind, society) attributed to ideas on systems hierarchies.
[189] In the "biological world structures are the expression of a flow of processes" (Von Bertalanffy, 1968, p. 27).

Negative entropy[190]	Decreasing entropy spontaneously developing toward increased heterogeneity and complexity.	Entropy deficit of an ordered subsystem with respect to surrounding chaos. Entropy in an open system is always exchanged with the environment. Numerically, negative entropy doesn't exist as entropy is always >0.	Closed systems work towards entropy and toward a simple homogenous state. The function of the open system has the potential to make the system more heterogeneous and complex. Negative entropy is the process of the reversal of the natural entropic tendency of closed systems.	yes
Purposefulness	Mechanisms of a feedback nature are the base of teleological or purposeful behaviour.	Not relevant	Overall coherence and responsiveness to inner goals of an open system. There are some universal purposes of open systems e.g. survival. Some purposes can be secondary or acquired e.g. meaningful activity. Purposefulness referred to as pursuit of goals.	Not clearly. MoHo presents a link to motivation which was a step that was cautioned by von Bertalanffy – see spontaneity.

[190] Erwin Schrödinger's paradox (1944 in *What is life*) is credited with postulating that the increased order inside a life system is balanced out by disorder outside the system. Mostly accounted for by loss of heat into the environment. Thus, in an open system entropy is exchanged with the environment. Living organisms feed on negative entropy to evolve which goes against the second law of thermodynamics.

Steady state[191]	Living systems are initially in an unstable state and tend toward steady state. Open systems may, provided certain conditions, attain a stationary state. Then the system appears also to be constant, though this constancy is maintained in a continuous change, inflow and outflow of materials with the environment. This is called a steady state.	Closed systems must reach a time-independent state of equilibrium where composition remains constant. A steady state system may not necessarily be in a state of dynamic equilibrium because some of the processes are irreversible. For a steady state in the entire system there must be flow through the system.	Systems seek to keep certain equilibria but the process may involve constantly changing states. The system, environment or both may be in constant change process in order to achieve a steady state.	Yes although GST steers clear of referring to equilibrium
Differentiation	Differentiation is transformation from a more general and homogenous to a more special heterogeneous condition. Wherever development occurs it moves from state of relative globality to state of increasing differentiation, articulation	The process of finding a derivative which is the rate of change of a function with respect to one of its variables.	The change from homogeneous to heterogeneous states through unfolding potential and "division of labour" of differentiated parts. Differentiation is influenced by innate potentials of the system and by the function of the system.	In general this is consistent. Some cross overs of the terms differentiation (MoHO) and mechanisation (GST). MoHO steps toward incorporating purposefulness in this process by including

[191] Steady state in some disciplines is called equilibrium, homeostasis in physiology, dynamic equilibrium

	and hierarchic order. Progressive differentiation is the whole system achieving higher states of organisation			innate potentials and function of the system.
Modularisation[192] and centralisation	No discussion on modularisation. Progressive segregation is often connected with progressive centralisation (= progressive individualisation) which is the time-dependent formation of leading parts. Progressive mechanisation is the transition from undifferentiated wholeness to higher function made possible by specialisation and "division of labour". Mechanisation often leads	Not part of physics. In maths the modularity theorem establishes a connection between curves and modular forms. Unrelated use of these terms to the systems theory.	Processes that facilitate the integration and regulation of differentiation of function. Modularisation is the establishment of pattern between system components which can be created and changed through system actions. Modularisation allows parts of the system to function in a stable, enduring, semi-autonomous way freeing up the system. Centralisation of modularised functions under a single governing entity throughout	Yes

[192] Some theories talk about mechanisation vs modularisation (early von Bertalanffy and Jerome Bruner). Kielhofner chose to use the later term to diverge from closed system connotations. This term is consistent with Arthur Koestler's phrasing.

	to establishment of “leading parts”. Later literature discusses modularity as being the degree to which system elements can be divided and recombined. It has been used as an equivalent to subsystems.		the open system leading to hierarchy.	
Potential	Potentials or “tensions” can be dispensed in spontaneous activity or in response to releasing stimuli, advancing toward higher order and organisation. Equipotentiality (neuroplasticity is a more contemporary terminology example) is diminished through fixed arrangement of components when system is achieving efficiency. Every unfolding of potential	Existing and ready for action, but not active. In maths, potential theory is the study of harmonic functions.	The open system cycle allows the unfolding of potential through change and constancy of the system. Open systems have encoded informational processes which guide how their potentials will unfold over time.	MoHO lacks a focus of potential being linked to spontaneous activity. MoHO takes a more pre-arranged perspective on potential as already existing in the system waiting to be unlocked through the system acting back on itself (circularity). A sense that potential is capable of being and doing. Lacks the notions of the outcome being about order and organisation

	prevents many other possibilities.			and diminishing possibility. In this sense potential is a genetic factor.
Spontaneity[193]	Humans are characterised by autonomy and spontaneous activity, actively engaging the environment. Spontaneity comes from built-in energy. Von Bertalanffy cautioned against the use of spontaneity in relation to motivation. Spontaneous activity is an organismic principle. Symbolic function is the humanistic principle and also needs to be considered in system-theories.	Spontaneous process releases "free energy"[194] and does not need an external energy source to drive it.	Open systems embody spontaneity and potential. Spontaneity is resultant from initiation and continuation of the open system cycle when appropriate environmental conditions exist. Spontaneous living action is the creation of culture. Humans have innate spontaneous tendencies to explore and master the environment.	Overall consistent. MoHO extends spontaneity to creating culture which GST does not. Culture to von Bertalanffy was a system of symbols. GST recognises that humans live in a world not of things but of symbols. Human behaviours are the consequences or different aspects of symbolic activity. Von Bertalanffy states "…man himself creates his world, which we call human culture" (1968, p.

[193] Spontaneity ideas collided with the stimulus-response theories of behaviourists.
[194] Thermodynamic free energy is the energy that can be converted to do work.

				251). Although cultures set limits on human behaviour they did not determine it, leaving room for individual freedom (Weckowicz, 1989).
Resonation	Not noted in early general systems theory writing.	Resonance is a phenomenon where a vibrating system or external force drives another system at the same frequency to oscillate with greater amplitude. It occurs when a system is able to store and transfer energy between different storage modes. Losses occur from cycle to cycle called damping.	Components impacting on each other resonate rather than have a cause and effect relationship. A disturbance, change or action progresses through the system interacting with the particular set of conditions which exist in a given part. Recognises the interconnectedness of the hierarchical open system.	Resonation comes from Gordon Moss' (1973) work about information processing of social and environmental contexts which does not include energy exchange. It is about the body's responses to and creation of information in interactions with the environment and in social interaction. Research by DeForest, Hawkins, & Jeanne Madigan (1991) is very small but shows some support for resonation in the MoHO.

Commanding and constraining	Stems from Paul A Weiss' (1969) theories on systems. Weiss states "Each subsystem dominates its own subordinate smaller parts within its own orbit or domain, as it were, restraining their degrees of freedom according to its own integral portion of the overall pattern, much as its own degrees of freedom have been restrained by the pattern of activities of the higher system of which it is a part and participant" (pp. 14-15)	Mathematical constraint is a limitation put on the domain or range of a function (what can be put in and what comes out). Constraint in physics is the restriction on the freedom of movement through a force.	Describes the interaction between a higher and lower components of a system. Higher levels command lower levels. Lower levels constrain higher levels.	No. Kielhofner diverges from Weiss' view and extrapolates the view that lower levels constrain higher levels. Weiss is also clear that domination of degrees of freedom occurs within its own orbit or domain, not outside of it.

Appendix I – My interpretations of watching Tom

Below is a description I wrote as I watched the video for a second time, before submersing myself into thinking about the ontology of it. It is intended as a kind of soliloquy in response to Tom and his "One Lousy Potato". Some of this is my memory of what it was like when I was there in Tom's house on the day of the videoing. It feels more natural to come at this description from what I would describe as a 'human-to-human' point of view. A point of view that is relational, because we are all human and, someday, I might experience what Tom is experiencing here or know of someone who has experienced a stroke of such differences in doing. The alternative for me would be to overlay or filter my view with an occupational therapy perspective (scientific, objective, measured, a named and categorised view). But this, to me, puts a barrier in the way, a screen to seeing the essence of what might be going on for Tom.

When I met Tom and heard he had been an interviewer, I felt some nervousness. But I went in hoping that he would not pick up on my much lower skill level in interviewing. But Tom appeared kind, understanding and not focussed on me at all. Tom reminded me of my parents who are getting older and increasingly struggling with their every-day tasks such as holding onto heavy things, using force on objects. When things that were once done without thought, like bending into the cupboard to look for something, become an effort, or when looking for something that should be in a familiar place is a challenge, I felt a draining energy and vitality in Tom's everyday life.

When Tom started working with the chopping board, it brought back thoughts of when I, in my clinical time, have organised a chopping board like this for clients. But in watching Tom, it made me think of how unfair it is, to give a client a thing that really looks like it creates more work and effort than if he might have solved the problem by himself. It felt like there was an unfairness in expecting people to learn a totally different and strange way of using objects that were once so commonplace and mundane in their existence. It also revealed how poor design of objects or 'technology' does not always make life easier. The way Tom goes about using it, also seems like the chopping board has a lot more agency or say in how he should use it. He stands side-ways, bends to look at the right angle, and in doing so must contort his own body vs just working the potato in a hand. I began to think about other tool or equipment designs that might help a person to peel potatoes one handed.

I did wonder if he was using the chopping board because I was there, and he knew I was an occupational therapist and perhaps he “should” do it this way. I wondered if on other occasions he may just scrub the potatoes or just chop them up without pushing them on the spikes of this board. That his “demonstration” that day was a performance for me, in which case it would not be an everyday process for him, and my thoughts and feelings were almost for nought about some of the struggles Tom seemed to face. His utterance of “and all this for one lousy potato” might have been Tom indicating that this chopping board creates unnecessary work for one potato. In doubting my observations of Tom and the chances that this was in fact not a commonplace process, I realised that as occupational therapists we are only ever privy to a small snapshot of a person’s occupational performance and can never truly understand what that one home-visit or encounter means in the bigger scheme of the person’s life and how irrelevant some assessments are that take a broad brush approach to claiming a person can or cannot do something based on one observation. In listening to my head and heart while watching this video (a luxury in itself to be able to re-watch again and again), I realised how considerable my role would be if this was a home-visit and how limited the occupational therapy objective view is, given the influence of my own lens and interpretations in the mix.