

Ethics as Harmony and Improvisation
in Responsive Equilibrium:
the Core Psychophysical Process
as a bio-logical foundation for ethical engagement

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Abstract

In this thesis I address the ethics of corporeal being at a foundational level. Rather than starting the discussion of ethics at an abstract level founded in propositions and logical arguments about principles, I offer an holistic view of human engagement that recognises sensori-motor processes and our embodied engagements with the world as foundational to and integral with cognition and higher functions and social skills. I propose that the capacity of human beings to act in an ethically responsible way is built into our biological, psychosocial natures, and that ethical interaction is informed and enhanced by intentionally cultivating a particular psychophysical process. The Core Psychophysical Process (the CPP) that I have identified naturally underlies our interactions in the world as vertebrate creatures, grounds our primary and ongoing developmental and learning processes, and is integral with the process of developing our ethical 'second nature.' The CPP is expressed at a fundamental level in a reflexive neuro-musculo-skeletal expansive and contractive process that is integral with an experiential sequence of perception, reaction, and reflection leading to choice of action.

There is a constant ebb and flow of contraction and expansion throughout the body which resonates with, in and through all of our experiences. It is integrated into processes of reasoning, interpretation, intentionality, emotion, valuing and habit, all of which, along with the abilities to inhibit, deliberate, and choose, are foundational to ethical action. Elements of the CPP are active at every level of corporeal being, from the fluent maintenance of equilibrium at neuronal level through to the dynamics of ethical deliberations and negotiations between people in society. In this thesis the Alexander Technique and processes in the Arts provide exemplars wherein the foundational intrinsic aspects and expressions of the CPP can be understood.

In order to fully explore the impact of the CPP in human experience, I examine both theoretical and practical experimental experience with the CPP in relation to: historical and contemporary readings from different cultures in bioethics, ethics, philosophy, feminist philosophy, and the philosophy of mind; empirical investigations in cognitive science, physiology, and neuroscience; and Susan Hurley's Shared Circuits Model. This is a phenomenological study, from a feminist and arts-based perspective. Arts Phenomenology starts with the question: 'What is the experience of being with, acting with, with the intention to?' That perspective leaves behind subject/object, mind/body dualities to understand human experience as extended and grounded in the embodied interactions of social being. I offer alternate conceptions of embodiment, and explore Bodily 'I'dentity that reflects multi-sensory meaning-making grounded in experience.

Introduction

In this thesis, I address the ethics of corporeal being at a foundational level. Rather than starting the discussion of ethics at an abstract level founded in propositions and logical arguments about principles, I offer an holistic view of human engagement that recognises sensory-motor processes and our embodied engagements with the world as foundational to and integral with cognition and higher functions and social skills. I propose that the capacity of human beings to act in an ethically responsible way is built into our biological, psychosocial natures, and that ethical interaction is informed and enhanced by intentionally cultivating a particular psychophysical process. That process naturally underlies our interactions in the world as vertebrate creatures, grounds our primary and ongoing developmental and learning processes, and is integral with the process of developing our ethical 'second nature'.

I call this process the Core Psychophysical Process or the CPP. The CPP is grounded in a neuro-musculo-skeletal reflexive movement process fundamental to all vertebrate creatures known as 'startle reflex'. That movement process is integral with an experiential sequence of perception, reaction, and reflection leading to choice of action. In a threatening situation, the startle reflexive response is activated by the perception of danger which then triggers the reaction associated with fear - an inward contraction and immobility. Overt action ceases thereby creating an opportunity for a creature to take in information on many levels and to consider its next most appropriate action. Whatever action subsequently occurs is energized by expansive movement through the musculo-skeletal system that corresponds with brain activity and electrical and chemical processes throughout the body.

The reflex element of the CPP is more than a survival-oriented physiological response, in that there is a constant ebb and flow of contraction and expansion that happens through the head-spine-pelvis structure, and which is integrated with movement throughout the body. Contraction reflects a gathering into oneself, an inward focus, while expansion is an opening outward, an embracing of and extending into engagement. Like breathing, that core movement resonates with, in and through all of our experiences. And it is integrated into processes of reasoning, interpretation, intentionality, emotion, valuing and habit, all of which, along with the abilities to inhibit, deliberate, and choose, are foundational to ethical action. Elements of the CPP are active at every level of corporeal being, from the fluent maintenance of equilibrium at neuronal level through to the dynamics of ethical deliberations and negotiations between people in society.

While a focus on correspondences between biological and psychosocial processes is not unique in biology, cognitive science and neuroscience, ethics and the philosophy of mind, the understandings and conclusions that I present about these processes are. I claim that normative definitions of human nature, which are based in Western European philosophies grounded in dualism – in which the mind-brain is the controller of a body mechanism that is merely subservient – devalue, obscure, or misconstrue essential elements of human nature.

Challenging Western philosophy's disembodiment, and the hierarchal valuing that puts thought, mind, and the brain as somehow above and independent of bodily existence, is a central element of my thesis. I offer alternate conceptions of embodiment, and articulate senses of a 'Bodily 'I'' that reflect multi-sensory meaning-making grounded in experience. The insights gained from my research support the theory that human beings have an innate **valuational** capacity grounded in the body and our psychosocial natures, rather than exclusively or even primarily in the mind, to act as responsible social beings exercising reflective self-discipline in their actions with-in the world. This intentional and valuational capacity is fundamental to our being as ethical creatures attuned to what is good or life affirming.

My research process for this project involved putting the Core Psychosocial Process up against both historical and contemporary readings in the philosophical groundings of ethics and bioethics, and empirical investigations in cognitive science, physiology, and neuroscience. In these latter fields, I have found the greatest resonance with Susan Hurley's Shared Circuits Model, which draws on contemporary research about mirroring, imitation, empathy and social learning. In particular, Hurley's model addresses the practical and developmental importance of the inhibitory impulse and capacity in human beings, and which is a foundational element of the CPP. The juxtaposition of the CPP with these multiple philosophical and empirical discourses not only elucidates the properties of the CPP in a way not otherwise possible, but it also brings to light and calls into question common base **assumptions**, usually individualistic, in cognitive science, psychology, the philosophy of mind, and ethics.

Beyond a theoretical critique, I also portray the operation of the CPP in practical terms as a basis for ethical action in the everyday world of human engagements. As a process of flow within and in response to a world and situations as they develop, the CPP underlies and supports negotiations in the improvisatory flux of 'the practical interconnection of acts' (Watsuji) which is ethics. I examine the CPP in the contexts of Alexander Technique practices and the arts, particularly music, where I suggest that the CPP can very clearly be seen as the holistically integrated fundamental process that it is.

There one finds the development of relationships, skills and reflective self-discipline in the context of continually evolving creative interaction.

The practice of basing ethical analyses in propositional reasoning abstracted from human engagement is a common thread in historical and contemporary Western philosophy, and also in practical ethics. This short circuits, rather than supplements, elaborates, and articulates, the responsiveness and capacity for beneficence that our embodied relational nature empowers. Those abstract ethical analyses are based in an intention to mirror mathematical and scientific methodologies. The strength of reductive and objectifying scientific processes is in the isolation of factors from their complex contexts, in order to define and control variables. Calculus and mechanism are useful constructs, but human organisms and their psychophysical social interactions and needs are far more complex. Reasoning happens in many ways, simultaneously with and different from the linear processes of word-language and argument. My thesis supports the understanding that human social engagement is based in the empathy that grounds cognitive and social development. The inclusive process of 'responsive equilibrium' as a methodology for ethical deliberations is more consistent with that perspective than utilitarianism or cost-benefit analysis.

Western society's marginalisation of artistic processes to alterity to the norm of real common life has ghettoised aspects of human beingness that are essential and fundamental to our ethical social existence. Many scientists and philosophers call on 'the arts' to provide examples of their conceptions of cognitive and social function, and to ground those functions in experiential processes. Most often their assumptions about the psychophysical processes of engagement in arts disciplines are inaccurate and reflect a stereotypical Western cultural perspective on embodied expressivity and skill development. 'Embodiment' is a contemporary catch-concept added in to the discussion, yet many of the expositions of this idea are still reflective of deeply embedded dualistic, mechanistic thinking. I present a more holistic understanding of embodiment and of the expression and capacities of corporeal being in relationship. In the performing and creative arts one finds an alterity to technicity within complex, skillful, culturally expressive activities involving every aspect of functional and social being.

I draw on my own extensive experiences as an Alexander Technique practitioner, musician, and dancer, and also on concepts of resonance, harmony and improvisation as central metaphors for our engagements in and with the world as ethical social beings. I bring together multiple disciplines and discourses because I experience them holistically, as inter-related. It is also not possible to fully understand the impact of the

CPP in human experience, and its importance, without placing it in numerous contexts of experience and philosophical thought. This is a phenomenological study, from a feminist and arts-based perspective. Arts phenomenology starts with the question: 'What is the experience of being with, acting with, with the intention to?' That perspective leaves behind subject-object, mind-body dualities to understand human experience as extended and grounded in embodied interaction. In this interpretive inquiry I have researched the philosophical groundings of ethics in a wide range of historical and contemporary readings through a process of qualitative analysis applied to discourse, wherein the element to be studied is put together with a variety of other elements to see how they interact. By those interactions I have learned about the properties and actions of that element and its co-relations with the other factors, but that process also inevitably shows the 'control' elements in a new light. This has led me to challenge some common base assumptions in cognitive science, psychology, neuroscience, the philosophy of mind, and ethics.

The reader will find a variety of modes of presentation of ideas and information from a range of disciplines, including: explanations of the methodology and development of the Alexander Technique, with reference to my own practical applications and research as a teacher of the technique – which laid the foundation for my development of the CPP construct; the presentation, through quotation, analysis, and/or critique, of research in cognitive science and neuroscience; references to and descriptions of experiences in music, dance and other art forms; invitations to experiential understanding through description and narratives; quotations, discussions and/or critiques of a range of philosophical ideas from different cultures and historical eras; poetry; explanations of physiological and biological processes, and scientific theories; and descriptions or stories to evoke understandings of cultures and qualities of relationships.

This thesis is multi-disciplinary, not only in that it includes references to and from multiple disciplines, but also in the intention to bring them together in such a way that their resonances create harmonies – both consonant and dissonant. Harmonies of relationship enrich understandings. Though it happens through the intermediation of text on a page or a computer screen, a writer and a reader are in conversation. In a way that is responsive to and reflective of the different disciplines and the experiential understanding I am hoping to generate, I use a range of different forms of expression: formal and informal, academic and conversational, analytical and poetic, predictable and unexpected.

As my research and this thesis are multi-disciplinary, there are many facets to be presented, and the explanations and interconnections of ideas and their applications are developed cumulatively. From time to time, particularly in earlier chapters, I offer 'promissory notes' in footnotes or the body of the text. This is to signal where, in later chapters, ideas that have been introduced can be more fully addressed. In Chapters 1 and 2, I have included endnotes to provide more detailed or summary information to readers who may not be well-versed in the particular topics addressed. In these particular cases, to have included the information within the text or in footnotes would have been disruptive to the flow of the text. In footnotes, in some cases, I have directed attention to references to works other than those quoted in my text. In my research I have found that bibliographies are an excellent resource, and I intend my thesis to be useful for readers from a range of disciplines who may be unfamiliar with research in a particular area.

Quotations are offered in a variety of forms. There are times when I include longer quotations, allowing authors to explain and situate their ideas rather than 'processing' their text or extracting information and then re-presenting it. I also do edit and distill text where it seems most appropriate and effective to do so in the context within which it appears. I have researched topics widely; I have followed the trails of references to original sources until I understood the ideas and groundings of the writers I quote and the research that I write about. I read and research not just 'for information', but for the context of the researchers' and writers' thoughts and understandings. This is reflected in *how* they speak, not only in the 'information' they offer, or the others they cite. Each writer, within the discipline(s) in which they speak supported by their experiences and expertise, is unique. The reason for writing is to communicate; my intention is to include others' work in my thesis in a way that is attributed, respectful, informative, and revealing of context, and which best communicates ideas within the context of my thesis.

Chapter summaries:

Chapter 1 – The Core Psychophysical Process

This chapter provides an introduction to the Core Psychophysical Process and its expression in human psychophysical engagement, described in practical life terms, and with reference to physiology and neuroscience. I present the methodology and practices of the Alexander Technique as an exemplar of ways in which elements of the CPP are intrinsic in human responsivity and learning processes. The ways in which I worked and experimented in my Alexander Technique teaching practice provided the

foundations for my development of the CPP construct¹, which was then further developed and expanded through this Doctoral research project. I also signal the range of ideas that will be explored in the thesis (including concepts about embodiment, consciousness, behaviour and ethics) and where they are developed, and provide historical contexts for Alexander's work, and for concepts about reflex, habit and intentionality in human behaviour.

Chapter 2 – Susan Hurley's Shared Circuits Model

I explain Susan Hurley's Shared Circuits Model (SCM) and situate it in the context of current cognitive science and neuroscience, highlighting key elements that share common ground with the CPP, referring also to research by Gallese, Varela, Molnar-Szakacs, and Isaacson.

Chapter 3 – The CPP and the SCM

The commonalities between the CPP and Hurley's SCM and their implications will be explored here, with detailed analysis of the intersections that clarify understanding of the CPP.

Chapter 4 – Dualisms versus Cognition as Embodied

In this Chapter I challenge the dualism embedded in philosophy, psychology and cognitive neuroscience from my foundation of understanding based in experimentation and experience with the CPP, particularly in the Alexander Technique and music. A variety of forms and expressions of dualism are considered and argued against. For this task the ideas of writers from diverse fields are brought together, including those of Gillett, Gendlin, Rowlands, Barad, Thompson, Varela, Noë and O'Connor Drury.

Chapter 5 – Embodiment

In this chapter, I ground rich understandings of embodiment through exploring: multi-sensory meaning-making; ideas about perception, emotion and cognition; the multi-level expression of the CPP in actions and intentionality; ways in which music and dance contribute to understanding the holistic integration of thought and movement. I challenge common assumptions about automaticity in action and the centrality of sight and word-language in reasoning and experiential meaning-making. I bring into the discussion ideas from: Wittgenstein, Gendlin, Aristotle, Gallagher, Sheets-Johnstone, Damasio, Johnson, and Dewey.

¹ My Master's thesis includes comprehensive analysis and practical examples of the experiential experimental processes of my Alexander teaching practice: Finger, S. [Noel-Bentley, S.](2001) *Reflex, Habit and Learning*, unpublished thesis (MA), University of Victoria, Ca., available: <http://dspace.library.uvic.ca/handle/1828/5696>

Chapter 6 – The Arts, Embodiment and Ethics

Harmony, improvisation and resonance provide profoundly appropriate metaphors for ethics. The harmonic foundations of Western music as developed by the ancient Greeks in response to the resonances of sound in the natural world is explained. Ways in which the phenomenology of arts processes reflect the foundations of ethical human being-in-relationship, and support the development of reflective self-discipline, are explained and supported with experiential examples. I, along with Nachmanovich, offer narratives from the musical world; Frey and I write from experiences in dance; Crowther is a contributor toward the understanding of creative/visual arts processes.

Chapter 7 – Bodily 'I'dentity

The identification of Self from a variety of perspectives is presented here. First I consider ideas from cognitive neuroscience and bioethics referencing Gilletts' and Adolphs' quite different perspectives. The twentieth century philosopher Watsuji Tetsurō is not well known in the Western world, but his work is foundational to ethics in Japan, and I introduce his ideas about self and other, alongside those of Levinas. I describe ways in which the CPP is intrinsic and central to the developmental and learning processes of ethical human being in relationship-with. I consider corporeal generosity with Diprose, and environmental embeddedness and responsibility with Suzuki.

Chapter 8 – Dark Ethics

I bring to light aspects of humanness in relationship that have been kept in the dark – excluded from and/or diminished in the discourses of identity, psychology, cognitive science and ethics. Ideas about intuition, the constructs of conscious and unconscious mind, and the sexualizing of sensual experience are challenged. The contribution of the CPP to different understandings of the nature of embodied being and thought are discussed. Gendlin, Irigaray, and Gillett are cited in this chapter.

Chapter 9 – The CPP and the Phenomenology of the Arts as a Basis for Practical Ethics

In this chapter I explore the holistic embodied learning processes in the arts and the Alexander Technique that support the development of responsive and responsible being-in-relationship-with-others-in-the-world. I summarise the ideas and understandings that underlie my thesis title, 'Ethics as Harmony and Improvisation in Responsive Equilibrium: the Core Psychophysical Process as a bio-logical foundation for ethical engagement', and assert the ethical imperative for reflective self discipline in responsible social and environmental engagement.

Chapter 10 – Illustrations and Applications – Signalling Future Directions of Research

Having articulated an alternate discourse in this thesis of human engagement as corporeal, holistically experienced and interactively interdependent, and in that light the implications for ethics found in my understanding of CPP processes, I briefly address a number of practical issues in Bioethics, signalling possible journal articles and areas of future research.

Chapter 1 - The Core Psychophysical Process

Introduction

The Core Psychophysical Process that I have identified and come to understand through many years of practice and research is an important aspect of our intra and inter-being that reflects the functionally integrative nature of human experience. As creatures, as resonant beings – we are creatively responsive to all that we experience, and experience moves us through processes of perception, reaction, reflection and intentional choice of action. The holism of human being is intrinsic in the development of a relational self – of our ethical ‘second nature’, and in the development of the reflective self-discipline that supports us in improvising and negotiating a way through life experience and the practical interconnection of acts.

My intention in this chapter is to introduce and explore the dimensions of the Core Psychophysical Process (CPP), how it works, what it does, and what it makes possible. In order to get a feel for the CPP, a comprehensive understanding, it is useful to examine it from different perspectives through different layers of human function using descriptions, analyses and experiential examples. This requires a field of explanation and description that encompasses a variety of styles of presentation and kinds of information. I will include: historical contextualising; grounding in physiology and neuroscience; experiential description from my own and others’ educative practices; methodological analysis; concepts developed through methods grounded in the CPP – signalling further development of those ideas in later chapters; quotations from and references to related research in a number of fields; and descriptive narratives. The multi-layered presentation that I am offering reflects the reality of my own research processes and ongoing results. Experiential comprehension requires experience, and on a page, to expand beyond the limitations of language, it is useful to create topological, timbral, sensually metaphoric accounts to flesh out ideas.

The Core Psychophysical Process has as its foundation a functional reflex commonly known as startle pattern, or in non-scientific public discourse, fight or flight reflex. That reflexive process is a part of a larger process that is fundamental to human functioning at every level. The holistic nature of the CPP, and the results and insights that flow from reflective experience with it, show up many aspects of human nature and capacities which are often unrecognised, misunderstood or undervalued. In order to explain the Core Psychophysical Process, and begin to make clear its implications for ethics, I will describe and analyse the processes of a method developed by F.M. Alexander that works with some expressions of the CPP explicitly and intentionally in practical ways. The CPP

not only provides the foundational tools (in its manifestation as startle reflex), but is also reflected in the experimental methodology of the practice of the Alexander Technique. This practical experiential context will demonstrate ways in which the CPP is a foundational element of human developmental and learning processes, and the capacities underpinning cognitive and other skills. When skills evolve in practices that develop fluent integration of the CPP with action and intentional processes, there is often an increasing awareness of and facility with the multi-sensory meaning-making that is grounded in movement and touch, and reflected in neural activity. This aspect of the CPP is related to the embodied social cognition and practical engagements at the heart of ethics and will be addressed here and in later chapters.

1. The Core Psychophysical Process

The CPP is grounded in a neuro-musculo-skeletal reflexive movement pattern fundamental to all vertebrate creatures. That movement process is integral with an experiential sequence of perception, reaction, and reflection leading to choice of action. It is commonly identified in its role as ‘startle reflex’, a reflexive responsive common to all vertebrate creatures and expressed throughout all stages of life. In a survival situation, the perception of danger triggers the protective reaction associated with fear – an inward contraction and immobility. Overt action ceases thereby creating an opportunity for a creature to take in information on many levels and to consider its next most appropriate action. Whatever action subsequently occurs is energized by expansive movement through the musculo-skeletal system that corresponds with brain activity and electrical and chemical processes throughout the body.

The reflex element of the CPP is more than a survival-oriented physiological response, in that there is a constant ebb and flow of contraction and expansion that happens through the head-spine-pelvis structure, and which is integrated with movement throughout the body. Contraction reflects a gathering into oneself, an inward focus, while expansion is an opening outward, an embracing of and extending into engagement. Like breathing, that core movement resonates with, in and through all of our experiences. It is integrated into processes of reasoning, interpretation, intentionality, emotion, valuing and habit, all of which, along with the abilities to inhibit, deliberate, and choose, are foundational to ethical action. As will be made clear through this thesis, what are often described as ‘physical’ processes are actually part of and reflected through all of the processes and actions of human being-in-the-world. The startle reflex will be described in detail and from various perspective in this chapter. I will summarise perception, reaction, reflection, and choice of action as aspects of the Core Psychophysical Process

and those aspects of human function will be addressed in more detail in this and later chapters.

In a reflexive startle response, there is a very brief sequential flow through those processes. In the continuum of psychophysical experience, the ebb and flow of the responsive and balancing motions of expansion and contraction through the core are quite fluent. Riding and influencing that flow are many processes and qualities of perceiving and responding which happen in layered and simultaneous ways, and which are expressed throughout functional, deliberative and intentional actions.

- Perception can be understood broadly as the generative process of a living being in an environment.¹ From physiology, neuroscience and cognitive science perspectives, perception is a multi-sensory affair: afference (input) responsivity is generated by contact with the world and by our own simulative processes in a context (brain/body plus world) where there are traces of past experience and anticipations of the future. The multi-sensory nature of experience is integral to and informative in reasoning and conceptual thought.² The generative experiences of empathy and monitored simulation in cognitive and developmental processes will be expanded upon in the next chapter with the discussion of Susan Hurley's Shared Circuits Model (SCM) and its cognitive and neuroscience groundings.
- Reaction is both an inhibitory and an informative process. Reactive inward tightening inhibits movement, creating space for deliberation and intentional action. Reaction itself informs us that there is something up that needs to be oriented toward and addressed. Even at the level of cortical neuronal function, inhibition and its interactions with excitation are important in 'tuning cortical neurons to specific stimuli and in shaping their activity pattern in time' (Isaacson and Scanziani 2011, p.234). Inhibition facilitates processes at every level of function and engagement – and this will be explored in relationship to the Shared Circuits Model and elsewhere.
- Reflection is a word that picks up on the connotation of mental processes of deliberation normally thought of as purely cognitive. I am expanding its scope, beyond the visual, linguistic, propositional configuration that is common, referring to deliberative processes of the whole being as an embodied organism. Alexander Technique processes, in re-educating the kinaesthetic sense and bringing attention to qualities of movement and expression in an integrative open-minded way, develop a broader understanding of the way that reasoning and meaning-making are

¹ Gendlin has written extensively about holistically embodied reasoning (1970)(1995), and in particular about the dynamics of perception and consciousness (1992), (2012a). These and other ideas about embodiment and mind/being are explored in Chapters 4, 5.

² This concept is central to my thesis and is extensively explored and developed in Chapters 2, 3, 4, 5, 6.

embodied. In subsequent chapters, particularly Chapters 4 and 5, new understandings of embodiment are put forward and applications to philosophy and ethics will be elaborated.

- Choice of action, intentional action, is a coordination of self that generates an energetic openness, an extension toward, which can be conceptual as well as a 'physically' interactive engagement. If we put aside presumptions of automaticity in action and understand the ways that habit (and in particular well-practised performance) is different from functional reflex action, experience demonstrates the complex improvisatory nature of human engagement with the world and other beings. Processes like the Alexander Technique develop that awareness and the reflective self-discipline that opens the door to creative responsively evolving interactions. This is also true of the performing and creative arts, and practices such as Buddhist meditation³.

2. Introduction to F.M. Alexander: within his historical context

Frederick Matthias Alexander was an Australian actor who began his study of habit and reflex in the 1890's. While pursuing a successful career as an actor and touring reciter, Alexander began to lose his voice during performances. Doctors advised him to stop talking, which did improve matters until he went on stage again. The treatment having proved ineffective, he set out to discover what it was that he was doing to cause his hoarseness.

Through a long process of self-observation and experimentation, he discovered some fundamental things about how humans and other vertebrate creatures balance through their neuro-musculo-skeletal systems. He discovered and analysed a reflexive pattern and sensory-motor postural control processes involving contractive and expansive motion through the spine. Through extensive experimentation he found that reflexive inward contraction and consciously directed muscle tensing thwarts effective action. In contrast, allowing the reflexive impulse for expansion through the spine that he discovered to organise gross and subtle movements proved to be far more efficient, supportive, and informative. Alexander developed a way of using focused attention to this primary reflexive and balancing process in order to challenge unconscious postural and movement habits and re-educate the kinaesthetic sense. He began to teach his

³ Correspondences have been drawn between the attentional and experimental orientations in Alexander work with both Western scientific methodologies and Buddhist meditative practices. Francisco Varela's ideas that developed through explorations of the intersections and differences between Western science and philosophy and Buddhist disciplines and philosophy (Varela 1997) (Varela, Poerksen 2006) have resonance with Alexander's work and the extended understandings and applications to ethics from my research into the CPP. This will be addressed in future chapters.

method to other people with great success, and in 1904 he moved to London, England where his work was widely taken up and highly respected by the scientific, artistic and intellectual communities. By recognizing that he was functioning as a psychophysical whole even in his unconscious choices, Alexander was able to make profound changes in his habitual functioning. He insisted that his method was an education in the use of the self, not simply a discipline of physical re-education⁴.

From 1914 until the end of World War I, Alexander lived and taught in New York, and he continued teaching there regularly from November through April up until 1924. His lessons were much in demand, and people from all walks of life, including scientists, doctors and educators (e.g. John Dewey) studied with him. It is amazing to me that though Alexander was well known and influential in his lifetime, there is relatively little awareness today of the significance of his work. Perhaps it is because he was primarily a teacher, and refused to have his work co-opted by the 'new psychology' juggernaut in the early twentieth century. Maisel wrote about Alexander's resistance to the research community:

Dewey, after trying repeatedly to bring him into fruitful connection with the world of foundations and university research, finally gave up... Alexander turned thumbs down hard on the inception of a research project at Harvard Medical School ... For he distrusted not science, but scientists. He knew what he had: but he knew not what it might become at their hands. He likewise sabotaged a research grant from the Rockefeller Foundation which influential friends sought for "the work."

(Maisel 1986, p.xiii)

The presumption of neutrality or objectivity in the research paradigms of that era, and the goal directed nature of scientific inquiry, did not take into account the perceptive bias that arises from the psychophysical and conceptual habits of the researcher. In the experimental process that Alexander engaged in, goal-oriented procedures leading to predictable outcomes were contrary to the methodology. The psychophysical method that Alexander developed brings about and requires from its practitioners a challenging level of re-education in kinaesthesia and touch, and sophisticated experimental skills that allow a constant re-tuning of the self as perceptive and responsive instrument. In regard to the common lack of sensory self-awareness that conditions and narrows perceptivity, Alexander wrote, 'Sensory appreciation conditions conception – you can't

⁴ Alexander's earliest published work (1910) explaining his concepts and methodology is: *Man's supreme inheritance: Conscious guidance and control in relation to human evolution in civilization*. The Alexander Technique Education Association website - <http://www.ate.org.au/all-about-alexander-technique-education> has numerous articles and links about the technique and related research. Also of interest is Gerald Foley's 2012 draft work, 'Towards a Neurophysiology of the Alexander Technique', available: <http://www.geraldfoley.co.uk/Neurophysiology.html>

know a thing by an instrument that is wrong' (in Maisel 1986, p.11).

Alexander understood through his own experience the discipline of self-awareness that was necessary to continually challenge the habitual actions and perceptions generated by unconscious habits. Though he studied animal movement and was influenced by Darwinism and late 19th and early 20th century research in physiology, he resisted the scientific methods of his era that sought to objectify and detach knowledge from experience and the experimenter. The need in that sort of methodology for predictability and repeatability in behaviour militates against acceptance of a method that is focused on the process rather than the goal. His method is based on the understanding that the parts are a reflection of the whole (as is modern embodied cognition research – e.g. Varela and Thompson 1991), rather than creating a whole out of disconnected elements that are seen to be mechanical and automatic. Alexander's understanding of the primary reflex came through years of experimental attention to his own processes, and then through ongoing interactive experimentation with his pupils.

[The Alexander treatment stresses] the importance for medical science of open-minded observation – of "watching and wondering". This basic scientific method is still too often looked down on by those blinded by the glamour of apparatus, by the prestige of tests, and by the temptation to turn to drugs.

(Tinbergen 1974, p.4 [from Nobel Laureate acceptance speech in 1973])

However, in general, scientific experimentation in the late nineteenth century was captivated by mechanism. In the early twentieth century psychology as a discipline moved from the field of philosophy into physiology and reactionary scientific methodology. John Dewey's critique of the New Psychologists' stimulus response paradigm was consistent with Alexander's assertion that actions are a reflection of the functioning of a psychophysical whole. Dewey pointed out that to describe the eye as responding to a light switching on solely in terms of a response to a stimulus ignores the act of seeing and the context and experience of the seer.

We ought to be able to see that the ordinary conception of the reflex arc theory, instead of being a case of plain science, is a survival of the metaphysical dualism, first formulated by Plato, according to which the sensation is an ambiguous dweller on the border land of soul and body, the idea (or central process) is purely psychical, and the act (or movement) purely physical. ... The reflex arc theory ... gives us one disjointed part of a process as if it were the whole. (Dewey 1896/1972, pp.108,109)

I was not surprised to find compatibility between the work of Dewey and Alexander, as Dewey studied with Alexander from 1917 onwards and wrote prefaces to three of his books. The experience of Alexander work is clearly reflected in Dewey's writing about

habit. According to Maisel, Dewey 'himself had undergone an extraordinary rejuvenation after embarking upon "the work" at the age of fifty-eight, and continued to practice to the end of his life. Dewey lived to a fit ninety-three, and his vital longevity he always attributed to his Alexander training' (Maisel 1986, p.x).

During the twentieth century, through the influence of Watson, Hull and Skinner among others, behaviourism began to dominate the discourses of experimental and cognitive psychology. Most disturbing was the metamorphosis of the concept of habit from its rich interdisciplinary qualitative roots to reactive automaticity in experimental psychology research. Historically the concept of habit has been defined by a large range of experiences including learned, cultivated and automatic behaviours. There were personal moral habits, habits as spiritual discipline or practice, habits as rituals for the reinforcement of values, social habits as manners (and foundations for the ethics of social interaction), habits as a metaphor for natural phenomena and vice versa , and the nun's habit – something you wear to overtly demonstrate your beliefs and commitment. The behaviourist stance was rooted in technicity, and detached 'the body' from the mind-body dualism and looked to make the zombie the definition of the whole. This then fed into the development of control-oriented computer models of mind. Though conditioning through reactivity to stimuli is no longer considered effective educationally, concepts of automaticity in memory, learning and function are still pervasive in cognitive psychology. The concept of habit has become imbued with the attributes of reflex action. This short-circuits the capacity to understand human function as intrinsically creatively responsive, and reflective of attentional and intentional processes that are integrated in an holistic way with functional capacities at every level.

Through his research, Alexander came to understand the difference between habit and reflex action, and the interactions of those different levels of function. When he realised that his habits were interfering with his ability to act, he looked for a way of controlling or changing his habitual ways of doing things. Through the process of experimentation he found that conscious ideas of corrective muscular effort just tightened the noose of contraction in his musculature. He eventually discovered ways of using conscious attention to underlying reflexive actions that allowed reflexive release to shape his movement. For Alexander, the insight that he was functioning as a psychophysical whole in all his actions – habitual and instinctive, conscious and unconscious – was key.

Startle reflex, as a primary active-responsive flow of actions, and the balancing ebb and flow of movement through the spine, are engaged in all of our actions, and engage one's

whole self. They shape the ways that we express ourselves in action, and those expressions reflect both our present and habitual frames of mind. Cognition is an interfusion of reflex responsivity, embodied experience and memory, articulated thoughts, and psychophysical meaning-making processes. And these processes are expressed in ethical attitudes and intentional acts.

The Alexander Technique is a way of experimenting with attention and action that allows for complex intuitive and sensory-motor processes to be engaged in continual and creative problem solving, and leads to the development and refinement of psychophysical self-awareness. Articulated attention and responsive action without willful effort allow an holistic natural process of balance and coordination to shape movement. More rigid ideas of posture and seeking control through the sensations of muscle contraction are still common fitness goals, though it is obvious that learning to control each muscle involved in an action would be a ludicrous project – like chasing your tail through a maze. There is a perfectly well-designed system within us that organizes balance and movement. Basic balance and coordination within the neuro-musculo-skeletal system is controlled at the same level of function as your heartbeat and digestion. In the Western European tradition, we are not taught that it is necessary to control our heartbeats, but we do have all sorts of ideas about how to work muscles to support movement. Though everybody can demonstrate a well-learned version of correct posture, hardly anyone wants to stay in that position for long. Try it ... Sit Up Straight ... What do you want to do next?

Concepts, constructed through language, of what it is to be and act in the world are reductive of the complexity of psychosomatic engagement. That is fine, when concepts are understood to be inspirational, or an aid to focusing attention, rather than descriptive of all of what it is to sense and do an action.

3. Alexander's Experimental Process – the primary reflex structures processes; goal-oriented focus activates habitual reactions

Alexander initially tried to use his image in a mirror to correct his obviously faulty posture. He noticed a contractive movement in his head, neck and upper spine with associated muscle tensions, and then tried to do the opposite – looking for a correct position and seeking a sense of muscular control. This did not work; it resulted in the same or increased tension. When Alexander found that all his efforts to change his habits were going nowhere, he gave up trying. This allowed for an insight that opened the door to a new way of learning. He realized that by trying to *do something* to correct

his problem, by seeking a sense of muscle effort as corrective control, he was layering new conscious effort on top of existing unconscious habitual tensions. Trying to control his body position and muscle tone was a reactive process in itself, which tended to trigger the reactive tightening of the startle reflex.

Realizing that these layers of action – conscious, unconscious, musculo-skeletal – were expressions of his own intent, within an understanding of the self as a psychophysical whole, he decided to intend not to do anything, and then to pay attention. From this perspective of interested detachment, he noticed that the moment he decided to do something he contracted in his head, neck and back; and that when he did not proceed, there was a corresponding lengthening through the spine with a generalised expansion and release of tension throughout the body. *Inhibition, as the choice not to react habitually, allowed the possibility of discovering a different way of moving.* He then found that by focusing his conscious attention and intention on the reflexive lengthening of his spine as he moved, he was able to act without activating his habitual muscular effort (Alexander, 1932). Alexander also came to understand that his sensory awareness was conditioned by experience, such that postural habits and the sensations of the amount of effort engaged in actions came to be normalised through repetition. Habits come to feel increasingly neutral, or 'like how it is necessary to do X', as the system adjusts and balances in order to function. Attending to the reflexive expansion as an organising concept continually provided Alexander with new information and experiential understanding of how to balance and move. He called this attentiveness focusing on the 'means whereby' instead of the goal. This has profound implications and reflects fundamental aspects of human cognition and physiology, and will be explored further in Chapters 2, 3, and 6.

Habitual effort, and the primary reflexive core expansion and contraction which is expressed most dramatically in startle pattern, are intertwined in action. The moment of choosing to act is full of potential for the expression of reflex, habit and creativity. For instance, in the moment of choice when you decide to walk across the room, the reflexive release in the head and spine connection is triggered. This directs an expansive flow of movement throughout the body to organize and support walking. Immediately after this, if you are mostly concerned with getting there (*the goal*), habitual patterns are activated, and whatever it is that you usually do to get there is likely to substantially shape your movement actions. If you pay attention to how you get there (*the process or 'means-whereby'* – with primary attention to the simple reflexive organization of movement and balance), you may well have a new experience on your way.

Alexander, an actor, used the terminology of the theatre to describe the process of paying attention and focusing intention without efforting. He called it 'directing'. The analogy to a theatre director is very useful here. A good director will not try to prescribe every action in precise detail to the actors: breathe six times between speeches, take steps 30 centimeters long, imitate these vocal inflections exactly, express grief with your facial muscles just so, and so on. The director will offer suggestions as to the content, the interaction of characters, overall action (blocking), intention, and tone of expression, then monitor the performance and make suggestions that will inspire and refine the creative process so that the actor can feel her way into the role and do what the character would do. In a similar way we can direct ourselves: suggest, observe and then direct again. Walking across the room can be experienced as an interesting and creative act if we attentively indwell in the process instead of focusing on the outcome.

The Alexander way of attending to 'the body' doesn't work in the mind over matter way. It is not about using the mind – as controller/brain, conscious entity – to control the movements of the body as mechanism. Rather it is a sort of *intrabeing* and extended communicative experimental process, whereby the inhibition of an initial impulse is followed by attentiveness and metaphoric suggestions. The suggestions, attention to possibilities for expression, are consistent with ways in which the processes of expansion and contraction support movement. The feedback from that attentive process informs perception and supports fluent intentional action. And it turns out that that sort of attentive process is integral with many experiences of learning, not only *doing-things-skills*, but also interactive, social and *making-sense-of-things* skills.

4. The Alexander Technique in Teaching Practice

An Alexander Technique practitioner continually interrupts habits with a momentary decision not to act, making space for reflexive release to rebalance and guide movement. There is an implied question: 'If not this, then what?' It is a question that is asked in an holistic, psychophysical (rather than intellectual) way, and which acknowledges but does not attach much energy to the 'this.' The next step in the process is to wait and focus attention in some way on the reflexive momentum of release in the spine. And then to choose a focus of attention or an organising concept that supports the particular action intention. In my own practice, that could be: a descriptive phrase; focus in some way on an area of the body or an external point of focus; a concept of spatial awareness; an expansive structural metaphor for the flow of balance and supportive motion for the action; or any metaphor that is generated in improvisatory experimentation, the effectiveness of which is gauged by the response in reflexive expansion and contraction.

The decision not to act stops an habitual way of acting, and allows the reflexive motion through the body to act as a kind of reset mechanism. Expansive release re-energises movement and re-attunes the system in the present moment, making one's psychophysical resources more fully available and engaged in responsive acts. Countertensions of inward contraction have the resonance of startle reflex, which is a stress response, and there is reciprocity between the contractive pattern and the sense of stress or fear. The expansive impulse makes more direct fluent movement possible, and also creates a more neutral, open-minded tone of being in a social interaction. Dewey found that his mental processes were positively affected by his Alexander Technique study, and that there were resonances with his moral and philosophical beliefs in the experiences that he had.

John Dewey recognised that the process of psychophysical re-education that Alexander developed demanded an experiential understanding.

Each lesson was a laboratory experimental demonstration ... As one goes on, new areas are opened, new possibilities are seen and then realized; one finds himself continually growing, and realizes that there is an endless process of growth initiated. From one standpoint, I had an unusual opportunity for making an intellectual study of the technique and its results. I was, from the practical standpoint, an inept, awkward and slow pupil. There were no speedy and seemingly miraculous changes to evoke gratitude emotionally, while they misled me intellectually. I was forced to observe carefully at every step of the process, and to interest myself in the theory of the operations. I did this partly from my previous interest in psychology and philosophy, and partly as a compensation for my practical backwardness ... And so I verified in personal experience all that Mr. Alexander says about the unity of the physical and the psychical in the psycho-physical; about our habitually wrong use of ourselves and the part this wrong use plays in generating all kinds of unnecessary tensions and wastes of energy; about the vitiation of our sensory appreciations which form the material of our judgements of ourselves; about the unconditional necessity of inhibition of customary acts, and the tremendous mental difficulty found in not "doing" something as soon as an habitual act is suggested, together with the great change in moral and mental attitude that takes place as proper co-ordinations are established. In re-affirming my conviction of the scientific character of Mr. Alexander's discoveries and technique, I do so then not as one who has experienced a "cure," but as one who has brought whatever intellectual capacity he has to the study of a problem. In the study, I found the things which I had "known" – in the sense of theoretical belief-in philosophy and psychology, changed into vital experiences which gave new meaning to knowledge of them.

(Dewey in Alexander 1932, p.xvii-xviii)

The primary focus of Alexander's work was, and often still is, seen to be the

development of more efficient, less stressful postural and movement habits. But then once we realize that the whole self (including its 'moral and mental attitudes') is engaged in any action, then the question is: how do we manage some effective intra-communication within that complex whole without interfering with its integrity, or overriding its balanced interconnections? Metaphors are a useful means of focusing conscious attention on reflexive release. The function of a metaphor in this case is to be suggestive of qualities of experience, but in an indirect way. Though the concept 'metaphor' is rooted in language, and may often be articulated in words, the intention is to generate imaginative content engaging memory and simulation that will stimulate multi-sensory and experiential associations. Those thought and attentional processes also engage both reflexive and voluntary proprioceptive and kinaesthetic processes, and so can inspire new dynamics in the interplay of thought and action. This creates a potentiality for holistically generated improvisation in action, bypassing habit.

In action, focusing on metaphors for reflexive release in the body allows for a continual transformation of the structural patterning of movement and balance. Using movement oriented concepts that do not involve seeking after muscular sensation offers an open ended stimulus for organisation in the complexity of human action. Alexander found that intentional inhibition (mirroring the reactive inhibition of the primary reflex) allowed the reflexive release of spinal extension to wash out, as it were, both the reflexive reactive tightening and the habitual neuro-musculo-skeletal patterns. He found that if he refused to act on his initial habitual impulse – which was triggered by the goal he had in mind – and waited, he would experience a different flow of organisation of movement in his actions. As he developed his teaching repertoire, he included a set group of verbal cues as a focus of attention that were consistent with his experience of the primary reflexive pattern of release, and hands-on guidance to give feedback to his students' kinaesthetic sense. Through these methods, students came to associate the verbal cues with kinaesthetic experience. Alexander used those phrases as focusing metaphors for experience.

Though in many respects his teaching was truly experimental and deeply responsive to the dynamics of the engagement, the ways in which he practised and taught his method were very consistent in their own conventions. The organising reflexive expansion and contraction through the core is initiated in the head and cervical spine area, and Alexander named that reflexive process 'the primary control'. In teaching he used set linguistic cues as a focus of attention which, through kinaesthetic and haptic experiences in the lessons, came to be associated with the reflexive release phase of startle pattern. The words he used were: 'neck free, head forward and up, back lengthen and widen'.

Alexander's own his postural habits, prior to his experimentation, involved tucking in his chin and pushing his head backwards in the manner of a British military stance. Relative to that habit, the description of the head moving 'forward and up' made sense. He generally worked with simple movements such as standing, sitting, walking, balancing arms on the back of a chair, and attending to the breath through a vocalising sound – 'the whispered ah'. His students observed fundamental changes in postural alignment, balance, and the development of reflective self-discipline and self-awareness in action. When students themselves employed the methods of inhibition and attention to the primary control in their daily lives, they experienced insights and improved skills in more complex activities and the psycho-social dimensions of engagement. Many teachers that Alexander trained, and the students they subsequently trained as teachers, used his set words and particular activities as the core of their teaching practice⁵.

Very early in my teaching practice I realised that each person has her/his own complex individual associations with words and concepts, and that using set phrases can have a rote hypnotic function rather than acting as a stimulus for improvisatory attentiveness. It was clear to me that each person's way of articulating and attending was unique from the reflexive responses that I noticed as I suggested words or foci of attention and observed reactive or active neuro-musculo-skeletal responses. I experimented together with my students to discover the metaphors, qualities of attention or foci that were meaningful and useful to each student in each circumstance. We might use: words or phrases; any sensory focus; directions or objects of focus; concepts representing qualities, tones or characters of being; sounds; distilled concepts from students' thoughts and memories, or the finest detail of qualitative attentional awareness. I describe this process as finding the ways in which you communicate with yourself, and how you conceive of yourself both internally and in relation to the world. Two examples:

1. To bring your awareness to the weight and balance of your head, imagine that you are a deer with huge many-pointed antlers. Look around.
2. One of my university students, a bassoon player, would tighten her shoulders and neck in anticipation of the technically difficult passages in her music. This coincided with

⁵ A notable exception was Alexander's first (1931) graduated trained teacher, Marjorie Barstow. She had trained as a dancer before her Alexander study, and was acknowledged as the most gifted of Alexander's early students in her kinaesthetic awareness and hands-on communicative work. Barstow's way of working with the technique was continually creative – in her ways of communicating and in practical activity-based applications. The Australian teacher Jeremy Chance, a generation later, followed in her tradition in his work and teacher training innovations. My own training was grounded in traditional forms, but included applied training in dance and yoga. James Howell, my teacher-trainer, was a musician, dancer, choreographer and physiotherapist, and applied Alexander principles to his dance training method.

the loss of breath support. Relaxing the pelvic floor and thinking of the pelvis as a three dimensional base triggered reflexive expansion and freed her. Her way of doing this was to think: 'whole wheat pancakes for breakfast, with blueberries and maple syrup'.

An Alexander Technique teacher gauges the usefulness of an idea by the reflexive response in the body. My training and experience with interpreting through the kinaesthetic sense allows me to feel the balance and flow of movement in my student's system. If an idea produces contraction/reaction, then it is not a useful idea to organize action. One of the great creative pleasures in my practice is discovering the innumerable interesting ways that people pay attention in relationship to active intentions, themselves, others and the environment. This way of working with Alexander's technique is based in the practical kinaesthetic and somatosensory experiences of everyday life activities, and how they are and can be shaped by our habitual reactions, present intentional focus, and the responsive improvisatory cognitive capacity that is the innate foundation of our ability to learn and survive in the world. Drawing on the work of Edmund Husserl, Gillett summarises this capacity in the following passage:

Husserl argues that thematic focusing and selection of a subject or topic around which to organise experience is a pervasive feature of human consciousness. Facts do not just arrive through receptive faculties of the mind, rather they are constructed and organised by the cognitive system of the subject. The ability to select and change one's focus is basic to the flexible and creative properties of human thought, but it means that we are constantly in a position of having available, at least potentially, a variety of ways of seeing things depending on our interests at the time of the experience. The tools of constructing and cognising these experiences are concepts, and the concepts we use themselves select certain features of experience as being significant at any given moment. Concepts, as Wittgenstein remarks, are tools to craft a body of knowledge, and as such they express our interests. (Wittgenstein, 1953, #570). (Gillett 2004, p.729)

Alexander would also say that concepts express not only our interests, but our prior experience, beliefs, habits and reflexive responses, terms that have immediate relevance to our intuitions and therefore our thinking in bioethics and ethics more generally.

5. Practical Descriptions of Balancing Mechanisms and Startle Reflex

In all vertebrate creatures (creatures with a spine), there is a reflexive process involved in the organisation of movement and balance. Startle reflex is a description of an emergency – 111 expression of this process, but the ebb and flow of contraction and expansion through the spine is an organising factor in all movement. The reflexive impulse engages the musculature connecting the skull to the cervical spine and shoulder

girdle, initiates contraction and expansion through the spine, and generally coordinates the movement of the body. It is useful to imagine a point, a trigger for movement, where the head meets the top of the spine, high up in between the ears. In practical terms, the head leads and the body follows. Have you ever ridden a horse, or seen one ridden? When the rider asks the horse to go somewhere, she turns the horse's head in that direction and the horse follows its head. (A good rider also looks where she is going.)

In four-legged animals head leading is pretty obvious, because the head is at the front and the spine trails behind. A cat's head not only gets there first, but it also more obviously leads the spine through movement and balance. Four-legged creatures organize internally – through the length of the spine – in the same direction that they move through space. Two-legged creatures balance by lengthening through the spine as well, but move forward through space perpendicularly to the organising motions in the spine. In other words, to walk we lengthen upwards but move forwards. This seems to create some confusion, particularly when we forget to pay attention to what we are doing in the rush to get where we are going.

We tend to shape our movement in response to where and how we focus our attention. Picture somebody running for the bus, face pushed forward, neck tight, trying hard to get there faster, relying on their goal-oriented habits of locomotion. Their whole intent is focused on the idea of forward, yet the body moves most effectively when lengthening upwards through the core (musculo-skeletally the head, spine, rib cage and pelvis is the core of the body). Or perhaps think about intently focusing on a computer screen or smartphone and consider the way in which your posture tends to be shaped and pulled forward or down into what you are focusing on visually.

Another way of talking about the reflexive pattern in the head-spine relationship is to talk about its dramatic 111 expression: startle pattern or the fright/fight/flight response. This is a process that involves the extrapyramidal neural system acting through the motor system, as well as the autonomic nervous system and its regulation of hormonal and chemical actions. (Those action regulating neural processes are not isolated from other areas of the brain, as will be discussed later in this chapter.) At the instant of perceived danger, a flood of responses and an immediate inhibitory neuro-musculature clamp down is triggered. That stop action inhibition allows for some quick thinking about the best choice of intentional action, which could be fight or flight, or any number of other options – like make friends or, if you're a cat, relax and take a nap.

Humans react not only to imminent danger, but also almost any concern or shift of attention: to surprise, fear or excitement; 'Oh no, I forgot to...'; 'I'm late for...'; walking onto a stage; the ring of a telephone; something moving; just about anything really. The reaction involves a reflexive tightening inwards that starts in the head-spine connection and extends through the whole body. Though we are designed to release that inward constriction to take action, quite often a residual amount of that stop action tension gets integrated with habitual ways of moving. The startle pattern is an inborn survival mechanism that is very effective in the woods or the jungle, but not always helpful in many complex human cultural contexts, particularly where you need to be open to something new or unexpected. So first let us take a look at how the pattern works for humans (and other creatures) in the wild.

Imagine that you are taking an enjoyable walk through the woods alone. It's a beautiful day, the sun is filtering through the trees, and you are feeling your footfalls cushioned by the forest floor. Looking around you see thick rough brown tree trunks, brush and berry bushes along the sides of the path. The smell in the air is cool and rich with the scent of green mixed with the mulch of bark and leaves. The only sounds you hear are birds singing and the soft brush of ferns against your legs as you move along the narrow path...

Then, about 10 yards away, you see a **HUGE GRIZZLY BEAR! ... !** What is your response? It is likely that your head has been pulled down and back, your shoulders are tightening up toward your ears, and you have stopped breathing. Perhaps this feeling is familiar from other startling experiences you have had. This is a protective reflexive response pattern that is common to all vertebrate creatures. I will describe what is happening in a practical way, so that you can understand the value of this reflex.

In the instant that you see the grizzly bear, your body releases a flood of adrenalin. The adrenalin gives you a huge shot of energy to deal with the emergency, but it also panics your whole system. It makes you want to leap in the air and scream. This is not a good survival choice, however, as the bear may not have seen you yet, and will simply be alerted to the fact that you are in her way, between her and her cubs. So at the same time, we have a reflex to clamp down, which does many useful things. First, the head is pulled back and down into the spine, the body compresses through the core, and the arms and legs contract into the core. This immobilizes you, as it's very difficult to move when all your muscle energy is tightening inwards. The compression through the spine presses on your heart and slows your heart which is racing because of the adrenalin. It also takes your breath away so you can't scream, and makes your breathing shallow and less visible to the bear. This reduces the oxygen in your system and calms you down –

like breathing through a paper bag for a panic attack does. The muscles that connect the head to the neck and shoulders bunch up to pull your head down and cause compression in the spine, but also to protect your neck which is the most vulnerable part of your body. Predators always go for the neck, because if they chomp you there, you're finished. All this is useful in the short term – for maybe three or four seconds – during which time you will think about what to do. Should you stay put, creep away slowly, or yell and jump on the grizzly to fight for your life?

The creative process of choosing your best course of action from the complex field of possibilities is made possible by this brief contraction pattern. Once you decide what to do, the muscle balance changes, your head releases away from the top of the spine, leading the spine to expand and open; your heart can race; your lungs fill up; your neck and shoulders relax; and your arms and legs are freed to move supported by the core musculature. Then if you were four-legged, you would follow your head to run away. As you are two-legged, your head continues to lengthen your spine, which organises and frees your body motion as you move through space, the extreme adrenalin rush of a life threatening emergency having overridden your less effective habit of leading yourself around by the chin, nose or eyeballs. Now imagine a parallel with the boss who is giving you a hard time walking into the room and your need to act in a considered way.

6. Startle Pattern: Hunt's experiment and what it makes clear

Up until recent years there has generally been very little attention paid by researchers to the startle reflex and fear response in human function. There was one very clear series of practical experiments undertaken by W.A. Hunt in 1936. His detailed study of startle pattern through observing human responses to the sound of a pistol shot were published in *The Journal of Psychology*. The reactive movement pattern he described involved a range of actions, the primary of which was a contraction between the head and cervical spine area, as well as contraction up and inwards of the shoulder girdle, contraction in the abdomen, and tightening of the extremities. The entire response pattern was seen to take approximately 500 milli-seconds.

When the experimenters repeated the process at two minute intervals, they found that although the subjects became somewhat habituated to the response, it never completely disappeared. The researchers placed the stimulus source in a variety of locations and found no difference. They added the element of intentional action by asking the participants to 'try to jump', and found that the intentional effort *increased* the reflexive reactive response. They also instructed the subjects to try to actively inhibit the

responses they had experienced, but all subjects found it impossible to do so. From these experiments, the researchers concluded that the startle pattern is a reflex action (Hunt 1936a,b).

The particular correspondences to Alexander's practical experiential understandings are:

- Perception is followed by a reactive tightening through and into the core.
- The contraction is centred first in the cervical spine area and involves contractive immobilisation of the extremities.
- The pattern is involuntary, in other words, it is a reflex action.
- Trying to do a defined habituated action at the moment of stimulus increases the contractive response.
- The reactive tightening happens very quickly – within milliseconds – and subsides within half a second if there is no other stimulus or intentional act.

This deep pattern of contraction and expansion (reaction and action) underlies much of our functioning in the world. It is not only grizzly bears or Huntsman spiders that trigger reflexive tightening – a bus roaring by, the pressure to get something done, the moment of remembering something you forgot to do, a demand for attention, a feeling of disagreement in negotiation... We are designed quite simply to react by tightening, but then to act by expansive and fluid motion through the core and from the core. Because human life and culture are very complex, we often learn ways of moving and balancing ourselves that involve a certain amount of unnecessary reflexive contracting – unnecessary countertension. These action patterns become unconscious habits which shape our movement and in many ways our perceptual functioning as well. And that reactivity can also be reflected in decision making processes and negotiations with others.⁶ These basic physiological features of our embodiment therefore affect cognition very broadly.

At the level of the CPP in human life experience involving our complex psycho-social skills – where inhibition following reaction makes a space for deliberations and choices other than desperate survival-oriented ones – there is a constant ebb and flow of motion through the spine underlying experience. Actions and inhibitions ride that current, and are shaped and supported by the motions of expansion and contraction, extension and withdrawal. There is a continual balance of excitation and inhibition at every level of being (from the neuronal to active person-in-the-world engagements) that generates

⁶ The ethical dimensions of responsivity and reactivity are addressed in a variety of ways in Chapters 7, 8 and 9.

and supports a state of responsive equilibrium⁷ in ourselves and our interactions.

Another turn of the refractory crystal allows us focus on a different aspect of balancing within and in relationships within the life world. I have described the Startle Reflex from the position of a person in the role of prey, but in our evolutionary development and even in our current place as omnivorous creatures near the top of the food chain, we are both predator and prey. Part of our psycho-social-physical balancing act is learning how to act in the circumstances in which we find ourselves. Choosing appropriate behaviours is reliant on the ability to inhibit reactive and/or habitual responses, allowing for deliberation and negotiations about what in social and personal life means something to us and to those with whom we share our lives. Inhibition is innate in our reflexive responsive beings, but it is also learned behaviour, cued and supported by those processes.

7. Habits of Mind

The insights that Alexander's work generated into the conditioning effects of unattended-to actions are applicable not only to habitual movement patterns, but also to habits of mind. Habitual ideas and beliefs, including those that arise within societies, and cultural or intellectual traditions, act as filters for our perception and constrain our responsivity. Such habits can both support and hinder our capacity to improvise responsively and responsibly to interactions as selves with others and as actors in larger social groups. *Each enaction of a habit is nonetheless a current act of a whole self.* Though interpretation is coloured by habit, the potentialities in perception and the interceptions of inhibition are always present. It is inherent in our structural and interactive capacity to act through a creative flow of engagement with habit as a background of possibilities rather than as an automatic determinant of behaviour.

Memories and habits are not stored like objects in a brain storage bin. Experiencing is not a discrete flow of information bits burned onto a brain disc, or bundles of information imprinted into the brain as if from one of those new 3D copying machines. There is a clue to better understanding in the ideas about memory being linked to experience, and that we remember by contextualising, keeping in mind that all contexts are loaded with trace connections from prior CPP processes. An articulated memory or enacted habit is an array of interconnections. It is not only reminiscent but also current – a current of action throughout the being, that has resonance of the past and of present

⁷ 'Responsive equilibrium' is a descriptor applied by Gillett in his writing about brain function and holistically embodied moral agency (Gillett & Franz 2014). The concept is developed and elaborated in this thesis in later chapters.

experience generatively intermingled, whether or not articulated to attention. But that doesn't just happen in the brain. There are clusters and pathways of chemical interactions, and bodily sensations and resonances that grow into the tissues and the bones. And all the while, the ebb and flow of responsive systemic balancing, and reactive and deliberative intentionality, happen concurrently.

Why would the experience of the bones, tissues, musculo-skeletal system, digestive system, breath, heartbeat, blood, chemical and spinal flows, all be excluded from, or extraneous to, the processes of thought and memory? Sometimes an old fashioned idea of the 'five senses' is acknowledged to be part of the package, but what about one's situation in the environment, and the orienting proprioception and kinaesthesia that is part of any experience, moment to moment? These questions can and will be addressed on many levels through considering the CPP in action, through challenging Western concepts about embodiment and learning and developmental processes, and by examining current ideas in neurophysiology and cognitive science – all of which tend to be taken as read in ethics and bioethics.⁸

There is still a strong orientation in neuroscience and cognitive science to look for behaviourally determinant physiological patterns on the model of the reflex arcs decried by Dewey. Alexander techniques, grounded in and actively working with the CPP, demonstrate the functional integration of being at every level, and clearly show the effectiveness of understanding physiology as *capacity to* rather than a *determinant of* behaviour. The representationalist idea of conceptual thinking sets up an autonomous process, a re-presentation and discriminatory function in the mind that is understood to stand apart from and even trump experientially embedded responsiveness. In Western cultures, articulated skills for including more comprehensive sensory awareness in attention while active are lacking. Though Richard Menary in *Embodied Mind* makes an excellent case for the integration of self and environment in human processes, he nonetheless falls into the common trap of identifying skilled action as requiring automatic, unattended to behaviour patterns—body schemas—that allow one to be unaware of 'the body' in action.

In describing the actions of highly skilled people, Menary writes:

The expert's ability to perceive and flexibly respond to a situation is tied to a well-trained and practised suite of unconscious body schemas, which function best

⁸ Johnson, Dewey, Varela, Hurley and Noë, among others, do present multi-sensory embodied understandings of cognitive processes, and their ideas are brought into the thesis in later chapters. Dualistic influences and alternatives to Cartesian dualism in cognitive neuroscience and philosophy are challenged in Chapter 4 citing Rowlands (2003) and others.

without the intrusion of conscious deliberative thought, or even a series of intermediate subpersonal processes on representations. (Menary 2007, p.82)

From the perspective of someone skilled in Alexander's attentive processes, fluency and effectiveness in skilled action is not built on, and does not depend on, diminished sensory-bodily awareness. A different kind of holistic attentiveness allows intentionality to shape action in an expanded field of awareness that includes rich perceptivity and takes account of bodily responsiveness and all that it indicates about past and present experience. Skilled action, all action, is improvisation that draws on all the potentialities of experience and capacity (including habits), along with the resources of the present engagement.

8. Reflective Self-discipline

So if our reflexive, habitual, intentional and learned skilled actions are embodied, and cognitive processes are integrated with and reflective of and in those embodied processes, how does ethical reasoning fit into the picture? If ethical reasoning is isolated as a propositional verbal process, then the complex reasoning of embodied experience does not receive due regard for its importance.⁹ An important result of the way Core Psychophysical Process shapes learning is the development through inhibition and deliberation of what I call reflective self-discipline.¹⁰ Humans learn to actively engage the embodied layered psychophysical capacity for inhibiting reactive responses in order to deliberate and choose actions that bring them into effective concert with others in their world.

An ethics based in a hierarchy of values that valorises dissociated intellect and defines corporeal being as a mechanism of control short circuits the development of reflective self-discipline. The inhibitory, reflective and responsive capacity that is grounded in our psychophysical beings informs and creates space for complexity and in-depth understanding between people through a kind of intersubjective resonance.

In making the link to ethics as 'the practical interconnection of acts' (Watsuji 1996), it would be obvious that relying only on a conditioned set of habitual actions of social engagement as the key to good social relations is really problematic. Humans would then be bound by conditioning into set patterns of reaction for good or evil. In that

⁹ These ideas have resonance with those of Varela (2006), and with Gendlin regarding bodily knowing, and will be addressed more fully in Chapters 5, 7, and 8.

¹⁰ The development and expression of reflective self-discipline is demonstrated particularly clearly in the learning and performing processes in Music and the Arts in general, the discussion of which is in Chapter 6.

frame, learned behaviours and beliefs are unattended to habits, schemas are sets and relied upon as foundational, and the stuff and place of negotiation and argument is a test of one against the other. On a cultural background of an individualistic autonomous definition of self, that makes for reactive and exploitive engagements.

These topics will be explored more fully in later chapters: from a cognitive science perspective in Chapter 2 with regard to Susan Hurley's Shared Circuits Model (SCM) and related research, and when the SCM and the CPP are brought together in Chapter 3; in Chapter 4 devoted to challenging the pervasive legacy of dualism in Western philosophy and science; and in considering the ethical implications of concepts of self and other informed by the philosophies of Watsuji and Levinas among others in Chapters 6 through 9.

Neurological and somatic experience are not discrete processes except for the purposes of discussion grounded in a history of dualistic conceptions of human beingness. Emotion is not isolated from cognition or movement or sensation.¹¹ What I think and feel about things is embodied in my present as well as in the resonances of past experiences.

9. The CPP, Fear, and Developmental and Learning Processes

Keeping in mind that startle pattern is a survival oriented fear response, how is that relevant to everyday human life and activity? Given that city dwellers rarely directly encounter grizzly bears, robbers, or life-threatening circumstances, what sort of impact does startle pattern have on human psyches and function? The continual adaptive balancing motion of contraction in reaction and expansion for action is a constant undercurrent in human thoughts and actions. The holistic functioning of the CPP is reflective of that responsiveness; attending to the CPP enhances interactive skills. Like most creatures in the world, our roles are flexible: predator and prey, actor and responder, empowered in one context and dependant in another. And our instinctive reflexive responses are integrated not only with our practical skill development, but also with processes of assessment and decision-making in any situation.

In childhood, for instance, it is helpful that curiosity (an important fundamental impulse) is balanced by a reactive pattern that inclines one to withdraw and inhibit in order to assess danger and make survival choices. Those choices are not just about the

¹¹ Damasio's understanding of the nature of mind, cognition and emotion as embodied is referenced and discussed in Chapter 5.

imminent danger of death, but also about pleasure and pain, emotional responses, skills acquisition, and the development of relationships. Early on, when walking into the path of a moving car has no danger associations for a toddler, parents provide the inhibition and fear stimulus – children mirror their parents' bodily fear response to danger and a parent might grab the attention of the child with a yell, 'NO, STOP', which triggers an inhibitory neuro-musculo-skeletal contraction. There are many variations of the theme.

The subtler ebb and flow of internal motion also becomes integrated with acquired active and conceptual skills, which always involve processes of perception, inhibition, deliberation, and intentional conceptualisation. This simple process that is basic to human survival is expressed in our inter-intra-actions, and our interpretations of experience and ways of being and living. The CPP provides the elements for evolving active and social engagements.

There are multiple feed-back and feed-forward aspects to this process. Here are some examples. If I have learned a skill under duress, at a level of demand that didn't allow for me to release reactive tension and find optimum poise and balance in the process, I might very well learn to perform that skill with a certain amount of unnecessary reactive tightening in the neck and shoulder musculature based in the stress response of startle pattern. When I later perform that skill, the habitual muscular tightening would be signalling stress, regardless of the current situation in which I find myself.

Also, efficient movement, the required action to achieve a goal, involves the least possible counter-effort in the musculature. The primary function of startle reflex is to immobilise the person through reactive tightening inwards. Acting without releasing that tightening through the core requires internal countertension. Those countertensions generate more tactile and muscle sensations of effort, and if those sensations are associated with the learning of a skilled action, then the actor may come to expect those sensations and seek to generate them. Therefore, the actor is intentionally seeking an unnecessary level of stress, against the intention to act in such a way as to achieve a desired goal. There are many levels of possible stresses here, some of which are: startle reflex reactive tensions trained into actions thereby signalling stress; countertensions throughout the musculo-skeletal system in response; the additional attentional and direct energy demands to overcome counterproductive movement patterns; and the sensation of being thwarted in the ability to achieve an action effectively or without internal struggle.

Two more examples of reciprocity are illustrated well by examples from musicians' experiences. Many pianists have difficulty playing very softly, particularly with a quick change to that dynamic. Sometimes the musician is creating reactive countertension by thinking 'don't play loudly', at the same time she is trying to play. The more effective action is to switch gears and intend a different quality of touch interaction with the keys. Also, often in a music composition, a quick switch from loud to soft playing signals that a mysterious or scary scenario is meant to be communicated. Just before that bit, pianists can often be seen to contract into startle pattern with the inevitable contraction in the neck and shoulder musculature. *They are anticipating the scariness and reacting to it.* The key to effective action is to realise there is some role confusion here. The pianist is meant to be the scarer – the predator (cougar), not the scaree – the prey (bunny rabbit). Conceptual thought interacts with reflex and expressive action. These are simple examples of the complex self-observation, awareness, and experimentation that is intrinsic to music study and performance, and which will be explored further in Chapters 5 and 6.

Fear is a very clear example of an 'emotion' that has 'physical' affect. And it is commonly identified as being tied to various demands and functions of living. But of course all emotional responses are grounded in experience in the world, which is embodied. We might all express happiness, grief, or remorse in different ways, but we nonetheless *express emotions*—within ourselves or as communication of experience to be shared. Emotional responsiveness in experience is reflected in movement memory, in the remembered sensations of interactions, and in the internalised assessment and meaning-making structures humans develop, and it therefore informs our moral attitudes.

Alexander's method of attending to a foundational level of responsivity allows for a neuro-musculo-skeletal 'reset' or rebalancing impulse, which also generates an echo through all the layers of experience, past and present. All learning processes involve some measure of disruption in the balance of the complex structuring of a self as actor in and of the world.

In these examples one can see that developmental and learning processes ride the underlying current of startle pattern and the CPP. Also, as humans learn practical and social skills, developing expertise in negotiating the complexity of experience, actions are affected, informed and integrated with startle responses and the CPP. Adults learn to appraise a new interlocutor. Children learn to stop at the edge of the sidewalk and look both ways.

Fear is a powerful response, commonly used and conditioned for social control. The initial reflexive reaction, which happens at the neuro-musculo-skeletal level, is meant to inhibit action, and in a sense it is disempowering – of overt action. However the processes of the startle pattern, which involve perception, reaction, reflection and choice of action, are intrinsic in many levels of human function. Humans have the capacity to, and all the time do, function at another step up by inhibiting a self-perception (an habitual response – to fear, or need, or desire), and then making creative interpersonally respectful choices about actions. In many ways that's what maturity is about. That is Aristotle's 'second nature' that develops through living with others in the world. And that second nature takes us beyond the ego-centric stage of seeing the other only as a reflector of me that has a role in early childhood – where mother seeing me means I exist and my needs are met. Through experiences in our shared life-world, children learn to flow and resonate with others, responding psychophysically to the actions and reactions of those around them, and thereby develop the resilience in their own capacities that allows them to engage responsively with others and the world.

The complexity of our capacity to choose behaviour is obscured by a dualistic perspective, even the watered down or anatomical brain-body versions of dualism. But, in reality, we are actively grounded in, functioning through, and informed by our 'bodily' processes of being-in-the-world-in-relationship-with. Concepts of being that split the psyche from the 'physical' diminish access to our full embodied capacity, and obscure the information that reactivity and responsiveness signal.

From F.M. Alexander:

For unbalanced psychophysical development connotes unsatisfactory equilibrium in all spheres, and unsatisfactory equilibrium is ever associated with fear. As we have seen, since man's entry into the civilized state, he had been developing more rapidly on what is called the mental side, whilst on the so-called physical side there was actual deterioration. He had thus been building up within himself two forces, as it were, the one working against the other, until it was almost as if he had developed two separate entities, the "physical" and the "mental". It was the conflicting demands of these "separate entities" which caused the interference with psycho-physical equilibrium and produced in him the condition of inward fear to which I refer.

This new fear – actually a fear of himself – gradually developed until its presence was recognized as an urgent problem, and it is in man's solution of this problem that we are faced with a conception which will be seen to be a most harmful one when considered in relation to his evolutionary progress.

The conception to which I refer is that of the separation of the human organism into the parts which have been named soul, mind and body. Those who were bent on this separation attempted, in obedience to their own arbitrary and unreasoning conception, to develop each of the three parts named soul, mind and body, specifically, nay, even to make a class-distinction, as it were, between them ... Surely, even to those who believed in this separation, their knowledge of the process of Nature should have indicated the place which the body should occupy in order of importance, and its relationship to the other parts in the series named body, mind and soul. (Alexander 1923, pp.73,74)

10. Alexander Technique Methodology Consistent with Core Psychophysical Processes: the interactive self as the instrument of experimentation

The experimental processes of the Alexander Technique are based in the processes of the CPP. The experimental apparatus, or action mechanism if you like, involves a neuro-musculo-skeletal pattern of motion that humans share with other vertebrate creatures. That reflexive action exists within a calibration process that involves continual rebalancing through expansion and contraction, expressed throughout the human system. That calibration, or constant tuning mechanism, informs and guides the researcher through experimentation. The sensory experience of and interpretive understandings from this apparatus are not fixed. Neither its usefulness and the results of its function in experimental processes, nor the validity of the processes in which it is applied, are based on repetitive or predictable criteria. Like language, the process and its structures are developed and expressed in engagement with the world. Attentive engagement is an integral part of the experimental process. As with other practical experimental processes, the experimenter's intentional action and attentiveness to the ongoing results are key to the results and the meaning made of them.

In Alexander's working processes, the practitioner is explicitly known to be the instrument of experimentation. The instrument is not externalised, interpretation is continually conditioned by the results, and therefore each particular experience cannot be generalised as the 'correct' result. Consistency is in the *intentional calibration* not the result. Alexander described this as focusing on the 'means whereby' rather than the goal. This conception has great significance in learning and developmental processes, and is importantly relevant to current ideas in cognitive science about mirror neurons and imitation, and in appreciating Susan Hurley's work (see Chapters 2 and 3).

Dewey remarks, about ends and means:

A fair interpretation of these pregnant sentences is that as long as objects are viewed telically, as long as the objects of the truest knowledge, the most real forms

of being, are thought of as ends, science does not advance. Objects are possessed and appreciated, but they are not known. To know, means that men have become willing to turn away from precious possessions; willing to let drop what they own, however precious, in behalf of a grasp of objects which they do not as yet own. Multiplied and secure ends depend upon letting go existent ends, reducing them to indicative and implying means. (Dewey 1929, p.131)

The reflexive motion in the neuro-musculo-skeletal system could be understood as a mechanism of contraction and expansion, reactive and active functioning, or the ebb and flow in the balancing acts of engagement-in-the-world. As physicist-philosopher Karen Barad asserts from the lessons of quantum physics, the experimental apparatus (the body) is not a separate totally discrete object that is fixed in its functional structure, or neutral and unaffected by the researcher's assumptions and intentions (Barad 2006).

A description of working with Alexander principles with the intention to learn new skills or change habits of action or belief would be useful here. Using the Alexander methodology, a researcher, in this case a student, needs to first learn how to work with the apparatus, and most commonly she will do this in interaction with an experienced researcher-teacher. I will take that role and write from my own experience. The guidance of interaction with a skilled practitioner is obviously of value, as from birth, humans learn about movement and the actions and articulations of engagement in interaction with other people. Those learning processes and Alexander Technique practises involve multi-sensory attention – the tactile, kinaesthetic, spatial, auditory, and visual senses and more. The normal developmental processes of a human actor learning to function in the world also involve continual experimental testing of hypotheses and the feedback of experience. Propositioning is more than a linguistic process; it is grounded in sensory-motor experience. In Alexander work as I have practised it, an expanded repertoire of sensory awareness is involved in the construction of metaphors to focus attention and express intention. Intentional and reflexive inhibition allow time to focus on organising concepts of movement that are consistent with the expansive impulse for rebalancing that shapes fluent action.

The teacher approaches the student with an attitude of curiosity about and acknowledgement of the other, as much as possible without giving credence to prior assumptions about the person. This working process requires an openness to the unexpected, a willingness to suspend beliefs both about the present experience and the outcome. Here there is a correspondence to Emmanuel Levinas' understanding of non-appropriative relationships – the necessity for a willingness to engage with the Other as

truly alternate, not as a projection of self or as an object of intent, and the responsibility and responsibilities toward other beings inherent in doing so.¹²

The putting into question of the self is precisely a welcome to the absolute other. The other does not show itself to the I as a theme.'... ' The absolutely Other is the human Other (Autrui). And the putting into question of the Same by the Other is a summons to respond. (Levinas 1996, p.17)

Inhibition, making space again and again for a questioning responsive interplay, allows both participants to move beyond reactive habits and presumptions. Inhibition allows for a moment in decision – indecision, when judgement is suspended and where attentiveness without intention makes space for the inter-corporeal enactive process of improvisatory exchange.¹³

For most people, Alexander work is very liberating. Often students liken the experience to early childhood when they were first learning to walk and make their way around in the world. The hands-on work has a nurturing quality that is quite specific. Alexander teachers have highly trained kinaesthetic and tactile interpretive skills. And yet if I think I know the answer, have the 'right' idea, in the next moment I am committed to questioning my presumption, and inhibiting habitual assumptions (even if the habit is only 30 seconds old). Then I re-focus my attention, question my own balance kinaesthetically, wait for the impulse that seems like momentum, and 'listen with my hands' to my student again (all with direct parallels in ethical engagement). As a teacher, my first responsibility is to balance within myself, to intend clarity, and to pay attention in whatever way I do to allow the expansive motion through and outwards from the spine to support my movements and inform my actions.

When I touch a student, my intention is to pay attention to that core motion through the spine, and to how the expansion and contraction are being expressed in the student's internal balance and interactive movements. I follow the student's movement with my attention, which is motion. You might say I am providing re-afferent feed-back to my student – her/his own internal sense of movement is being amplified by the signals of my attentiveness and communicative motion. We are together in a circle of feed-back and feed-forward processes. In the terminology of Hurley's Shared Circuits model at Layers 4 and 5: my afferent experiences of the student's movement and my own is looped again and again with the afferent/efferent results of subpersonal mirroring and

¹² Levinas' ideas regarding Self/Other with regard to respect for otherness and the responsibility that arises out of empathy and the commonality of humanness are explored in Chapter 7.

¹³ Varela and Thompson's ideas regarding 'the enactive approach', autopoiesis and emergence will be addressed in Chapter 4.

my own spinal movement; a new intentional movement impulse is generated and communicated to the student from my own subpersonal cycles of afference, inhibition, efference and the subpersonal interactions with my student's movement.

That description of an interaction will be clarified by the ideas developed in Chapters 2 and 3. But it does presumably communicate some of the complexity in the interaction. And certainly, the apparent sequential experiencing is to an extent an artifact of textual description, because there is also the factor of synchronicity, not only between two people but also an 'internal' synchronicity and fluid intermingling of a hugely complex mix of afferent, reafferent and efferent signalling.¹⁴ It is notable also that in an era increasingly dominated by technology, touch as a refined, valid interpretive skill is less commonly experienced, trained or credited.¹⁵

Intentionality is both a stimulus and the organising centre of the teaching-learning interaction, a cohesive motive that supports the generative improvisatory processes. The intentional focus is on the spinal motions of expansion and contraction; the intention is to notice how expansion organises an active movement. In terms of overt action, reaching for the keypad to type for instance, both teacher and student focus on the process of how to move rather than on the end result of the movement (fingers on pad). Focusing on the process creates an intersession that interrupts the impulse to reach in the same old way, and that allows for expansive musculo-skeletal motion to suggest other possible ways of reaching that might be more efficient or pleasurable. Actions aren't just 'learning how to do it', but are instead improvisatory engagements that bring prior knowledge to bear in generative experiences.

When two or more people pay attention in a focused environment, with their attentions seeking a kind of rebalancing congruity and simplicity, without a pre-programmed demand for results, it allows exploratory experiences beyond the habitual. Everyday life and the negotiations of social relationships are of course more immediately demanding of complex skills that reflect and require necessarily complex organisations of self and developed skills. Habituated skills and beliefs provide a sort of gravitational field within which we can respond creatively to present demands. In my many years of practice, I have seen that over time people can continually develop and refine their ways of functioning toward more fluency and responsive resilience. Interactive processes

¹⁴ These concepts will be explained in Chapters 2 & 3.

¹⁵ In Chapter 8 the importance of touch-contact, and 'reasoning', as a concept limited to linguistic and linear propositional processes less grounded in physicality, is challenged. Aristotle's *De Anima* and Gendlin 2012b & 2012c will be discussed in Chapter 5 with regard to perception and sensory meaning-making.

demand exchange, and humans are particularly gifted in the dance steps of imitation¹⁶ and coordination, and the push and pull dynamics of cohesion. We are always in a balancing act that unfolds itself as we interact – a key thought for ethical reasoning and judgements, and the foundation of ‘responsive equilibrium’ in ethics.

Responsive equilibrium, within and in relationship to others, is a tidal ebb and flow expressive of our improvisatory capacities. Alexander Technique processes involve the commitment to continual responsiveness and attention to the engagement in the present, and the results demonstrate that action is not the repetition of conditioned maps of behaviour, not bound to prior assumptions even though informed by them.

Without direct experience, it can be difficult to get a feel for the functional repercussions of the CPP, and the ways that reactive/active, contractive/expansive core movement is present and influential in an integrated way with perception and intentional action. Few Western disciplines attend to it explicitly, and a dualistic hierarchal conception of human functional engagement with the world sets up a control system and body-to-be-controlled dynamic that excludes a wide range perceptual experience and feedback. From this dualistic mindset the body is viewed as object, as an action mechanism controlled by automatic programmes directed from above and outside the processes of experiencing. I offer a look at contrasting ways of defining and working with human structural function and action that demonstrate embodied cognition here.

In my first years of practice as an Alexander Teacher, I was lucky enough to have a friend and colleague at the early stages of his career as a Feldenkrais practitioner. We regularly traded hands-on work, discussed and analysed our experiences with each other’s work and in our developing teaching practices. Alexander and Feldenkrais had similar intentions in the techniques they developed: psychophysical re-education, enriched kinaesthetic awareness, and practical improvement in human function. They came from quite different backgrounds, however, and their methodologies reflect that. Feldenkrais was at first a cartographer, then Doctor of Science in engineering. He did nuclear physics research at the Sorbonne university before WWII, and had a black belt in Judo. He was inspired to develop his method by his own rehabilitative experimental processes after injuries. Because of his background and experiences, there is a lot of detailed structural and functional analysis in his method, and there are embedded ideas about the relationship between neuro-musculo-skeletal function and evolutionary and developmental processes.

¹⁶ Ideas about imitation in learning and social relationships are discussed extensively in Chapters 2 and 3.

My Feldenkrais teacher friend (FTF) and I experimented, bringing different insights and traditions into play with similar goals. I worked through touch and movement to understand the balances of tension and release throughout FTF's neuro-musculo-skeletal system. I might for instance, by holding his lower leg in my hands and attending to the subtle movements and counter-tensions that I became aware of, describe a series of interconnections right throughout the body. My supporting and moving with the sensed momentum and shift of internal balancing allowed a release of unnecessary counter-tensions, resulting in a simpler, more relaxed state appropriate to the physical demands of the moment. I would describe my experience. FTF would then tell me Feldenkrais' structural, development, and functional descriptions for all that I had just demonstrated through a tactile-kinaesthetic process. We both found this exchange useful. FTF developed his sensitivity to touch and kinaesthetic experience, and interpretive and communicative skills in those respects. I appreciated the different perspectives on things that I understood in other practical ways. I broadened my vocabulary and representational understanding not only through Feldenkrais' systems, but also was inspired to continually look for connections beyond the bounds of my prior training and experience. Of course we each developed in ourselves through the encounter with difference, and the learning from our interactions enriched our own practices.

Integrative, less mechanistic understandings of psychophysical function are found more readily in working processes that are more holistic. Nonetheless, when integrated with experience, analytic understanding and representational description can focus and enrich learning or healing processes. But where activity and analysis is based in dualistic mechanical concepts of control, and valorising and validating repeatable means toward a predictable goal, the CPP would be accessible to understanding only as an involuntary interaction between reflex and conditioned behaviour. In the informatively experimental processes of the Alexander Technique, action is interplay between perception, intentional action, expectation and habit. It is an inherently creative coordination of past and present that happens within a flow of sensory experience, with an attitude of open ended inquiry and continual re-interpretation of that experience. Performing and creative arts are areas of endeavour where one finds an intrinsic acknowledgement of the holistic nature of processes and skills, which are also expressed in the ethics of engagement¹⁷.

¹⁷ Ways in which arts processes inform understandings of psycho-social-physical function are explored in Chapter 6, and the relevance to ethics in Chapter 9.

11. The Cultural and Scientific Context

Many doctors and scientists were interested in Alexander's work during his lifetime.¹⁸ Most of the 'scientific' studies focused on the improvement in mechanical function, and described the working processes in mechanical terms. The integrative attention that is fundamental to this work was described in terms of the interactions between reflexes (the late 19th century version), their corollary conditioned habit, and conscious directive attention combined with intentional inhibition. This is an accurate description as far as it goes, and reflects the cultures in which Alexander practised. But key to Alexander's working process is understanding that any action is a creative experiment in the moment which can produce an unexpected result – a result that is experienced as unfamiliar. This process has also demonstrated repeatedly that our interpretations of perceptions are continually conditioned by our experiences. That does not fit with the scientific paradigm of validating research by predictably measurable and repeatable results. Changeable interpretations of sensory meaning-making would suggest unreliability in that paradigm, but it is the process not the result that structures the experience and reflects the effectiveness of the method. As stated previously, Alexander called this focusing on the 'means whereby' rather than the goal. The outward manifestation, the result – better, more efficient, action – is the result of a creative process that reflects a non-mechanical integrative conception of human function.

Alexander's experimental process was based in experiential observation and relied on developing his kinaesthetic sense and sensitivity to touch as interpretive and communicative skills. In teaching, touch is the medium through which perception and action are interpreted and communicated. These particular interactive sensitivities are traditionally seen in Western cultures as being in the purview of women's experience, such as child rearing and in health care, nursing. Skilled interpretations of those experiences are not generally seen as scientific. Similarly nurturing activities, which involve so much interpretive touch, are generally not considered to be highly skilled or evidencing complex deliberative cognitive function.¹⁹

Beyond the history and particulars of Alexander's work, the trend in Western culture has been toward the relegation of the value, function, and understanding of the kinaesthetic sense to goal-oriented gross level activity. The training for kinaesthetic

¹⁸ The recognition of Alexander's work by scientists and philosophers like John Dewey and Nikolaas Tinbergen was largely ignored, though they spoke and wrote publicly in support of the value and breadth of his discoveries and the applications to human psychosocial and skill development. An excerpt from Tinbergen's 1973 Nobel Lecture is available on Video here: <http://www.youtube.com/watch?v=XXr-9kQZ0ow>

¹⁹ This will be discussed further in Chapters 5, 8 and 10.

sensitivity and a 'listening touch' that allows one to sense and interpret the ebb and flow of spinal motion is uncommon – at least in Western countries. Interpretive touch sensitivity is not only foundational in Alexander training, but it is also an integral part of many other cultural traditions' healing practices. One example would be the training in Chinese medicine that develops a sensitivity to touch and motion that allows practitioners to read 72 different varieties of pulses. In dominant Western medical and scientific traditions, the subtleties of kinaesthetic awareness and touch sensitivity are relegated to the unconscious, to passive perception rather than intentional interpretive meaning-making.

This topic will be explored in later Chapters, particularly in regard to the holistic nature of experiences in the arts and the metaphors that music provides to illuminate the nature of human processes and interactions. A brief look at some blinkered perspectives of Western scientific traditions offers clues to understand why such a significant aspect of human function, development and social engagement (CPP and the reflexive process underlying it) has been misunderstood and relatively ignored by scientists. Useful insights into cultural assumptions underlying Western scientific beliefs and practices can be found in feminist and post-modern scholarship.

Ruth Hubbard, in *The Politics of Women's Biology*, critiques the supposedly neutral biological grounding of Darwinism, showing Darwinism's survival of the fittest paradigm as reflective of imperialism, feudalism, and the British class system. In writing about how culture shapes scientific understanding, she focuses particularly on women's biological role assignments. It is the case that in the dominant dualist paradigm, nature, physicality, and the senses are represented as lesser matters for the control of mind. Woman and women's experience, as expressive of the sensual, creative, mortally embodied reality of human life are often, through fear, assigned a place of **disempowerment**.²⁰ Hubbard's insights as a biologist and feminist philosopher of science also shed critical light on reductionist, dominance and control oriented biology research and ways in which those constructs as applied to societal relationships.¹

There is a disposition in Western culture, particularly in the 20th and 21st centuries, to look for explanations of behaviour, and to understand and justify social mores, in scientifically constructed views of biological or instinctive processes. There are common undercurrents through Darwinism's natural selection paradigm, Freud's sexist and fearful division of corporeal being into conscious and unconscious realms, behaviourism's automaticity and operant conditioning, the focus on genes as

²⁰ See Chapters 5, 7, & 8 re: embodiment and Dark Ethics, and particularly referencing Irigaray.

determinant of characteristics and character, and analyses of the brain to find determinate mechanisms of control within it – all are in thrall to control and dominance. Working with the CPP as an holistic process shows biology as intrinsic to but not determinate of behaviour. That non-deterministic perspective also points to the responsibility for humans as social beings to develop the skills of reflective self-discipline to move beyond fear and reactivity.²¹ Understanding how developmental and learning processes are grounded in the CPP and creatively subsume it in directed adaptation and action, demonstrates the biological underpinnings of our disposition and equipment for that development.

The narrow attention paid to startle pattern and the dynamics of reactivity is shaped, as I have noted, by a particular cultural orientation. Even the common name for the process reflects a stance toward the world: fight or flight. The process is far more complex, and it is not only in extremis. ‘Fight or flight’ as definition presents choices bounded by reactivity, and certainly reflects a mindset grounded in fear and appropriative relationships. It is not surprising then that scientists would misunderstand the startle pattern by viewing it from outside its context and therefore miss its significance as part of a core psychophysical process that extends beyond fear and aggression.

Though people adapt to the frameworks they are given by their culture, behaviour and beliefs are not fixed. Do the Darwinian view of biology and deterministic ideas of human behaviour explain why we do what we do? Are ethics based in a survivalist fight for self-interest reflective of our biological nature as social beings? Contemporary ideas in biology present a different perspective on evolution. Margulis and Sagan, in *Slanted Truths, Essays on Gaia, Symbiosis, and Evolution* (1997), offer research and interpretations that suggest that complex organisms (eukaryotes) such as we are evolved through symbiogenesis, from cooperative amalgamations of bacteria bounded within a cell membrane. This understanding of eukaryotic evolution as fundamentally cooperative, not simply competitive, informs ethics differently.

‘All organisms of greater morphological complexity than bacteria, that is, nucleated or eukaryotic organisms (whether single or multi-cellular), are also polygenomic, having selves of multiple origins. All these “selves”, comprised of heterologous (different sourced) genomic systems, evolved from more than one kind of ancestor. Because the organelles (nucleocytoplasm, mitochondria, plastids, and so forth) of

²¹ There is common ground here with Varela’s comments in his dialogue with Poerkson (2006, published posthumously) wherein he speaks of the value of Buddhist disciplines for developing an experientially grounded, embodied, self-reflective foundation for engagement – not only for cognitive research, but also for ethical deliberation and negotiation. Applications of the CPP and the SCM to ethics and social being are discussed particularly in Chapters 3, 9 and 10.

eukaryotic cells had independent origin among the bacteria, any such cell – any eukaryotic genomic system – must be comprised of heterologous parts.’

(Margulis and Sagan 1997, pp.65,68)

[For instance] ‘Mitochondria live inside our cells but reproduce at different times using different methods from the rest of the host cell. They are descendants of ancient, oxygen-using bacteria. Either engulfed as prey or invading parasites, these bacteria then took up residence inside foreign cells, forming an uneasy alliance that provided waste disposal and oxygen-derived energy in return for food and shelter. Without mitochondria, the nucleated plant or animal cell cannot breathe and therefore dies. The results of these first mergers were protoctists, our most recent, most important – and most ignored – microbial ancestors. Protoctists invented our kind of digestion, movement, visual, and other sensory systems. ... The new knowledge of biology, moreover, alters our view of evolution as a chronic, bloody competition among individuals and species. Life did not take over the globe by combat, but by networking. Life forms multiplied and grew more complex by co-opting others, not just by killing them.’

(Ibid., pp.77,78)

This thesis supports ideas about biology as capacity not determinant, and demonstrates biological and socially constructive dispositions for: social responsibility not selfishness; empathy not narcissism; mutually respectful relationship not exploitation; deliberation and responsivity rather than reactivity or habit guiding intentionality; and improvisation not automaticity as the defining feature of intra and inter-actions.

The difficulties of applying scientific methodologies to social sciences arise because of the reductionist methods and disciplinary isolation of most Western scientific practices. Quantum physics has provided a shift of perspective and a background against which philosophers like Barad and Hubbard can expand the discussion through acknowledging the perspective of the experimenter, and including multiple disciplines in deliberations about the nature of life processes. The interdisciplinary nature of this thesis reflects that orientation. Hubbard suggests that a praxis based conception of theory and equal respect among practices will yield richer meanings and understandings:

Complementarity provides a fruitful model for integrating the different levels of organization we can use to describe living organisms. The phenomena we observe at the subatomic, atomic, molecular, cellular, organismic, or societal levels are all taking place simultaneously and constitute a single reality. It is an outcome of Western cultural history and of the history of professionalization that we have developed separate academic disciplines to describe these levels as though they were different phenomena. In fact, the only reason we think in terms of these levels is that we have developed specialties that draw distinctions between them. But the distinctions are not part of nature. Physicists and theoretical chemists, who calculate energy levels in atoms and molecules, do not have access to more fundamental truths than have molecular biologists, who study the structure and sequence of

genes on the chromosomes. Nor are the descriptions molecular biologists provide more fundamental than those of biologists who study cells or organisms. Biologists do not probe deeper realities than anthropologists and historians, just different ones. (Hubbard 1990, pp.116,117)

The intersections of science and philosophy in Western culture have produced different streams of understandings not only of biological and physical processes, but also of the nature of mind, reality and the place of people in the broader scheme of things. There are current intersecting paradigms where philosophy meets cognitive neuroscience and developmental psychology (as in Susan Hurley's work explored in Chapter 2). A common Western perspective that I critique in various ways throughout this thesis identifies knowledge as the construction of conceptual representations of reality, and thought as primarily linguistically based (and visually dominant) organisation and representation in the brain. But as Gillett writes:

The overall assumption behind the traditional theory of scientific knowledge is that we are investigating the world in which we live so that we can develop a thought picture (or cognitive map) of that world which reflects the way that it "really is". The embedded representational view of truth and knowledge posits representations (or thought pictures) which correspond to the reality being represented. The fit or correspondence between representations and reality is such that our knowledge increases as the fit between the thought and the world improves. Contemporary philosophy of science, and then post-modern criticism, tend to undermine these traditional views about knowledge in general and science in particular.

(Gillett 2004, p.728)

The methods of observation and research that characterise the Alexander Technique and my own inter-disciplinary experimental approach is integrative of the multi-sensory experiential meaning-making that is an intrinsic element of cognition and reasoning processes. I bring a wide range of perspectives and discourses to bear in analysing and explaining the CPP, including current ideas in cognitive science and neuroscience in Chapters 2 and 3. After all, there are many different versions of empirical research, and they not only provide different reportable information as results, but also involve researchers' engagement in different ways that conceptually colour those results. For instance:

A person might see a cheetah and think – what a beautiful furry fast graceful animal. At one end of the experimental spectrum, to understand it – to get a feel for what it is and what it does and how, you could kill it, cut it up, and notice how when you tug on a muscle it moves the bones in a certain way. Or you could catch it, remove or disconnect parts of its brain and notice if and how it functions – e.g. the decerebrate and thalamic

'preparations' of cats and bunny rabbits. You would find out many things about what parts of those animals are and do in those experiments. Since those creatures aren't human, they're food, we don't usually react to those experiments with the same horror as we do to the Nazi freezing, drowning and surgical experiments. At the other end of the spectrum, you might decide to spend a year living on the Veld in Africa observing the life of a cheetah and her cubs. And there you would: experience the same heat of the sun on your back; smell the same air; listen, look and pay attention to the same things that the cheetah does; rest or feel hunger in the same place and in mutual presence... in other words, you would walk a mile on cheetah paws. And by that method you would know many things in ways that aren't measured mechanically.

Reflect back for a moment on your responses to my two descriptions. Did the laboratory descriptions cause you perhaps to contract a bit, feel uncomfortable. Did the sensory Veld description inspire you to relax and open up a bit? The underlying process of reactive contraction and engaging expansion is responsive to thoughts as well as sensory and proprioceptive environmental input.

12. Explaining Reflexes and Neuro-musculo-skeletal Interconnections

In part because of the influence of behaviourism in the 20th century, there are a number of conflicting understandings in science and common usage of the meaning of the term 'reflex'. In 'What do *reflex* and *voluntary* mean? Modern views on an ancient debate', a number of authors' views (Prochazka, Clarac, Loeb, Rothwell, and Wolpaw) are brought together to reflect different trends of thought about the concepts *reflex* and *voluntary* as applied to human behaviour. From the behaviourist side of the spectrum and rooted in the work of Sechenov in the 19th century, reflexes are understood not only as instinctive and automatic (where a simple cause leads to a predictable effect that is also simply defined) but also as reactive programmed responses, with all human behaviour seen as the result of chains of 'reflex' actions. In contrast the concept 'reflex' could be applied to 'automatic' instinctive motor programmes, and 'voluntary' action understood as deliberative creative intentional action shaping or influencing actions, even to the level of autonomic responses. According to Prochazka, current trends of thought can be broadly 'split into two camps: those who equate voluntary behaviours with consciousness and suppressibility and those who view all behaviours as sensorimotor interactions, the complexity of which determines whether they are reflexive or voluntary' (Prochazka 2000, p.417).

In light of the diversity of perspectives, it will be useful to describe how the neuro-musculo-skeletal and autonomic nervous systems are engaged with startle reflex and the postural and balancing mechanisms from my holistic standpoint. This will not represent those aspects as functionally isolated but rather offer a foundation from which to understand their interconnectivity with other layers of human function. Even though physiology is often researched and presented in a reductive and mechanistic way, the results can be used to demonstrate ways in which humans function as a psychophysical whole such that the organisation of movement, whether instinctive and reflexive or learned and voluntary, is integrated through all levels of brain-body function.

The disjunctures between ‘common use’ concepts of reflex and differing 19th through 21st century biological, cognitive, and behavioral science concepts of reflex are perhaps reflective of the shift toward mechanism, technicity, and computer programming concepts of human action and psychophysical function.²² In my use of the term reflex I am referring to basic structural, homeostatic and survival functions that underlie all of our actions. Think of your heartbeat as an example, as few people would aspire to learn to control their heartbeats in such a way as to ‘take over’ the actions of electrical and chemical signalling as an entirely ‘conscious’ process. In this understanding, habits are not reflex actions, and are misrepresented if they are described as such. Through experiential understanding of the CPP, *reflexes as primary structural action patterns* can be seen as foundational to developmental and learning processes, including socialisation as the development of a ‘self’ in relationship with the world and other beings. (Aristotle would think of this as first and second potential for the actualisation or emergence of self.) Those functional processes are a *grounding* for behaviour, *not determinants*. Neuro-musculo-skeletal structures and their organisation are increasingly understood by neuro-scientists and cognitive scientists to be highly complex and interconnected at every level of brain-body function. I offer brief and summary descriptions to place startle pattern and the CPP in the context of past and current understandings in physiology and neuroscience.

Experimentation to unlock the mysteries of physiological function during the 19th and much of the 20th century tended to look for clearly hierarchal understandings of brain-body interconnections. It was common also to look for a reflection of Cartesian dualism in physiological and mental structure and function. Many experiments were carried out that reinforced the interpretation that movement was organised at lower levels of the brain (literally lower in the human brain) and through spinal reflexes. Through experimentation on animals with the cerebrum removed, the cerebellum, basal ganglia

²² Technicity and mechanical orientations to cognition, and alternatives, are addressed in Chapters 4 and 9 .

and brain stem (and in some cases the thalamus) were seen to exert control on basic postural and motor functions and autonomic functions such as breathing and heart rate. Human reasoning, logical intention and 'the will' were superimposed on the process from higher centres in the brain – the cerebral cortex – and the homunculus who presumably lived there.

John Hughlings Jackson was an exception, and contemporary neuro-science reflects his more holistic understanding that sensory-motor processes are integrated with and represented throughout the layers of neurological function.

Hughlings Jackson emphasized his views that higher nervous processes (mentation) incorporated layers of information patterned by constraints and correlations representing 'the correspondence of the organism with the environment' such that the direct relation of a primitive reflex or more automatic response pattern becomes integrated into those higher order patterns. (Franz, Gillett 2011, p.3116)

There are multiple interacting layers of connectivity in reflex and voluntary action control processes throughout the brain and body. The spine and spinal pathways are the central core through and within which sensory-motor afferent and efferent signals flow, not only to and from the brain, but also locally from limbs to core. Early animal experiments on the central nervous system (brain) connections to the spine and extremities identified mid to lower brain centres – subcortical areas – as key to action, balancing and musculo-skeletal reflex actions. These lower brain centres are: the cerebellum, brain stem (the midbrain, pons and medulla), basal ganglia, thalamus and amygdala.

This summary functional description of action organisation in the body can usefully start with the extremities and their connections to the spine. Nerve fibres interact with muscle and tendon action. Sensory neurons send information to local interneurons in the grey matter of the spinal cord and also to the brain via the white matter of the spinal cord. Some reflex actions happen locally – between muscles and the spine; they are called spinal reflexes. Their interactions are called reflex arcs. There are a number of different kinds of local reflex processes, such as: the *withdrawal reflex* – touch something hot with your finger and your arm contracts away; *superficial reflexes* – various tendon jerk responses (biceps, triceps) and the abdominal reflex which is initiated by the stimulation of skin sensation on the abdomen; a *deep tendon reflex* – for instance the action produced tapping the patella tendon (knee) which triggers a kick motion in the leg; and the *monosynaptic stretch reflex* (a muscle's stretch and reactive contraction that maintains muscle poise).ⁱⁱ Local spinal reflexes are integrated in

function with the postural reflexes that are organised primarily through the cerebellum, thalamus, basal ganglia and brain stem.ⁱⁱⁱ

Afferent signals (input, by sensory motor neurons) and efferent signals (output, by motor neurons) work interactively, balancing stretch and contraction in muscle action. Excitatory and inhibitory actions are brokered by interneurons in the spinal cord. There is constant reciprocal action that works toward functional equilibrium and this continually negotiated responsive tuning in the musculo-skeletal system is reflected at each level of action processes as we will see.

We can now consider how the brain-body interconnections are understood to work at the motor and autonomic reflex level in relation to startle reflex. Information as sensation is experienced through all the senses (including the tactile and proprioceptive systems), and those afferent signals make their way through neural pathways to the thalamus. When a person is responding to a frightening stimulus, the thalamus not only sends signals to the motor cortex, but also to the amygdala. The amygdala has two levels of function, sending along signals for integration with information in various parts of the cortex, and also sending emergency alert signals directly to the hypothalamus (hormone production, autonomic regulation), the hippocampus (explicit and contextual memory from experience), the cerebellum (integrates information from sensory and motor cortices and basal ganglia; functions in timing and coordination of action), brain stem and basal ganglia (balance, coordination and motor control), all of which are directly engaged in the neuro-musculo-skeletal response in startle reflex²³. Messages signalling contractive reaction travel through the *extrapyramidal tracts* as action triggers to the musculo-skeletal system.ⁱⁱⁱ Note that this system is multiple, holistic and integrated.

There is a similarity between the direct route spinal reflexes that cause a local reactive contraction, and the 'lower brain' fast track initiation of contraction in the interconnections at the head-cervical spine area, with reactive inward contraction extending throughout the core as previously described in functional detail. The reactive contraction is protective and inhibitory, just like the withdrawal of your hand from a hot burner. The initial withdrawal also extends to attentional awareness, which is narrowed to the immediate danger. At the moment you burn your hand and pull it away, your attention is dominated by the pain and its source.

²³ An illustrated explanation of these processes is available at: McGill University, Montreal (2015a) 'The Amygdala and Its Allies', *The Brain From Top to Bottom*: http://thebrain.mcgill.ca/flash/a/a_04/a_04_cr/a_04_cr_peu/a_04_cr_peu.html [accessed 12 May 2015].

The short route response triggers the reactive tightening pattern of startle reflex, along with autonomic changes in heart rate, blood pressure and other aspects of visceral regulation. There are habituated patterns of action that can be activated through the emergency 111 amygdala route. Scenario: I'm walking home alone at night and someone comes up behind me and grabs my shoulder. Having taken a self defence course after being mugged in the past, I tighten reactively, then twist, turn around and smash him in the nose. It might have been a mugger, or my friend who has chased after me because I left my briefcase at the restaurant. The inhibitory immobility of inward contraction can provide a time out that allows for a wider deliberative process to engage the whole brain, and the wider field of bodily and environmental information before acting. The 'knee jerk' response is not always the best.

The startle reflex is a process, and the stimulus and reactive contraction is part of the story. The same channels of interconnection that organise inward contraction are also conduits for the electrical and chemical signals that restore postural balance and allow coordinated intentional action (whether predominantly habitual or more responsive to current circumstances). A reminder: I have described the startle reflex as a flow through processes of perception, reaction, reflection, and choice of action. Currently in neuroscience, the startle reflex is understood as a process primarily engaging the 'lower' brain centres with sensori-motor and somatosensory processes.²⁴ Even so, as was reported in Hunt's experiment about startle, the reflexive reactive processes are lightning fast. And though in extremis the areas of the brain assigned to reasoning and language articulating functions are not thought to be influential in the loop, they nonetheless get the signals (as is evident in stuttering).

All sections of the brain have multi-directional interconnections, so signals come into parts of the brain not only from 'outside' following paths up the line to the cerebral cortex, but also simultaneously from different areas back and forth, up and down, and all around. It is a very complex improvisatory choreography, like a modern dance work where it's impossible to understand the whole of what's happening if you just watch one small group interacting. You need the long view from the upper balcony to take in the totality and get a sense of the complex coordinations, responses and meanings that make up the whole. It would require far too many pages to provide an inclusive

²⁴ 'The somatosensory system is the part of the sensory system concerned with the conscious perception of touch, pressure, pain, temperature, position, movement, and vibration, which arise from the muscles, joints, skin, and fascia. The somatosensory system is a 3-neuron system that relays sensations detected in the periphery and conveys them via pathways through the spinal cord, brainstem, and thalamic relay nuclei to the sensory cortex in the parietal lobe.' (Fiez 1996, p.13)

perspective on how all the parts of the brain and their interconnections are active in the processes of the CPP – which itself is integral in the choreographies of **human-being-in-the-world**. What I will do is briefly describe the results of some current studies in neurophysiology that show how brain-body function is integrated at every level, and reflective of the primary processes of the CPP.

Inhibition, understood in startle reflex and the CPP as a **stop-action** mechanism that allows for deliberation and re-organisation, is expressed at every level of being. It is a fundamental element: of systemic homeostasis; in neural processes that support responsive interaction, learning, and behaviour comprehension; and in active intentional engagements in the human life-world. Responses to stimuli, whether at the neuronal or the neuro-musculo-skeletal level, are managed through a continual counter-balancing of excitation and inhibition.^{25 26} Posture isn't a position, but rather an incredibly diversely organised and responsive complex active poise generated by the equilibrium arising between electrical signals, chemical signals, sensory perceptions and responses, and reflex and voluntary attentional and intentional acts.²⁷

The psychophysical integration of sensory motor and cognitive actions and processes with reasoning (through language and other articulating expressive processes), and the

¹⁹re: homeostatic plasticity:

'There are extensive positive feedback connections between excitatory pyramidal neurons both within and between cortical layers, which are kept in check by feedback and feedforward inhibition mediated by complex networks of inhibitory interneurons. ... indicating that excitation and inhibition must be delicately balanced to keep cortical networks functional.'

(Turrigiano and Nelson 2004, p.103)

²⁶ Resonance transmits information and enables coordinated action:

'Cortical processing reflects the interplay of synaptic excitation and synaptic inhibition... These rapid changes in the ratio between excitation and inhibition can have important consequences in tuning cortical neurons to specific stimuli and in shaping their activity pattern in time... A prominent characteristic of cortical activity is the rhythmic and synchronous oscillation of the membrane potential of populations of neurons... Cortical inhibition is an essential element in at least some of the fastest oscillations, occurring in the "beta" and "gamma" frequency range... These fast oscillations take place under a variety of behavioral states, either spontaneously or in response to sensory stimuli and are thought to play a role in the transmission of information across cortical areas... Inhibition is not only directly involved in the generation of these fast oscillations, but also in synchronizing participating neurons, in setting the pace of the oscillations and in maintaining their coherence in space.'

(Isaacson and Scanziani 2011, pp.231, 234, 237, 238)

²⁷ 'Balance correcting responses are estimated to occur about 370 milliseconds after a balance perturbation [1]. This means that the CNS {central nervous system} has time to modulate the amplitude and timing of the corrective muscle activity. The learning network comprising brain areas such as the cerebellum, basal ganglia [74] and hippocampus, basolateral amygdale and striatum [75, 76] is involved when standing balance is disturbed, allowing adaptation to perturbations.'

(Patel 2009, p.23)

understanding of others' actions and intentions, are intertwined in brain processes. At the neurological level, the mirror neuron system (first identified by Rizzolatti and his colleagues more than 20 years ago) and the layers of imitative processes that resonate through it, support developmental processes, perceptual and deliberative skills, as well as intentional actions and the negotiations of social engagements.²⁸ The mirror neuron system has proven to be an important area of neurological research and has influenced cognitive science as well. The following is a succinct description of the mirror neuron system and its interconnections.

The mirror mechanism is present in various cortical areas and according to its location mediates different functions. The mirror mechanism is located in the parieto-frontal network and underlies the understanding of the goal of the observed motor acts and the intention behind them. The mirror mechanism is also located in human Broca's area and transforms heard phonemes into the motor format necessary to produce them. Finally, the mirror mechanism is present in the insula and anterior cingulate cortex. It mediates the understanding of emotions of others.

When we observe a motor act like grasping a cup of coffee we understand not only what the agent is doing but, typically, also why he/she is doing it. The agent's intention can be inferred from the way the object is grasped or from the context in which the action is executed. Some years ago, an fMRI experiment showed that when individuals had to infer the intention of the agent from the context, there was a selective activation of the right frontal node of the mirror-system.

(Rizzolatti and Fabbri-Destro 2008, pp.179,182)

The mirror neuron system is thought to facilitate the development of psychosocial skills, and the neurological interconnects demonstrate that sensori-motor processes are not only foundational but also intrinsic.²⁹

The anterior insula may also support neural representations for subjective autonomic states, including bodily states such as pain and hunger, as well as more subtle states such as perception of heart rate and emotional awareness. ... Anatomical data shows that the insular lobe has reciprocal connections with the limbic system as well as with posterior parietal, inferior frontal and superior temporal cortex. ... Through its connection to regions of motor significance, the anterior insula has been proposed to serve as the neural relay station between the human mirror neuron system linking perception and action and the limbic system involved in processing emotions.

(Molnar-Szakacs 2006a, p.239)

²⁸ These connections will be explored in depth in Chapter 2 through cognitive science and neuroscience, and Susan Hurley's Shared Circuits Model (SCM), and also in Chapter 3 regarding the correlations between the CPP and the SCM and their implications.

²⁹ The mirror neuron system and its relevance to Hurley's SCM and the CPP will be discussed in Chapters 2 & 3.

Cognitive science and neuroscience are mutually influential these days, particularly with regard to research on the mirror system and conjecture about its importance in human intellectual and social development.³⁰ Rethinking ideas about the development and cognitive structuring of language and communication processes has been inspired by the increasing understanding that all aspects of being are integrated. As Hughlings Jackson asserted, sensory-motor processes are not only foundational but also intrinsic and expressed in every level of human function. The focus of current neuroscience research ranges from the cellular level to brain imaging studies hoping to understand psychophysical processes and the motivations of behaviour by looking at the electrical activation of brain areas as people do things and think things.

13. The Core Psychophysical Process and Brains, Minds and Bodies

What this wide range of research foci *does* demonstrate is that perception and action, reaction and deliberation, reflex and intentional processes, are not based in dualistically separated mind/body functions. The CPP that I have described, involving perception, reaction, reflection, and choice of action, isn't a behaviour set, or a flow from physiological response to a separate mind-brain deliberation leading to intentional action. Every aspect of our corporeal engagement, our responsivity in experience, is an expression of the resonance of our extended being as creatures embedded in the world.

The processes I have described are not necessarily sequential. The structuring of experience, and our articulations of experience in space and time, are part of our ongoing cognitive organisation and practical function. Nonetheless there is a high degree of recursive and re-entry effects, integration and simultaneity at all levels of functional being, from cellular to neurological to psychosocial actions. The Core Psychophysical Process paradigm I offer provides a crystal through which elements of the whole can be seen. As in a rainbow spectrum view, sometimes the colours are seen in an order. This is the case in startle reflex, where the initial reflexive sequential flow makes sense in practical survival terms. The CPP lens in other contexts shows up how inhibition (reaction) is integral in processes from the neuronal level to ethics – understood as 'the practical interconnection of acts' (Watsuji 1937).

The methodology and the interactive experience-based experimentation of the Alexander Technique demonstrates that:

³⁰ Mirror neurons and action simulations, and conjectures about their role in language acquisition and social and evolutionary development are addressed in Molnar-Szakacs et al. (2006b), and Caggiano et al. (2012).

- Ⓜ perception is not a simple input measurement process, but rather a tuned interpretive capacity, existent as a circular bodily-environmental engagement that continually evolves.³¹
- Ⓜ reflection (deliberation at every level) simultaneously requires inhibition of self and engagement with others, (violet exists as the concurrence of red and blue light).
- Ⓜ intentionality is an expression of the interplay of past and present, responsivity and capacity, desire and curiosity, that instigates extension toward, and entering into responsive relationship with, targets of thought and action.
- Ⓜ reflective self-discipline is both intrinsic in the processes of negotiating the human life-world and a skill developed through our complex capacities as social beings to engage with and learn from others.

The research from Isaacson and Scanziani (footnote 26) provides a metaphor for the way in which the complex balancing acts of the CPP create resonances that have repercussions beyond the local initial activity. The generative effects of experience extend beyond an individual and her/his direct engagements, to the familial, social, cultural and ethical human life-worlds we create. Ethical awareness and deliberation tunes the homeostatic balance of relationships, but the 'stasis', or constancy, is not static, it is embodied in motion. There is a bio-logical foundation to ethics which continually fosters us toward responsive equilibrium in the practical interconnection of acts.

14. Embodiment

The union of past and future with the present manifest in every awareness of meanings is a mystery only when consciousness is gratuitously divided from nature, and when nature is denied temporal and historic quality. When consciousness is connected with nature, the mystery becomes a luminous revelation of the operative interpenetration in nature of the efficient and fulfilling. (Dewey 1929, pp. 352,353)

Experiences of attending to oneself through Alexander techniques (and other attention based disciplines) make clear that the many layers of processes of human being are concurrent. The functional, attentional, discriminatory, intentional and action processes are in a continually coordinated equilibrium. As Ribot wrote in the 19th century, 'Le moi, c'est une coordination,' (Ribot 1898) and yet perhaps there are even more elements in the complex coordinations of self than were dreamt of in his philosophy³². For instance, a partial list of interconnecting and coordinating layers of processes might be: sensory perceptions, the pyramidal and extrapyramidal neural systems (voluntary and reflex

³¹ In Chapter 5 Gendlin's and Aristotle's ideas regarding perception are presented.

³² Common allusion to: 'There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy.' Hamlet to Horatio in Shakespeare's *Hamlet*.

movement), remembering, the musculo-skeletal system (structural and locomotor), intending to do something, the autonomic nervous system (visceral innervation and modulation), imagining, the central nervous system (CNS – the brain and spinal cord), speaking, the peripheral nervous system (nerves leading to and from the CNS), expressing emotion, and acting in concert with. In this short passage I have intentionally brought together aspects of self that are not considered processes of the same sort. To get a better feel for things, I offer an exercise of imagination grounded in experience.

You are standing in a field in a park. There are trees around; the sky is a comfortable mix of sun and cloud. You are particularly aware of what you are seeing – trees, grass, and sky, and the sense of space defined by what you can see. You may also be noticing the sounds of a few birds and some children playing nearby and you turn your head to see them. Though you aren't aware of it, your heart is beating, but your attention is drawn to the smell of new mown grass as your breath moves in and out. The ground beneath your feet has some give in it; the touch of your clothes on your skin is light and soft. As you relax, your shoulders ease and you feel relieved to be away from work, demands, the computer. You think about something you want to do later; you feel the warmth of the sun and your attention shifts back to the place across the field you were headed toward the moment before you stopped. A brief memory of meeting your lover there last week flicks across your thoughts. You decide to move on, but wait for a moment, close your eyes and savour a few more moments of pleasure in standing, gently swaying, where you are.

Reflecting on the experience of being in the park:

While you were remembering and newly creating (inspired by my descriptions) park experiences, you were somewhere else. The simulations of experience that you created included: your present location, actions, perceptions and responsiveness to your current environment. They were generated and expressed through many layers of your psyche, and your neurological, autonomic, and sensori-motor systems. In a park, and wherever you happen to be at the moment, processes are ongoing and integrated with your current experiencing, but most of them are not articulated to your attention. They **include**, among many others: actions of the heart, lungs, and digestive processes; the interconnections of postural balancing and active movement; hormonal flows; chemical reactions and exchanges; simultaneous and sequential afferent and efferent signal flows; thoughts of the past, the present, desires, your next move. . . All of that and more **makes** up the holism of what it is to be present at a moment in time. Though you were imagining, you were not simply creating a visual representation in your brain – it is a far

more extensive and inclusive process that permeates your whole being and draws from your sensory present, your memory and your improvisatory capacity.

In Chapter 2, ways in which sensory-motor processes are foundational to our development as actors in the world with others, and form part of a multi-level integrated system, will be explored through Susan Hurley's Shared Circuits Model.

Endnotes

i. (p31) From Hubbard's *The Politics of Women's Biology*: "Although most of the elements of Darwinian evolutionary theory existed for at least a hundred years before Darwin, he knit them into a consistent theory that was in line with the mainstream thinking of his time. William Irvine (1972, p. 98) writes:

'The similar fortunes of liberalism and natural selection are significant. Darwin's matter was as English as his method. Terrestrial history turned out to be strangely like Victorian history writ large. Bertrand Russell and others have remarked that Darwin's theory was mainly "an extension to the animal and vegetable world of laissez faire economics." As a matter of fact, the economic conceptions of utility, pressure of population, marginal fertility, barriers in restraint of trade, the division of labor, progress and adjustment by competition, and the spread of technological improvements can all be paralleled in *The Origin of Species*. But so, alas, can some of the doctrines of English political conservatism. In revealing the importance of time and the hereditary past, in emphasizing the persistence of vestigial structures, the minuteness of variations and the slowness of evolution, Darwin was adding Hooker and Burke to Bentham and Adam Smith. The constitution of the universe exhibited many of the virtues of the English constitution.'

One of the first to comment on this congruence was Karl Marx, who wrote Friedrich Engels in 1862, three years after the publication of *The Origin of Species* (quoted in Sahlins, 1976, p. 102):

'It is remarkable how Darwin recognizes among beasts and plants his English society with its division of labour, competition, opening up new markets, "inventions," and the Malthusian "struggle for existence." It is Hobbes' "bellum omnium contra omnes" [war of all against all], and one is reminded of Hegel's *Phenomenology*, where civil society is described as a "spiritual animal kingdom," while in Darwin the animal kingdom figures as civil society.

A similar passage appears in a letter by Engels:

'The whole Darwinist teaching of the struggle for existence is simply a transference from society to living nature of Hobbes's doctrine of "bellum omnium contra omnes" and of the bourgeois-economic doctrine of competition together with Malthus's theory of population. When this conjurer's trick has been performed . . . the same theories are transferred back again from organic nature into history and now it is claimed that their validity as eternal laws of human society has been proved. (Sahlins, 1976, p. 103).'
(Hubbard pp.89,90)

ii. (p36) To give a perspective on such processes, here is a succinct summary of the Monosynaptic Stretch Reflex from a Dr Ali Ebneshahidi's lecture notes on 'Reflex Physiology':

1. Passive stretch of a muscle (produced by tapping its tendon) stretches the spindle (intrafusal) fibers.
2. Stretching of a spindle distorts its central (chain) region, which stimulates dendritic endings of sensory nerves.
3. Action potentials are conducted by afferent (sensory) fibers into the spinal cord on the dorsal roots of spinal nerves.
4. Axons of sensory neurons synapse with dendrites and cell bodies of somatic motor neurons located in the ventral horn gray matter of the spinal cord.
5. Efferent impulses in the axons of somatic motor neurons (which form the ventral roots of the spinal nerves) are conducted to the ordinary (extrafusal) muscle fibers. These neurons are (alpha) motor neurons.

6. Release of Ach from the endings of alpha motor neuron stimulates the contraction of extrafusal muscle fibers, and thus the whole muscle.

7. Contraction of the muscle relieves the stretch of its spindles, thus decreasing electrical activity in the afferent nerve fibers, and relaxes the spindle fiber and terminates the stretch reflex and muscle contraction.

Note: By sending a command to the motor neurons, the brain sets a muscle's length. The stretch reflex makes sure the muscles stay at that length. The stretch reflex is therefore important for maintaining muscle tone and upright posture.' (Ebneshadidi 2009, pp.19,20)

*The note at the end of the previous passage refers to the integration of function between local spinal reflexes and the postural reflexes that are organised primarily through the cerebellum, basal ganglia and brain stem.

iii. (p36) The reflexive musculo-skeletal balancing processes are primarily organised through the descending tracts of the extrapyramidal motor system. The four tracts and summaries of their functions:

1. Vestibulospinal tract: This tract originates in the vestibular nuclei that receive information from the inner ear and it is involved in the balance of head and spine and coordination of eye and cervical spine movement, and affects spinal reflexes and muscle tonus.

2. Reticulospinal tract: This tract originates in the pons and the medulla oblongata, receives inputs from many sources and extends the entire length of the brainstem, and is: active in reflex postural and balance movement of the spine; inhibits and facilitates voluntary movement; responsible for exciting and inhibiting anti-gravity extensor muscles; inhibits extensor muscles of movement; affects respiration and vasoconstriction of blood vessels.

3. Rubrospinal tract: This tract originates in the red nucleus in the midbrain and receives information from the frontal cortex and influences flexor muscle tone.

4. Tectospinal tract : This tract starts in the midbrain and receives some visual, somatosensory and auditory information, and is engaged with postural control of head movement in response to stimuli.

5. Olivospinal tract: This tract originates in the olivary nucleus and extends only into the cervical area. It is engaged with reflex movement from proprioception, and innervating cervical spinal areas.

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Chapter 2 - Susan Hurley's Shared Circuits Model

1. What is Cognitive Science - is it just about brains?

Cognitive science is a relatively recent interdisciplinary orientation toward the study of 'mind' that brings together in various configurations psychology, neuroscience, philosophy, anthropology, linguistics, and an undercurrent of the physiologically mechanistic orientation of behaviourism. Generally, cognitive science is more focused on research through behaviour observation rather than vivisection, and it has also been influenced by representationalism and the computational focus in artificial intelligence research. Recently neuroscience, with the focus on organic functions – particularly brain functions – has become increasingly influential in bioethics, psychology, philosophy of mind, cognitive and social sciences, medicine and in other research fields such as artificial intelligence. This is partly because neuroscience is cool and *au courant*, and often makes promises to find the answers to why we do what we do, or the real underlying bases and explanations for human behaviour and intentionality. It is also because cognitive science, neuroscience and the philosophy of mind share a common Cartesian inheritance of mind/brain and body division, though with a variety of perspectives on hierarchal valuing and function. The influences of dualism will be explored more fully in Chapter 4.

There are trends in cognitive science where it intersects with philosophy that are challenging to dualistic perspectives, and there is research within and around those trends that begins from a more holistic embodied stance grounded in socio-cultural and environmental experience. That is where Susan Hurley's work and mine sit, alongside research about cognitive processes involving mirroring and imitation, and the multi-disciplinary perspectives of Varela, Gillett, and others. Susan Hurley was a philosopher whose writing on the philosophy of mind, ethics, and practical and political philosophy is informed by her research into cognitive science, social science and neuroscience. The CPP comes into the picture in its foundational role in learning and developmental processes, and in the orientation toward a 'whole and extended self' as the ground of cognitive function.

This chapter is focused on Susan Hurley's Shared Circuits Model (SCM) and the cognitive and neuroscience research on which the SCM is based. Of particular importance to this thesis is Hurley's focus in the SCM on imitation, the dynamics of means-ends (process-goal) focus, and the centrality of inhibition at many levels of interaction, all of which intersect with my Core Psychophysical Process.

2. Hurley's Shared Circuits Model

Susan Hurley's work challenges representational and cognitive sandwich models of human thought, and instead offers an holistically embodied perspective on the nature and development of practical, conceptual and social skills. In common with Hughlings-Jackson, Hurley grounds human development at every level in sensory-motor processes. Her SCM offers a structural underpinning to human engagement and social being in embodied interactivity, integrating perception, action and cognition in a complex non-linear interdependent process. That process is integral within, but not determinant of, deliberations leading to intentional behaviour and meaning-making. She references empirical research in cognition and neuroscience, and addresses complex philosophical and ethical issues from foundational human interactive processes.

The SCM describes an holistic psychophysically embedded matrix of developmental processes of self-other identification, practical and social skill acquisition, and the conceptual experiences involved in discernment and judgement. And most remarkably Hurley is able to use the languages of mechanism and contemporary versions of systems theory in cognitive science research to do so. When exploring Hurley's explanatory structure – the Shared Circuits Model (SCM) – it is useful to remember that, though she has targeted her descriptions to engage in dialogue with a certain stream of cognitive and neuroscience research, the body of her work makes valuable connections to practical ethics, the philosophy of mind, bioethics, and research in human development and socialisation.

Hurley's SCM is a layered, progressively more complex and extended, model of how human sensory-motor processes ground the development of sophisticated skills and cognitive functions. She rejects the 'cognitive sandwich' model of mind, and instead embeds perception and action (afference and efference) in a field of layered and simultaneous interactions. Hurley argues against the separation of cognition from sensory-motor experience, and rejects the assumption that perception and action are distinct parts of a linear cause and effect process (Hurley 2001, p.4).¹ Her conception of cognition, of 'mental' processes, takes account of the embodied, holistically integrated

¹ Hurley's SCM works at and references a certain level of explanation, in common with a current stream of cognitive science. In Chapters 4 -8 I will be offering a range of perspectives on concepts like 'perception and action', and 'subject and object'. For instance, Watsuji's '*sonzai of ningen*' – the I who is at once a being with and of others and who negotiates the ethics of engagement in the 'space between'. And that space between is where Gendlin's creation of patterns of engagement involving the necessary construction of objects allows the dance of negotiation between 'things' and concepts as metaphors. We are then not subjects and objects but creators of patterns of engagement within the field of being together. Perception and action are elements of the processes of embodied intentionality in CPP, but not separate functions. Though for the purposes of the SCM, perception and action are articulated as separate events, at the neurophysiological level, experiencing is an extraordinarily complex inclusive field of interactions.

and extended nature of human experience, and our dependence on inter-active engagement with others to learn skills, develop reasoning capacity, and ‘make sense’ of the world.

The classical sandwich conception of the mind – widespread across philosophy and empirical sciences of the mind – regards perception as input from world to mind, action as output from mind to world, and cognition as sandwiched between. I have argued that the mind isn’t necessarily structured in this vertically modular way. Moreover, there is growing evidence that it is not actually so structured in specific domains, where perception and action share dynamic information-processing resources as embodied agents interact with their environments, rather than functioning as separate buffers around domain-general central cognition.

(Hurley 2008a, p.2)

A traditional view of perception and action makes two assumptions: that the causal flow between perception and action is primarily linear or one-way, and that they are merely instrumentally related to each other, so that each is a means to the other. Either or both of these assumptions can be rejected. Behaviorism rejects the instrumental but not the one-way aspect of the traditional view, thus leaving itself open to charges of verificationism. Ecological views reject the one-way aspect but not the instrumental aspect of the traditional view, so that perception and action are seen as instrumentally interdependent ... a better alternative is to reject both assumptions, resulting in a two-level interdependence view in which perception and action co-depend on dynamically circular subpersonal relations and as a result may be more than merely instrumentally interdependent. This is illustrated by reference to motor theories of perception and control theories of action. (Hurley 2001, p.3)

As indicated by the title of her paper ‘The shared circuits model (SCM): How control, mirroring, and simulation can enable imitation, deliberation, and mindreading’, Hurley is writing primarily in reference to the interactions of participation in active-responsive relationships with the world through sensory-motor processes. In looking for and finding physiological grounding for active and intentional processes, she references contemporary research in neuroscience, much of which is done in laboratory environments and structured in an isolated reductionist way. Hurley is able to apply that information in a more holistic field to create her SCM structure, which is built on layers that encompass the sensory-motor learning and developmental processes of human beings engaging with one another and the world.

The shared circuits model (SCM) shows how subpersonal resources for control, mirroring, and simulation can enable the distinctively human socio-cognitive skills of imitation, deliberation, and mindreading. The model has intertwined empirical and philosophical aims ... One aim is to provide a unified framework for ... various strands of empirical evidence and theorizing. Another is to illustrate the philosophical view that embodied cognition can emerge from active perception,

avoiding the “classical sandwich” architecture, which insulates central cognition from the world between twin buffers of perceptual input and behavioral output. ... It does this ... by addressing a higher-order theoretical question, about how it is possible for subpersonal processes to enable certain personal-level abilities: in particular, how it is possible to build subpersonal resources for sociocognitive skills on those for active perception. (Hurley 2008a, pp.10,11)

Hurley distinguishes three different levels of processes for the purposes of her descriptions: the personal level, the informational and functional subpersonal level, and the neural subpersonal level. The ‘personal level’ is the person as imago, with an identity as an intentional actor in the world, and it can be related to the subpersonal in a top down manner (Gillett & Liu 2012, Varela and Thompson 1995). Hurley’s Shared Circuits Model is primarily a conception of the ‘subpersonal’ level of engagement, with links made to contemporary theories in neuroscience about mirror and canonical neurons as integral to processes of copying, mirroring, and imitation. She makes connections to personal level interactions from that foundation. The subpersonal and neural subpersonal levels relate to the sensory-motor actions, resources and processing structures that enable fluent interactions with others and the environment.

At the subpersonal level of description, information is processed and the cycling of causes and effects knits actively embodied nervous systems into environments they interact with. But these processes are not correctly attributed to persons. Persons see trees, make friends, look through microscopes, vote, want to be millionaires. Subpersonal informational and causal theories explain how personal-level phenomena become possible – are enabled – but need not share structure with personal-level descriptions of processes as rational or conscious. (Hurley 2008a, p.3)

Hurley makes it clear that she is not presenting a behaviourist account of people as automatic stimulus-processor, reactor-responders. The subpersonal processes of interaction with the world enable intentional actors, but subpersonal processes are not necessarily the same as, or structurally the same as, person level intentionality.

Below I describe Hurley’s five layers of action in two ways: using the technical languages of systems theory and cognitive science, and with simplified action oriented examples.

- Layer 1:

This is described as ‘Adaptive Motor Control’, and refers to structurally and genetically instigated and programmed actions. These actions are presented in a ‘comparator feedback control’ model; Hurley likens this model to a heat thermostat system. There is a comparator device with a reference point (outcome), Inputs (as feedback) are

compared to Outputs (actions), and Outputs are modified accordingly. This creates a feedback loop of activity in which the comparator responds to Input by changing the Output aiming to match the Input to the reference point. I offer two distilled conceptions:

- In active human terms, personal level: Perceive That, Do This/ Get What, Modify This/ Get That.
- Another Version: Available Object (Affordance), Grasping/ Miss, Grasp/ Drop, Grasp/ Hold.

Hurley describes feedback control as adaptive, in other words responsive to the results and the environment, which my simplistic example makes clear.

- Layer 2:

Layer 2 is about improving instrumental action control by adding predictive simulation. This provides basic cause and effect level deliberation. Another level of processing is introduced that feeds back into the comparator, along with real-time action and input. Simulation generates a loop of possible output-input (means to ends) combinations relative to the reference outcome, and the comparator *predictively* adjusts output. 'Forward model is engineering terminology for this mapping; copies of output signals in organisms are called *efferece copy*' (Hurley 2008a, p.13). The current feedback (input) goes into the mix to moderate the total process, which allows for faster responsiveness as simulation is much quicker than overt action. Hurley describes these action sequences as subpersonal, but also includes the neural subpersonal in identifying canonical neurons as being active here. Canonical neurons respond to something that an organism identifies, through experience, as something it is equipped to get. In the language of cognitive science that something is called an 'affordance'. Once simulation is introduced into the system (which involves a subtle level of neural and sensori-motor action), a *mechanism* of inhibition is implied, as the simulation loop is not producing overt action. Hurley also refers to simulation as offline processing.² Two kinds of distilled examples:

- In active human terms: Perceive That, Do This/ Get What (running predictive simulations: Do This so/Get What, Do This so/Get What), Do This/ Get What (inclusive of predictive loop), Do This Modified/ Get That.
- Another version: Cup on the table = an affordance; Overt Actions plus concurrent predictive simulations: Reaching and Grasping so/Get Cup? – (simulations enrich

² In Chapter 1 there is reference to inhibition at the neural level as part of the process that tunes the nervous system for balance and responsivity (Isaacson 2011). This will be addressed later in this chapter also.

orientation), Reaching and Grasping so/ Get Cup? – (if/ then what, if/ then what) Reach and Grasp Cup; Hold Cup.

You might notice that the mechanical descriptive mode is already getting some pressure from the natural complexity of experience that you are aware of – through the simulations generated from your own experience. Bear with Hurley, keeping in mind that all propositional linear explanation is slower than and reductive of human experience and cognition.

· Layer 3

Layer 3 models the beginnings of social learning involving behaviour copying. At the neural subpersonal level, *mirror neurons* get into the action here, as they are activated when an observer sees – or perceives in some multisensory way – an action.³

Mirror neurons and canonical neurons are relational responders: mirror neurons are activated by motions (means) that you do or perceive; canonical neurons are activated by affordances – something with which you might interact (ends). At Layer 3, behaviour copying is something like a mirroring game where I mirror what someone else is doing – either overtly or more subtly. We reach, mirroring actions, for the cup. But in mirroring action at Layer 3, all the actions are processed in the same way – not yours or mine, but ours. So in effect your action is processed like my own simulation of an action, and it's all in the same afference, efference feedback looped soup. In cognitive evolutionary terms, this happens in relatively simple creatures.

In human developmental terms, this sensori-motor mirroring occurs very early. The activity is posited to be undifferentiated as to self-other and means-ends focus.

Note the intimate relationship between the sharing of circuits for self and other and for action and perception: Layer 3's shared informational dynamics for intersubjectivity presupposes layer 2's shared informational dynamics for perception and action, which builds on layer 1's generic informational dynamics for sensorimotor control. SCM explicitly builds shared resources for self and other on those for action and perception. (Hurley 2008a, p. 14)

³ Though the visual sense often dominates in experimentation and philosophy, I argue for holistic multi-sensory experience as the ground of meaning-making, with movement as the primary sensory organiser in Chapters 4 through 8. 'Mirror neurons' could be a misleading name, in that those responsive neurons are not specifically engaged by visual experience, but rather are responsive to the whole range of sensory-motor perception/action.

Hurley also notes that the copying of actions relating to ends creates 2-way associations in copying and simulations at the subpersonal (sensory-motor) level. Copying action feeds predictive simulations of output/input which are integrated into the system (at Layer 2: output results from both input and predictive simulation of input; output is not simulated). At Layer 3, affordance perception (input) can evoke overt and/or simulated action (output). Also, representing evolutionary and developmental stages, the copying of motion makes directional and relational sense, but is not distinguished as to self-other or articulated as abstraction from experience. And copying isn't even distinguished as to creaturely correspondence – not just 'critters *like me*', or even critters, as we are all environmentally embedded. It is a step up from Layer 2's 'mirroring of basic movements in priming (Rizzolatti's "low-level resonance"), [to] mirroring of goal-directed action or emulation (Rizzolatti's "high-level resonance")' (Hurley, 2008a, p. 13). As in Layer 2, the mechanism of inhibition functions to allow sensory-motor processes to be simulated but not overtly actioned.

To be clear, the simulations are not articulated 'mental' representations, they are neural and subtle sensory-motor try-outs, and are able to be inhibited from full expression in overt action.

- In active human terms, *undifferentiated* We-I: Perceive That, We-I: Do This/ Get What (adding in predictive simulations of 'own' and mirrored actions: We-I Do This so/ Get What, Do This so/ Get What?), Do This Modified/ Get What (inclusive of predictive loops), Do This Modified/ Get That.
- Another version: Cup on the table = Affordance; *undifferentiated* We-I Reach and Grasp so/ Get What, (processing predictive simulations of 'own' and mirrored actions together: We-I Reach and Grasp so/ Get What, We-I Reach and Grasp so/ Get What) We-I Reach and Grasp Cup/ We-I Hold Cup.

In the active creature experiencing the world scenario, we have a subpersonal trial and error process that has become more efficient through sensori-motor predictive simulation. Informative complexity has been added to the mix with the mirroring of motions that have means-ends (action-affordance) associations. Copied actions are undifferentiated as to self-other, and the actions and end results are processed by the creature in its feedback loops of instrumental associations and simulative predictions. By both self-instigating and copying means in relation to an affordance, and simulating means while inhibiting overt action, the distinction between means and ends starts to become defined. At another level of conceptualisation, one can see that intentionality in the coordination of events in an organism's existential interbeing is based and developed in motion. Though these mechanical descriptions are useful, nonetheless at

the neural sub-personal and subpersonal levels there is a high degree of simultaneity and parallel processing in creature processes. Corporeal beings don't function like a clockwork motion, or like computer processors do – in a pre-programmed linear, step by step, either-or, string of inputs and outputs manner.

- Layer 4

Layer 4: Monitored output inhibition combined with simulative prediction and/or simulative mirroring: Information about the instrumental structure of observed action provided by a flexibly articulated network of mirror circuits can not only enable imitative learning, but also contribute to enabling the understanding of another's actions as instrumentally structured, including in novel or complex ways. SCM's layer 4 introduces the capacity to inhibit actual output and monitor this inhibition while instrumental associations are activated. This capacity for monitored inhibition could combine with layer 3's mirroring to enable action understanding. Or, it could combine with layer 2's online predictive simulations to enable offline instrumental deliberation. Or both. (Hurley 2008a, p. 16)

At Layer 4, the grounding of self-other distinctions and means-ends deliberations is found through mirroring and the capacity to inhibit at the subpersonal level. Intentional action is present here as the *monitoring* of action and offline simulations (copied or own), and combined with inhibitory control this provides the capacity to choose when and how to act overtly. The inhibition of overt action (means) allows the focus of attention to shift between means and ends (goals) such that either the actions or the goals can become the copying target. Mirrored actions and simulations which were undifferentiated as to We and I at Layer 3 can register as Other and Self, enabled by experiences of monitoring and inhibiting. Hurley's detailed explanation of how the Layers in the SCM can combine to support the transition to Self-Other and Means-Ends distinctions is very clear and well-constructed, and addresses the evolutionary benefits of Self-Other identification and Means-Ends distinctions.

Now consider action understanding. Layers 3 and 4 could combine functionally to distinguish self from other – more precisely, to distinguish one's own action from another's. At layer 3, observing another's action primes similar action by the observer, through mirroring. At layer 4, the observer's similar action is inhibited; observed behavior isn't actually copied. Copying behavior can be beneficial (especially for young organisms), but unselective overt copying would often have disastrous results for copiers; a prey that chases predators won't survive for long. The capacity to inhibit copying is adaptive and should be expected to evolve. Offline mirroring simulates in the observer the causes [ends] of observed action, reversing the direction of simulative prediction ... Instead of simulating feedback that would

result from motor activations, mirroring simulates motor activation [means] that would produce results similar to those observed, with actual motor output inhibited. Simulative mirroring can thus provide information for understanding the instrumental structure of observed actions. In effect, offline copying enables action understanding. ... Mirroring of means/ends associations for observed actions isn't enough to enable understanding action as another's. This also requires monitoring as to whether motor output from mirroring is inhibited, to separate information about others' actions from information about one's own. Layer 3 doesn't do this job. But use of information about actions to understand others has different consequences, and makes different demands on subsequent behavior, than does use of information about actions actually to copy them. Therefore, it would be adaptive to track the distinction between own and others' actions. Layer 4's monitored inhibition provides an informational basis for this distinction, which overlays the shared informational dynamics for own and others' actions at layer 3: simulative mirroring with monitored inhibition provides information about another's action, not one's own. Thus, simulative mirroring can provide information about the causes [ends] and instrumental structure of observed action [means], while monitoring of output inhibition can provide information that such actions are another's, not one's own. This is how information for a self/other distinction emerges in SCM.

(Hurley 2008a, pp.16,17)

A human action description:

As I watch, undifferentiated You-I Reach for a Cup and Get it; I mirror those actions. I Reach, I Get. Ah, Reaching Gets Cup. Means to Goal. ... Later I see You-I Reach for a Cup. I simulate the action (canonical and mirror neurons firing) but inhibit the overt action, nonetheless my attention is engaged in some way with Cup Getting. This does allow me to consider the matter of Reaching and Cup Getting, decide whether I want to do it, and also observe the processes (means and ends) involved. I realise that a Cup is being Gotten but I am not doing the Getting. Something like me – You, the 'second person' – is(are) doing something like what I do, but I am doing something else while You are doing that. I choose not to act *with* You at this time, but it is apparent that You and I share action-goal interests, capacities and sensori-motor experience. Later, I see You with a Cup. I want a Cup. If I were a monkey I might just go after a cup any old way.⁴

⁴ 'Brain imaging suggests a division of labor in the human mirror system: Its frontal regions tend to code for goals of action, whereas its parietal regions tend to code for means (i.e., movements; Iacoboni 2005). (Monkey parietal mirror neurons seem to be goal-related; Fogassi et al. 2005; Nakahara & Miyashita 2005.) ... Thus, mirror neurons are arguably part of the neural basis for true imitation, though not sufficient for it. Monkey mirror neurons code for ends rather than means. Human mirror systems, by contrast, have articulated structure: some regions code for goals, whereas others code for specific movements that are means to goals. It has been suggested that human mirror systems enable imitation (not just emulation) because they code for means as well as ends (unlike the macaque's system), and that mirror neurons contribute predictive forward models to subpersonal comparator control circuits.'

(Hurley 2008a, p. 7)

As a human I'm likely to connect ideas of means (how to) with the goal and reach for a cup the way We-I did the other day, or the way You did when I didn't but only watched. Not only that, but also I have watched You and noticed Reaching is a generally useful activity, and I have Reached, and simulated and inhibited Reaching, in many ways in many circumstances. I want a Cup, so in the moment and within the holism of the present situation I will access prior experience and the capacities I have (run some simulations) and creatively Reach to Get a Cup.

Monitored inhibition of means allows for a distinction of focus between means and ends. The space created for deliberation by inhibition allows context specific experimentation with means. This is a fundamental part not only of the methodology of Alexander Technique, but also of all human active creative engagement. Response to the affordance (end) can also be inhibited, thereby allowing deliberation about ends, which Hurley examines in layer 5.

In the dynamics of Self-Other, '... simulative mirroring can provide information about the causes and instrumental structure of observed action, while monitoring of output inhibition can provide information that such actions are another's, not one's own. This is how information for a self/other distinction emerges in SCM' (Hurley 2008a, p.16,17). This grounds the move to understanding that I am at once with Other(s) but also autonomous in choosing action.⁵

Hurley cites Meltzoff, Heyes, and de Waal, among others, whose cognitive science research supports the learning and adaptive benefits of that associative resonance of mirroring behaviours and inhibition at the subpersonal level. Hurley also references Wolfgang Prinz's ideas about common coding in imitation and the faster reaction times it facilitates. In fact, earlier identification of the significance of copying and inhibition can be found in the ideomotor theory of 19th century philosopher/psychologist William James.

Prinz associates common coding with what William James called ideomotor theory, on which every representation of movement awakes in some degree the movement it represents. Perceiving another's observed movement tends inherently to produce similar movement by the observer, and primes similar movement even when it doesn't break through overtly. (Hurley 2008a, p.6)

⁵ This understanding of an important step in social development is congruent with Watsuji Tetsuro's concepts of self-other dynamics and social being and the relevance to ethics, which will be discussed in Chapters 7 and 9.

In cognitive science and the SCM, mirroring activities are understood to have a variety of manifestations in the actions of creaturely engagement with the world. At layers 3 and 4, neural subpersonal mirroring provides the foundation for several kinds of subpersonal kinds of copying. Hurley describes different categorisations of copying behaviour thus:

- Ⓔ *stimulus enhancement*: Animal A's action draws Animal B's attention to an affordance (goal); Animal B reacts with a similar innate or habitual action related to the affordance, but there is no intentional hook-up between means and goal.
- Ⓕ *movement priming*: actions are copied, but not as means to a goal, and not as learned associations with a goal—example, yawning.
- Ⓖ *chameleon effects*: an action unrelated to the primary focus of attention is mirrored – similar to movement priming.
- Ⓗ *goal emulation*: Animal B observes Animal A achieving a goal. Animal B finds the goal attractive and tries to achieve it somehow, but there is not necessarily any connecting between means and goal.

Those kinds of copying don't entail a cognitive linking up of directed means to ends structure, which is called *action understanding*. *True imitation* includes action understanding, but is a highly flexible process that can involve creative copying of: ends or means separately, particular means to multiple ends, and innovative means to particular ends. These open ended possibilities lead to complex multi-level active-associative learning and experimentation. Humans differ from most other creatures in their inclination to favour means imitation over goal emulation. Hurley posits that this may well be an important adaptive development for social creatures like us, and that understanding Others' actions and intentions builds on imitative processes (Hurley 2008a, pp. 3-5).

At layers 3 and 4 all these copying and imitative capacities are in play at the personal level. Layer 4 is where Self-Other distinctions are possible, and deliberations about own and others' actions are enabled by the inhibition of action – inhibition of an one's own action or inhibition of the simulation of one's own or others' action.

· Layer 5

This layer of engagement is very much informed by imitation and the capacity to attend to and inhibit both means (output) and ends (input) responsivity. Whereas at layers 3 and 4, the dominant orientation of simulations is to the *actions* that produce results, layer 5 adds the deliberative processes of monitored simulation of Other's *goals in*

relation to their actions. Complex reasoning about the intentions and experiences of Others at personal level is supported by monitored simulations of the input from observing Others' goals at the subpersonal level. When linked with simulation and inhibition of related action, social and reflective reasoning is enabled. Imitation is also foundational in the development of communication skills and symbolic meaning-making – including the choreographies of expressive movement, gesture and vocalisation, which are integrated with deliberative processes and the negotiations with others.

SCM's last layer adds the function of monitored simulation of ... possible observed actions. This extends counterfactual information about actions socially, providing information about possible acts by others. This function combined with inhibited mirroring (layers 3 plus 4) ... can generate information about possible (as opposed to actual) actions by others (as opposed to self), and possible causes and effects of such possible actions. Linguistic and theoretical resources can be added to simulative foundations, thereby enabling deft manipulation of combined actual/possible and self/other distinctions and tracking of interacting means/ends relations among multiple possible acts by self and multiple others. (Hurley 2008a, p.18)

At Layer 5 it is not just about getting 'things' – object manipulation. The complexity of engagements-with is built on flexibility and integration through the different levels – neural subpersonal, subpersonal and person level – of psychophysical experiencing. Once a creature starts to accumulate experiences as a being-within-the-world and pay attention to actions as mine and others', then sense-making and the experiential depth in capacities for skills, desires, memories, and relationships build on each other. So there are multiple simultaneous processes going on as I watch someone do something, or have something, and don't overtly act.

The description 'overtly act' has often been used in my explanation of SCM. Cognitive science and neuroscience studies have shown that when observing another's behaviour, mirror and canonical neurons will fire and other sensori-motor interconnections are activated at a low level 'as if' one were doing the action.⁶ Actually doing what others are doing all the time is obviously not always a good idea. Inhibition of subpersonal copying provides the grounding for survival oriented and social level (mindreading) understanding, deliberation and strategic thinking. People are more and less skilled at

⁶ Examples in the literature are: Caggiano et al. (2012); Rizzolatti (2014); Gallese (2002a,b), (2007); Preston and De Waal (2002), Hurley (2005b). Hurley and Chater (2005a) *Perspectives on Imitation – From Neuroscience to Social Science, Volume 2: Imitation, Human Development, and Culture*, provides a range of research and thought on the influences on person level engagements of mirroring and imitation. Hurley also explored the political and social implications of the influences of media presented violence and imitative responsivity (2004), (2006).

covert deliberative behaviours, and it is common to see people ‘unconsciously’ actively mirroring others’ actions, or expressing the desire for others’ things.

A layer 5 description in active human terms might be better centred on a nice crunchy red apple:

We are in an orchard. I watched you reach up and pick a ripe red apple and you are chomping on it. I can feel the crunch and taste the sweetness. I want an apple. I have already filched several from your orchard (do you know?), so I am being cool. As we walk along I *happen* to bump into a branch which shakes a nice ripe apple loose and it falls to the ground. I pick it up, ‘Now this apple is bruised, and it’s a shame to waste it.’ You say, ‘Well go ahead and eat it then.’

I am understanding the dynamics of the situation through the mix of direct sense experience and monitored simulation – noticing my take on apple having and eating, what it’s like, whether I like it or want to do it, taking account of the whole of the situation, and picking up on the expressions of the ‘other’ in the experience. We are mutually simulating and inhibiting and choosing what to express in overt interaction. Our valuing and emotional responses are embodied in sensori-motor processes that are simultaneous and shared, and at the same time inhibition allows me to strategise about what I want to do or have in this situation. When I see someone acting or having acquired something, I consider their goal and their intentional action based on my accumulated experience of means and ends. And I might also respond to their experience – empathise – in quite complex ways, depending on all the ways that I am able to coordinate responsively with them.

In both the SCM and the CPP, inhibition is a key element in learning and developmental processes. In the Shared Circuits Model, Hurley describes how sensori-motor processes, imitation and inhibition can be understood as intrinsic in cognition, with understandings of others’ intentions built on the progressive interactive complexity in the way those processes are knit into our ways of being with others in the world.¹ Layer 5 (and beyond) brings imitation together with both learning and the articulation of experience, to support the level of complexity (personal level) where mindreading—understanding others’ behaviour and motivations—and individual and communal ethical deliberations take place. Language, as the capacity to articulate elements of experience to share understanding or negotiate actions and intentional outcomes, is nonetheless anchored in the experiencing to which it refers (Wittgenstein PI #95). In the expressive and active engagements of the human life-world, language acts as a stimulus to monitored inhibited simulation and holistic deliberation, and has common syntactical roots with

the non-verbal demonstrations of means and goals that evoke deliberative inhibited simulation of own and others' means and goals.

3. The SCM and Simulation - Theory, Theory - Theory: regarding understanding and communicating

A significant part of Hurley's explanatory article about the Shared Circuits Model is spent addressing ideas about how humans develop theories about their own and others' behaviours in relation to the interweaving of sensory-motor processes and thought. Representation – in thought and through language – is part of that analysis.⁷ Starting with 'common coding' (shared informational space) for perception and action, Hurley locates representation in embodied engagement. The reciprocities in the processes of perception and action in imitation are the foundation for mutual understanding of intentional action, and for the articulation of experience for communication.⁸ She juxtaposes two trends of thought in the cognitive science of interpersonal understanding – Simulation Theory (ST) and Theory Theory (TT) – that offer explanations of how the interactions of those processes work to generate deliberation at various levels of sophistication leading to mindreading, and about whether self/other distinctions are innate or developed through intersubjective experience.

TT accounts of mindreading invoke laws and inferences about mental states and behavior, whereas on ST accounts mindreaders use their own psychological processes offline to attribute similar mental states or actions to others. ... Underived similarity between one's own and others' acts is shared ground between Meltzoff's TT account of mindreading based on early imitation and ST accounts based on inhibited copying. (Hurley 2008a, p.9)

Hurley reconciles both orientations through her model of developmental complexity. Whereas at SCM Layers 3 and 4, the 'foundations of intersubjectivity and the self/other distinction can be provided by *simulative* mirroring' and inhibition, at Layer 5 and above, 'richer self/other and other/other distinctions depend on interpretation, theorizing, and inference' (Hurley 2008a, p.9).

⁷ Representationalism, verbal/visual dominance and 'extended mind' will be addressed in Chapters 4 & 5.

⁸ 'Mirroring the cause of another's movement, or resulting relationship to an object, could enable movement priming, goal emulation, or even full-fledged imitation (if instrumental control and associated mirroring functions are sufficiently articulated and flexible). Combined with further information distinguishing self from other (layer 4), simulative mirroring can provide information to enable understanding of others' observed movements as instrumental actions with intentional, means/end structure.' (Hurley 2008a, p.15)

In ST at Layers 3 and 4, understanding of others' actions and intentions can flow directly from the reciprocal flow of intra and interactions, without an extra layer of 'mental' theory construction. In TT, linking one's own mental states with one's own experience generates a reasoning structure allowing 'inferences from first-person mind-behavior links to similar third-person [mind-behavior] links as in traditional arguments from analogy' (Hurley 2008, p.10). In other words, I understand your intentions by developing theories about my own experiences and then think about how your actions fit my theories. Hurley cites Meltzoff's theories as representative of TT, albeit with some commonality at the developmental level of undifferentiated We/I. She brings Gallese's 'shared manifold hypothesis', into the discussion with its correspondence to SCM Layer 3. Gallese's model also grounds emotions and empathy in intersubjective experience:

On Gallese's shared manifold hypothesis, mirror systems enable various aspects of interpersonal understanding and empathy. Mirror systems develop from the way biological control systems model interactions between organisms and their environments. They provide the neural basis of a primitive intersubjective information space or "shared manifold" that is prior to a self/other distinction both phylogenetically and ontogenetically, yet preserved in human adults (SCM's layer 3 incorporates this feature). The shared manifold underwrites automatic intersubjective identifications across different perceptual modalities and action, but also for sensations and emotions ... There is evidence of mirror mechanisms for pain and disgust, and hearing anger expressed increases the activation of muscles used to express anger. Empathy involves a common scheme of reasons under which persons, self and others, are intelligible, rather than recognition that others' bodies also have minds. (Hurley 2008a, pp.9,10)

Hurley presents Robert Gordon's 'constitutive mirroring' as being in the ST camp, and he shares Gallese's conception of intersubjective We/I experience in mirroring processes. Making sense of experience in his schema involves commonality of action and interpretation identified as ours together rather than mine and yours. According to Hurley, Gordon identifies self/other identification at a later stage of development through true imitation with offline inhibition, rather than early stage innate predisposition (Hurley 2008, p.10,11)⁹. Though Hurley's orientation is more toward

⁹ 'Gallese views mirror systems as enabling broad interpersonal empathy by implementing primitive intersubjective information, prior to differentiation of self from other...

Meltzoff views early imitation as foundational for the ability to understand other agents: In imitation my acts are directly, noninferentially identified with others' acts; I then associate my acts with my mental states and infer a similar association in others. ...

In Gordon's ST view of how mindreading involves offline imitation, "constitutive mirroring" "multiplies the first person" by reference to a shared scheme of reasons.' (Hurley 2008a, p.9)

For more information regarding the above researchers' ideas not otherwise cited in this thesis, see: Gordon (2002) and Meltzoff (2005).

Simulation Theory than Theory Theory, all accounts do meet in various layers of the SCM. She describes how:

The fundamental similarity between self and other is understood in terms not of theorizing but mirroring (as in Gallese's shared manifold, Gordon's constitutive mirroring, Meltzoff's innate self-other equivalence, and SCM's layer 3). Such primitive intersubjectivity persists into adulthood, providing a basis for mature empathy and mindreading, as Gallese holds. The informational origin of the self/other distinction is understood in terms of monitoring whether mirroring is inhibited (layer 4). ... the full range of distinctions and identifications required by mature mindreading [as in Layer 5], probably demands theoretical resources, even though the subpersonal enabling foundations of intersubjectivity are found in mirroring, and of the self/other distinction in monitored simulation. SCM explains how mirroring and simulation can provide foundations for mindreading on which theorizing builds. (Hurley 2008a, p.11)

Another way of looking at these different perspectives is to consider which comes first, imitation or understanding. In Hurley's SCM, 'self-other similarities expressed by mirroring, whether more or less structured, are informationally prior to the self/other distinction required for understanding action as another's' (Hurley 2008a, p.11).

Discussions about self-other distinctions and mindreading take place in a context where cognitive science and neuroscience look to explain the reasons for our social behaviour through understanding what are seen as 'physiological processes' and innate or genetic pre-programmed behaviours, and their intersections with the practical and developmental experiences of interacting with others in the environment. There are fundamentally different orientations to and from creaturely being-in-the-world expressed through various systems of explanation, and they impact on ethical constructs and deliberations.¹⁰

4. Imitation, Inhibition, and Making Embodied Sense Together

In Hurley's system and her extrapolations from SCM, imitation involving means-ends flexibility, offline simulation, and inhibition are foundational in the development of practical and cognitive skills in social beings like us. The Core Psychophysical Process, and learning methodologies that reflect it, are also grounded in and expressive of those fundamental processes. To situate SCM (coming back to CPP in Chapter 3) in the context of current research, I will offer several examples of relevant neuroscience and cognitive

¹⁰ This is a central element in my thesis and will be addressed in many ways in Chapters 3, 5, 6, 8, and 9.

science research and perspectives regarding inhibition, mirror functions, and cognition, and the links and reciprocal reflections between neural function, sensory-motor processes and creaturely life in the world. I start with basic actions at a neuronal level, offer perspectives on mirror neuron actions and their links to cognitive function, and move through to ideas about how cognition, mindreading, language and social being are embodied.

Addressing the importance of inhibition in cortical function, and understanding the ways that inhibition, even at the neuronal level, has repercussions in the multi-level integration of brain and behavioural functions, Isaacson and Scanziani (2011) write:

Cortical processing reflects the interplay of synaptic excitation and synaptic inhibition. Rapidly accumulating evidence is highlighting the crucial role of inhibition in shaping spontaneous and sensory-evoked cortical activity ... A prominent characteristic of cortical activity is the rhythmic and synchronous oscillation of the membrane potential of populations of neurons ... Cortical inhibition is an essential element in at least some of the fastest oscillations, occurring in the “beta” and “gamma” frequency range ... These fast oscillations take place under a variety of behavioral states, either spontaneously or in response to sensory stimuli and are thought to play a role in the transmission of information across cortical areas. ... Inhibition is not only directly involved in the generation of these fast oscillations, but also in synchronizing participating neurons, in setting the pace of the oscillations and in maintaining their coherence in space. (pp.231,237)

Rizzolatti is one of the researchers who initially identified mirror neurons 20 years ago in the ventral premotor and inferior parietal areas in monkey brains. More recently, he has found neurons that he identifies with mirror properties in other locations in primate brains, but in these areas only in human brains, the: hippocampus (functions in memory and spatial relationships), insula (a timbral membrane in the sense that it resonates with the cortex and combines cortical patterns with proprioceptive, interoceptive, emotional, cognitive, homeostatic, and environmental information) (Cauda 2013, p.10), and the cingulate cortex (an interface between emotion, cognition and action) (Rizzolatti 2014, p.1). The responsiveness to mirroring activity in these different areas of the brain is linked by Heyes to an associative concept of developmental reciprocity:

If the associative hypothesis is correct, mirror neurons not only support, but are supported by, human sociality. They come, not from evolution, but from sensorimotor experience, and much of this experience is obtained through interaction with others. Therefore, the associative account implies that mirror neurons are a product, as well as a process, of social interaction.

(Heyes 2010, p.581)

It is important to note that how, and whether or not, the neurons described as ‘mirror neurons’ are integral in human actions and cognitive deliberations that involve mirroring and imitative action is still a matter of debate¹¹. However, understanding the importance of mirroring behaviours of all kinds in human psycho-social-physical actions and developmental and learning processes does not depend on whether or not specific neurons can be identified as functionally dedicated to, or necessary for, facilitating those engagements. Hurley’s SCM construct is not dependent on the validity of the mirror neuron designation. Mirror neurons have value as a symbolic representation of an integrating neurological function relative to certain kinds of engagement with the world.

Mirror neurons, beyond the obvious visual metaphor, are often discussed in reference to visual attention stimulating action copying. This reflects a dominant visual orientation in Western culture and in experimental procedures. However, mirror neurons are not located in the visual cortex but in the frontal and parietal associational cortices. The primary responsiveness of mirror neurons is to *movement*, and canonical neurons are responsive to the interactive potentials of that with which we engage. A more multi-sensory perspective fills out the picture of how our reflective responsiveness is grounded in sensory-motor processes. Think for a moment of the interactions of a mother and child. The mother holds the child – they move together, toward and away; all kinds of subtle qualities of contact in touch and motion communicate direction, intensity, action patterns, focus of attention, pleasure, warmth, change of pressure, approach and withdrawal. Another example from child-world interaction: the child runs across the carpet and pulls a cord attached to a Buzzy Bee toy. She feels, through the cord, the motion of the toy on the carpet and the vibration of the sound producing wing buzz. The child makes a buzzing noise and feels the vibration in her torso.¹²

In thinking about our interactive sense-making, it is useful to reference experience holistically, rather than focusing specifically on language. Later in this chapter (section 5) I will address the way that Hurley brings language into the discussion. Here in Gallese, we find a view of the sensory-motor grounding of mindreading and social cognition not dependant on theorising or linguistic competence.

The results of neurocognitive research suggest that in the brain of primates, mirror neurons, and more generally the premotor system, play a major role in several aspects of social cognition, from action and intention understanding to language

¹¹ One example of current questioning in the literature is in: Kokal, I., Gazzola V., Keysers C. (2009) ‘Acting together in and beyond the mirror neuron system’.

¹² The first predominant fundamentals are movement and touch interaction; Aristotle understanding of touch in regard to perception is explored in Chapter 5. Visual and verbal dominance in Western culture and alternate conceptions are addressed in Chapters 5, 6, 8.

processing. Another problem for the mainstream view on social cognition is posed by the relationship between mindreading and linguistic competence. ... We can certainly 'explain' the behaviour of others by using our complex and sophisticated mentalizing abilities. And we should add that the neural mechanisms underpinning such complex mentalizing abilities are far from being fully understood. Most of the time, though, we do not need to do this. We have a much more direct access to the inner world of others. Direct understanding does not require explanation. This particular dimension of social cognition is embodied, in that it mediates between the multimodal experiential knowledge of our own lived body and the way we experience others ... [the mirror neuron system] is involved in different aspects of social cognition like action and intention understanding and social communication. ... the premotor system is at the basis of different aspects of the faculty of language ... [Gallese offers] the 'neural exploitation hypothesis', according to which a single functional mechanism, embodied simulation, is probably at the basis of various and important aspects of social cognition. (Gallese 2007, pp.659,660)

Many studies regarding social cognition and competence address ideas about empathy, with more or less brain-centric models of how empathy is generated and expressed. Hurley's SCM shares Gallese's orientation toward simulation and inhibition as providing the corporeal grounding that informs interpretive and intentional actions. Our psychic and practical survival as social creatures is dependent on our abilities to interact responsively with others, creatively in the present, while drawing on accumulated interpretive skills that are encoded in our beings through cumulative shared experience. Empathy is a phenomenological concept, not a mechanism, a timbral experience the causes of which are diffused through many layers of the experiences of **being-in-the-world-with-others**. Empathy is understood in Hurley's and Gallese's work as being grounded in sub-personal level sensory-motor responsivity to others and the environment, as are the personal level expressions of empathy not only in the articulations and communications of experience, but also in what is understood as abstract reasoning about other's feelings and thoughts.

Empathy is deeply grounded in the experience of our lived-body, and it is this experience that enables us to directly recognize others, not as bodies endowed with a mind, but as *persons* like us. Actions, sensations, and emotions experienced by others become meaningful to us because we can *share* them with others. How can such a sharing of experiences be possible? We need to introduce a second level of description, one pertaining to the functional mechanism that enables such an experience to occur. This functional mechanism may be constituted by *simulation* ... By modelling a given process, our brain provides a *simulated representation* of the same process that can be used to produce it, on the one hand, and to decode it when performed by someone else, on the other. We suggest that these "as if" simulation mechanisms may subsume a wide range of processes as diverse as action perception and imitation – as simulation of the observed action, emotion perception – as

simulation of the perceived emotion, and mindreading. Simulation theory in fact holds that we understand others' thoughts by *pretending* to be in their "mental shoes," and by using our own mind/body as a model for the minds of others.

(Gallese 2002b, pp.35,36)

The word representation is often used in cognitive science writing about shared experience and meaning-making. 'Representation' has a range of associations and definitions in philosophy and other disciplines, and is also brought into the discussion of concepts about language and memory.¹³ In the context of the sensory-motor foundations of cognition, 'representations' are not necessarily conceived of as mental visual pictures or verbal articulations. They can be understood as matrices of experiential simulations (actions) incorporating past and present, own and others', and environmental potentialities. Those matrices are actions inclusive of all the interactive processes of being, and they include the psychophysical resonances of empathy.

In order to carry out experiments, cognitive science, behavioural psychology and neuroscience researchers locate particular configurations of those actions in particular bodily processes and actions. Often mind = brain, and the integrative function, the switching station as it were, comes to be seen as the motivator and location of experiencing and intentionality. Nonetheless, within the chosen contexts, the reciprocity in these fields of research produce valuable conceptions of 'how things work' that are useful in practical ways, as we have seen through Hurley's explanatory SCM and the contributions made to understanding the CPP in Chapter 1. Some of those practical studies and their applications are explored in 'Empathy: Its ultimate and proximate bases' (2002), in which Preston and de Waal offer their Perception-Action Model as explanatory of how perception of others' behaviours is cognated and actioned in the perceiver. They use the word *representation* in the explanation of their model; in this case the word appears to stand for neural processes that are stimulants for sub-personal simulations. Their article was criticised for attempting to integrate too many levels of functional being-in-the-world in trying to explain empathy, but they argue that reductive research and disciplinary specialisation generate incomplete representations of holistic multi-level processes. These excerpts present the range of perspectives and levels of description on which Preston and de Waal base their model, and address some of the problematic aspects of research narrowly focused within one discipline.

A Perception-Action Model of empathy[:] –*attended perception of the object's state automatically activates the subject's representations of the state, situation, and object, and that activation of these representations automatically primes or generates the*

¹³ Representationalism will be discussed referencing Rowlands and others in Chapter 4.

associated autonomic and somatic responses, unless inhibited (p.1). [this is] grounded in the theoretical idea ... that perception and action share a common code of representation in the brain (p.9). ... natural complex emotional situations require the activation of many complex factors, including episodic memories, autonomic sensation, and emotional valence. ... there is no one place in the brain where they exist (p.11). ... the most robust effects in empathy experiments can broadly be categorized as effects of familiarity/ similarity, past experience, learning (explicit and implicit), and cue salience.

The effects of familiarity, similarity, past experience, and learning are often addressed as separate variables due to the slightly different emphasis of each discipline. Learning, for example, is more relevant to developmental studies, because these studies focus on the role of rearing on individual differences. Past experience is more applicable to animal studies because of its role in determining a subject's response to an unconditioned stimulus. However, all of these effects result from the ability of the nervous system to create and refine representations through experience. ... The greater the familiarity or similarity, the richer the subject's representation of the object. A rich representation ... creates a more complex, elaborated, and accurate pattern of activity in the subject; this pattern is encoded with reference both to personal experience and experience with the object.

(Preston & de Waal 2002, pp.1,9,11,16)

Above and beyond the particular interpretations of and orientations toward experimentation, as well as varied perspectives on brain-mind-body functional definitions discussed above and in this chapter, a large number of studies point to:

- Ⓜ the integration of sensory-motor processes with every level of being
- Ⓜ embodied social interaction as central to learning and development
- Ⓜ sensory-motor responsivity and simulation as foundational for empathy, and empathy as broadly understood – beyond shared or reflected emotions and sensations – as informative for cognition
- Ⓜ cognition as an integrated expression of extended engagement, from the cellular to the creature level, and the understanding of creaturely cognition as socially and environmentally embedded.¹⁴

Francisco Varela is cognitive scientist who, through his multi-disciplinary multi-cultural orientation, articulates interconnections in ways that are extended and expressive of experiencing in an holistic field of inter- and intra-active engagement. Varela and Thompson present cognition as an enactive process in which embodied engagement is both determinate of and defined by our active presence in experience. They bring

¹⁴ Cognition and reasoning as holistically embodied multi-sensory integrative processes are addressed in Chapters 4, 5, and 7.

concept dualities like subject/object, inner/outer, and perception/action into an integrated field of embodied action.¹⁵

It is precisely this emphasis on mutual specification that enables us to negotiate a middle path between the Scylla of cognition as the recovery of a pre-given outer world (realism) and the Charybdis of cognition as the projection of a pre-given inner world (idealism). ... both take representation as their central notion: in the first case representation is used to recover what is outer; in the second case it is used to project what is inner. Our intention is to bypass entirely this logical geography of inner versus outer by studying cognition not as recovery or projection but as embodied action. ... By using the term *embodied* we mean ... first, that cognition depends upon the kinds of experience that come from having a body with various sensori-motor capacities, and second, that these individual sensori-motor capacities are themselves embedded in a more encompassing biological, psychological, and cultural context. ... the term *action* ... emphasize[s] once again that sensory and motor processes, perception and action, are fundamentally inseparable in lived cognition. ... In a nutshell, the enactive approach consists of two points: (1) perception consists in perceptually guided action and (2) cognitive structures emerge from the recurrent sensorimotor patterns that enable action to be perceptually guided. (Varela, Thompson, Rosch 1991, pp.172,173)

5. The Articulation of Experience in Language

Now we can resume the conversation with Susan Hurley, moving from cognition as a process that is embodied, extended and environmentally reciprocal to mindreading and the articulation of experience in language. The development of cognitive function has been tied to language acquisition in the philosophy of mind and other disciplines.¹⁶ Hurley explores possibilities about how language skills and propositional deliberation might be grounded in the subpersonal layers described by the SCM.

Do we understand what other people think (and mean to say) because we observe what they do out there and then articulate it through symbolic representations in our minds, which we then use to deliberate (through propositionising)? Or do we imitate, simulate, inhibit, and reference prior experience through subpersonal processes, articulating our sensory-motor response as an answer?

¹⁵ An comprehensive article on the shift in perspective from behaviourism to embodied cognition and the enactive approach: 'What is Consciousness (advanced level) – 'Theories of Consciousness in the Cognitive Sciences'(2015b), is presented on the McGill University website *The Brain From Top To Bottom*, available: http://thebrain.mcgill.ca/flash/a/a_12/a_12_p/a_12_p_con/a_12_p_con.html Thompson's and Varela's journal article 'Radical embodiment: neural dynamics and consciousness' (2002) considers the implications of the enactive view for the neuroscience of consciousness.

¹⁶ This topic is of significant relevance to understanding the holistic multi-level nature and expression of the CPP, and is addressed in many ways subsequent chapters.

I believe that Hurley would say that it is a dynamic mixture of both scenarios, a continuous multilevel (top-down and bottom-up) reciprocal causation process happening at different levels simultaneously, only aspects of which are propositionised through language. The creativity of flexible means-ends imitation that provides a foundation for understanding the dynamics of others' actions may correspond with the manipulation of symbols in the recombinant structure of language, and language resonates with real life situations in which words are taught and learned. There is commonality at the neural subpersonal level, in that mirror neurons are found in Broca's area of the brain which has been shown to be associated with language. Hurley makes these steps of connection from mirror systems and imitation to language development:

- 1) Ends/means flexibility may 'be an evolutionary precursor of arbitrary relations between symbols and referents.' Separating an action from a result frees it to be used in other contexts, or assigned meaning independent of particular function.
- 2) Mirror systems 'provide a common code for actions of self and other, and thus for language production and perception; by enabling intersubjective action understanding, mirror systems may be the basis for the intersubjective parity, or sharing of meaning, essential to language'.
- 3) 'The flexible recombinant structure of ends and means in imitation may be a precursor of recombinant grammatical structure in language ... The latter may result when creatures with recombinant imitative skills learn to pursue their goals by recombinant manipulation of external symbols.'
- 4) 'Finding recombinant units of action in streams of bodily movement has parallels with finding linguistic units (e.g., words) in continuous acoustic streams of speech'. The processes of mirroring and imitation, which include behaviour parsing and '[perceiving] underlying structures of intentions or causes in the surface flux of experience [parallel the processes] of syntactic parsing and the recombinant structure of language'.

(Hurley 2008a, p.7)

In later chapters of this thesis, I will offer ideas about meaning-making, articulation and communication through means other than word-based language, particularly in relation to arts practices and experiences, and the commonalities between them. Here, where we are discussing the neural and subpersonal bases of language, is an arts-based perspective on the interplay between mirror systems and many types of communicative expressions, as well as their holistic sensory-motor grounding from the neuroscientists Molnar-Szakacs and Overy:

The role of the human mirror neuron system, Broca's area in particular, in mediating the sensory-motor transformations underlying imitation is already well-established ... The success of music/speech therapy methods such as MIT [Melodic Intonation Therapy] might thus be due, at least in part, to the fact that their imitative elements involve a direct transfer of sensory information to a motor plan, leading to a strong recruitment and co-activation of brain regions involved in the perception and production of both music and language ... perception of action, language and music recruit shared neural resources, which appear to be located in brain regions comprising the human mirror neuron system. ... we propose that humans may comprehend all communicative signals, whether visual or auditory, linguistic or musical, in terms of their understanding of the motor action behind that signal, and furthermore, in terms of the intention behind that motor action. The expressive nature of any human action or vocalisation sends a signal of the intentional and emotional state of the executor, such that even footsteps can be correctly interpreted as conveying simple emotions (such as sad, happy, angry or stressed) ...

Thus, as a sentence or a musical phrase can be used to express an individual's semantic intention or emotional state, a listener can understand the intended expression of the sentence or melody, via the perceived 'motion' of the signal. Since the acoustic nature of music can convey pure, non-referential 'motion' in pitch-space and time, it can thereby convey complex and subtle qualities of human 'emotion', using varying complexities of structural hierarchy.

(Molnar-Szakacs, Overy 2006a, p.238)

Molnar-Szakacs and Overy articulate the correspondences and common sensory-motor roots between word-language and the communicative expression of meaning and emotions through movement and sound.

6. Summary of the SCM and Extensions to Chapter 3

In her research, analysis and writings, Susan Hurley moves from the most basic levels of creaturely engagement with the world to the complexities of social interactions and ethical deliberations. She does this without losing touch with 'the self' as an embodied being who develops in interdependent resonant engagement with others and the environment. Current research in cognitive and neuroscience regarding not only mirroring but also the interconnectivity of brain action and function supports this understanding. The later 20th century orientation toward understanding brain-mind processes through computational representation, and making leaps from there to understanding the nature of human engagements, reflects and supports a mindset with deep roots in Cartesian dualism and a mechanistic orientation to human processes. That mind-set is being increasingly challenged, not only in cognitive science but also in the

philosophy of mind.¹⁷ Susan Hurley makes a significant contribution to that shift through bringing together cognitive and social science, neuroscience and philosophy in her SCM and wider work.

Chapter 3 is focused on the correspondences between the Core Psychophysical Process and the SCM, and ways in which the SCM informs understanding of the actions of the CPP. Relevance to the development of a self-in-relationship, understandings about cognition and the nature of human engagement, and indications for responsivity in ethics as the practical interconnection of acts will be explored. Key areas are:

- inhibition from the corporeal level to social engagement,
- means – ends focus in developmental and learning processes
- the grounding of empathy and self-other distinction in imitation
- deliberation as an always embodied process, and reflective self-discipline
- communication as a multi-sensory inter-reflective process based in and reflective of sensory-motor experience.

¹⁷ The multi-level expression of the CPP presents a challenge to computational models of mind and dualistic conceptions of human being. Arguments against those constructs and traditions are presented in Chapters 4 and 5.

Endnote

i: Susan Hurley's Chart:

Table 2. *The shared circuits model: Layers and levels*

Inter-level relations	Levels	Layer 1	Layer 2	Layer 3	Layer 4	Layer 5
	Personal/ animal level:	Adaptive motor control, maintain target against disturbance	Instrumental action, self/world and action/perception distinctions	Social learning, behavior copying (movement priming, emulation, imitation); intersubjective empathy; automatic priming & copying & interference effects; chameleon effects	Deliberation about possible acts, understanding others' instrumental actions, actual/possible and self/other distinctions	Deliberation about others' possible acts, social reasoning about own and others' possible acts
enables	Subpersonal functional level: SHARED CIRCUITS MODEL	Comparator feedback-control system	Simulative prediction (from cause to effect), smooths & speeds instrumental control, shared information for perception and action	Mirroring, information for own and others' actions	Simulative prediction (from cause to effect) and/or simulative mirroring (from effect to cause), with monitored inhibition of output	Monitored simulation of input
implements	Subpersonal neural level:	Various neural comparator systems, exafference vs. reafference	Efference copy, neural systems for sensorimotor affordances (canonical neurons)	Neural mirror systems	Neural inhibitory and monitoring mechanisms	*? Neural imagery mechanisms

(Hurley 2008a, p. 20)

Chapter 3 - The CPP and The SCM

Having explored Hurley's construct (the SCM) in detail, in this chapter I will describe the correspondences between the SCM and the Core Psychophysical Process – with the educational methodology of the Alexander Technique as a practical example of the CPP in experience. Hurley's SCM describes a flow of developmental processes that underlie our functions as organisms with particular complex capacities and biological predispositions for creative problem-solving and communication. Those processes support our engagements with the world as social and discursive creatures. The Core Psychophysical Process that I put forward in this thesis is a cohesive conception of intra-active developmental and active processes that are reflected at every level of human engagement.

In Chapter One I quoted Hubbard's critique of Darwin's culturally embedded perspective on evolution and ways in which biological processes were seen to be determinant of behaviour and social norms. Attempting to define attributes of 'human nature' while having seen the evidence that one's socio-political-cultural grounding inevitably filters and colours any construct is problematic, but as has Hurley, I have stepped into that stream. In exploring the intersections of science, philosophy, sociology, education and cultural practices, and considering the possible implications for ethics, my intention (and Hurley's as I understand it) is *not* to offer a new form of biological determinism about behaviour. My own work is intensely experientially grounded and cross-disciplinary. The concepts presented as foundational can be observed within any discipline or human engagement, and can be identified in human development and social interactions across many cultures. These are ideas about human capacities, potentials, and learning trajectories, referencing observations through experience from a dynamic and holistic perspective that takes account of the embeddedness of the observer.

I will begin by looking more closely at the name I have chosen to use for the process that is central to my thesis – the Core Psychophysical Process. Anatomically, the 'Core' can be understood as the structural center of the body – the head and spine, including the pelvic structures – with the other skeletal structures connecting to and innervated from that core. 'Core' as a descriptor also reflects the intrinsic and foundational nature of the CPP, which is expressed through all of the developmental and interactive processes of human engagement. 'Process' in this context denotes a present flow of activity-with that is extended through the corporeal structure and systems, grounded in sensory-motor action, and reciprocally extended in engagement. A musical analogy would be the

way in which the vibration of a body generates timbral harmonic resonances within itself, while at the same time resonating responsively through current bodily and environmental interactions¹. I use the word 'Psychophysical' for it's common usage understanding—psychology and body, mind and body, but also to provide a wider non-dualistic understanding. A richer and historical grounding is available for the concept psyche (mind-soul) as the discursively articulated seat of responsive and reasoning processes, and the expression in engagement of the developed and cumulatively experiential self.

The Core Psychophysical Process is not only a foundational neuro-musculo-skeletal pattern of environmental responsivity (as expressed in Startle Reflex), but also a process of interactive balancing that supports deliberation and underlies intentionality. It is reflected at every level of complexity in human engagements with the world. There is now greater understanding in psychology, cognitive science and neuroscience that though people learn particular ways of 'consciously' attending to and articulating their experience,² that doesn't stop the psychophysically integrated visceral and sensori-motor processes of creaturely experience.

It is also more commonly recognised by twenty-first century cognitive science researchers, and philosophers referencing cognitive science, that sensori-motor processes ground empathy, reasoning, and emotional responsivity, and that all are integral in cognition³ and therefore central to the negotiations of ethical deliberation. In this chapter I will be filling out the picture of how the elements of the CPP are expressed through different levels and expressions of human function and engagement, and how Hurley's SCM and research in cognitive and neuro science support those understandings.

1. Key Commonalities Between the CPP and the SCM

Below is a summary of significant areas where Hurley's SCM, and complementary cognitive science and neuroscience research, coincide informatively with the CPP and processes like the Alexander Technique to which the CPP is central :

- Ø identifying sensory motor processes as foundational and integrated in cognition, and developmental and active processes of the whole self.

¹ Music as metaphor for human being in relationship is a central topic in Chapter 6.

² In Chapters 4, 5 & 6 embodiment and reasoning beyond word-language is explored.

³ These researchers (among others) reflect that perspective in their work in various ways: Damasio (2007), Damasio & Carvalho (2013), Gallese (2002), Maiese (2010), Molnar-Szakacs & Overy (2006b), Stapleton (2013).

- ∅ understanding that human flexibility with means-ends (process-goal) focus makes a profound difference to our cognitive, creative and interactive capacities.
- ∅ recognition of the important role that inhibition plays at every level of function, from the neural reflexive to reflective intentionality in action, and in the ethics of social engagement.
- ∅ grounding the self-other distinction in imitation and the capacity for simulation and inhibition at subpersonal level.
- ∅ recognition of empathy as a core aspect of psychosocial development that evolves first through sensory-motor interactions.
- ∅ common understanding that perception and action share resources at subpersonal levels, such that cognition is understood holistically⁴.
- ∅ finding the foundations of language development in subpersonal sensory-motor processes, means-ends mirroring and imitation, and inhibition.

These elements of human function have been explored in Chapters 1 and 2, and I will elaborate further by looking at some of the correspondences between Core Psychophysical processes and Hurley's developmental Layers 1 to 5.

2. Inhibition

In the CPP and Hurley's layered developmental schema, inhibition is key to functional and developmental processes. Inhibition is a stop action impulse and a process. At reflex level inhibitory efferent signals last milliseconds, whereas at the level of person to person cognitive interactions, intentional inhibition can be extensive, allowing for much longer deliberative processes including communal negotiations around ethical and socio-political issues. At the SCM's subpersonal level, inhibition allows complex responsive simulation and imitation, and makes possible the transition from undifferentiated copying and emulation to true imitation and self-other distinctions. Subpersonal processes here are not only a 'brain' matter but also a human-systemic extended psychophysical *imagining capacity*, enabled by a suspension of immediate action and a period of off-line embodied cognition. Inhibition in the CPP makes space for a learning cycle of deliberative subpersonal processes to support intentional action.

In Alexander Technique processes intentional 'conscious' inhibition interrupts startle reflexive and habitual reactions with the intention to allow for more effectively responsive improvisatory action.⁵ It is demonstrated through the Alexander Technique

⁴ This is explored in depth in Chapters 4 and 5 referencing Gendlin particularly.

⁵ This is demonstrated in musical processes –learning, playing, and performing as described in Chapters 1,5,&6.

that when the end/goal is the primary focus, then the psychophysical imagining is lessened and the current engagement is to an extent blocked from creative deliberation, the result being weighted toward repetition rather than learning.

3. Means and Ends

Hurley cites contemporary cognitive science researchers' observations (Rizzolatti, Tomasello, Meltzoff, and others) that humans, relative to other animals including other primates, have a distinctly complex ability and inclination to mix and match means and goals. This supports the development not only of complex skills but also the understanding of intentions and provides the grounding for abstract associations.⁶

True imitation involves something phylogenetically rare: the flexible interplay of copying ends and copying means; a given movement can be used for different ends and a given end pursued by various means ... This is something humans are distinctively good at. (Hurley 2008a, p.4)

Human children, who are in the business of learning skills and scaffolding meaning-making and social-communicative structures, prioritise means over goals imitation. Attention to actions is generative of social learning, as intersubjective mirroring of sensory-motor processes is about commonality of means. Goal focused emulation learning is object and environmentally oriented.

Tomasello, regarding chimpanzee emulation:

Perhaps, I reasoned, the observers are just watching the objects and learning something about them. It so happens that when I observe others manipulate objects I learn a lot about those objects and their affordances for my own actions – much more than when I observe the objects sitting idle. Thus, if we give naive chimpanzees a rock and a nut, they may not discover on their own how to crack the nut open. However, if they see another chimpanzee do it, they might learn from this observation that nuts can be opened, which creates a new possibility for them, and they might even learn something about the rock's role in the process. This is what I have called *emulation learning*. Although emulation learning is clearly a case of social learning – individuals learn things from others that they would not have learned on their own – it is not imitative learning in the sense that an organism is “learning to do an act from seeing it done.” ... *In emulation learning the organism learns new things, some of them quite complex; it is just that they are learning about the environment, not about behavior.* [italic emphasis added] (Tomasello 1998, p.704)

⁶ In 'Understanding and sharing intentions: The origins of cultural cognition' (2005), Tomasello et al. examine human children's 'species unique' development of capacities for shared intentionality, and propose ways in which the complex dynamics within shared actions, emotions and experiences, including human-specific means-goals focus flexibility, support human cognitive development.

These insights into human learning predispositions dovetail with Alexander's insight that focusing on ends tends to activate and reinforce habitual actions and beliefs and, at the reflex level, reactivity. However, attending to the process – Alexander's means-whereby – allows for holistically integrated and presently engaged creative functioning such that prior action patterns and not just goal achievement can be used to expand a creature's repertoire. Hurley makes the connection between the sharing of circuits for 'self and other' and 'action and perception'. *Means imitation orients one toward intersubjective sharing and understanding the intentions of actions; goal emulation is oriented toward definition and acquisition.* Alexander's methodology integrates subpersonal sensori-motor processes with intentional attentiveness to *means* toward a goal, with the background presumption that both perception of and achievement of the goal evolve in response to the experiential process. The teacher/student interactive learning processes of the Alexander Technique build on the subpersonal processes involved in imitation. Core Psychophysical Processes of perception, reaction, reflection, and choice (intention) are present at every level of human intra- and inter-action.

4. Self-Other and Perception-Action Dynamics

Hurley makes a connection between the sharing of circuits for 'self and other' and 'action and perception'.

Note the intimate relationship between the sharing of circuits for self and other and for action and perception: Layer 3's shared informational dynamics for intersubjectivity presupposes layer 2's shared informational dynamics for perception and action, which builds on layer 1's generic informational dynamics for sensorimotor control. SCM explicitly builds shared resources for self and other on those for action and perception. (Hurley 2008a, p.14)

An association is thus formed between neural processes that tend to cause movement and neural processes that enable perception of such movement. ... This bidirectionality, between processes for perceiving behavior and processes that tend to cause behavior, is an essential aspect of mirroring. (Hurley 2008b, p.764)

Afference (as perception) and intentional action (own and other's) produce snowflakes of sensorimotor associations (neurons that fire together wire together⁷) which are refined through that interaction. Interconnections from prior actions and perceptions are used in neural simulations, not only to instigate action, but also to reflect on sensory feedback and possible responses – 'reused to anticipate' (Hurley 2008b, p. 766).

Predictive simulations include habituated response patterns and creative reconfigurations of perception/action possibilities. This is Hurley's 'intrapersonal reuse',

⁷ (Hebb 1949)

which she describes as ‘the core generic sense of process-driven simulation’ (Hurley 2008b, p.760).

Current actions are always improvisatory responses, including off-line simulations and on-line interactive creative actions, as demonstrated in Alexander Technique experimental processes. Simulation, inhibition and improvisation are integral to the CPP, and happen in contemplation and interpersonal and environmental interactions, both at the level of undifferentiated We/I and with cognitive self-other distinction (developed through true imitation with means-ends flexibility plus inhibition).

5. Empathy and Psychosocial Development

Both Hurley’s analysis in the SCM and the multi-level expressions of the CPP demonstrate that emotions are grounded in sensory-motor processes. Feeling what someone else feels isn’t simply a ‘mental’ response, though language offers signifiers and the means to communicate such that abstraction from experience seems possible. Emotional cognition is a reasoning process, grounded in sensory-motor experience. Empathy, often viewed as an emotional ‘unreasoned’ response, is developed and expressed at subpersonal level through our responsive mirroring and complex imitative capacities along with simulation and inhibition. Empathy as the resonance of engagements between self-other-world, provides the foundations not only for the development of practical motor and psychophysical skills, but also for inter-personal social deliberation, communication and ethics.⁸

6. Cognition, Communication and Ethics

In grounding what have been described as mental processes in sensory-motor actions, Hughlings-Jackson, the SCM and the CPP suggest that cognition is an action of the whole self, a capacity developed through interactive engagement. Shared neural resources for perception and action, the globally integrative nature of brain functions, and preverbal developmental processes that involve structured, progressively more complex organisations of information and intra-interactions (self-other-world), all support the conclusion that verbal language, propositionising, and abstract reasoning are reflective of, built on and embedded in the embodied structuring of experience.

Communication happens first through sensory, kinaesthetic exchange. Though verbal language, because of its flexibility, temporal-linear structure, and seeming ability to fix meanings, is often the focus of exchange, it is not the only means being employed. I am

⁸ These ideas are considered in depth in Chapters 5, 7 and 8.

articulating my thoughts through these words, but I am also sitting here, typing and stopping to reference prior experience with conversations, articles, books, and people – the memories of which all include active expressive engagements beyond words. I look for, try to get the right feel for, the combination and order of words that express the conversation that I am having with you the reader through this writing.

Thoughts are generated in a field of experience that includes embodied (not just brained) simulations from memory and from present experience. It may be possible to use language in such a way that it seems to have no bodily or experiential resonance, but even a single number has resonant history of association and current ties to bodily sense. Try it. Think: **Number 7**. Can you say that no associations ‘come to mind’ as you consider it? Try this: **4 patients in the waiting room**, let’s consider the ethical prioritising of their care. You might act *as if* a concept has no experiential resonance, but in the ethical domain you must deny human responsivity and potentially responsibility in order to do so. Even if the abstraction is extreme – as in the use of numbers and mathematical equations, the human apprehension is coloured by a history of associations.⁹

7. The CPP Flow of Perception, Reaction, Reflection and Choice of Action, and Hurley’s Levels of Human Function

Hurley’s designation of three levels of human function, the *neural subpersonal*, *subpersonal*, and *person level* was explained in Chapter 2. She focused her layered developmental Shared Circuits Model at the *subpersonal* level, and to an extent explored how the more complex functions at *person level* might be grounded in *subpersonal* processes. The CPP is manifested at every level of human engagement; this can be illustrated by my analysis of the educative experimental methodologies of the Alexander Technique. They engage with Core Psychophysical Processes not only at Reflex level as a subpersonal level constant in the ebb and flow of corporeal engagement, but also in the expressions of inhibition, deliberation and intentionality in the complex creative, cognitive and social interactions of human beings at the person level – thereby using the top-down possibilities to the maximum. In my practice of the Alexander Technique, the reflexive expression of the CPP (Startle Pattern, as a neural subpersonal process), and the ebb and flow of expansion and contraction through the core at subpersonal level are attended to indirectly through person level skills of holistic attentiveness, intentional inhibition, stimulative metaphor, and reflective reasoning. Through interactions between teacher and student, subpersonal processes of mirroring, imitation, and

⁹ Embodied conceptualising is explored in Chapter 5.

simulation, along with inhibition, contribute to the improvisatory, deliberative experimentation which supports evolving experiential learning. That flow of interactive sensory-motor learning is akin to the developmental processes that Hurley describes through her SCM. The practice of the Alexander Technique actively and intentionally engages manifestations of the CPP at all three levels. This can also be clearly seen and understood in the range of experiences in music and other performing arts disciplines.

I have described a flow of processes as characteristic of the CPP – perception, reaction, reflection and choice of action, and exploring those concepts and how they connect with Hurley’s three levels (and the SCM) will enrich understanding of how the Core Psychophysical Process is expressed in the human life-world.

Perception:

Responsivity is generated by contact with the world and by our own simulative processes in a context (brain/body plus world) where there are traces of past experience and anticipations of the future. When perception is articulated to attention, the multi-sensory nature of experience is evident. Holistically embodied experiencing is integral to and informative in reasoning and conceptual thought.¹⁰

- **at neural subpersonal** – Perception is an impingement of experience within extended being, a process of balancing for functional equilibrium of neuronal responsiveness. Afference, efference, reafference, and reefference are global not linear processes. Keep in mind that neurons are distributed throughout the body, and sensory-motor processes are integral in brain function at every level.

JHJ’s view is that, “higher mental functions” are “continually organising through life” (1884a, 555) because they are “the climax of nervous evolution . . . the least organised, the most complex, and the most voluntary.” Here “least organised” means least automatic and thereby least susceptible to linear chains of causal explanation and prediction, and least like our primitive reflexes, impulses, and stereotyped reactions. Indeed, our ability to inhibit, suppress, and control these lower-order influences with higher-order intentions, are what make us human, moral, beings. JHJ’s term re-re-representation implies that new sources of information are used to reshape neural circuits and associations so that the highest integrative functions “represent, or coordinate, movements of all parts of the body in the most special and complex combinations”

(Gillett & Franz 2014, p.4)

¹⁰ These concepts are analysed and expanded in Chapters 4 & 5.

- **at subpersonal level** – Perception is a multi-sensory interactive process, a creative interplay of memory, habit, and present experience. We see in Hurley's SCM that perception is an active interpretive receptiveness to experience, (to 'information' if you will). It is not just stimuli from outside to inside, but an holistic pooling of memory resonances, mirroring, imitation, and simulations of own and others actions. Experiments in the Alexander Technique demonstrate that the interpretation of experience (an aspect of perception) is coloured by expectation, but, as in SCM at Layers 3, 4 and 5, the pooling of the resources of present and past engagements at subpersonal level provides means for integrative reflection and creative situationally responsive intentional action.
- **at person level** – The experiences of perception are articulated for reflective attention in a variety of ways in order to define relationships-with and facilitate intentional action. Perception, which is not articulated to attention exclusively through language or as a linear process, provides experiential content for propositionising – for deliberation about possible interactions and self – other dynamics.

Reaction:

Reactive response in CPP terms is both inhibitory and informative. It is a functional stop and it is also a message in and of itself – there is a reason to stop; pay attention. It is a stimulus to resonances (memories and habits of action and inhibition) as well as making time for real-time mirroring and Hurley's offline simulation (without overt action) – the sensory-motor deliberation that supports person level propositionising.

- **at neural subpersonal level** – In neurons in the brain, reactive inhibition and excitation interact continually to maintain equilibrium which generates a readiness field with room to respond. Inhibition is involved in the oscillation of membrane potentials of groups of neurons, creating coherence of function and organising a rhythmic flow across cortical areas to integrate information as action (Issacson & Scanziani, 2011). The Core Psychophysical Process can be seen at the neural subpersonal level in the short route 111/emergency Amygdala response to danger or emergencies. Startle pattern provides the immediate neuro-musculo-skeletal and visceral reaction of withdrawal of energy into the core and resulting inhibition of overt action that creates space for assessment and deliberation at subpersonal and person levels. Reflex reactions/actions of that type are distributed throughout the

body (as described in Chapter 1) and are informative in the integrated processes of perception and deliberation.

- **at subpersonal level** – inhibition as a reactive/responsive holding back of overt action allows mirroring and simulations to remain ‘offline’, undetectable to others, consuming minimal energy, and providing flexibility for the choice of overt responsive action. Hurley’s SCM details the functions and values of subpersonal inhibition for: reasoning (propositionising) regarding affordances, own and others’ means and goals, choice of action, self-other identification and empathy. These elements ground the development of social being.
- **at person level** – Intentional inhibition is a skill developed in part through reflexive responses to unpleasant experiences (touch hot burner, withdrawal reflex) and through engagement in social processes. Multi-level inhibitory skills evolve through continual propositionising and experimentation. Intentional inhibition of action allows for deliberative creative processes, such as those that are intentionally articulated in Alexander’s methodology and learning processes, and as are exemplified in music and other artistic endeavours. Inhibition allows the cumulative responsivity and reasoning of the organism to be brought to the level of articulation, such that intentional action can be propositionised about and chosen. Person level inhibition is a cognitive act, a learned skill that supports ethical social deliberation.

Reflection:

Reflection is the cumulative reasoning of the organism such that intentional action can be propositionised about and chosen. Here and in Chapter 5 I expand the scope of associations for the concept beyond the visual, linguistic, propositional limitations that are common. Propositionising is a basic deliberative process generally seen to be focused through language, but it is grounded in sensory-motor processes reflecting attention to affordances, mirroring, simulation, and memory schemas.¹¹

- **at the neural subpersonal level** – Reflection is manifested in the reflexive monitoring of neuronal excitation and inhibition in order to maintain responsive equilibrium. For the processes of reflection in Startle pattern, the thalamus routes stimuli through the sensory cortex (integrated reciprocally with other areas of the cerebrum) which then feeds information to the hippocampus and amgdala to moderate the efferent signals of the short route stress response (thebrain.mcgill.ca

¹¹ In Chapter 5 there is reference to and critique of the concept ‘body schema’.

2015a). Reflection involves a summing up of afference-efference neural responses in current and habitual simulations, which include reciprocal messaging throughout the whole organism in resonant engagement with others and the environment. Reflex actions like spinal reflexes can function at the extremities through neuronal interactions as reflex loops that don't go 'through the brain' (Chapter 1). They are nonetheless responsive to an holistic impulse toward equilibrium in whole-self integral functioning. In research that Hurley cites, mirror and canonical neurons are key to the capacity for including others' actions to deliberately predict and assess situations, intentions and appropriate actions in context.

- **at subpersonal level** – Hurley's SCM shows the development of increasing complexity in deliberative processes through her 5 Layers. At Layer 1 monitoring and adjustment of impulses responsive to feedback results is deliberation at the most basic level – simple assessment relative to a comparator. Layer 2 adds more elements with the addition of predictive simulations of output-input loops. Layer 3 is where own simulations and undifferentiated self-other emulation and mirroring provide neural and diffused sensori-motor try-outs (simulations) that enrich and extend the pool of information for reflective deliberation. Layer 4 deliberation is informed by mirroring goal attention, predictive simulations of means, and the monitored inhibition of output – own and others' – which informs self-other distinctions. At Layer 5, adding focus on the assessment of input through simulation brings all directions of capacity into play. Propositioning here is reflective, active, and grounded in sensori-motor processes. Reflection at subpersonal level in the Alexander Technique is experienced during interactions with a teacher through the imitative and simulative processes described by Hurley, and through the attentive and experimental approach to interactions with persons, the environment and objects of engagement (pianos, 'smartphones', shovels, etc.).
- **at person level** – The processes described by Hurley in her SCM are foundational to person level deliberation. The Alexander Technique trains attentiveness to the subpersonal reflexive balancing responsivity in the core (reactive/active contraction and expansion), and assessment of the effects of person level intention on that process. Reflection at this level is actioned in a field of intentional and subpersonal monitoring of experience. Propositions for action, often as metaphor, provide a stimulus for action, and both the result of overt action and reflexive response at subpersonal level provide feedback as to the effectiveness of the proposition. That feedback can be articulated to attention in many ways that include sensory-motor awareness, conceptual description, and interactive feedback with others and the

environment. Reflection, or deliberation, is intentionally integrative of all levels. The methodology of the Alexander Technique is therefore informative about the interplay of the Western dichotomies of *conscious* and *unconscious*, *rational* and *intuitive*, and *intentional* and *automatic* processes.

Choice:

The organising impulse for organisms at every level is movement. Movement toward interactive balancing, which is not stasis, a state that does not actually exist even for rocks. In human terms this can be seen in the flux field of excitation and inhibition at neuronal level, inquisitive and responsive processes at subpersonal level, and the sophisticated integrative deliberative acts of person level interactions. Choice of action, intentional action, can be understood in a general way as a shift in direction in response to reflection, and an impulse toward responsive equilibrium.

- **at the neural subpersonal level** – The impulses toward balance are mediated by the timing of excitation and inhibition. As in CPP, inhibition creates space for assessment/reflection and a shift of ‘intention’. From Issacson and Scanziani:

The timing of sensory-evoked inhibition relative to excitation is another factor that could sharpen the tuning of cortical neurons to preferred stimuli. As mentioned above, studies in auditory, somatosensory, and visual cortex indicate that, in response to impulse like stimuli, inhibition follows excitatory input with a brief (few ms) temporal delay. This slight lag between excitation and inhibition enforces a brief window of opportunity for the integration of synaptic excitation and subsequent spike output, thus making principal cells precise coincidence detectors of afferent input. Some experimental observations suggest that the relative timing of excitatory and inhibitory synaptic input contributes to stimulus-selective firing.... Thus, *stimulus selectivity* [my italics] in the cortex can emerge from a temporal shift in the timing of excitation relative to inhibition. (2011, p.237)

In relation to processes in her SCM, Hurley references neuronal action as a field of comparator systems with monitoring and inhibition mechanisms that inform and support intentional acts of engagement with others and the environment. The integration of sensory-motor processing with ‘higher levels’ of cognitive function, along with the engagement of neural mirror and canonical systems in self-other-world interactions, support the deliberations that lead to intentional action. At the cumulatively complex Layer 5, language for communication and as a structure for abstract reasoning is plausibly grounded in imitation, as mirror neurons are found, among other sites, in Broca’s area which is associated with language.

- **at subpersonal level** – Choice is a directive, continually present element in the stream of engagement. In the SCM, the sophistication and complexity of intentionality evolves through the 5 Layers: from simple comparator feedback control monitoring including simulative prediction, through multi-directional predictive simulations combined with action and perception, enriched by mirroring and eventually true imitation, leading to self/other identification and complex means-goal deliberation. At Layer 5 in the SCM, Hurley suggests that multi-directional flexibility of means-ends imitation grounds representation and the manipulation of symbols in language development, and facilitates strategic deliberation leading to choice of intentional own and communal actions, and intentional cooperation and collaboration. This view is also supported by the work of Tomasello (2005 & 2014).

Choice works in several directions in Alexander Technique experimentation, and the same applies to the learning processes in music. The choice to inhibit action in response to a particular goal orientation, by attending to means, allows time for offline subpersonal processes to generate more options. Options are inclusive of whole brain, whole self, realtime perceptions and presence-in-experience. The choice of intentional action that results is an improvisatory expression of those embodied extended deliberations (see Chapter 6). Monitoring and feedback allows self-adjustment not only at subpersonal level but also concurrently in the flow of consciously directed expressive action.

- **at person level** – Intentional inhibition, learned and cultivated through experiences in relationships and skill development, generates the capacity to exercise reflective self-discipline in choosing actions. Practical and social skills demand this.¹² The training for conscious inhibition, and extending and refining the capacity for deliberation, supports responsive and survival enhancing intentional action. These are basic factors in children's psychosocial maturing processes and intrinsic to the development of Aristotle's 'second nature'.

Person level decisions are based in subpersonal embodied reasoning. In engaging with multi-level expressions of the CPP in learning paradigms, the Alexander Technique demonstrates that reasoning is holistically referenced and embodied, not just linguistically based or a matter of linear propositioning. Choice at person level, and the deliberations that support it, may be articulated and communicated

¹² The development and importance of reflective self-discipline is considered in several chapters, particularly in relation to the phenomenology of arts processes.

through language and ‘abstraction’, but the stuff of reflection, the content, is experience.

Experience is concurrent with re-presented sensory-motor processes in a depth of field that actively intermingles subpersonal and personal arrays. Habit is not automaticity, it is a choice, which reflects a particular configuration of concurrent experiences. That configuration includes monitored simulations, means/ends possibilities, acquired skills, and the simulations of memory and habit, all intermingling in the field of engagement to provide the substance of an improvisatory decision for action. The Alexander Technique demonstrates that there is always the possibility of acting creatively in the moment of choosing action.

Unpacking expressions of the CPP at different levels of function is like opening up a Matryoshka Doll – the same design is seen at each manifestation of the pattern. I have elaborated elements of the CPP within Hurley’s neural subpersonal, subpersonal, and person levels. Hurley’s SCM enriches understandings of the embodied grounding of the Core Psychophysical Process that I have identified. Because the Alexander Technique works explicitly and intentionally with the intersections of reflex level responsivity and other levels of expression of the elements of the CPP, it shows how the CPP is integral at every level of function. In Chapter 4, I carry through these ideas of the integration of processes throughout all levels of being and the interactive dynamics of self-other-world engagement to challenge Cartesian dualisms, representationalism, and computational theories of mind. I explore externalism, the philosophy of being inspired by quantum physics, and understandings of cognition as embodied and extended.

Chapter 4 - Dualisms versus Cognition as Embodied

These days there is a real trend across many disciplines to look for correlations between scientifically determined biological functions and behaviour – in this context behaviour is defined very broadly as including valuing, thinking, desiring, learning, robbing banks, choosing breakfast cereals, and so on. That has been going on for quite a while, and reflects the desire to be able to explain, predict, repair, control, and manipulate behaviour and ‘mind-body’ processes through discoveries about our biological structure and nature. The fascination with brain function is the most recent trend, based on the idea that it all must get processed and organised in the head – it’s neuro-everything these days.

I started this project with the idea that the Alexander Technique and the Arts (music in particular), and the fundamental processes I had identified in my work in those disciplines, had something to contribute to ethics – ethics by Watsuji Tetsuro’s definition, *viz.* – the practical interconnection of acts. The project also had something to do with the ways in which our biological natures and processes are integral to our meaning-making and actions in the world. And my belief that it is in our nature as human beings to be social, and to have the capacity to be socially responsive and responsible – even in the very wide sense that we are social creatures among others, and in and of our environment. This can be seen as foundational, right from our cooperative biological evolution as eukaryotes¹. It can also be observed in the learning processes of growth and development in humans (as explored in previous chapters), in many other creatures, and more widely in ecological systems.

But as soon as we start talking about ‘the nature of’ and how and why things are, and whether and how we know things, we get into what are traditionally the realms of philosophy. For a long time philosophy has been shaped by many variants of Cartesian dualism, and so has science. Philosophy has been stuck in the head, and dominantly focused and defined through the visual sense and verbal language, to the point that representationalism and propositional language arguments have pulled people’s attention away from the obvious evidence of their embodied experience. There are notable exceptions – e.g. Wittgenstein – but the pervasive influence of various forms of dualism in philosophy shaped perspectives in the relatively new disciplines of psychology, cognitive science and neuroscience.

¹ Other writing on this topic and related ideas can be found in: Tomasello, M. (2014) *A Natural History of Human Thinking*; Margulis, L. (2001) ‘The Conscious Cell’, *Annals of the New York Academy of Sciences*, 929(1), 55-70.

1. Dualism in Philosophy, Psychology, and Cognitive Neuroscience

Even though 'embodiment' is a fairly common theme in those disciplines, the Cartesian split is still embedded in language, and in unattended-to underlying assumptions about the nature of experience. From a dualistic perspective, 'I' might be identified as a mind sitting in a brain peering out from behind the eyes. These days the brain often gets the role of central-controller, with or without a corporeally generated or walk-in mind/soul. But most often the brain itself, as an organic thing, has replaced the homunculus, with 'the body' still in the role of directed mechanism. This view is attractive to many researchers because, if true, it expands the possibilities for scientific experimentation to give us the answers to human motivations and actions. And also to potentially control human 'mental' functions and corresponding actions by conditioning, or by chemical and electrical mechanical effects in neural circuits – more effectively than we do already.

The materialist version of Cartesian dualism was epitomised in the 20th century by behaviourism, which actually dispensed with 'mind' altogether and conceptualised humans as sophisticated biological reaction mechanisms, with the brain as a processor – switching station. In doing so behaviourism rides on a linear computational idea of cognition, and is stuck in the input-output 'cognitive sandwich' model of active engagement with the world. Behaviorism valorises reactivity as the sole *motivation* of human action. There is also a fairly narrow economic idea of stimulus/response, reward/punish at the heart of the model so that the idea of intrinsically flowing behaviour as our natural mode of being is lost. I disagree with the behaviourist model, based on my many years of experimental observation through the Alexander Technique².

Psychology, cognitive science and neuroscience are now, and have been through the twentieth century, influential not only in the socio-political realms and ethics, but also in the recently designated field of bioethics and in 'feed-back loops' with philosophy. But recently ideas about embodied cognition, echoing Hughlings Jackson's insights that sensori-motor processes are foundational and integrated at every level of function including the cognitive, are influencing cognitive science and neuroscience. I am making a case in this thesis that our sensory-motor experiences are intrinsic in the flow³ of perceptions, reasonings and actions. Susan Hurley suggests that afference and efference

² My Master's thesis, *Reflex, Habit and Learning* (2001), critiques behaviourism from the perspective and experimental insights developed in Alexander Technique methodology and practice. Gillett and McMillan, in *Consciousness and Intentionality* (2001b), critique behaviourist conceptions of mind and intentionality.

³ Csikszentmihalyi's studies of the focused awareness in action that supports the fluent integration of skills and responsive engagement led to his development of the concept of 'flow'. Both the foundations and concept are presented in his book, *Flow: the psychology of optimal experience* (1990).

are mutually entangled and cognitive sandwiches are passé, as even when focusing at the 'level of physiology,' function is holistically integrated rather than divided into layers of perception, cognition and actions. In other words, 'body' and 'mind' are not separable entities, and brain-centric thinking oversimplifies the complexity of physiology and the dynamic interconnectivity of functional being-in-the-world.

The tradition of reductionism in scientific experimental methodologies and the isolation of 'scientific' disciplines from the arts and humanities perpetuate economic, mechanistic and diminished conceptions of humanness. Minimising variables to generate predictability in a laboratory, and research extrapolating function from dysfunction, reinforce a cultural mindset that disconnects the human organism from its internal flow and extended entanglement with an environmental context. It is true that excluding things from our attention that are nonetheless happening can be practical. I think of it as blinkering. By narrowing our attention, we are able to focus in great detail on particular aspects of some things. Scientific experiments and rational arguments are mostly like that, in that as many factors as possible need to be controlled for or excluded, in order to get a predictable and repeatable result. Actual human experience is far more complex. Perhaps focusing on proscribed mechanisms and the body as a machine subject to the will of a 'mind'—yours or mine—reflects a desire to be able to assert predictable control over processes that are fundamentally holistic and improvisatory. That end undermines embodied experiential understandings of human life processes.

Aristotle, along with the Hippocratics, realised that the brain was the seat of those diseases which affected human powers of sensibility, movement, and intellect, a position that has become the philosophical view that the mind (or better, *psyche*) is a complex of cognitive techniques structured by meaning that, if deployed adequately, adapt the individual to the human life-world. Neuroscience is often regarded as the "base science" as we try to understand the physical and social or interpersonal influences on psychological disorders and the physicalist assumption (that the mind is a way of describing brain function) carries with it a theoretical framework of mechanism and antecedent causes following Pavlov, Hebb, and Watson. ... The alternative seems to be that there is "mind stuff" or "a soul", an entity with attributes not realised in the brain, inside a human being. There is, however, a kind of naturalism that locates human beings in a world of meaning (structured by culture, rituals, and symbols) so that the psyche is a set of functions engaging that world of meaning with the trajectory of the situated embodied being in the actual world. That is not dualism – the belief that there are two different kinds of stuff in the world (mind stuff and physical stuff) -but neither is it physicalism because it eschews the philosophical view that the basic stuff of reality can adequately be described by the language of core natural sciences like physics, chemistry, and physiology. It regards patterns discerned in the biological, social and moral sciences as equally valid ways

of describing and explaining what goes on in the world (particularly in relation to human thought and action). (Gillett 2009b, p.1)

In some quarters, the recent bringing together of branches of science – biology, physics, ecology, and ‘social’ sciences – with feminist and embodied philosophy and practical ethics is breaking down Newtonian and Cartesian ways of structuring thought about cognition, substance and reality. Cross-disciplinary researcher-writers such as Grant Gillett, Mark Rowlands, Karen Barad, Francisco Varela, Evan Thompson, Alva Noë, and Eugene Gendlin, among others, offer understandings that the processes of being can be expressed in ways other than and beyond the dualist conceptual boundaries of body/mind and person/environment⁴. I will be referencing some of their ideas here in relationship to the CPP.

2. Alexander and Holistic Logic

This trend is not only contemporary, as F.M. Alexander made a profoundly anti-Cartesian move in his own discoveries and practice in the late 1900s. He started his experimentation with a quite mechanistic attitude, thinking that by exercising a willful mind-over-body rationality, with sensations as predictable fixed feedback controls, he could change his postural bad habits and make his body work properly. It was only the futility of his efforts that caused a shift of perspective, as after finally giving up his goal-oriented attempts, he realised that by intending *not* to act (‘accidentally’ accessing inhibitory capacity at all levels through conscious intention) his attention was opened to a range of sensory-motor insights and process-oriented improvisation that had been completely obscured. Some of the language he later used, such as ‘constructive conscious control’ reflected the era in which he lived, but what he *did*, how he expressed his theories in the ways he worked and taught, would be described differently in the contemporary context. Using current terminology, one can describe Alexander’s ‘conscious control’ as attentive presence in responsivity that allows an holistic intra-active improvisation to generate novel insights and new action procedures.

In my practice of the Alexander Technique and other contexts such as arts disciplines, I found that the use of metaphors as a focus of attention, as a kind of holistic propositioning, stimulates multi-level processing. This provides a shift of structural and conceptual equilibrium that is informative beyond, and reciprocally back to, the level of articulated attention, as it incorporates all levels of being. It accesses a logic

⁴ Some texts of interest on the above issues by some these authors are: Noë, A. (2012) *Varieties of Presence*; Thompson, E., Stapleton, M. (2009) ‘Making Sense of Sense-Making: Reflections on Enactive and Extended Mind Theories’; and Gillett, G., (2001a) ‘Free Will and Events in the Brain’.

generated from the ground up as it were, from sensory-motor and reflexive processes integrated with memories of skills and experience and orientations of self that are environmental, social and conceptual. That holistic logic is often called intuition⁵.

In Chapter 3 with reference to Hurley's designations of neural subpersonal, subpersonal, and person level, I explored ways in which the Core Psychophysical Process is expressed throughout all levels of human engagement. Because it isn't possible from a dualist conception of human experience to understand how the CPP is integrated at all levels, I will present arguments here that challenge dualism, as well as some of the ideas about cognition and the nature of being that are based in a variety of dualistic constructs: mind/body, subject/object, self/other, conscious/unconscious, person/world. In this and other chapters, through referencing multi-level aspects and expressions of the CPP, I will show how non-dualistic understandings 'make sense' of experience.

3. Perception and Action

In Chapters 2 and 3 I referenced Hurley's challenge to the 'cognitive sandwich' construct. This is the idea that perception and action are separated by a cognitive representational layer—cognition as the mediator mind that defines what's out-there and decides what to do about it from in-here. I have offered alternate ideas of human engagement with the world based in understandings that: the neural resources for perception and action are shared, we experience the world as a multi-sensory holism, and our engagement with the world involves an uncountable number of simultaneous intra- and inter-actions. It then doesn't make sense to imagine the process of perception as a linear out-to-in process wherein bits of sensory input enter the organism and are parsed as re-presentations the brain. In that scenario, presumably the thought object-constructs get re-integrated, as motivation, into the sensory-motor pool of action. It doesn't make temporal sense either (which the real workings of the mind rather than the ideal abstractions from our patterns of activity have to do), as a range of environmental interactive responsivity does not 'go through the brain'. Spinal reflexes are an example of direct action at the extremities, and the sub-cortical short route 111 amygdala expression of startle reflex is not understood to involve 'cognitive level' assessment (thebrain.mcgill.ca 2015). The processes of the CPP happen concurrently at different levels of humanness; it is the coordinations of the organism within relationships that generate actions – including cognition, which is an holistically embodied action.

⁵ Intuition is addressed in a variety of ways in subsequent chapters, particularly in my expansions of ideas about metaphors, embodied reasoning, holistically integrative meaning-making, and metaphors for social being and embodiment from the arts in Chapters 5,6, and 8.

The commonly understood concept of perception as a reaction to external stimuli doesn't address the whole of the psychophysical dynamic of self-environment experiencing. The philosopher Eugene Gendlin tackles the confusion about the coordinations of self and the shared and communicated about environment by locating concepts of perception in action.

Perception involves a split between a *here* and a *there*. We sense here what is over there. Perception involves an *inside* and an *outside*; we sense in here in the body what is out there, outside, 'external' to us. ... I will show that this here-there 'perception' is not a body's actual perception. It is an already analysed cognitive kind of 'perception'. Originally perception does not just hang there like a picture floating alone. It develops as part of a behaviour sequence. It need not be taken as the here-there picture, which gives rise to the body/environment gap and the space-filling entities in our science. ... If 'perception' is defined only as the present organ intakes, then the behaviour possibilities have to be considered 'interpretation', something 'only internal', therefore 'subjective'. But behaviour possibilities are not subjective. The space of behaviour possibilities is environmental interaction.

(Gendlin 2012a, pp.143,144,156)

The feed-back and feed-forward active/interpretive dynamics in Hurley's SCM Layers 4 and 5 involve simultaneous multi-level sensory-motor based responsive, deliberative, and intentional processes. Her model demonstrates perception as fluently integrated within self-other-world engagement. Gendlin makes a distinction between 'perception' as the articulation of experience to attention, and 'a body's actual perception' as the holistically resonant responsivity of being. In Chapter 3, I offered interpretations of the concept 'perception' (as an element of the CPP) at neural subpersonal, subpersonal, and personal levels. Gendlin's bodily perception corresponds to interpretations at:

- Ⓔ the neural subpersonal level – perception is an impingement of experience within extended being, a process of balancing for functional equilibrium of neuronal responsiveness.
- Ⓔ the subpersonal level – perceiving is not just stimuli from outside to inside, but an holistic pooling of memory resonances, mirroring, imitation, and simulations of own and others actions.
- Ⓔ the personal level –the articulation of experience to attention encompasses embodied meaning-making at all levels, and attention is understood broadly, not a seemingly limited focus on a defined representational 'object' as it were, but holistically inclusive of every level.

In all cases, and consistent with Gendlin's explanation, perception is an action-with, not a reaction-to, not simply 'organ intakes'.

The integration of self-world-environment in cognition, and experiencing and meaning-making as holistically embodied actions of human beings-within-the-world expressed above, resonate with Rowlands' exposition of ideas about content and vehicle externalism. There are also commonalities with Gendlin and Rowland in the work of Varela and Thompson who, in their writing about the 'enactive process' and 'enactive cognitive science', assert that 'that the processes crucial for consciousness cut across brain-body-world divisions, rather than being brain-bound neural events' (Thompson & Varela 2001, p.418). I bring Rowland's ideas together in this chapter with Noë's anti-Cartesian take on brain-centricity and 'extended mind', and Barad's perspective from quantum physics that 'subject' and 'object' are Cartesian/early phenomenological constructions of what are actually intra-actions within phenomena. I will again ground my own and others' arguments against dualistic ideas of human being and agency in examples from experience, including Alexander Technique based processes, and references to the elements of the CPP. The common basis of understanding is that though we may be autopoietic self-organising creatures, we are not, and our thoughts are not, existent as separable from our experiencing of being-in-the-world. Though through our embodied experience in relationships with others in the world, we build a ideal and shared range of constructed concepts from which objects and events can be 'identified', communicated about and pre-planned for the purpose of collaboration, cognition is not bounded by, or isolated in the brain as, linguistic representation.

4. Variations of Cartesian Dualism and Its Origins in Atomism and Mechanism

I will briefly explore a few of the concepts that underlie a conditioned intuition that there are separate mind and body things. Both Rowlands and Barad identify the application of mechanical principles to the 'physical' world, and the atomism of scientific methodologies as important in the construction of dualistic divisions, not only within a human being, but also between self and world. Rowlands' analysis is clarifying; I have made some text bold for emphasis.

Descartes's dualism and his internalism have, arguably, the same root: the rise of mechanism associated with the scientific revolution. This revolution reintroduced the classical concept of the atom in somewhat new attire as an essentially mathematical entity whose primary qualities could be precisely quantified as modes or aspects of Euclidean space. Macroscopic bodies were composed of atoms ... **Atomism is, then, mechanistic** in the sense that it reduces all causal transactions to the translation, from point to point, of elementary particles, and **regards the behaviour of any macroscopic body as explicable in terms of the atoms that comprise it.** ... Descartes's dualism stems ... from his acceptance of mechanism. The physical world, for Descartes, is governed by purely mechanical principles. He was, however, unable to conceive of how such principles could be extended to the

thinking activities constitutive of the human mind. ... minds, for Descartes, are essentially thinking things and, as such, governed by principles of reason. But such principles, Descartes thought, are distinct from, and not reducible to, principles of mechanical combination and association. Rationality, for Descartes, cannot be mechanized. Each mind is thus a small corner of a foreign field, inherently non-mechanical, hence inherently non-physical. Descartes's dualism, in this way, stemmed quite directly from his mechanism.

Of equal significance ... is the connection between mechanism and internalism. **Mechanistic atomism is, we might say, methodologically individualist. A composite body is ontologically reducible to its simple constituents. And the behaviour of a composite body is reducible to the local motions of its constituents. Thus, if we want to explain the behaviour of a macroscopic body, we need focus only on local occurrences undergone by its parts.** This methodological individualism would also have some purchase on the explanation of the behaviour of human beings since we are also, in part, physical. ... A mind, for Descartes, is essentially a psychic atom or *monad*. And minds are self-contained in a way analogous to that in which atoms are self-contained. Each mind is a discrete substance insulated within an alien material cladding. Just like any other atom, the mind could interact with the physical atoms of the body. **But crucially, and again just like any other atom, the essential nature of any mind was not in any way constituted or changed by this interaction. The rational nature of the mind is taken as an independent given and its interaction with other atoms is extrinsic to this nature.** The legacy of this conception of the mind, and the mechanistic and individualistic conception of explanation that underwrites it, are very much with us today.

What emerges is the view of the mind as essentially an *interiority*. Minds are located inside individuals that have them, and the existence and essential nature of minds does not in any way depend on factors external to the individuals that have them ... it is Cartesian internalism ... rather than the officially exorcized Cartesian dualism. ... Cartesian internalism and Cartesian dualism are logically independent views in the sense that it is possible to be an internalist without being a dualist. Most present-day internalists are not dualists; they are materialists. ... The most obvious form of Cartesian materialism is what is known as the *mind-brain identity theory*. This, roughly, is the view that the mind is the brain. Slightly less roughly, it is the view that mental events, states and processes are identical with brain events, states and processes. (Rowlands 2003, pp.18-20)

Rowlands offers content and vehicle externalism as alternatives to Cartesian dualism. Content externalism has to do with thoughts about things, which could be understood as representations of, or summary configurations of experiencing that are articulated to attention. Vehicle externalism has to do with the *process of* thinking about or knowing about things. Both are intra-inter-active interdependent engagements with the world. Externalism acknowledges that to experience some thing is an event, and is dependant

on the qualities in the existence of the affordance(s), such that those qualities are accessible to our psychophysical engagement. It is an Aristotelian perspective at heart and if one merely added a bit of dynamic quasi-stability one would have a contemporary form of neo-Aristotelianism.

An example: The grass in the garden is experienced as green by me; greenness is not dependent on my having the word green associated with certain colour sensations, only my description of it is. Rather greenness ensues because the substance of grass absorbs and reflects light in such a way that a certain spectrum of light is reflected. Dogs, bees, and rabbits all have perceptive-responsive relationships to that spectrum of light and so do I. Light is a medium through which I have that particular rapport with grass. The 'colour' is a property of the grass, and is existent to me through aspects of the world and my corporeal engagements within it. The knowing of experiencing is not a construction of reality by brains directed towards a world of stable representations (which are required for communication), but the co-creation of dynamic responsive relationships.

5. Language, Representationalism and Dualism

Cartesian ideas of separate mind and body 'things', or the materialist version of an organic controller mechanism running a body machine, are in part founded on the use of language and a belief that 'abstraction' is actually disengageable from sensory-motor and responsive corporeal experience. So the logical train is something like: if thought is separable from experience, ie. the use of symbols to think does not necessarily involve acting out those symbols in present world interactions, then symbols have an existence that is separable from experience. So a separate thinking thing (mind) must create thoughts accessible for objective and stable truth (which are separate from 'physical' self-world interactions), so mind is separable from the vehicle of experience (body).

A different conception of the role and importance of language can help to clear the fog that arises from amnesia about the engaged experiencing that 'grounds' communication and meaning-making processes. Word-language has a central place in human interactions, but it is not the generative constituent of thought or the primary meaning-making process. Symbols do not have meaning *in and of themselves* outside of the sensori-motor, cultural, and socially interactive engagements that embody them with meaning. If I am ignorant of Chinese written characters, I can admire them on a page as drawings, I can copy them, I can imbue them with associations from my experiences, but I cannot know or even surmise their meaning for the person who intended to communicate by writing them. That is unless and until I myself learn (through

interactions with others) to use them in new combinations to convey things about new experiences or fact situations (Huglins-Jackson 1879 p.218; & Wittgenstein 1953, PI #95). These thoughts are of course familiar from Wittgenstein's philosophy.

But word-language is still central to most discussions in philosophy and cognitive science not only about how humans communicate, but also about how we structure our making sense of the world. This is so even though current cognitive science researches into developmental processes involving mirroring and imitation suggest that understanding others' actions and intents is founded on sensory-motor empathy, and subpersonal deliberative processes that are made possible by inhibition of the overt expression of simulations (Gallese 2007, Hurley 2008). A thought symbol generates connections to embodied experience – that is, some or all of current, remembered, imitated, improvised and shared experience – and has its meaning thereby. Word-language is symbolic, and the manipulation of symbols contributes to the holism of sense-making, but abstract thoughts – thoughts that are not acted out – are not disengaged from experiential grounding even if that grounding is unacknowledged. Word-language can also be understood as metaphoric in that it stimulates an association between ideas and experience.⁶

Metaphors as symbols for experience are not only verbal-visual cues or about substance, but are also about qualities of engagement-with. They are not just 'mental pictures' but rather a focus of attention grounded in imagination that picks out certain aspects of the sensory and interactive experiential array. As described in Chapter 1, the focus on metaphors in some experimental processes of the Alexander Technique engage elements of the CPP in an holistic multi-level way in order to stimulate useful, meaningful action-perceptions. The technique of coordinating attention through metaphors to inspire new insights integrated with actions is also common practice in music and other arts disciplines. Those metaphors are very often not expressed through word-language, but rather through the language of the art form or through related sensory-motor associations. The articulate 'meaning-making' and communicative expression in music, dance, and plastic and visual arts is no less complex, imagineable and reflected upon than word-language. Yet the sensual embodied relational grounding of those communicative processes is often more apparent in 'the arts' than in the use of word-language.⁷

⁶ Embodied meaning-making and expression of varied kinds other than verbal are explored in Chapter 5.

⁷ Communication through arts processes and what that makes clear about embodied meaning-making and expression are discussed in Chapter 6.

The physicist-philosopher Karen Barad also sees some of the roots of the dissociation of thought from corporeal being as rooted in the centrality of word-language in philosophy, alongside the influence of scientific paradigms.

Language has been granted too much power. The linguistic turn, the semiotic turn, the interpretative turn, the cultural turn: it seems that at every turn lately every 'thing' – even materiality – is turned into a matter of language or some other form of cultural representation. ... There is an important sense in which the only thing that does not seem to matter anymore is matter. What compels the belief that we have a direct access to cultural representations and their content that we lack toward the things represented? How did language come to be more trustworthy than matter? ... Representationalism is so deeply entrenched within Western culture that it has taken on a commonsense appeal. ... Rouse identifies representationalism as a Cartesian by-product – a particularly inconspicuous consequence of the Cartesian division between 'internal' and 'external' that breaks along the line of the knowing subject. Rouse brings to light the asymmetrical faith in word over world that underlines the nature of Cartesian doubt. (Barad 2003, pp.801,811)

Representationalism and Newtonian physics have roots in the seventeenth century. The assumption that language is a transparent medium that transmits a homologous picture of reality to the knowing mind finds its parallel in a scientific theory that takes observation to be the benign facilitator of discovery, a transparent lens passively gazing at the world. Just as words provide descriptions or representations of a preexisting reality, observations reveal preexisting properties of an observation-independent reality. In the twentieth century, both the representational or mimetic status of language and the inconsequentiality of the observational process have been called into question. (Barad 2006, p.97)

Barad offers her construct of 'agential realism' as a performative approach to understanding 'entangled material agency'. This is a quantum physics based alternative to the split conceptions of mind/body and self/world, and to the Newtonian physics influenced idea of scientific investigation as **subject to object observation**, or as a dualistic dynamic of '**perception-cognition-representation**' in-here of fixed objects out-there.

It is possible to develop coherent philosophical positions that deny the basic premises of representationalism. A performative understanding of natural/cultural practices is one alternative. Performative approaches call into question representationalism's claim that there are representations, on the one hand, and ontologically separate entities awaiting representation, on the other, and focus inquiry on the practices or performances of representing, as well as the productive effects of those practices and the conditions for their efficacy. A performative understanding of scientific practices, for example, takes account of the fact that knowing does not come from standing at a distance and representing but rather

from a direct material engagement with the world. ... Phenomena, according to my agential realist account, are neither individual entities nor mental impressions, but entangled material agencies ... The agential realist understanding that I propose is an on-representationalist form of realism that is based on an ontology that does not take for granted the existence of 'words' and 'things' and an epistemology that does not subscribe to a notion of truth based on their correct correspondence. Agential realism offers the following elaboration of Hacking's critique of representationalism: experimenting and theorizing are dynamic practices that play a constitutive role in the production of objects and subjects and matter and meaning. ... theorizing and experimenting are not about intervening (from outside) but about intra-acting from within, and as part of, the phenomena produced. (Barad 2006, pp. 49,56)

6. Quantum Physics, Agential Realism and the CPP

As does Rowlands, Barad challenges the mechanistic orientation of Newtonian science. Grounded in quantum physics and her interpretation of the work of Neils Bohr, she critiques the atomism that she asserts is the root of the split concepts: 'subject – object', 'in here – out there', and 'materiality – representation'.

Liberal social theories and scientific theories alike owe much to the idea that the world is composed of individuals with separately attributable properties. An entangled web of scientific, social, ethical, and political practices, and our understanding of them, hinges on the various/differential instantiations of this presupposition. Much hangs in the balance in contesting its seeming inevitability. ... Physicist Niels Bohr won the Nobel Prize for his quantum model of the atom, which marks the beginning of his seminal contributions to the development of the quantum theory. Bohr's philosophy-physics (the two were inseparable for him) poses a radical challenge not only to Newtonian physics but also to Cartesian epistemology and its representationalist triadic structure of words, knowers, and things... Bohr rejects the atomistic metaphysics that takes 'things' as ontologically basic entities. For Bohr, things do not have inherently determinate boundaries or properties, and words do not have inherently determinate meanings. Bohr also calls into question the related Cartesian belief in the inherent distinction between subject and object, and knower and known. (Barad 2003, p.813)

Barad offers *diffraction* rather than *reflection* (as mirroring) as a metaphor for interactions and material being-in-relationship. Diffraction patterns are expressions of the intra-actions of differences – in waves and from out of the simultaneity of all possible states for particles (superposition of states). Reflection is an instrumentally optical concept about the reproduction of an object set at a distance. Diffraction patterns emerge through inter-intra-actions and are mutually dependent upon and shaped by the intentionality of the agents, the apparatus of experimentation, and the properties of materiality.

Rather than bounded ‘subject here-object there’, or ‘knower-known’ dualisms, Barad suggests that boundaries and definitions are in-formed through defining intra-active processes within phenomena – through an entangled state of agencies, rather than as the interaction of already discrete objects⁸. She uses metaphors from quantum level processes to suggest that embodied human agency and meaning-making is the negotiation through the dynamic holistic simultaneity of processes which engage all levels and systems of being.

On my agential realist elaboration, phenomena do not merely mark the epistemological inseparability of ‘observer’ and ‘observed’; rather, *phenomena are the ontological inseparability of agentially intra-acting ‘component’*. That is, phenomena are ontologically primitive relations—relations without preexisting relata. The notion of *intraaction* (in contrast to the usual ‘interaction’, which presumes the prior existence of independent entities/relata) represents a profound conceptual shift. It is through specific agential intra-actions that the boundaries and properties of the ‘components’ of phenomena become determinate and that particular embodied concepts become meaningful. A specific intraaction (involving a specific material configuration of the ‘apparatus of observation’) enacts an *agential cut* (in contrast to the Cartesian cut—an inherent distinction—between subject and object) effecting a separation between ‘subject’ and ‘object’. That is, the agential cut enacts a *local resolution within* the phenomenon of the inherent ontological indeterminacy. In other words, relata do not preexist relations; rather, relata-within-phenomena emerge through specific intra-actions. Crucially then, intra-actions enact *agential separability*—the local condition of *exteriority-within-phenomena*. The notion of agential separability is of fundamental importance, for in the absence of a classical ontological condition of exteriority between observer and observed it provides the condition for the possibility of objectivity. Moreover, the agential cut enacts a local causal structure among ‘components’ of a phenomenon in the marking of the ‘measuring agencies’ (‘effect’) by the ‘measured object’ (‘cause’). Hence, *the notion of intra-actions constitutes a reworking of the traditional notion of causality*.
(Barad 2003, p.815)

I have described resonances for the Core Psychophysical Process in different levels of experiential interaction (or intraaction in Barad’s terminology), from the neuronal to the person level. The Alexander Technique has provided an exemplar for the simultaneity of multiple processes in active-cognitive engagement, and there is also resonance with Barad’s agential realism. In the experimental methodology of the Alexander Technique, the ‘apparatus of observation’ is the neuro-musculo-skeletal expression of the CPP. The ‘agential cut’ effects a perspective of ‘conscious’ observer and process observed. From a broader holistic perspective, the interactive self is the instrument of experimentation,

⁸ This correlates with Watsuji’s philosophy regarding self-other – ‘sonzai of ningen’, explored in Chapter 7.

such that the agential cut allows for flexible foci of self-other and self engaging with aspects of the world that are articulated to attention. In a variety of ways (practical and conceptual) person-level attention to core reflexive action generates an impulse for re-balancing, reconfiguring the dynamics of the moment allowing intention to generate an improvisatory response.

Action and meaning-making are entangled here. The phenomenon of the experience enacts an ‘agential cut’ – between cause and effect, means and goal, intention and articulated result, the self as attending and intending, and the self as articulating and assessing, all within a temporal flow. The resolution of the experiment (a diffraction pattern) emerges through the inter-intra-actions on many levels, including the joint intra-active focus of teacher and student, and is a creative response to the sum of possibilities. A person might then reflect upon and describe the experience in words: ‘Wow, my balance shifted forward and walking felt fluent and easy.’ The articulation is not the same as the effect. It is a reference to a holism of experience, a *reflection* of experience, that generates resonance with experience. An attempt to recreate, to impose, the result exactly based on the articulation short-circuits the process into reactivity.⁹

The Core Psychophysical Process is an inter-relationship of elements that are expressed in different ways at different levels, not necessarily sequentially, and it is intrinsic in the dynamic flow of engagements – self-other-world – that is characteristic of responsive equilibrium. Equilibrium is not a static state, it is balancing within a constantly shifting responsive intra-inter-action. Imagine a tightrope walker at the centre of a rope over the Grand Canyon. There is a sense of calm in his and your expanded focus of attention, and in the unity and harmony of the walker moving in flow with the motions of the rope and the wind. Now imagine him responding to the movement by trying to hold himself rigid, gripping the balance pole tightly, and stiffening his feet against the rope. Did he fall?

7. The Enactive Process

Now I will take a leap over to the biologically based autopoietic nature of a being in relationship with the world that is articulated in the works of Varela, Maturana and Thompson. They propose that biological entities are self-organising in relationship with environmental contingencies. It is essentially a responsive and integrative take on evolution and the ecological embeddedness of human development. Maturana and Varela developed their theory of autopoiesis in the 1980s, and their book, *The Tree of*

⁹ Alexander Technique processes are described in Chapter 1, sections 3, 4 and 10.

Knowledge: The Biological Roots of Human Understanding, originally published in 1987 was very influential in the fields of biology, ecology and cognitive neuroscience. The autopoiesis of the human organism (self-organisation) is understood in biological terms as generating a cohesion of self and intentionality for the survival of the creature as an autonomous being-in-relationship. Varela's and Maturana's theories are consonant with the biological and ecological ideas of Margulis (symbiotic evolution)¹⁰ and the Gaia theory originated by James Lovelock and developed cooperatively with Margulis¹¹. Varela, Thompson and Rosch (1991) developed an 'enactive approach' to embodied cognition, which is not a materialist or behaviourist account of human being and agency, and is biologically based and non-dualistic in understanding that the 'mind' is not a property of, or a resident entity in, the brain. It acknowledges the entanglement of biological and social-relational-world existence such that the biology of consciousness is located in being-in-relationship, rather than a neural-mechanical process in the head. Varela believed that Buddhist meditative practises in particular brought an integrative awareness of being to 'mind'. That awareness isn't bound by subject/object divisions, or the need for material predictability, and is resonant with insights from quantum science. Thompson and Varela describe neural processes as emergent within the dynamic interactivity of a person and world.

Emergent processes correspond to the collective behaviors of large ensembles, in which positive and negative feedback interactions give rise to non-proportional (or nonlinear) consequences. Emergence through self-organization has two directions. First, there is local-to-global determination or 'upward causation', as a result of which novel processes emerge that have their own features, lifetimes and domains of interaction. Second, there is global-to-local determination, often called 'downward causation', whereby global characteristics of a system govern or constrain local interactions. This aspect of emergence is less frequently discussed, but has long been noted by researchers in the field of complex dynamical system.

The nervous system, the body and the environment are highly structured dynamical systems, coupled to each other on multiple levels. Because they are so thoroughly enmeshed – biologically, ecologically and socially – a better conception of brain, body and environment would be as mutually embedded systems rather than as internally and externally located with respect to one another. Neural, somatic and environmental elements are likely to interact to produce (via emergence as upward causation) global organism–environment processes, which in turn affect (via downward causation) their constituent elements. ...

Our aim has been to suggest an 'enactive' or 'radical-embodiment' approach to the neuroscience of consciousness. We propose that there are two-way or reciprocal

¹⁰ Margulis, L. (1970) (2001)

¹¹ Margulis, L., Sagan, D. (1997)

relationships between neural events and conscious activity. An attractive feature of this proposal is that it allows consciousness to be a causally efficacious participant in the cycles of operation constituting the agent's life. ... We also propose that the processes crucial for consciousness cut across the brain-body-world divisions rather than being located simply in the head.

(Thompson & Varela 2001, pp.422,423,425)

In their aptly titled article 'Neurophenomenology and the Spontaneity of Consciousness', Hanna and Thompson challenge dualism and extend the understanding of the enactive process to the holism of human engagement:

Enactive minds comprise conscious processes (sensory, perceptual, imaginal, emotional-affective, and volitional) that are fully integrated with the self-organizing dynamics of the neurobehavioural processes of living animal bodies, which in turn are both fully embedded in and in constant interaction with their external environments. ...The spontaneity of consciousness and the neurobehavioural dynamics of the world-oriented animal are thus two sides of the same coin...

The enactive conception of conscious mentality aims to move beyond the classical dichotomy between materialism and dualism in three ways. First, the mind is to be regarded as deeply and inextricably interwoven with an interactive system consisting of brain, body, and world. Second, the mind is emergent from this interactive system in the twofold sense that (i) it expresses global properties of the interactive system that do not follow directly from its microphysical components; and (ii) it exerts a unique and irreducible causal influence on the local (e.g., microphysical) processes within this system. Third, the intrinsic mental properties and intrinsic first-order physical properties of animals are at once mutually irreducible and also complementary or necessarily reciprocally related. These three features of the enactive conception ... make room in logical space for a new account of the mind-body relation and a correspondingly new account of intentional action and mental causation.

(Hanna, Thompson 2003, pp.155,156)

The CPP is interactive in a way that fits with the enactivist model. It may seem obvious as I state it, but the CPP is not a solo event. Perception, reaction, deliberation, and intentionality in action are all engagements simultaneously with and within; they are interaction dependent active expressions of a being in and of the world. Alexander Technique methods demonstrate this through the integration of person level articulated intentions and foci of attention – commonly thought of as 'in the mind' – with reflex level sensory-motor processes, and subpersonal processes that are interactive and inclusive of current experience and memory. Actions and the articulation of concepts emerge as grounded improvisations in a socially and environmentally extended field, through reciprocally generated and shared experiences. This is foundational for the negotiations of ethics.

Inhibition is key in an autopoietic system's balancing of experience-with and intentional action:

- ® at neuronal level through the interplay of excitation and inhibition that generates resonances for interconnectivity in function as well as fluid equilibrium
- ® at subpersonal level through the inhibition of overt action allowing for holistic deliberation that takes account of what is past, present, and possible in a situation
- ® at person level in developmental, learning and communicative processes that support the organismic and psycho-social survival of social beings like us
- ® in ethics manifested in deliberations and actions that link beliefs and experience to generate intentional communality of action.

Deliberation is intrinsic in the autopoiesis that generates cohesion within a responsive organism's being in extended engagement. Intentionality is not generated in abstracted isolation from experiential reference; abstract concepts and their articulation are not separable from the embodied meaning-making that is generated by the concurrence of experience and communication between people. The belief that concepts can be abstracted from experience is a conditioned blinkering of attention that excludes awareness of embodied responsivity. Because, in Hanna and Thompson's terms, 'the intrinsic mental properties and intrinsic first-order physical properties of animals are at once mutually irreducible and also complementary or necessarily reciprocally related' (2003, p.156), blinkering can also suppress that responsivity.

Perception conceived as the passive reception of information through individual senses is an example of an idea structured by the atomism of reductionist scientific methods. Earlier in this chapter I quoted Gendlin's description of perception as part of a behaviour sequence in an environmental interaction. Rowlands offers a related embodied externalist understanding of perception as a complex of sensory and motor engagement with the environment, within which cognition is both responsive and integrated. He describes an approach to understanding perception, with visual processing as an example citing O'Regan and Noë (2001), that contrasts the mechanistic internalist perspective I described above with ideas about vision as a process grounded in sensory-motor experience (Rowlands 2003). He calls attention to the fact that seeing is constituted by more than the impact of light on the retina processed in a segment of the brain, and challenges the idea that seeing is dependant upon generating an internal representation for assessment. Noë critiques the isolating and reductionist scientific methodologies that have been presumed to generate understanding of real life-world engagement, and makes clear how experimental constraints provide a distorted view of the holism of experience.

We now know that the behavior of cells in the cortex varies, depending on what the animal is doing or what it is paying attention to. The modulation of the behavior of cells depending on the context of the animal's activity is something that Hubel and Wiesel's research did not and could not take into account, for they worked only with animals that were not engaged in any active task: their subjects were unconscious. That is, they were anesthetized, paralyzed, on artificial respiration; stimuli were presented to eyes whose lids were peeled back and held open with clips; eyes were kept moist and clear by means of contact lenses. It is only the assumption that vision is something that happens passively inside the brain that could justify conducting research of this sort in an effort to understand how vision works. But surely we should question this assumption. Remember, we have no clue how neural activations would or could make visual experience happen. Moreover, it is salutary to remember that animals evolved vision not to represent the world in the head but to enable engaged living- for example, the pursuit of prey and mates and the avoidance of predators and other dangers.'

(Noë 2009, pp.168,169)

8. Externalism and Sensory-motor Meaning-making

Our experience of the environment is informed by our actions of engagement. I define the object that I see by my sensory-motor engagement with it. All of my available capacities for sensory interaction are engaged in this process – touch, kinaesthesia, smell, hearing, taste, and so on¹² – and all that experiencing becomes part of the act of seeing within my schemas for making sense of the world. The kinaesthetic and haptic senses are key as they bring us, as autopoietically defined beings, into contact with the world as substantial and dimensional. When I see a round ball, I know it as round not only by the light reflected to my eyes, which does not come from the whole of the roundness of the ball. The variation of light and shade that meet my eyes is only part of the picture. Seeing the roundness and the identification of a ball is entangled with: my kinaesthetic experiences of spatial relations between self and ball including the interactions of playing with a bouncing ball; ways light and dark describe shadow and shape; and the haptic sensations in experiences of holding a ball – to name just a few elements involved. It is the whole richness of my experience with roundness that informs my seeing of the ball, and that is present as a sub-personal resource that is integrated and experienced simultaneously with my experiencing of seeing a ball ® over there. It is not necessary for me to construct a catalog of ball pictures in my brain and reference my experience to it – representationalism.

¹² There are many kinds of sensory responsivity beyond the commonly acknowledged five, and they will be discussed in Chapter 5.

This relational understanding of sensory-motor meaning-making informs Rowland's *externalist account of phenomenal consciousness*. He locates phenomenal conscious *in* the relationship of experiencing.

Each form of perception has its own contingency rules and, according to O'Regan and Noë, what differentiates visual perception from other forms is the structure of the rules governing the sensory changes produced by various motor actions. ... To learn to perceive visually is to learn the rules of sensorimotor contingency, understood as a non-propositional form of *knowing how*, governing the relation between changes in the orientation of the visual apparatus and the resulting changes in the character of the perceived world. If this vehicle externalist or *extended* account of perception is correct, there is little need to explain the haptic perception of ...[an object]... in terms of the production or activation of an internal representation. The work of such a representation can be performed by ... [an object] itself ...

Visual perception is essentially hybrid, made up of internal processes (extraction and activation of the laws of sensorimotor contingency) plus external processes (the probing or exploration of information-bearing structures in the environment). Visually perceiving is a process whereby the world – understood as an external store of information – is probed or explored by acts of perception, and the results of this exploration are mediated through the non-propositionally instantiated laws of sensorimotor contingency. (Rowlands 2003, pp.191,192)

... the phenomenal features of experience do not attach to an internal state or process. The detail and complexity of an experience are partly constitutive of the way the having of that experience seems to its subject - they are partly constitutive, that is, of the phenomenal content of that experience. But these features are not, if O'Regan and Noë are correct, ones that attach to any state or process that occur inside the skin of that subject. Rather, they are features that exist in, and only in, the directing of awareness towards worldly objects and properties. Since this process of directing awareness is not an internal activity but one that essentially occurs in the world, the phenomenal properties that attach to this process are also, therefore, not internally constituted properties. They are properties that exist only in the relationship that an experiencing organism bears towards an external world.

(*ibid.*, p.195)

Representationalism shares space with the Cartesian materialist idea that cognition resides in brain processes. Both constructs are challenged in a variety of ways by the perspectives I have presented – from agential realism, externalism, the enactive approach, the integrative Shared Circuits Model, and my own exposition so far of the holistic and multi-level expressions of the CPP. These perspectives are grounded in holistic understandings of cognition as embedded in engagements within the human-life-world, as expressions of extended embodied responsivity in experience.

9. Computational Minds

Cartesian materialism has found a home in a substantial trend in cognitive science that has been influenced by computational models of thought in computer science and research into artificial intelligence. The 'thinking brain' is often likened to a computer these days, more and more so as computer processing becomes more efficient and compact. This is not the 'imitation' of human processes, it is a magician's trick with mirrors, a mechanical version of movement priming creating the illusion that increased quantity and speed of calculations generates human-like thought. This is a confusion of kinds –linear mathematical abstraction versus organic life, which is not to say that machines will not one day be programmable to do actions that people do in a way that may seem autonomously intentional because the programmer is absent from the scene. The computer as brain and brain as computer are versions of the insular homunculus controller.

The contemporary philosopher Alva Noë, in – *Out of our heads – why you are not your brain and other lessons from the biology of consciousness* – challenges the ideas that consciousness is in and of the brain, and that computation is representative of human cognition.

Establishment neuroscience is committed to the Cartesian doctrine, that there is a thing within us that thinks and feels ... (and) only breaks with Descartes in supposing that that thinking thing is the brain'. ... [and as] We spend all our lives embodied and situated and involved with the world around us ... How could we take seriously the idea that consciousness depends only on what happens inside the brain? This idea may be good enough for science fiction, but why should we let it frame the way we understand ourselves? (Noë 2009, p.172)

You may think that the existence of the digital computer ... provides proof positive that a mere mechanism such as the brain can process information. Computers, after all, perform calculations; they render three-dimensional models from line drawings. Computers correct spelling and play chess ... What better grounds could there be for thinking we should take seriously the thought that brains are, in effect, organic computers? ... Some problems admit of mechanical solutions. If you want to know how many people are in the room, you can count them. Coming up with the solution requires no more than an ability to add one again and again. Likewise, you don't need to understand long division in order to find the answers to long-division problems. ... You were taught a decision procedure in school, one that makes use of writing, the Arabic system of notation, and the fact that you know how to divide, add, subtract, and multiply very small numbers. ... [a child and] a machine can do it. In this same way, you don't need to be a great chef to follow a great chefs recipe. ... An algorithm is a recipe or procedure for solving a problem. It is, as it were, a program that enables one [a child ... a machine] to reach a desired conclusion in a finite

number of steps. ... there's all the difference in the world between understanding the solution to a problem and getting a good score on the test because you have memorized a recipe for doing so. Computers may generate an answer, but insofar as they do so by following rules blindly, they do so with no understanding. But more important, computers don't even follow rules blindly. They don't follow recipes. Just as a wristwatch doesn't know what time it is even though we use it to keep track of the time, so the computer doesn't understand the operations that we perform with it. We think with computers, but computers don't think: they are tools. If computers are information processors, then they are information processors the way watches are. And that fact does not help us understand the powers of human cognition.

(Noë 2009, pp.162,163)

10. Holistic Understandings

Noë, in common with Hurley and the authors referenced in this chapter, presents understandings of 'mind' as an aspect of our embodied being-in-the-world.

...what all this reveals is that the brain is no more in charge of what you do than a surfer is in charge of the wave he's riding. Brain, body, and world form a process of dynamic interaction. That is where we find ourselves. ... Landmarks, tools, shared places and practices, belong to the machinery of our being. We are partly constituted by a flow of activity with the world around us. We are partly constituted by the world around us. Which is just to say that, in an important sense, we are not separate from the world, we are of it, part of it. Susan Hurley said that persons are dynamic singularities. We are places where something is happening. We are wide.

(Noë 2009, p.95)

There is one other dualistic conception that I want to address here, and the discussion of it will be expanded in the next chapter and in Chapter 8. It is based in the differential valuing of aspects of humanness that grounded the Cartesian mind-body split, and reciprocally the Cartesian conception of human being added to that differential. With mind encompassing reasoning and will, which was separated from 'physicality', aspects of our engagement with the world were inevitably divided up between those dichotomies. This has been reflected in various ways in beliefs about identity and self-world relations, social values and the negotiations of ethics, and in conceptions about responsibility for and in actions. From the twentieth century onwards, that aspect of the Cartesian legacy has been embedded in Western culture in the field of psychoanalysis as the idea of separate conscious and an unconscious minds. Maurice O'Connor Drury, a psychiatrist and philosopher friend of Wittgenstein, wrote about the coining of the term 'unconscious' in response to early experiments in hypnosis at the end of the nineteenth century.

...so it became convenient to introduce special terminology and to speak of 'unconscious' memories and 'unconscious' motives. But every adjective is in deadly danger of being transformed into a substantive. So it came about that psychologists began to speak of the 'unconscious mind', as if some new *entity* had been discovered. A mysterious second self that accompanied us at all times and was the 'real' source not only of dreams and neuroses, but of art and mythology, history and religion. This is superstition and has done infinite harm. (Drury 1996, p.138)

This dividing up of the self into mental and physical components and then creating a subterranean dark zone in the mind that is allocated responsibility for the impulses of desire and intuitive sensory meaning-making seems a mistake to me. Disciplines such as the Alexander Technique and 'the arts' demonstrate that there is an embodied unity of self in our reasoning and intentionality. It is not possible to understand the capacity we have to choose behaviour from a perspective based in Cartesian dualism, or from the watered down or anatomically brain-centric versions of modern times. As the CPP is a presentation of processes that are active, constitutive, and integrated through many levels of human being and engagement, it provides a useful paradigm for thinking about human nature and agency.

Chapter 5 - Embodiment

Substance

Some philosophers talk about language as if it invented understanding,
but thought is there before the words.

I made metaphors of my experiences long before I spoke;
sensations and actions were my materials.

My Dreamtime was in the womb, suspended
I curled and stretched in the all-embrace of a warm sea.
My world became movement, vibration, and rhythm;
I knew the ebb and flow of energy in a dance of synchronous being.

In that first given space of existence,
I grew into a being of substance with powers of my own,
so that when I moved into the world of needs,
I was able to reach across light-space for connection.

The first shock of difference that overwhelmed my senses
gave me light, time and dimension.
There was a sudden split between inside and outside of being,
as breathing moved me, but brought no density to space around me.

The viscosity of air left me bereft of contact
and yearning for the familiar encompassing touch.
I reached through the whole of my being for what was missing,
extending through confusion, wanting to find union.

Then I found cold and heat, the texture of touch, the resonance
of voices, memory in a heartbeat, and the bonds of desire.
Warmth flowed into an emptiness I'd never known,
awakening taste to sweetness and my soul to joy.

In that new open space I experienced the brightness of discovery,
and understanding through the syntax of my sensations.
From a sea to a world of elements, movement carried me through
experiences in a life of meanings, relationships and love.

Suzanne Noel-Bentley

Even in much of the 'more enlightened' cognitive science writing about embodiment, there is still an essential chunk of experiential comprehension missing. The inability to understand the active presence (the unattended to and elusive 'dark matter') of sensory embodiment *in awareness within experience* is actually yet another influence of dualism. It is conditioned and embedded in the romantic notion often seen in writing on

aesthetics, that various kinds of automaticity make the attainment of complex skills possible and actions seemingly ‘effortless’, such that one doesn’t pay attention to ‘the body’ and it becomes ‘transparent’ to awareness’.¹ Entwined with those ideas are the predominantly 20th century Western culturally conditioned beliefs about divisions between conscious and unconscious processes, and motivations and actions. With all the talk about sensory-motor *skills* and mind enacted in tandem with the environment, there are still prevalent beliefs in: an internal-external divide, the hierarchical ordering of thinking over acting, and thinking as a process mostly in or directed from the head. This is bound up in the residual dominance of functionalism that interprets action as goal-oriented and sensory-motor awareness as minimally relevant to the achievement of object-oriented intentions. The reader will recall that through the CPP and the SCM and related researches, I have made arguments that in means-goal dynamics, it is the focus on means that distinguishes human capacity and creativity in developmental and learning processes. The *goal*, as the primary focus of attention, engenders habituated actions and reactivity rather than stimulating improvisatorially responsive intentional experiences. If I were writing in the functional mode, I would have written ‘solutions’ instead of ‘experiences’ in the previous sentence – that is goal-driven description. Identify the object of acquisition or problem and solve it; keep your eye on the ball. The actual process of getting there is secondary in that modality, ignorable if you have the right conditioned habitual schema.

Anyone who has learned to juggle will remember that watching the balls, as a narrow exclusive focus, makes your movements frantic and stressful, and you will drop the balls. Expanding your field of attention to include the balls and awareness of your fluid motions in a wide field of attention makes juggling easy. You can even experience this throwing one ball up in the air, back and forth between your hands. Try it? The concept ‘body schemas’ as articulated by Gallagher (2005), exemplifies the goal-driven perspective that leads to neglect of, and lack of ‘com-prehension’ (complete-grasping) of the possibilities of, kinaesthetic and sensory awareness in action integrated with cognition. I will challenge that perspective as represented by Gallagher’s ‘body schemas’ in this chapter with the assistance of Maxine Sheets-Johnstone (2009).

In this chapter I will also be exploring a range of ideas about embodiment and embodied meaning-making from different perspectives, referencing philosophy, cognitive science and neuroscience. I will make connections to the groundwork laid for understanding

¹ An example of this perspective is clear in the 2 minute UTube video clip: de Vignement, F. (2011) ‘Learning about embodiment of consciousness from dancers’, in Day, N., Director, *The Consciousness Chronicles*, 2, [video online] available: <https://www.youtube.com/watch?v=3SOcmuY-CmU>

the CPP and its repercussions in the embodied human life-world. There is, of course, current and historical interest and extensive research in the fields I have mentioned, and the topic could easily be extended on its own to a PhD thesis. I include only some aspects that are particularly relevant to my thesis in sections addressing these elements:

- 1. Multi-sensory meaning-making and (1a.) the dominance of the visual in western culture**
- 2. The emotion-cognition divide from Damasio's integrative perspective in cognitive science and Johnson's grounding of meaning-making in aesthetics**
- 3. Body schemas and the 'automaticity' of skilled actions**
- 4. How sensory-motor processes are integral with meaning-making and can be integrated in attentive expanded awareness in action**
- 5. Metaphor and what it shows us about the embodiment of language – including and other than word-language**

1. Multi-sensory Meaning-making and Perception

I begin here with an exploration of some of the meanings that are commonly made of the concepts 'the senses' and perception, and offer some further options. Aristotle identified five senses, and those categories have persisted, are common knowledge, and are taught to everybody in school: sight, hearing, touch, taste, and smell. I think that set is too limited, too much separately defined, such that aspects of our sensory experience and meaning-making are excluded. Contemporary researches in cognitive science have shown that the experience that we identify as 'seeing', for instance, is not simply composed of light hitting the retina, but is an accumulation of different sensory-motor engagements with the world that allow us to 'fill out' the dimensions and dynamics of the picture (Noë 2009 & 2012, Rowlands 2003). Our ways of seeing are also shaped by how we pay attention, what we habitually attend to, and our attitudes towards those interactions. Perception is more than stimulus intake. As explained in Chapter 1, by engaging with the continual impulse for psychophysical re-balancing that the CPP provides, Alexander Technique processes demonstrate that perceptions are both conditioned by experience and flexibly responsive to changes in the psychophysical dynamic equilibrium of being-in-the-world.

Let us go back now to looking beyond the common designation of five senses to see what aspects of experiencing in and of the world are excluded. Fiona Macpherson wrote a paper called: 'Taxonomising the Senses' (2011), where she explored other possibilities such as: proprioception – the awareness of body parts, movements and the force

required to move; equilibrioception – the sense of balance; and the vomeronasal system – detects pheromones and is separate from the olfactory system. Distinct, though usually lumped together in the category ‘touch’ are: sensitivities to pressure, temperature and pain. There are also the sensations of hunger, thirst, wet and dry, heat and cold, and of bodily processes such as respiration, heartbeat, digestion and changes in energy dynamics. There are a variety of senses identified in creatures other than humans, and which may or may not exist in some way in humans. Electrical field sensitivity is found in trout, who have organs to sense it, and in other creatures that either generate intense electrical fields to interpret their surroundings or sense changes in the fields around them, for example: sharks, electric eels, bees and the platypus. In snakes there are organs of infrared sensitivity that are separate from the eyes. Echolocation in bats is well known and quite different from hearing.

So in the human and extended life-world, sensations are not interpreted discretely, but holistically in terms of whole body fittingness/fittedness to what is going on, and there are more elements than are generally acknowledged in the interplay. And it is interplay, as sensory-*motor* processes are key to building three dimensional active interpretations of our engagements with ‘things’ in the world, and to being able to identify, develop intentions with-and-toward, and communicate those meanings-made with others.

The word-concept *perception* is used with a variety of background assumptions about its meaning. At one extreme is the reductionist behavioural interpretation: perceiving is a bio-mechanical auto-function of taking in information, which is then sorted as to use-value in the brain-mind. Objects of perception ‘out there’ become, and are, triggers that both condition and dictate automatic reactive responses ‘in here’. In Chapter 4, ideas from Rowlands and Barad challenging ‘in-here’ ‘out-there’ bounded understandings of experience and cognition in a variety of ways were explored. Gendlin draws attention to the bodily meaning-making that is implicit in our interactions with the world and prior to concepts about the world. He challenges the scientific and philosophical construct of ‘perception’ as the fundamental of self-world engagement, describing it as expressive of subject-object distancing and a re-presentational cognitive processing orientation.

The primacy of perception leads to a traditional problem. Perception inherently involves a datum, clear or unclear, something that exists *for* someone, happens to someone, or is present *before* someone. Perception remains a being-for. If one begins with perception, then interaction seems to consist of two individual percepts. [the

person as object and the object perceived] ... The scientific construction of the universe consists of percepts and percept-like patterns *presented* before us ...

To begin philosophy by considering perception makes it seem that living things can contact reality only through perception. But plants *are* in contact with reality. They are interactions, quite without perception. Our own living bodies also are interactions with their environments, and that is not lost just because ours also have perception. On the contrary, for us that functions in many additional ways. Animal bodies – including ours – sense themselves, and thereby we sense the interactional living we are. In sensing themselves, our bodies sense our physical environment and our human situations. The perception of colors, smells, and sounds is only a small part of this. ...

What the word "perception" says does not usually include how the living body *consists of* interactions with the world. ... 'Perception' is usually something that appears before or to – a body. But the body is an interaction also in that it breathes, not only in that it senses the cold of the air. It feeds; it does not only see and smell food. It grows and sweats. It walks; it does not only perceive the hard resistance of the ground. And it walks not just as a displacement between two points in empty space, rather to go somewhere. The body senses the whole situation, and it urges, it implicitly shapes our next action. It senses itself living-in its whole context – the situation.

We act in every situation, not just on the basis of colors and smells (not even all five senses crossed so each is in the others), nor just by motions in geometric space. Rather, we act from the bodily sense of each situation. Without the bodily sense of the situation we would not know where we are, nor what we are doing. ...the body's interactional intentionality must not be read as something only latent, only the prior work of a pre-linguistic, pre-cultural body. Rather, the body's interactional intentionality must be understood as always still with us, now. In sensing itself the body functions as our sense of each situation. It would be a gigantic omission to miss this role of the body's self-sentience. (Gendlin 1992, pp.343,344)

Gendlin is an Aristotelian scholar and has re-translated *De Anima* and written a line by line commentary (2012b,c). His presentation and interpretation of Aristotle's ideas about perception in relationship to sense and proportion is relevant here. In his commentary, Gendlin analysed Aristotle's text regarding the processes of perception wherein a musical instrument, the lyre, is used as an illustrative metaphor. The following is a distillation and interpretation of Gendlin's commentary and Aristotle's text (2012b, pp.194-202), informed by my experience as a musician:

- i.** That which perceives is like an instrument.
- ii.** A sense is the ability to perceive, the capacity to respond to the perceptible. The tuning proportions the pitches of the strings such that the instrument can be played and

music as responsive meaning can be generated. The tuning of the instrument creates a ratio of relationships and a range of responsive capacity, which is the ability to perceive.

iii. The perceptible engages with the instrument by affecting its proportioned capacity. The way in which that capacity responds defines the perceptible, within the instrument and in expression as communication.

The following is Gendlin's translation of two passages from *De Anima* which refer to perception, sense and proportion (logos)[parentheses and bold are Gendlin's]:

Universally ("*katholou*"), with regard to all sense-perception,
we must take it that the sense is that which can receive
perceptible forms without their matter,
as wax receives the imprint of the ring without the iron or gold,
([424a17-20]in Gendlin 2012, p.197)

For the instrument which perceives must be a
particular extended magnitude,
while what it is **to be able to perceive** and **the sense**
is surely not a magnitude but rather
a certain proportion (*logos*) and potentiality of that thing.
([424a26-28]in Gendlin 2012, p.199)

I understand the processes of perception described as above as an holistic experiential metaphor for a type of engagement of human beings with others and the world that is not simply a material transaction, but mutual effect and responsive affect according to their forms and capacities. I make explicit my understanding of this, grounded in the context of my experience and in accord with my own conceptions of human being-in-the-world:

- i.** Humans, as beings of substance and meaning-making are created and develop their potential within biological, ecological, cultural and social contexts. Their capacity for the expression of meaning (the articulation of meaning to themselves and others) is generated in and because of their multifaceted engagements-with.
- ii.** The situated and embodied being has skills and capacities to be responsive, to resonate with perceptibles. We are tuned to respond, understand and articulate meaning by experiences within contexts. That tuning provides an evolving foundational ratio (proportion, logos) of relationships and range of capacity that supports the improvisatory interactions of self-other-world.
- iii.** All that with which we are in contact (perceptibles), is understood and articulated through our cumulatively developed capacity to respond. The instrument of being is affected according to its resonant capacity, defining through its responsivity, and

creatively extended through experience such that the foundations of meaning-making, expression and communication evolve in the context of engagements.

Thus far in every chapter I have elaborated understandings of human beingness as embodied and extended through experience, as well as being informed in part by the imagination and symbolic worlds. Movement (known through the kinaesthetic and other senses) is the foundation of our engagement with the world and with sense-making at every level of expression of human beingness. Movement is central to experience: from the level of neuronal excitation and inhibition that generates integrating oscillations, to the organising ebb and flow of motion through and extending from the core of the body in action; and from the grounding of empathy and self-other understanding in sensory-motor responsiveness, to the intra-interactive generations of concepts and languages whose meanings are existent in exchange and in the bodily resonances of/with experience. Equilibrium is found moment to moment in active balancing.² With the centrality of movement in mind, it makes sense to challenge the dominance of focus on the visual sense in Western culture, dominant not only in experimental procedures in cognitive science and experimental psychology, but also increasingly as the means by which people learn and interpret their experiences.

1a. The Dominance of the Visual Sense in Western Culture

I remember reading, a few years ago, an article touting the benefits of providing computer tablets to primary school children for developing ‘eye-hand’ coordination. Learning those skills used to be understood as whole body activities, learned through playing ball, building things, and learning cursive writing. There is quite a bit of distance and substance between an eye and a hand; if you look at your hand you will see that. The action of the hand is dependent upon the integration of nerves, bones and musculature of the whole body. It has already been explained (by Rowlands and Noë in Chapter 4) that eye-to-brain is only a small part of the action of seeing anyway. The intention and capacity to do things is organised by an integration of sensory-motor and psychophysical processing.

Seeing is commonly experienced as perceiving things out-there in the world from in-here in the head. In conversations on this topic, Gillett has often described sight as a scopic sense, important in distancing ourselves from and assessing the distance to affordances out there in the world. It is particularly valuable for our survival to be able to assess threats and opportunities from a distance and with a delay before they are

² In Chapter 9 the construct ‘responsive equilibrium’ as a conceptual foundation for ethics is elaborated.

right on top of us/in our face. The startle reflex initially inhibits motor responses and diminishes some sensations, but sight is focused acutely toward a (multi-sensorially) perceived danger or exciting opportunity. Perhaps because of its importance for survival and in-forming deliberative processes, and because it allows framing and distancing, sight has become a significant metaphor for thought, and become linked to and reinforcing of mind-body dualisms.

Aristotle's phrase, 'The soul is to the body as sight is to the eye' has had resonance for many people over more than 2000 years, and is continually re-interpreted according to the meanings that people in different cultures make of their experiences. It is often taken as identifying sight as the key to knowledge of the nature of being and soul ('insight' into what is in-here). I would like to offer my own interpretation, and keep in mind that 'soul' is the English translation of psyche, which is not a walk-in spirit, but a combination of the contemporary concepts mind and embodied soul. I offer this understanding of Aristotle's intent:

'The soul is to the body as sight is to the eye'

- sight is the action, purpose, perceiving, meaning-making of the being of the eye
- sight is the engagement with the world that happens through the being in existence of the eye

Therefore:

- psyche is the action, purpose, perceiving, meaning-making of the being of the body
- psyche is the engagement with the world that happens through the being in existence of the body.

Referencing the instrument metaphor for perception: corporeal being is the instrument of perception; the psyche is the tuning of the instrument of being that creates a ratio of inter-relationships and a range of responsive capacity, which in experience allows us to respond to perceptibles and structure interpretations and meaningfulness. So 'psychophysical' can stand as a word that acknowledges the practical identification of our corporeal presence as beings in and of the world, and also the capacity we have for second order articulations of experience. Those articulations allow us to generate and share metaphors and meanings, and to reflect within and with others to negotiate actions and purposes. And those negotiations for social creatures like us, with complex integrated capacities for articulation and deliberation, are nonetheless embodied actions in the corporeal being of humanness. As Watsuji writes, ethics is 'the practical interconnection of acts' (Watsuji 1937)³.

³ Watsuji's work is referenced and discussed in detail in Chapters 7 and 9.

2. Emotion and Cognition - Two Integrative Perspectives

Until quite recently in cognitive science, there were some common internal divisions within divisions of self that were submerged in ideas about the mind and cognition. I was astonished when early in my research process I read a journal article critiquing the prevalence in cognitive science of a belief that cognition was a separate process from 'emotion'.⁴ I was glad to see a critique, but amazed it needed to be made. Having spent my life involved with music, dance, the arts, literature, education and the Alexander Technique, which are all profoundly 'intellectually' challenging integrative expressive disciplines, I didn't expect to find that – what seemed to me to be antiquated and narrow minded – way of thinking about psychophysical engagement with the world. But through further research I realised that the roots of dualism are deep and diffused throughout Western thought. Like the root system of a giant colony of aspen trees, the new ideas might look fresh, but they're fed from the same roots, and of the same substance. That substance harkens back to the reason/instinct and soul-psyche/body divides that were fueled by the rationalism of the 'new science' in The Enlightenment period in Western cultures.

Recently there have been a number of arguments for and explorations about the integration of emotion with cognition from an 'embodied' perspective in the main streams of cognitive science and neuroscience, and in the philosophy that references them. A contrast of approaches and perspectives can be seen in the ideas put forward by Damasio and in those of Mark Johnson in his integrative philosophically oriented book *The meaning of the body: Aesthetics of human understanding*. It makes sense that Johnson finds the arguments for holistically embodied being in artistic disciplines, and that perspective will be explored more extensively in Chapter 6.

The enthusiasm for mechanical devices and belief in their ability to generate true fixed knowledge about the world, and the nature, states and actions of being can be found in most scientific disciplines, quantum physics being an exception. Those disciplines that are based in the complexity of organismic reasoning, communication and relational processes are oriented quite differently. In 'the arts', objects are expressions of, and/or extensions of, human action in the expressions of experiential meaning-making and communication. Those expressions generate corporeal empathy and shared cultural-experiential resonance. The developmental processes of a human being in relationship with the world produce more than a biomechanical capacity to integrate effectively with the physical and social environment and survive, though that is obviously necessary.

⁴ Davidson, R. (2000) 'Cognitive Neuroscience Needs Affective Neuroscience'

Damasio's understanding of the integration of sensory-motor responsivity, emotion and cognition is representative of an evolutionary bio-mechanical approach to elaborating an embodied understanding of human capacities and expression. I introduce it, in brief, for that reason⁵. His detailed explanations of physiological processes, including neural processes at microscopic and macroscopic levels, elaborate the interconnections throughout the body in a way that contributes to an holistic understanding of corporeal being. My argument with Damasio's presentation is that the picture that it generates is insufficiently dimensional to portray the nature of corporeal being as constituted and expressed in engagement with life. My alternate views have been presented in the thesis thus far in relation to the CPP and its expression in experience, and will be articulated further in the rest of the thesis. I will not address all of Damasio's points directly here.

Damasio's overall idea of how things work is certainly a concept of embodied being and does not posit a Cartesian mind, as everything is biological or biochemical, but it is perhaps Cartesian materialism (according to Rowlands' definition). Emotions, feelings, actions and environmental responsivity are bodily processes. 'Mental processes' are centralised in the brain but in the flow with processes throughout the organism. The brain builds neural maps of body states through developmental processes and experience, and mental processes access developed somatic maps to determine appropriate action program responses. The meanings made of experience – emotions, feelings, thoughts, and expressions of – are the sum of reactive and active bio-chemical and electrical processes which are potentially defined, analysed and predicted through brain function mapping. Damasio's definitions of his core terminology:

Homeostasis: The process of maintaining the internal milieu physiological parameters (such as temperature, pH and nutrient levels) of a biological system within the range that facilitates survival and optimal function.

Interoceptive system: A collection of nerve pathways and CNS nuclei dedicated to detecting and mapping homeostatic signals (such as degrees of visceral muscle contraction and internal milieu chemical composition). The main interoceptive pathways are the vagus nerve and the lamina I (spinothalamocortical) pathway. The interoceptive system monitors the state of the body, orchestrates responses thereto and has a central role in generating feelings.'

⁵ I reference Damasio's recent work (2013) here. Some other relevant works by Damasio are: (2001) 'Fundamental Feelings', in *Nature*, 413, 781; (2002) 'A Neurobiology for Consciousness', in Metzinger, T., ed., *Neural Correlates of Consciousness*, Cambridge, Mass.: The MIT Press, 111-120; and (2007) 'Neuroscience and Ethics: Intersections', *The American Journal of Bioethics*, 7(1), 3-7.

Action programmes: A set of innate physiological actions triggered by changes in the internal or external environments and aimed at maintaining or restoring homeostatic balance. The actions include changes in viscera and internal milieu (for example, alterations in heart rate, breathing and hormonal secretion), striated muscle (for example, facial expressions and running) and cognition (for example, focusing attention and favouring certain ideas and modes of thinking). Action programmes include drives and emotions. Changes in body state resulting from an action programme are sensed by the interoceptive system, displayed in sensory maps of the body and may be experienced consciously as feelings.

Feelings: The mental experiences that accompany body states. Action programmes (drives and emotions) can elicit feelings. Experiences related to exteroceptive senses (vision, hearing, touch, taste and smell) commonly cause emotions and ensuing feelings but in general are not felt in and of themselves. This definition also excludes the use of 'feeling' in the sense of 'thinking' or 'intuiting'.

Drive: An action programme that is aimed at satisfying a basic, instinctual physiological need. Examples include hunger, thirst, libido, exploration and play, care of progeny and attachment to mates.

Emotions: Action programmes largely triggered by external stimuli (perceived or recalled). Examples include disgust, fear, anger, sadness, joy, shame, contempt, pride, compassion and admiration. (Damasio, Carvalho 2013, p.145)

It may be that Damasio's ideas and definitions are influenced by the mechanical mapping of electrical activity in the brain that is so much a part of current experimental psychology and cognitive science research. He defines some qualitative aspects of engagement solely in terms of a systemic internal response pattern. A few more excerpts from Damasio and Carvalho's article will clarify their perspectives somewhat and highlight where blending or confusion exists in definitions. Though their descriptions of 'internal' processes are rich, the designation of what is 'external' is not supported or well understood, and there are cultural loads to the definitions that don't fit into their physicalist reductionist format. (bold emphasis added).

Changes in body state cause automatic physiological reactions as well as mental experiences – feelings – such as hunger, thirst, pain or fear. **Evidence suggests that body state changes are mapped topographically in the CNS (specifically, in the upper brainstem and cerebral cortex). Changes recorded in these neural maps serve as triggers for physiological corrective responses and for interruption of those responses once the deviation has been rectified. ...**

We also venture that although feelings involve a systems level central process, they are rooted in events occurring at single-cell level, specifically in the unmyelinated axons conveying signals from humoral and visceral aspects of the body towards nuclei in the CNS. ...

Whether **feelings portray an internal state (for example, hunger or thirst) or are prompted by an external situation (for example, compassion or admiration)**, their dominant mental contents describe a state of the body in which the condition of the viscera (for example, heart, lungs, gut and skin) has a key role. ...

Seen in this light, it is reasonable to advance the idea that **feelings, which are only accessible to the organism in which they occur**, provide a subjective experiential window into the processes of life regulation. ... Feelings allow a glimpse into ongoing home-ostatic regulation, ranging from basic processes such as metabolism to complex social emotions. This idea opens the way to envisioning neural mechanisms capable of generating feelings. James first proposed that feelings are derived from sensing our body states, and later work has supported the notion that **a crucial requirement for the generation of feelings is the mapping of varied features of body state in the CNS.** (Damasio, Carvalho 2013, p.143)

The internally and neurally centred focus of these ideas (and the experiments they are grounded in) somehow miss the importance of the holistic embodied and situated context of the activity which is needed to do the work of meaning-making. Though making sense of experience generates brain activity, that activity isn't setting fixed brain map coordinations specific to a thought or action, but rather extending capacity in experience that then informs interpretations in the creative presence in engagement in the actual life-world. I offer a poem as response, in keeping with the next part of this section where I ground the integration of emotion and cognition, and the making sense of embodied situated being, in 'the aesthetics of human understanding' with Johnson.

The Uncooperative Subject

A painting is not the artist's experience.
It doesn't tell you that the moment of hearing a bird's song
intensified her perception of green,
or that a disagreement with her husband
inspired a heavier application of paint.

The patterns in a brain scan don't explain thoughts.
They are pictures generated by a mechanical device
creating images in response to electrical activities,
which are then subject to your interpretations.
Those outputs of my brain don't draw a picture of my reality.

They don't tell you when, why or how
I decided to flick my finger, or
the sensory qualities of my experience.
You don't know the way in which I followed instructions,
and how I feel about your experiment.

So when I decide to speak, walk,
 or get up to cross the room,
 my sparkling neural connections will tell you
 nothing at all about the origins of my accent,
 the fact that I am graceful, or why I'm leaving.

Suzanne Noel-Bentley

The work of philosopher Mark Johnson has consistently challenged dualistic, representational and reductive mechanistic ideas of human engagement and cognition. With Mark Lakoff he coauthored the influential book, *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought* (1999), wherein they make a comprehensive case that meaning-making, cognition and language are holistically reflective of bodily experience, and challenge some common conceptual assumptions in philosophy and philosophy of mind. In his recent work, Johnson brings together current ideas in cognitive science with Dewey's philosophy which is grounded in the arts and an extended conception of being, and reflective of his experience with the Alexander Technique⁶.

Dewey takes great pains to remind us that the primary locus of human experience is not atomistic sense impressions, but rather what he called a 'situation'. By this he meant not just our physical setting, but the whole complex of physical, biological, social, and cultural conditions that constitute any given experience – experience taken in its fullest, deepest, richest, broadest sense... (Johnson 2007, p.72)

Johnson's interpretation of the extended embodied nature of meaning-making that involves all aspects of self-in-relationship also has resonance with Rowlands' externalism, Noë's conception of extended mind-being, and Varela's conception of enactive processes.

Meaning is embodied. It arises through embodied organism-environment interactions in which significant patterns are marked within the flow of experience. Meaning emerges as we engage the pervasive qualities of situations and note distinctions that make sense of our experience and carry it forward. The meaning of something is its connections to past, present, and future experiences, actual or possible ... None of these aspects of meaning are necessarily conceptual or propositional in any traditional sense. ... meaning involves the blending of the structural, formal, and conceptual dimensions on the one hand and the preconceptual, nonformal, felt dimensions on the other. Meaning resides in neither of these dimensions of experience alone, but only in their ongoing connectedness and interanimation.

⁶ Dewey's ideas about aesthetic experience and developmental processes can be found in *Art as Experience* (1934), and 'Aesthetic Experience as a Primary Phase and as an Artistic Development' (1950).

The more cuts, or selections, we make within what we might call the flow of our thought-feeling, the greater the number of explicit connections we can make with other aspects of our experience. This is one type of growth of meaning, the growth that, according to Dewey, is made possible by language and all other types of symbolic communication.

What we call our "highest," or most abstract, concepts may not seem to be based on aspects of our sensorimotor experience, *but this is an illusion*. Concepts that we think of as utterly divorced from physical things and sensorimotor experiences (concepts such as justice, mind, knowledge, truth, and democracy) are never really independent of our embodiment, because the semantic and inferential structure of these abstract concepts is drawn from our sensorimotor interactions. ... The reason that the meaning of certain things can be so rich for us is that so many parts of our bodily experience are neurally connected and continually interact. Our sense of meanings that transcend the words available to us is nothing more than the richness and depth of connections that transcend any formalization, abstraction, or selection that we are able to make in a given situation. (Johnson 2007, pp.274,275)

In previous chapters have described what Johnson calls 'selections ... within the flow of our thought-feeling' as articulations to attention. By this I have meant to keep in mind the integration of experiencing at all levels, such that meaning-making does not reside only in a linguistically organised 'conscious' mind, divided from an 'unconscious' realm that holds the substantial qualities, actions and effects of emotion, feeling, and unattended to sensory-motor and visceral processes. From Johnson's perspective meaning-making is extended through interactions, and inclusive of emotions and our qualitative, feeling sense of experience. Johnson also critiques the tendency in Western philosophical traditions to focus on linguistic propositional structures and to create the distancing abstractions of subject/object and subjective/objective.

The long-standing prejudice in Western philosophy against granting cognitive meaning to emotional experience is due primarily to the widespread belief that emotions are not conceptual. However, once we stop thinking of concepts as abstract, disembodied entities and see them rather as bodily processes of discrimination and relation, we can recognize the crucial role of emotions in the meaning of situations, persons, objects, and events. (Johnson 2007, p.147)

The idea that meaning and understanding are based solely on propositional structures is problematic because it excludes (or at least hides) most of what goes into the ways we make sense of our experience. In striking contrast to this conceptual-propositional view of meaning and knowledge, a substantial body of evidence from the cognitive sciences supports the hypothesis that meaning is shaped by the nature of our bodies, especially our sensorimotor capacities and our ability to experience feelings and emotions. ... An embodied view of meaning looks for the origins and structures of meaning in the organic activities of embodied creatures in interaction with their changing environments. (Ibid, pp.9,11)

Johnson argues that reasoning is grounded in embodied experience, which includes the feeling of qualities as well and emotions. He analyses the tendency in philosophies of mind (that are often entangled with word-language structures and argument) to focus on abstracted concepts and propositional reasoning, and to ignore or see as inadequate the qualitative *sense* of experiences. [bold emphasis added]

The problem with qualities is that they are about how something shows itself to us, about how something *feels* to us, and they seem to involve more than can be structurally discriminated by concepts. "Qualities" are not reducible to the abstractions by which we try to distinguish them. Consequently, to the extent that philosophies of mind and language focus only on conceptual and propositional structures and the inferences supported by those structures, they lack an adequate way to investigate the role of qualities in meaning and thought. It is no surprise, therefore, that qualities, just like emotions, are typically underappreciated in philosophical theories of meaning. Because we cannot capture qualitative experience in propositions with subject-predicate structure, we tend to downplay the importance of qualities as part of meaning. We mistakenly regard something that is only a conceptual limitation (i.e., our inability to adequately conceptualize qualities) as though it were actually a limitation on our experience of meaning itself. Many recent philosophical discussions of cognitive science make reference to the problem of *qualia*, which are felt qualities ... **The problem is that qualia cannot be reduced to conceptual structures or to functional states of an organism... ..meaning is grounded in bodily experience; it arises from our feeling of qualities, sensory patterns, movements, changes, and emotional contours. Meaning is not limited only to those bodily engagements, but it always starts with and leads back to them. Meaning depends on our experiencing and assessing the qualities of situations.**

(Johnson 2007, p.70)

The realm of qualitative awareness is resonant with embodied relational experience. 'Qualities' could be understood as the colours and atmosphere of our presence in the world, which is generated by and reflective of the multi-sensory meaning-making that grounds, that gives substance to, the articulations of concepts and propositional reasoning. And meaning-making and the structures of articulation are not generated as solo events that happen 'inside' the brain of a person, as experiencing is extended and inclusive beyond scientific atomised conceptions of individual organisms or their 'internal' processes. The cognitive and active capacities of assessment and articulation, the tuning of the instrument of being in the human life-world, happen in a life-long, extendedly interactive developmental stream. The elements of the Core Psychophysical Process are intrinsic in that stream, and reflected in actions from the neuronal level to the intentional engagements of self-other-world.

3. Body Schemas and the 'Automaticity' of Skilled Actions

'The arts' are often referenced by philosophers and cognitive scientists to provide exemplars of their theories about the division of labour as it were, between mind and body, or intentionality plus attentional focus versus the 'automaticity' of bodily actions. Gallagher's 'body schema' construct is an excellent example of this mindset, and is referenced by many 'embodiment' oriented researchers and writers, including Noë (2012) and Menary (2007). In light of what I have written thus far about the CPP, as understood through activities and methodologies such as the Alexander Technique and arts disciplines, I challenge the lurking dualism that divides attentional presence from sensory awareness and valorises ideas of 'automaticity' in action.

In the 20th century, the development of psychiatry (profoundly shaped by Freud⁷) and both therapeutic and experimental psychology have conditioned a firm belief in the division of mind into conscious and unconscious processes. That belief is so generalised through Western cultures that it is a common sense reference. Cognitive science is influenced by and in many cases participates with experimental psychology. In those contexts, the conscious bit is assigned: intentionality, attentional processes – with the visual sense as the dominant experimental apparatus, observable actions, and the articulation of experience predominantly through language. The unconscious part is assigned: visceral functions, practised behaviours and skills, emotional responses and drives, and sensory-kinaesthetic modes of engagement – which are understood as predominantly reflexive or conditioned as automatic reactive responses. In this section I focus on orientations in cognitive science toward conscious and unconscious processes as they relate to intentional and skilled actions. I will address some of the psycho-social aspects of the influence of Freud's ideas in more detail in Chapter 8.

Through his exposition of the conceptual construct 'cognitive integration' (2007), Richard Menary challenges internalism and computational models of mind and grounds human cognition in the interactions of organism and environment, exploring concepts like reciprocal coupling, bio-causal coordinations, and extended mind. There are many parallels with ideas I have put forward thus far. My argument here is with how he portrays the interactions of perception, action, thought and attentional processes. To do that he offers an analysis of skilled actors' actions bringing together the concepts of subpersonal processes and affordances, Gallagher's body schemas, Dreyfus's theories about expertise, and neural representationalism, and orients the whole process as goal

⁷ Drury's critique of the construct 'unconscious mind' is quoted in Chapter 4; Freud's theories are critiqued in Chapter 8.

driven and focused. Though cognitive integration is the theme, he puts the bulk of the action, the coordination of cognition, intentionality and action (inclusive of bodily processes), into the 'unconscious'/unattended-to category.

[body schema are] subpersonal processes that dynamically govern posture and movement, and Gallagher claims they do this in a *close* to automatic way. They are only *close* to automatic, because body schemas can be part of a goal-directed activity, such as catching a ball in a game of cricket. There are higher level goals and intentions involved in this action, but our consciousness is not directed at the movements of our body, but at the ball. Hence, we are not aware of the functions of the body schema in governing our posture and movement, in so far as these are part of a goal-directed activity. ... extension of the body schema into its surrounding environment is reflected in its neural representations. ... Motor programmes do not just initiate behaviour, they are fully integrated with the environment, and they are constrained by the environment because they often require the perceptual navigation of the environment and the manipulation of environmental objects. Therefore, my body shapes itself to meet the environment. ... Body schemas are attuned to environmental affordances for action...

(Menary 2007, pp.79,80)

I agree with and appreciate the understanding that the capacities to act are developed in the context of person – world engagement, and that those developed capacities are cognitive and extended and reflected integratively in neural actions. However, the construction of body schemes as fixed brain-body patterns, and the belief that competent fluent engagement with the world is dependent on them, is from my perspective a reductionist and inaccurate portrayal both of brain function and the improvisatory nature of action. The 'physicality' of present experience always involves newly creative configurations generated from all possibilities of learned capacity and current potential. Goal-oriented focus of attention tends to stimulate a greater percentage load of habit, engaging more frequently activated neural interconnections if you will, but every moment of engagement is nonetheless a new holistic configuration.

Menary cites the work of Dreyfus as support for his environmentally extended analysis of skill development and skilled actions. [bold emphasis added]

It is in the fluid manipulation of objects in the environment and in fluent skilled activities that we are most likely to find the unconscious integration of the body schema with the environment... Dreyfus's five stage account of expertise begins with ... reliance upon strict adherence to rules ... Tasks are broken down into context free features ... The transition from novice to competence and proficiency to genuine expertise involves the move from reliance on explicit rules and **conscious deliberation** to ... a flexible, adaptive responsiveness to the situation. Experts often do not need to detach themselves from the situation to analyse it or deliberate about

it, they are able to respond fluently and adaptively. The expert is not simply using the same rules that the novice and beginner are consciously dependent upon ... the expert has the ability to perceive the relevant features of the situation quickly and selectively. This recognition of patterns is directly tied to action, **there is no need for an intermediate step of conscious deliberation; “an expert's skill has become so much a part of him that he need be no more aware of it than he is of his own body”.** (Menary 2007, p.81)

I appreciate Menary's portrayal of skilled actions as representing the cognitive integration of self and environment in the learning and performance of skilled actions, but disagree that body schema, as set repetitive action patterns, are foundational, and that expert skill necessarily involves a lack of attention to one's 'body'. The word-idea 'conscious' as used in the text above and many others stands in for 'paid attention to', but the what and how of that is an unspoken taken for granted self-body dualism. The idea of body schemas has been taken up by quite a few philosophers and cognitive science researchers, perhaps without stopping to reference their own immediate embodied experience.

Stop for a moment and pay attention to where you are, how you feel. Take a deep breath through your nose, hold your breath for a few moments, then exhale through your mouth slowly. Pay attention to a wider visual field (as if you were driving) and the sense of your bodily presence in the room which probably now includes your breathing. There are many people for whom the varied and creative configurations of sensory-motor-visceral presence in being aren't shut out from awareness or shunted to the periphery, but instead are included in a fluid and informative way in whatever else is going on – reading, cooking dinner, staring at the computer and typing, climbing a mountain, negotiating a contract, and so on. By the way, as I wrote and edited those active instructions, I followed them. I was re-minded to include different aspects of my experience in my awareness and felt better for it. Perhaps the active directive description out of the blue inspired you, the reader, to try a shift of attention as well?

There are many ways of attending to self-in-world that are inclusive of 'body' awareness and not disruptive to fluent skilled action. Taking a mechanistic approach to learning skills – one that is goal driven in terms of outcome and/or in seeking after prior configurations of sensations in action – thwarts fluency and narrows attentive capacity. Deliberation (described by Menary above as conscious and disruptive) is intrinsic at many levels in actions, and as I have pointed out in previous chapters: there is a constant ebb and flow of contraction and expansion through the musculo-skeletal system; reactive contraction precedes generative expansion; and the CPP is functioning simultaneously on many levels intermingling continual processes of responding,

inhibiting, deliberating and choosing, or re-energising, coordinations of balance and attention in engagement.

Gallagher's research and the 'body schema' construct in particular have been influential in cognitive science research and analysis. The goal-oriented focus that I have critiqued in detail in other chapters and at the beginning of this one is central to Gallagher's body schema concept, along with the assumption that sensory-motor actions are automatic and related qualia are mostly unattended to in everyday and skilled action. It is illuminating to read the source text; I quote Gallagher below. [Bold text added for emphasis]

...in a majority of situations the normal adult maintains posture or moves without consciously monitoring motor activity. Posture and movement are usually close to automatic; they tend to take care of themselves, **outside attentive regard. One's body, in such cases, effaces itself as one is geared into a particular intentional goal, and this effacement is possible because of the normal functioning of a body schema.** (Gallagher 2005, p.44)

...a *body schema* is a system of sensory-motor capacities that function without awareness or the necessity of perceptual monitoring. ... The body schema ... involves certain motor capacities, abilities, and habits that both enable and constrain movement and the maintenance of posture. **It continues to operate, and in many cases operates best, when the intentional object of perception is something other than one's own body.**

...it is a system of sensory-motor functions that operate below the level of self-referential intentionality. It involves a set of tacit performances—preconscious, subpersonal processes that play a dynamic role in governing posture and movement. In most instances, movement and the maintenance of posture are accomplished by the *close to automatic* performances of a body schema, and for this very reason **the normal adult subject, in order to move around the world, neither needs nor has a constant body percept. In this sense the body-in-action tends to efface itself in most of its purposive activities...**

...I said that a body schema operates in a *close to automatic* way. I do not mean by this that its operations are a matter of reflex. **Movements controlled by a body schema can be precisely shaped by the intentional experience or goal-directed behavior of the subject.** If I reach for a glass of water with the intention of drinking from it, **my hand, completely outside my awareness, shapes itself in a precise way for picking up the glass. It takes on a certain form in conformity with my intention.** It is important to note that although a body schema is not itself a form of consciousness, or in any way a cognitive operation, it can enter into and support (or in some cases, undermine) intentional activity, including cognition.

... Is my body always intentionally present, that is, **am I always conscious of my own body as an intentional object**, or as part of an intentional state of affairs? The distinction between consciously *attending* to the body and being marginally *aware* of

the body is important. **It appears that sometimes we do attend specifically to some aspect or part of the body. In much of our everyday experience, and most of the time, however, our attention is directed away from the body, toward the environment or toward some project we are undertaking.**

(Gallagher 2005, pp.24,25,27)

Much of this is a description of goals triggering predominantly habitual responses to actions, and the trained neglect of sensory self awareness that is common in daily life activities in Western cultures. The 'I' and the 'body' are clearly two separate things and the body is an object.⁸ Gallagher's proof of his theory is based in his own personal/cultural experience and (in Gallagher 2005) also described in terms of 'others': people who are ill, people with brain damage, or skilled 'others' (like musicians – referred to by many researchers). The model is based on culturally grounded conditioned ways of attending to self and world. It is not 'the definitive truth' of how human cognition works. The evidence of that is there to be recognised in Gallagher's own text.

He acknowledges that 'some theorists argue that there is a constant awareness of the body that accompanies all movement and cognitive activity' (Gallagher 2005, p.27), referring to the dancer-philosopher Maxine Sheets-Johnstone⁹. However, 'in a majority of situations **the normal adult** maintains posture or moves without consciously monitoring motor activity' (Ibid, p.44). As an Alexander Technique teacher I worked with 'normal adults' from *all* walks of life. My practice involved continual experimentation with, and articulated questioning and discussion about, my students' attentional awareness of self and world. How they included kinaesthesia and 'body-sense' in their awareness varied widely, and was reflective of each of their lives and cultural grounding. It was common for students to report substantial improvement in psychophysical functioning as they learned to include more of their body-sense in their attention and awareness in action.

Musicians are often used as examples in arguments for trained automaticity in skilled action. From extensive experience as a musician and Alexander Technique teacher of musicians, I can write that skilled musicians have broadly inclusive attentional skills that allow for a fluid structuring of configurations of awareness and attention in action. However, I agree with Menary (as previously quoted) that when learning new skills people tend to (are generally taught to) isolate elements, focus narrowly, and bring to

⁸ Chapter 7 explores concepts of self-other and identity referencing Gillett, Watsuji and Levinas, among others.

⁹ Maxine Sheets-Johnstone's writing about embodiment, mind and self-awareness can be found in: 'Embodied minds or mindful bodies? A question of fundamental, inherently inter-related aspects of animation' (2011a), and *The Primacy of Movement: Expanded second edition* (2011b).

bear attention to sensory-motor elements in isolated mechanically minded ways. Beginner pianists often stare intently at their hands and the keys. As they have more experience, they explore ways of moving their fingers, hands, arms and whole bodies such that they develop strength, flexibility, and many effective capacities for holistic coordination. They realise that eyes don't move or place fingers, and that visual attention can be broader and flexible in the roles it plays, including none at all. Feedback is holistic, and includes the bodily sense of actions and the sounds that result from the interplay of actions and intentions.

It is not the case that skill equals fixed repeated engrained habits, as responsivity in a situation requires presence of mind and an improvisatory attitude toward action. Expert musicians always attend to the processes of playing and learning creatively, and to do so is not to 'detach oneself from the situation'. To be 'consciously attentive' to embodied processes is one of the skills of expertise. It is the case that the configurations of what we attend to in the complex field of action and sensation changes all the time, and our capacities for inclusive attention expand with experience. What is often described as the absence of bodily sensation or 'transparency of the body' in skilled action is simply the absence of countertensions generated by contractive stress response or by goal-oriented attempts to reproduce an habitual feel. It is common for people to associate 'feeling bodily action' with the sensations of countertension in the musculature. In Alexander Technique experiments people often comment that their 'feeling sense' of doing an action changes when they stop tightening inward, and instead generate and ride expansive impulses to create the choreography of actions. An holistic 'physical awareness' in activity is not the piecemeal or mechanical direction of parts. Goal oriented, habituated sensory feedback as direction and gauge of effect is not the process of a highly skilled athlete, carpenter, musician or writer.

The problem with training a belief in automaticity, such as in conditioned habitual schemas, and the neglect of attentive awareness to movement processes is that walking, sitting, for instance, are not auto-patterns. They cannot be, because we are constantly changing in response to our environment and activities. Our muscles and bones are growing and changing constantly. Walking is different everyday and everywhere; we are in a psychophysically engaging world that demands responsivity. Every act is an active interaction of being. If we try to recreate the same sensory pattern, there is a continual diminishing of responsivity, a distortion of capacity that degrades our structural integrity. As an Alexander Technique teacher I taught hundreds of people whose inattention to the processes of sitting, working at computers, carrying bricks, et cetera, resulted in cumulatively distorted 'postural' and functional patterns of use.

Unlearning habits of ignoring oneself in action, and learning to include the energising creative resources of active awareness through attention to the CPP, are profoundly liberating and readily available experiences. The stresses of neglecting fundamental elements of acting-in-the-world diminishes regenerative capacities and closes off one's awareness of a range of supportive resonances within and in engagements with the world. Mindfulness of the self in all its aspects includes means attention and flexibility, not just ends-attention. It is always the case that no matter how hard one tries to gain a preset end goal, the actual goal achieved will be in some or many ways different than originally imagined. The process shapes both the goal and one's experience of it.

Human organisms have developed and survive through their capacities to grow, learn, regenerate and respond creatively. The stress responses to the demands of a job, both practically and socially, are constantly being expressed through one's being in the reactive aspects of the CPP. If we do not flow through the process, picking up on the expansive re-balancing on offer and think creatively, look for the resonance of release and redirected energy in our work and interactions, then reactivity is reinforced into our psychophysical expressions of being in the world. Attending to the CPP at reflex level is relatively free from the particulars of daily life. Coping with the particulars becomes a creative, supportive challenge if the body-mind is able to find an expansive energetic equilibrium. So too this occurs in the negotiations between people. Constriction and resistance are signals for attention, the need to look for a way out; inhibition creates space and the potential for deliberations to show a way toward a more graceful responsive equilibrium. We are extended in our being-in-the-world, nothing is actually shut out by resistance, it is *expressed in* the resistance.

The CPP reflects the fundamental impulse for continual responsive rebalancing of the whole system of being. In Alexander work, it is clear, obvious, in its effect when the reflexive expansion through the spine reorganises the interconnections of postural balance. That intrinsic pattern can be seen in animals and athletes, or when any person stands up and stretches and takes a deep breath after focusing intently on something. You can see it in the flow of a musician's preparation for contact with a musical instrument, the upbeat that expands, focuses and organises the momentum which is then released into and through the contact of bow with string¹⁰.

Equilibrium is not a *static* state; it is movement. Just like the oscillations between the inhibition and excitation of membrane potentials in neurons that generate integrative currents through the brain, the ebb and flow of organismic balancing energises and

¹⁰ In Chapter 6, there is further development of the ideas above through music metaphors and narratives of musical experience.

organises the dynamics of engagement with the world. The impulse for extending into interaction is always an impulse for improvisatory balancing within the extended coordinations of equilibrium.

4. Attentive Expanded Awareness in Action

Maxine Sheets-Johnstone is a philosopher, dancer/choreographer and interdisciplinary scholar who has written and lectured extensively on a range of topics including the phenomenology of dance, feminist and embodied approaches to philosophical issues of ethics and power dynamics, and the centrality of kinaesthetic experience in thought and human action. She offers her idea of 'kinetic melody' as an alternative to relegating sensory-motor awareness to an automatic unconscious background. In doing so she references and critiques the ideas of both Merleau-Ponty and Gallagher. She reads Merleau-Ponty's idea of a experiential *background* in describing the consciousness of movement as ambiguous in that 'it effectively nullifies kinesthetic experience and kinesthetic memory, and thereby makes "consciousness of movement" literally, logically, and experientially unintelligible' (Sheets-Johnstone 2009, p.268). Her view is that 'by invoking a "background", Merleau-Ponty recognizes what must be recognized – "consciousness of movement" – but cuts short its actual experience, nature, and significance' (Ibid., p.268). Based on his presentation, Sheets-Johnstone argues that Merleau-Ponty doesn't acknowledge the extent to which kinaesthetic awareness and memory are part of the holistic texture of embodied experience. She offers her concept of a kinesthetic melody (also referred to as a kinetic melody) as a fuller description of kinaesthetic awareness in action.

A kinetic dynamics is sensuously present at the lower end of the continuum that describes the intensity – or focal to marginal-gradient of consciousness. ... a certain kinetic dynamics is undeniably underway that is familiar as well as self-propelling, a dynamics that is not there only if we notice it *focally*, but a dynamic that is present as a familiar, ongoing **kinesthetic melody**. ... In sum, a veritable kinetic dynamics is not reducible to a "(bodily) attitude directed towards a certain existing or possible task." ... [but] is kinesthetically felt, ... experienced in the flow of movement itself, and with a sense of familiarity (supposing that the movement is not novel) generated through kinetic memory. (Sheets-Johnstone 2009, pp.268,269)

In section 3 of this chapter critiqued Gallagher's body schema construct, as it is based in the idea that **unattended-to** habituated action patterns (imprinted into the brain) are foundational for fluent function in the world. From my perspective, his is a common cultural misconception that keeps physiotherapists busy treating repetitive strain injuries. I believe that every researcher's perspective is influenced by her/his own

experience, and that from his culturally embedded observations, Gallagher is offering a template for how human sensory-motor capacity develops and functions that makes sense to him. I strongly disagree with his conception; Sheets-Johnstone also critiques Gallagher's body schema construction.

To begin with, a body schema ... is at best an explanatory convenience, a hypothetical entity in the brain (or central nervous system as a whole) ... to do the work of putting movement together, furnishing a kinetic blueprint for neurological eyes only, as it were. In contrast, a kinetic melody describes both what is constructed neurologically in the course of learning – a distinctive temporal course of innervations and denervations, as in learning to walk, to brush one's teeth, to make an abdominal incision, to do the tarantella – and what is experienced – a distinctive dynamic flow of movement. A kinetic melody is not a *thing* in the brain ... but a particular ... experiential dynamic, ... a *neuromuscular dynamic* whose innervations and denervations ... constitute a particular temporal organization. Kinetic melodies thus straddle two worlds; ... they describe inherently dynamic patterns that are at once neurological and experiential. (Sheets-Johnstone 2009, p.269, 270)

Kinetic melodies 'recognize a vast range of bodily-kinetic dynamics "in face of the world"' (p. 271), in that each is a dynamic engagement, temporally and experientially located. Let us explore the idea:

What is a melody? It is a framework that is expressed in many ways. It can be: sung or played in higher or lower keys, played by any instrument, ornamented in innumerable ways, expressed with words or not, accompanied or not, given any sort of articulation or emphasis, sung or played by one or more people together or turned into a round, stretched or condensed, improvised on such that there's only a trace of the original melody but it is nonetheless recognisable – to name a few of the possibilities. So walking across the room is an idea that has some basic structure and memory attached, but how you do that isn't the same when you are 2 or 4 years old, or when you are 20 or 40, or the same this time as the very last time. It never is or was an unexpressive mechanical act.

Your demeanour and actions wholly express your choices out of the sum of possibilities from all that you have experienced, your creative capacity, and who you are. Most people won't take notice of the complex richness of your expression of being or their own in such a mundane task as walking because of the prevalent cultural training to relegate it to the 'unconscious'. People certainly don't talk about walking very much, or congratulate someone for doing it successfully past the age of one and a half years old. This brings up the topic of language, and how experience is articulated to attention.

5. Language and Embodiment

‘Uttering a word is like striking a note on the keyboard of the imagination.’
(Wittgenstein 1953/2009, PI6)

I start with word-language simpliciter: the things we say and write that are used to name concepts. In the acts of communicating we are experiencing everything that is happening in the moment, including subpersonal simulations of all sorts, current processes or resonances of mirroring and imitating, bodily sensations of speaking or typing, incidental action around us, memories that flesh out our thoughts, and more. Therefore, language *reflects* embodied experiencing and the meaning made therein *and* language *affects* experiencing – as a channeling of attention, as a coordination of communal exchange, as a stimulus for improvisatory meaning-making, and as an organising discipline that helps in the expression and communication of our thoughts. Language is a mode of articulating experience and assists in the processes of making meaning from experience. However, concepts, imagination and propositions are not intrinsically word-dependent, but words are dependent upon experience-with for their meaning. Humans can and do make sense of the world and communicate in many ways other than by the use of words. The idea that the use of words can be completely abstracted from experience is an illusion based on conditioned inattention to the resonances of sensory-motor-visceral experience and the contexts of use that generated the experiential meaning of our signifiers. ‘My words and therefore my meaning do not stop anywhere short of the fact’ (Wittgenstein 1953/2009, PI #95).

As explained in Chapter 1, in my practise as an Alexander Technique teacher words were valuable in the exchange of understandings and experimentation with my students. I learned very quickly through observation (multi-sensory including tactile and kinaesthetic observation) that a word was a *metaphor*, a stimulus to associations, rather than a *predictable* unit of meaning. The CPP at reflex level is an excellent reflector of the resonant associations of a word that is intended to focus attention in such a way as to allow expansive core release to organise movement. When it does not, reflexive contraction through the core kicks in. My students and I would often create more elaborate metaphoric associations for actions and qualities of movement, and they might include description through words, a particular sensory focus of attention, a spatial orientation, a meaningful image or memory of a place. And there is also a very effective activation of inhibition in simply choosing ‘no’ to whatever configuration of attention and intention is present to awareness in the moment, and then wondering in an open-minded way what will come next. A basic level of response to any of those ideas would be monitored through the reflexive expansion and contraction in the core. But as well,

there were many interactions and articulations of psychophysical awareness, deliberation and intention. We worked with propositions in an analog holistically embodied way rather than the digital atomistic way: not this or that, with a preconceived idea of the meaning of this or that, and resulting in an answer that fixed a truth. Improvisatory ideas flowed from and through those experiments, reflecting different combinations of experiences, memories, feelings, attitudes and capacities, and were articulated through words, movement, and the expressive actions of 'engagement-with'. Words had/have their meanings in experience – a sensory-motor language through which we step into the unknown, welcoming the unpredictable, which is where shared understanding and learning are generated. 'Shared human behaviour is the system of reference by means of which we interpret an unknown language' (Wittgenstein 1953,/2009 PI206).

These ideas about the embodiment of experience *and* our means of expression are not new to the 21st century. They have not arisen out of 20th century experiments in cognitive science, experimental psychology and neuroscience. Aristotle, Levinas, Alexander, Hughlings-Jackson, Watsuji, Dewey and Wittgenstein, among many others, expressed variations on a theme, commonalities across cultures, that grew from their direct experience and their personal and cultural-historical groundings. Wittgenstein struggled with the abstraction-bound orientation toward language and its role in philosophy and logic within some of the philosophical traditions prevalent in his milieu. The concept of 'language games' that he explained and used extensively in *Philosophical Investigations* provides an alternative understanding of the use of words – not as a means of calculation among inherently meaningful symbols, but as a game of rules wherein the markers' meanings are continually negotiated in the inter-change of embodied experience (Kenny 1973, pp.160-166).

I would like to offer a conversation with Wittgenstein here, with one section quoted and eight restated as a response to Wittgenstein's text.

Thinking is surrounded by a nimbus. – its essence, logic, presents an order: namely, the a priori order of the world; that is, the order of *possibilities*, which the world and thinking must have in common. But this order, it seems, must be *utterly simple*. It is *prior* to all experience, must run through all experience; no empirical cloudiness or uncertainty may attach to it. – It must rather be of the purest crystal. But this crystal does not appear as an abstraction, but as something concrete, indeed, as the most concrete, as it were the *hardest* thing there is...

We are under the illusion that what is peculiar, profound and essential to us in our investigation resides in its trying to grasp the incomparable essence of language. That is, the order existing between the concepts of proposition, word, inference,

truth, experience, and so forth. This order is a *super*-order between – so to speak – *super*-concepts. Whereas, in fact, if the words ‘language’, ‘experience’, ‘world’, have a use, it must be as humble a one as that of the words ‘table’, ‘lamp’, ‘door’.

(Wittgenstein 1953/2009, PI97)

My understanding of a series of Wittgenstein’s texts illuminating this point:

PI 104 – Sometimes we think the nature and particulars of our tools for representing a thing are actually the thing. In thinking our representation embodies the nature of the thing, we are deluding ourselves.

PI 105 – When we think that language can embody the thing, we are frustrated. That is, if we believe that words are more than simply propositions for consideration and exploration, referents, or **signs that indicate a network of experiences**. Logic wants descriptors to be clear and simple and fixed. So we struggle with trying to find the right signification, intuiting that its relational nature doesn’t allow it to be pinned down.

PI 106 – When we get tangled up in this process, we need to ground ourselves in experience. Conveying complex, subtle meanings is difficult with words alone, particularly if we try to create precision in isolation from the interactions of direct communication, or imagine that there is a meaning somehow independently defined.

PI 107 – Crystalline purity of meaning is a requirement of a particular symbolic (or languaged) process called logic. In taking our stance on this crystal, and in the light it casts on the world, we find that the more we try to polish the surface, the more readily we slide off of it.

PI 108 – We then see that rather than finding logic to be a consistent and discrete process with its own rules and objects, providing us with predictably justifiable meanings – it is simply a meaning-making tool. The crystal is actually a multifaceted, sometimes internally reflecting, lens through which we can engage with experience. Language happens in the spatial/temporal/relational field of human interactions. It is phenomenon, not a phantasm. And its structure cannot define its meaning in a void.

A word is like a chess piece. A chess piece has an appearance and substance, but its meaning/function is as a representation of possible interactions. A word is a sequence of sounds, calligraphy on a page, an image, a construct—its meaning is as a means... The philosophy of logic is subject to the same confusions as our use of language in everyday life.

PI 109 – If we are present in our perceptions and not merely hypothetical, then we may be better able to understand the structures of our thinking. That is the job of philosophy.

PI 110 – When manipulating symbols becomes an end in itself, problems in interpretation are generated that seem very impressive. This is a misdirection of attention to form rather than substance, and really only creates illusions.

PI 111 – Those illusions are powerful and deeply disturbing, because they seem to be validated by our language, yet they are disconnected from the experience that gives language meaning. Language is a profoundly important medium through which we

conceive of the world. The structures of language are part of the structuring of our perception, and they facilitate communication and relationship. When philosophy resides in a place of conflict between representation and meaning it has lost its way.

PI 112 – When “a simile that has been absorbed into the forms of our language produces a false appearance [we are] disquieted.” We readily perceive the falseness of these manipulations, of a structural manipulation that ‘doesn’t make sense,’ because our actual life experience is where we create and share the meanings embedded in our language.

A being is an ‘altogether’, an ‘all at once’ of experience, but with different constellations of attentiveness and articulations. If language, instead of being understood as a signifier of a truth, is understood as the articulation and communication of experience, as the expression of the fluid inter- and intra- agency of embodied social beings, then it makes sense that there are multiple and integrated languages of the body. From a place of attentive presence, the meaning-making of embodied experiencing can be known more fully as articulative and integrative, and that holistic, logical in its associative nature, creative meaning-making becomes accessible to our awareness.

Before words, humans experience ‘relationships-with’ that include movement, sound, dimension, the temporality of pace, texture, density, light, colour, scent, taste, and much more, and we structure substantial meanings in ‘relationship-with’ according to the proportioning that our capacities allow. To know something as a something (with a sense/Sinn for thought), is to make meanings of your engagements with that which you have identified (Gillett 2008, p.68)¹¹. A meaning is not an abstract, it is generated by a coordination within the experiences of extended being. Language as the articulation and communication of the meaning made of experience includes the articulations of movement, as gestures, dances, and the empathy of sensory-motor imitation.

Metaphors are a stimulus to the resonance of the sense we have made of experience. A word, or other expressed ‘reference-to’, is a stimulative metaphor – to memory, or to the capacity for empathy that grounds communication. Empathy is more than a mirrored ‘emotional’ conceptual response. It is expressive of direct sensory-motor-visceral processes that are integral in the experiences of being. Feelings of empathy are expressive of cumulative and complex identifications and actions arising through shared experience and meaning-making and are therefore foundational to ethics. For a more poetically expressed understanding of metaphor, I quote Levinas.

The reality given to receptivity and the meaning it can take on seem distinguishable.
For it seems as though experience first gave contents – forms, solidity, roughness,

¹¹ Gillett has written extensively on this subject, see also: *Representation, meaning, and thought* (1992) and ‘Culture, Truth, and Science After Lacan’ (2015).

colour, sound, savour, odour, heat, heaviness, etc. – and then all these contents were animated with meta-phors, receiving an overloading through which they are borne *beyond* the given. This *metaphor* can be taken to be due to a deficiency of perception or to its excellence, according as the *beyond* involved in a metaphor leads to other contents, which were simply absent from the limited field of the perception, or is transcendent with respect to the whole order of contents or of the given.

But a metaphor – the reference to absence – can also be taken as an excellence that belongs to an order quite different from pure receptivity. The absence to which the metaphor leads would ... be ... still to come or already past. The meaning would ... *make perception possible* ... There is no given already possessing identity; no given could enter thought simply through a shock against the wall of receptivity. To be given to consciousness, to sparkle for it, would require that the given first be placed in an illuminated horizon, like a word, which gets the gift of being understood from the context to which it refers. (Levinas 1996, pp.34-36)

It is visible that through this conception [the incarnation of thought], expression defines culture; culture is art, and art or the celebration of being constitutes the original essence of incarnation. (Ibid., p.41)

Central to both Johnson's and Dewey's work is the belief that aesthetics and the arts are essential to the comprehensive understanding of human being-in-the-world and the embodied meaning-making, empathy and communication that are the experiential basis for ethics. Johnson grounds abstraction in the holism of experience, and writes that metaphor is foundational and informative across disciplines.

'If our abstract concepts are defined primarily by conceptual metaphors, then theoretical and practical reasoning ... should be based on ... defining metaphors of fields such as physics, chemistry, psychology, anthropology, philosophy, religion, politics, and law. (Johnson 2007, pp.186,187)

The metaphoric expressions of meaning in arts disciplines are experienced as, and understood to be, built upon the richness of sensory-motor meaning-making and psycho-social experiences. The study of the phenomenology of arts disciplines can be informative for interpretations in human-centred disciplines such as the philosophy of mind, psychology and cognitive science. As was demonstrated by Barad's ideas and analyses in Chapter 4, the structuring metaphors in scientific disciplines are also reflective of human psycho-social contexts and the historical research methodologies in which scientists' interpretations are grounded.

I give the last words of this chapter to Johnson and Dewey, as reflection on and summary of the above points, and as introduction to Chapter 6 – The Arts, Embodiment and Ethics.

...meaning is not just a matter of concepts and propositions, but also reaches down into the images, sensorimotor schemas, feelings, qualities, and emotions that

constitute our meaningful encounter with our world. Any adequate account ... must be built around the aesthetic dimensions that give our experience its distinctive character and significance. (Johnson 2007,, pp.xi,xii)

...the chief reason that certain philosophers neglect notions like quality, emotion, and feeling is their mistaken ... prejudice against aesthetics. When the arts are misconceived as a minor, nonpractical, wholly subjective dimension of human life, aesthetics becomes merely a tertiary ... This "subjectivization of the aesthetic" (as Hans-Georg Gadamer calls it) has led to a number of unfortunate consequences ... that (1) the mind is disembodied, (2) thinking transcends feeling, (3) feelings are not part of meaning and knowledge, (4) aesthetics concerns matters of mere subjective taste, and (5) the arts are a luxury (rather than being conditions of full human flourishing). ... [Instead] following Dewey, ... **aesthetics must become the basis of any profound understanding of meaning and thought. Aesthetics is properly an investigation of everything that goes into human meaning-making, and its traditional focus on the arts stems primarily from the fact that arts are exemplary cases of consummated meaning.** [Bold emphasis added] (Ibid, p.xi)

Dewey, from the lecture *Preoccupation with the Disconnected*:

The very problem of mind and body suggests division ... the splitting off from each other of religion, morals and science; the divorce of philosophy from science and of both from the arts of conduct. The evils which we suffer ... in the whole separation of knowledge and practice--all testify to the necessity of seeing mind-body as an integral whole.

The division in question is so deep-seated that it has affected even our language. We have no word by which to name mind-body in a unified wholeness of operation. We are reminded of happier days when the divorce of knowledge and action, theory and practice, had not been decreed, and when the arts, as action informed by knowledge, were not looked down upon in invidious disparagement ... when the knowledge and reason were not so "pure" that they were defiled by entering into the wider connections of an action that accomplishes something because it uses physical means. In Greece, there was a time when philosophy, science and the arts, medicine included, were much closer together than they have been since.

(Dewey 1928, p.1)

Chapter 6 - The Arts, Embodiment and Ethics

The arts, in the processes of creation, sharing and experiencing, offer a potential site for complex multi-level understandings of the CPP. As acts of creative engagement, they place the artist in a responsive generative relationship with materials and the embodied expression of concepts. They are also, as 'exemplary cases of consummated meaning' (Johnson 2007), a rich source of complex metaphors expressive of the integration of holistically embodied cognition, actions and communication that ground ethics in the negotiations of the extended human life-world. The integrative and extended natures of experiences through all of the aspects of creation, performing, and sharing in the arts demonstrate that meaning-making and expression are grounded in sensory-motor experience and are not exclusively or primarily structured and found in word-language.

I begin this chapter by exploring ways in which music – through its substance and expressions – is a metaphor for the holistic integration of meaning-making and experience in and of the world. Harmony and improvisation are offered here as a metaphors for responsive equilibrium in the resonant engagements of self-other-world. Ways in which the Core Psychophysical Process is demonstrated in aspects of the engagements in music and other arts disciplines will be explored. The CPP is integral in the development of reflective self-discipline, which is a foundational skill for our survival and thriving as social beings. Reflective self-discipline is essential to learning, expression and engagements in performing and creative arts, and the CPP is central to those experiences.

1. Music Explains Itself: meaning is embedded in culture and relationship

Dewey claimed that in ancient Greece science, philosophy, mathematics and the arts were holistically integrated in theory and practice. Ideas about the world and human engagement were grounded in the natural world and the resonances of human experiences-with. The body or substance of Western European music, which was defined by the ancient Greeks and persists in the same fundamental structure today, is based on the proportions of resonances (known as harmonics) found in nature.

Anybody, and my cat, hearing a vibrating body making a sound also hears a cluster of resonances that are produced simultaneously – riding on the primary pitch as it were. A clear example of this matrix of resonances would be a vibrating string, which vibrates along its whole length and simultaneously also in halves, thirds, quarters, et cetera, and theoretically infinitely down the line. Those subsets of vibrations are named harmonics or overtones. The Greeks defined those sound relationships mathematically as well as

aurally. They devised 8 note strings of pitches within an octave – which is the sound distance between the whole string and the half string vibrations which produce twice the resonance frequency. Those doubled frequencies ‘sound the same’, only higher in pitch. By using that property of sound, they scaled down the higher resonances (overtones) to notes that fit within the octave range and created melodic lines from out of the harmonics of bodily vibration. The spaces between notes varied from one pitch to the next according their proportional generation through the natural harmonic series and how those pitches fit together within an octave.¹ Melodic scales were defined and named according to the different patterns of large and small spacings (intervals) that resulted from starting at different points along that string of pitches. These sequences were each associated with different characters, qualities, effects on the psyche, and ethical referents (Munro, 1894).

When a body sounds, it inspires sympathetic vibrations in other bodies, some of which also then produce sounds, each body with its own unique pattern of harmonic resonances. Sounds sounding together create yet more congruent or clashing sounds, until the resonances run their course and, often having passed their motion onwards to others, fade into silence.

Of course, music consists of more than clusters of pitches – vibrations per second. It has a consistency, a texture and density that is experienced bodily and spatially. It exists in a temporal field; it moves within and through space and time and defines both along the way by its actions and interactions. It has a pulse and pace, and the stride is infinitely variable but connected and shaped by a heart’s beat. Just as when you drive a car, or walk down the street, the organisation of focus and intention in music generates an experience that encompasses and organises information into larger and/or smaller groupings, providing a synthesis of overview and engagement in each moment.

But the composition of music, the *being* of a musical expression, is more than the sum of its properties. Music is generated and exists in experience. The nature and structure of music was made vivid to me when a musician friend of mine described her experience of listening to a waterfall while camping in the wilderness of British Columbia. One night she and her husband were sitting by the fire when her attention was suddenly taken to the sounds of a nearby waterfall. She heard the interplay of resonating harmonics and found melodies underscored by the rumbling pedal note of the water flow. She sang along with the music she heard, and both she and her husband realised that it was very much like the traditional music of British Columbia’s First Nations People.

¹ The correspondence with Aristotle’s ideas about perception and proportion are addressed in Chapter 5.

My experience as a musician has been predominantly through Western European musical traditions. Years ago when I was a cello student in the 1970s, I went to a series of Master Classes taught by the great Russian cellist Mstislav Rostropovich. He was my hero; I loved the sound he made and the way he interpreted music, particularly Russian music. He lived in Russia through a time of great political and social turmoil, and then escaped to the West for artistic freedom. While in Russia he played music with and had works written for him by the composers Prokofiev and Shostakovich, both of whom struggled with the cultural politics of their times.

At one of the Master Class sessions Rostropovich worked with a student on the Prokofiev Sonata. The student played the first movement proficiently, but without a depth of understanding of the piece. Rostropovich played a phrase for him and said something like, “You must understand that for Prokofiev, this music embodies characters, the Russian people and spirit. This phrase, this is a Russian peasant...” And as he played it I could sense the movement and body, earthiness and strength, in the person of the music. And then he said, “and these big chords, they’re like throwing chunks of meat to the audience,” as he strummed chunks of sounds into the room with his big hands. And then, “and at the time this was composed, the people were HUNGRY...” We could feel the power of this and understood that they were hungry for more than food; they were hungry in their souls...

As I listened to a student play this piece in recent times I was struck by the integrity of the music, the force that the composition had to convey the meaning, culture, tradition, experience and emotion in which it was conceived. And also by a bit that was missing. Perhaps it was result of the well fedness of the player, the distance from struggle for physical, cultural, and emotional survival. I think it was also the lack of passed-on tradition from a teacher, and/or the student’s lack of interest in knowing more about the context, that somewhat limited his ability to bring the piece to life. Music has character, an internal integrity, and is founded in physicality, but resonates fully, expresses and connects fully, with both its whakapapa and present engaged. Just as we do.

2. Harmony, Resonance, and Metaphor

I used to think that harmony meant consonance, sounding pleasant, playing nice, and it still has that ring for me when I hear the word. That interpretation of the concept fits with the usual use of the term, many ideas about colour harmony in the visual arts², and the Western social and cultural common sense version. The music world has a more inclusive and expansive use of the word. In that field, harmony is about the interactions

² Rozsoivits, I. (2013) ‘Theories of colour harmony: past, present and future’; Westland, S., et al. (2007) ‘Colour Harmony’.

of sounds sounding together, though not necessarily as perceived consonance. The use of the word harmony in a musical context is closer to the Greek origins and concepts of the word, and as I have said, Western music is founded in ancient Greek musical, mathematical and philosophical systems intertwined.

Philolaus, ca.470 to ca. 385 BC, in his book *On Nature*, described harmony as a bonding together of unlike elements which created order:

Nature in the world-order was fitted together both out of things which are unlimited and out of things which are limiting, both the world-order as a whole and all things in it. (Philolaus, in Huffman 1993, p.93)

Concerning nature and harmony the situation is this: the being of things, which is eternal, and nature in itself admit of divine and not human knowledge ... the beings of the things from which the world order came together ... since these beginnings pre-existed and were neither alike or even related, it would have been impossible for them to have been ordered, if a harmony had not come upon them, in whatever way it came to be. Like things and related things did not in addition require any harmony, but things that are unlike and not even related ... it is necessary that such things be bonded together by harmony, if they are going to be held in an order.

(Ibid., p.123,124)

Musical harmony can serve as a metaphor for human relations, for the substance and actions of engaging and creating together. We are all connected and part of the same basic corporeal material; we initiate and resonate in engagement from the integrity of our autopoietic beings of matter and energy. True enough, some resonances or resonators exist far from one's own tonic home base. The clanging sounds of contact with such otherness can be disconcerting, but dissonance is as important as consonance for the fullness of life – perhaps even more so – and needs to be acknowledged and valued. The immediacy of coming face-to-face with such otherness brings one vividly into engagement in the present and invites the harmony of discourse.

To understand resonance it is useful to look at what is called the harmonic or overtone series based on the pitch of C, which is referred to as the 'tonic'. Earlier I explained that every resonating body produces not only a primary pitch, but also a series of overtones that are generated from simultaneous vibrations of parts of the whole. Take a look at the note C's harmonic series. The normal human voice range (from Bass to Soprano) extends from the C two octaves below piano middle C (C2) to the C two octaves above middle C (C6). If an unobstructed string vibrates at the low pitch of C2, it will generate, within that 4 octave range, an overtone series that includes every note in the Western music system's C scale, bar one. The 'missing' note is F, which is the generator of C, from a frequency of vibration that is almost below the level of audibility. F produces C as its

closest and strongest overtone. The chart below shows where the notes of a C scale can be found within its overtone series, C's relationships to F and C's closest overtone G.

C overtone series: C ₂ , C ₃ , G ₃ , C ₄ , E ₄ , G ₄ , Bb ₄ , C ₅ , D ₅ , E ₅ , F# ₅ , G ₅ , A ₅ , Bb ₅ , B ₅ , C ₆	
Scale of C: C ₍₂₎ , D ₍₅₎ , E ₍₄₎ , F, G ₍₄₎ , A ₍₅₎ , B ₍₅₎ , C ₍₆₎ // F overtone series: F ₀ , F ₁ , C ₂ , F ₂ , A ₂ , C ₃ , etc.	
Scale of F: F, G, A, Bb, C, D, E, F	Scale of G: G, A, B, C, D, E, F#, G

In the C overtone series, notice that the notes that aren't part of the C scale are the pitches that complete the scales of C's *dominant* overtone – G, which is the first different sounding note in the series, and C's *generator* pitch F.

Interestingly, the vibration (F) that generates the Low Bass C is found below the level of the human voice in this stream of relations. F₀ and F₁ are very low vibrations, more whole body earth tones if you will. They are felt like the rumble of low bass that huge speakers produce at a rock concert, or like the sensation of vibration in the ground, air and body produced by 32 foot organ pipes in a cathedral, or the roar of an earthquake. Such bodily sensations are often associated metaphorically with concepts of otherness or fearsomeness and relegated to the dark side in many religious, philosophical and societal traditions. So audible, registerable, harmony rests on a “dark” underpinning of which we are ordinarily quite unaware.

The other end of otherness, soundwise, brings us to what is called the leading tone, B, which is the most dissonant to the tonic. That overtone is a very high pitch, found last before the tonic C₆ at the top of the human voice range – only a coloratura soprano like Mozart's Queen of the Night dares to go higher. That penultimate pitch, B natural, is the closest to the tonic, and is called the leading tone because that closeness both clashes with the sound of the tonic and draws your attention most exquisitely to it. You might say that the expression of dissonance in that contact, and your acute awareness of it, leads you to a heightened sense of the tonic as a resonator or actor in the scheme of things in a musical world. Though it's said that the leading tone resolves to the tonic, it has its life in a range of harmonic relations and is not defined only by that particular role.

All resonances are not the same – in intensity or in the way they are perceived in any particular situation. Each resonance has an infinite extension in relationship; their definition is fluid, in relation to their interactions and mutual responsiveness. They are not solely constrained by their intended expression in a context. For instance, B is the (dissonant) leading tone in the key of C, but also and often in the same piece of music,

functions as the *dominant* of G major – considered supremely consonant. The sound – B is a resonance centre within a field and an atmosphere. It can be part of music; it can also be the pitch of the hum of your refrigerator or a seagull’s cry (still music to the ears of many composers).

3. Defining Music

Music is a language of harmonious frequencies; music is the intentional use of the relations of resonances to inspire a sensory experience. It is means of communication through metaphor that is both like and unlike verbal language. Though music can and often does include the explicit references of words, in this case I am describing the structured sound itself. In the contemporary western world, some people might describe such music as abstract or formal, but its generation and presence is substantial and grounded in nature, culture, and objects of craft and instrumentality.

It is based on the stuff of matter and motion, which is then organised and shared by people in such a way that it is meaningful to them. Even if maker(s) and hearer(s) don’t share common cultural structuring preconceptions (a language of music), the integrity both of the construct and of the resonance structure of sound – perceived vibrations – will likely identify the composition as something intended to be meaningful. A particular frequency of vibration situated in ‘music’ has an identity in an organised continuity and a particular entity of sounds. That frequency can be generated in an infinite number of ways and situations, but its affiliation with the intentional acts of communication identifies it as music. For that communicative quality, intention and reception are both key, which I suppose is why, to me, a bird sings. But then my neighbour dog’s barking is simply annoying, though the dog is attempting to communicate. Music, as such, is a situated human idea.

Music is metaphor – generative of experiential meaning-making. A note itself within a musical composition is also a metaphor, suggesting and inspiring an experience of itself that extends beyond itself, suggesting its root, its resonances, and its overtones potential as filtered by the generating instrument to create a particular timbral range. Within the music the note suggests its context, a field of relations, a cultural expression, and the shared experiences aroused by resonances and sensations of sound in composition. At the same time, it is also not metaphor but taken as an object in itself and in a context of other sonic objects which change it to our perception by framing it in a certain way. The relations of a note in music, and sounds in the field of resonance, could be understood in a parallel way to Watsuji Tetsurō’s conception of a being in and of community – ‘*sonzai* of *ningen*’ (1937/1996). A human being is part of the totality of being-in-relationship-

with, and yet is defined as self, and self identified, through the realisation of separation which happens in the act of recognition of others. At the same time, a being is brought back into unity with the totality through that recognition and the practical interconnection of acts (Watsuji 1937/1996).³

There's more to the nature of the encountered than the meaning we make of it in a particular context. That's not to diminish the value of the identification and meaning made in each inherently improvisatory and creative interaction – only to realise that beyond the immediate attention we pay to any element, there is a broader extension of connections possible. Every resonance is also an overtone. A sound is at once itself, a creation, a reflection, a response, and an instigator – as is a person, a being-in-relationships-with.

4. The Phenomenology of Engagements in the Arts

The phenomenology of musical experience, and of other art forms, starts from a place of relationship, a complementarity and **mutuality** of expressive capacity that is directed toward creative action. There is an interplay between a musician and her instrument, through their generative processes and capacities *in order to* make music; the sculptor and the stone, by the properties that are revealed through their substances and **responsivity**, create meaningful form. The corporeal being of the **painter** and the substance of paint are **responsive** to colour and light, the picture is the expression through the qualities and capacities of being of both. A dancer's creation of expressive movement exists in responsive sensory-motor contact with ground, space, and gravity – kinaesthesia is both intra and inter-responsivity experienced. Artistic endeavours create meaningful expressions out of substance and **relationship**; the media are **integral** in the extended embodied process.

The creative nature of the inquiry includes otherness as ally, as co-creator. The artist starts the process already constrained by relationship, committed to a inter-responsive developmental creative project that is unpredictable. An artist is not a subject projecting a pre-formed intention to and through an object, but is already disciplined by the nature of substances, proportional responsivity, and creative potentiality in an existent world within-which. Arts Phenomenology asks: What is the experience of being with, acting with, with the intention to (the act of creation itself only completed by doing/enacting/ creating or performing)? That perspective leaves behind

³ There is more detail about Watsuji's philosophy is in Chapter 7 – Bodily 'I'dentity. These ideas resonate with Hurley's self/other distinction through imitation and inhibition, and Varela's autopoiesis.

subject/object and mind/body dualities to understand human experience as extended and grounded in embodied interaction, and consciousness as attentive presence in collaborative creative action.

A short narrative is illustrative here:

Years ago my housemate's boyfriend named my cello Howard. I don't know why, but I didn't mind, since Howard was the name of my first childhood musical mentor. Al also named my bow – Beauregard, of course. For me, my cello wasn't identified as male or female, but was certainly my true friend and closest companion for many years. My cello Howard was an old Italian, and had the scars of having survived WWII god knows where before s/he made it to San Francisco where we met. As it is with people, interesting relationships and scars from life experiences gave Howard a complex character and a richly expressive resonance. The kind of relationship I am about to write about evolved in my experiences with Howard and Beauregard, but is perhaps even clearer and more vivid to me in the present, as Beauregard and I now have a different, young friend, also Italian, but as yet unnamed.

Anthropomorphism aside, a musical instrument has a physical life and potential that evolves through its experience of interaction with people. Its story is both intimate and public, and its history extends back into long traditions, and continues through its influence on the people who come into contact with it. I always think it's sad to see a beautiful old instrument in a museum, because if it can be played, it needs to be played to be what it is. So this is one description of what it is like to practise my cello, this particular cello being relatively new to the world and untutored.

I get the room set up: music stand, tuner, metronome, a proper chair and a carpet to put it on so I can stick the cello spike into the floor wherever I like. I greet the cello as I unwrap it from the case, and I'm still always slightly surprised by its golden orange glow and unmarked beauty. Howard was blood red, low sheen, subtly wrinkled all over, and scarred. When I brought Howard to the shop to see about trading him in on a newer model, the Luthier was lusting to get his hands on my old Italian, knowing that he could work his magic to make the once gorgeous sounding instrument strong again and more beautiful. Anyway, I was very dubious about the brand new cello, played it for hours to bring out its sounds, but couldn't feel comfortable with the shiny evenness of it. The Luthier took it and buffed it to corrupt the sheen a bit, and assured me that in no time the finish would age. Meanwhile my husband had been sitting there for hours chewing his nails to keep quiet, thinking: 'my god, that's an incredible cello, what a sound, how powerful and even it is, please let her realise it and let go of her attachment to that cello that is now holding her back...' He didn't dare to speak his thoughts, as Howard and I

went way back much further than my relationship with him. Needless to say, I came around, and Howard now has a renewed life in someone else's arms. Back to the present...

I wipe the rosin off the strings with a cotton handkerchief; I dust off the body of the cello with a silk scarf. I rosin my bow, then head for my practice space. After sitting down I look over the cello, fuss with the endpin height and compromise as a start. There are rituals of acknowledgement, respect and negotiation in the greeting. Here are two bodies: one wood and mostly hollow, person-shaped and sized, with metal vocal chords and a very long neck; the other is mostly water, not hollow, intentional in movement, and quite a bit more complex. It's a balancing act. I balance within myself and on the chair, on the ground and within the space of the room; the cello balances on its endpin and against my chest and knees. The greatest temptation is to snuggle up against the cello, to wrap myself around it and conform to its angle and edges. But the balances are found, and the vibrations resonate, in the spaces between as much as in the contact. When I am in the flow of music-making with my cello, the generating and responsive resonating together creates a mutual field of embrace.

Tuning my cello takes awhile. Unlike a piano, whose intervals are slightly unnatural to accommodate fixed equality between all scales, a cello can ring from head to pin with natural harmonics. For the sake of the music, a player can adjust every note to draw out the tonal relationships and enhance the expressive meaning of the harmonies and phrases. But tuning has its own rationality. The perfect fifth intervals express congruence with ringing overtone-rich resonance in the upper registers. The low C and G produce a thick warm growl that activates the other strings. If the cello strings (low to high: C, G, D, A) are right in tune, a stopped D on the lowest string (C) will make all the other strings vibrate sympathetically, so that the whole instrument rumbles and echoes with sound.

It takes years for an instrument to become generously resilient. The pieces are made and fit into a whole that isn't fully integrated until it has been activated by a wide range of harmonic resonances. Not only pitch per se, but the timbre of sounds experienced will expand the palette of colours that the cello can generate. Of course the cello doesn't play itself, except for sympathetic vibrations picked up from the environment. There are infinite varieties of qualities and types of contact between player and instrument, which is why each musician makes quite different sounds, even with the same instrument.

Because my cello is inexperienced, I spend quite a lot of time giving it the opportunity to resonate fully through a range of pitches. I tune it with minute attention to ringing perfect fifths, and then bow the open strings for volume so that the whole instrument

really gets engaged. When I stop bowing and hold the cello away from me, it goes on resonating with interesting overtones for quite a while. I play scales, listening for the quality of the intervals and the cohesion of the sound, and watching for the sympathetic vibrations in the open strings.

I notice that I haven't mentioned the bow much before now – perhaps because it seems like an extension of my arm. Having had such a long relationship with Beauregard (41 years), I may be taking him for granted. A bow is quite an extraordinary intermediary between one's body and the body of the instrument. Its own nature and qualities make demands on both the player and the cello. The bow gets its strength from the resilience and flexibility of its wood. The articulations come through the grippiness and springiness of the horsetail. Though the contact place for the hand is called the grip, you don't, as one's hand must be easy and responsive to the wood of the bow vibrating with the string.

In the first period of practise, I seek a calm centred balance in myself and with my cello. I play for resonance, to be in tune with and responsive to the cello, and to encourage the most open and integrated expression of sound possible. It is lovely to experience being in a resonant field, to feel the vibration of the body of the cello and the bow, and the soundwaves between, around and radiating from us. Once we're somewhat consistently in sync, I play/we make some music.

5. Music-making is Embodied, Extended and Inclusive

To play in a chamber group – a small ensemble without the authority figure of a conductor – is a richly satisfying musical experience. For one thing, there is the 3D nature of the communication involved. In rehearsal, the musicians are in a mutual flow of engagement with their instruments, each other, and the composer and her context through the metaphoric suggestions of the composition. In performance, the audience members become part of this community, which extends beyond the present into a connection with the history and cultural context of the music, along with the history that each person brings to an experience. The process of the creation of the music, itself both individual and collective, is also responsive to the engagement of the listeners. All of this takes place in an expansive and inclusive spatial field that is defined by the resonances, sights and sensations of gathering together in a defined space.

To play together, chamber musicians need to have an expanded field of attentiveness that is multi-sensory. For instance, both sound and movement are communicative and coordinating – musicians move together, and the visual sense is extended beyond the

music manuscript to include the whole ensemble for musical cues. It is more than a conversation, as each player is playing together with and supporting the music made and people making music. The cellist might pick up, intuitively, that the second violinist is nervous in anticipation of a very fast complex melodic run. In the measures before the violinist's run, the cellist might breathe deeply and relax in order invite calm focus through sensory-motor empathy, and emphasize the beat and rhythmic structure to lay down a supportive foundation that provides a boost of momentum for the run. When the players are playing in true synchronistic harmony, and even when they're not, it creates a field of resonance and expression that carries the music, the musicians and the audience into a zone of reciprocal attentive engagement. I included 'the music' in this grouping intentionally, as the responsivity and reciprocation of the resonances guides the process. The performance rests not only on the skills and efforts of the moment, but also on the hours of rehearsal before, and that is hard labour, learning, negotiation, creativity, pleasure in the experience, frustration, the motivation of responsibility to the music and other musicians, and more.

When I first started performing, a wise teacher told me to remember that the audience is vulnerable, much more so than the performer. After all, people have come to the theatre hoping to hear something beautiful, or interesting, or in some way meaningful. They are sitting there with open ears, and the musicians have a responsibility not to assault them with noise, or make a fuss about their own egos. At the same time, the audience is very forgiving, and it's an imposition for a player to agonise over occasional mistakes. The thing to do is to continually focus on the music (the field of engagement or the space between – Watsuji). There is a parallel here to Levinas' idea of the responsibility of the Same to the profound vulnerability and demands of the Other – in the face-to-face encounter, in this case ear-to-ear and really body-to-body. And then it is a simple step to understand from the metaphors of music and music-making that the engagements of life are embodied, interconnected, inter-permeating, and all at once substantial, energetic, social/historical and environmental. In the human life-world, ethics is the patterning of, the harmony of, human engagement, which is an intrinsically fluid and dynamic process. That brings us to improvisation.

6. Improvisation and Arts Phenomenology

Improvisation in the musical world is generally associated with the idea of spontaneous composition – making it up as you go along. There is also an idea that has been floating around the arts and education worlds for several decades that improvisation is about being 'totally free', self-generating, and somehow inspired by the ether and your

untutored unique capacity to express *yourself* – no prior knowledge and little skill required. That idea is *meant* to be an acknowledgement of the constant integrative learning and making sense of the world that we do everyday, which lays down a foundation for creativity and expressive communication. But it sells human agency and capacity short, and abdicates responsibility for educating children into the complexities and richness of the social, historical and communicative milieu that is the situated human life-world.⁴ That intent is also undermined by the singular ego-based concept of self that has a long history and resonance in Western culture.⁵

Skills develop through focused activity, interaction and reflection, and the development of a rich capacity for communication requires the building of a physical and conceptual structure that provides the resources for new creative acts. That learning and communication exist in interaction; as Watsuji wrote, ‘the practical interconnection of acts includes the mutual understanding of subjects’ (Watsuji 1937/1996, p.33).

The scaffolding that supports one to create a musical experience can be more or less complex, and may or may not include a map on paper. Improvising Jazz musicians who ‘never learned to read music’ are moving with the skill of a ballet dancer through familiar topographies generated by years and traditions of aural communication. Thus improvisation is always bounded within the constraints of physicality and enabled by structures of possibility which reflect a prior structuring experience in a domain, within the human life-world.

Steven Nachmanovich⁶ is a musician, philosopher and writer who teaches improvisation to classically trained musicians and other performers, and offers workshops for people from all walks of life. He also writes about improvisation, and in ‘Improvisation as a Tool for Investigating Reality’, he described an improvisation with a young neighbour.

The other day I was in the grocery store and ran into a little girl I know, Vlera, who is two years old. Her parents are from Kosovo, so she's half an English-speaking environment and half in an Albanian-speaking environment. When she talks to strangers, she can only say one word, which is "Nah." We had the most wonderful conversation in "Nah": *Nahhh in innumerable tones and timings and colors of*

⁴ I recently, in passing as a matter of course, corrected the very poor spoken grammar of a music student, and was informed by the mixed age group that students are no longer being taught grammar in middle school or high school in my town. They are told that content is more important than structure, so not to bother learning grammar. It seems to me rather like giving a starving child rice and water, but no recipe, pot or heat to cook it. And children are hungry, for structure.

⁵ Some of the roots of the ego-based singularity Western concept of self are in the atomism examined in Chapter 4. Different conceptions of Self/Other dynamics and identity are explored Chapter 7 – Bodily ‘I’-identity.

⁶ Nachmanovich's book, *Free Play – The Power of Improvisation in Life and the Arts* (1990), elaborates ideas about the values of improvisation based on his multi-disciplinary experience.

expression, Nah! Na? Na.....h passed back and forth between the two of us for many minutes. I realized that with a one-word vocabulary, *naaaaaah*, you can come up with an infinite variety of expression. And she could do it because she was completely uninhibitedly wired into her nervous system and to her surroundings and her feelings of shyness and fear and boldness and playfulness and flight and fight. All these expressions and moods and explorations of relationship were swirling around inside that single syllable which we tossed back and forth to each other.

(Nachmanovich 2006, p.2)

I also draw attention to how I and perhaps you might have imagined that conversation as we read his Nachmanovich's text. The improvisatory duet of sounds was accompanied and enriched by expressive movement of their whole selves, and the tones of energy in gesture and facial expression, all in active relationship with the environment. (What role did you have in the imagining by the way – man, child or observer?) From his perspective grounded in performing arts, literature, anthropology and the philosophy of mind, Nachmanovich also challenges the 'thingness' of reductive or dualistic definitions of form and relationship. The presumptions of meaning or being that accompany representations like words, or assumptions that we carry into interactions with people, can diminish the potential for responsive and effective engagement.

... I was visiting a dear friend of mine, Michael Stulbarg, who was a pulmonologist in San Francisco, what we used to call a left-brain person, very logical and scientific. I asked him, as a doctor, what does improvisation and creativity mean to you? Without hesitation, he said, it means actually seeing the patient who's in front of you, rather than a textbook case or a diagnosis you've been taught. Any doctor, who is in practice, and who really practices their practice, knows that each person is absolutely individual and cannot be completely categorized except in terms of their own situation. To see clearly that uniqueness, to see another human being, is a remarkable thing. And that ability is at the core of improvisation.

(Nachmanovich 2006, p.1)

So if we go back to our initial question of improvisation as a tool for investigating reality and ask what is the reality that is being investigated, that reality is inter-being. Inter-being, then, is the opposite of thing-ness ... There is a South African word, *Ubuntu*, which is the same thing as inter-being. Desmond Tutu brought it into currency in the West and it is the opposite of Descartes. Descartes is famous amongst other things for saying, "I think, therefore I am." *Ubuntu* means "I have my being through your having your being." *Ubuntu* is the territory that we get into as we do our improvisational explorations.

(Ibid 2006, pp.4,5)

The idea of improvisation re-presented itself to me with a different perspective on its meaning during my study and teaching practice of the Alexander Technique. Something was made explicit to me there that was always in and around all that I had experienced

before. Acknowledgement of the experimental and creative possibilities in every moment is fundamental to Alexander practice. The commitment is to approach each interaction without a preconceived idea of the outcome, in all good will, and be surprised by what is generated from your capacity in concert with the possibilities inherent in the situation. In the background as resource are the histories, beliefs, skill-sets, prior solutions, beliefs about limitations, et cetera. At any time, a person can choose to be inclusively attentive and let go of focusing on achieving a goal in a particular anticipated or familiar way. That opens the door to a very enlivening bout of experimentation that takes one back to the roots of animal structural integrity and fluidity, draws on all available developed capacity, and then boots a person into the unknown territory of real head-to-toe holistic integrated learning.

The Core Psychophysical Process is evident through many layers of creative intra-interactions. The ebb and flow of motion through the neuro-musculo-skeletal system is intrinsic within action. The sensory-motor-visceral actions of reflexive expansion through the core provide an energising impulse for re-balancing in action which is psychophysically systemic in its effect. Inhibition opens the door to present-tense inclusive focus and deliberation. Reactivity is expressed in attitudes and ideas as well as 'bodily' action. To stop, and then consider an idea, belief or opinion, without being committed to an outcome or the assertion of a prior meaning or disposition, creates space for improvisation through 'open-minded' attentiveness to the possibilities present in the engagement of the moment. This is of immense relevance to ethics, and foundational to the harmony of differences in the improvisational balancing of responsive equilibrium.⁷ Deliberation is fluent and inclusive from a stance of attentive presence that is inquisitive without aggression or appropriation; curiosity invites engagement and a generative creative interaction with others.

It is a common misconception that musicians and other performers train themselves for automaticity of action. Practising an instrument is often used as an example of 'training the body' to develop units of complex actions which then become habitual and 'unconscious'.⁸ This then supposedly frees the performer to focus his attention on things assumed to be more important and characterised as discrete mental processes, like directing the expression of the emotional or intellectual content of the music. One example of many:

⁷ The implications of the CPP for ethics is discussed more fully in Chapter 9.

⁸ The reader will recall that that ideas about 'automaticity', reflex and habit have been addressed in various ways in previous chapters, 1 & 5 in particular.

It is interesting to note that concert musicians try to limit their conscious involvement during the performance of well-rehearsed pieces, because too much attention “gets in the way.” In other words, they strive to take the *voluntary* out of their performance. Schmidt’s analysis of how movements become automatic invokes both *pre-programming* and *specialised processing* (fixed action patterns, subroutines). (Prochazka 2000, p.421)

Dance is another field where the process of developing skills is misinterpreted as a mind over matter process that results in the ability to forget about ‘the body’, to put *it* on autopilot as it were, in the acts of expression. A footnote in Chapter 5 may have led the reader to the philosopher de Vignemont’s UTube excerpt from her lecture, ‘Learning About Embodiment of Consciousness from Dancers’. She presents the experience of dancers as mechanistic in training and as transparent to awareness in performance.

Their whole life is about their body and controlling their body. When you are dancing, there is this view that maybe you forget about your body because you are so much immersed in the music... that you have music and control of movement, and in between you have nothing ... the body is almost transparent when we move.

(de Vignemont 2011)

Another view of this scenario is that de Vignemont’s imagined dancer forgets to ‘think of her body’ as a mechanism that she is striving to control, and doesn’t have words to articulate the wholeness of her embodied experience in performance. Dance is an expression of consciousness through the body rather than focused on it as an object separate from oneself. The dance is the language that speaks of the expressive wholeness of sensory and kinaesthetic awareness⁹.

It is the case that Ballet in some cultures has been very much influenced by visual training and interpretation. When the Ballet moved behind the proscenium arch in theatres, instead of taking place in the centre of a hall as in the time of Louis XIV, French choreographers began to look at dancers’ bodies as expressive of visual lines. Exaggerated postures became part of the form and were trained with mirrors as reference, so that to an extent the sensory feedback of the dancers’ kinaesthetic sense was subordinated to the visual in service of the art form. However in the 20th century, Russian dancers, for instance, were trained more holistically in the arts, as they studied music and visual arts as well as dance, and Russian choreographers tended to work more dimensionally in set design and with the spatial interactions of dancers. I had a memorable experience of the difference that culture and training makes to artistic presence and expression when I watched a performance of the New York City Ballet

⁹ An example of dance as holistically psychophysically embodied expression is found in the works of Pina Bausch. A documentary has been made about Bausch and her company by Wim Wenders (2011), an introduction to which is available at: <http://www.pina-film.de/en/>

with whom Mikhail Baryshnikov, a great Russian trained dancer, performed. The audience and I watched the performance of many excellent dancers before Barishnikov came on stage. They were brilliant, of course, and I was very engaged and focused on the individual dancers and ensembles. Another dancer came out from the wings, and before anyone had time to register who it was, there was an audible gasp from many members of the audience. Simply by the way in which he walked onto the stage, with a sense of presence in space that took in the whole stage, the hall, and the action that he joined, Barishnikov had redefined the dimensions and dynamics of the theatre. It wasn't a presentation of ego, it was simply that his presence of being was expansive and inclusive, inviting of vivid presence in engagement. Without at first knowing why, my attention had opened out to take in the whole theatre including the audience of which I was part, and I was wholly sensorally present in the midst of the experience, not just a watcher.

A stunning presentation of dance can be seen in the performance of an excerpt from 'Swan Lake' by the Guangzhou Acrobatics Troupe. Even through a tiny UTube video, the expressive emotive physicality, the communication of the sensory-kinaesthetic embodiment of swan-ness is quite stunning¹⁰. I cannot possibly imagine that the swan-dancer's 'body' is transparent to her awareness.

The disembodiment of experience is based in the old persistent undertow of Cartesian dualism, so insidiously embedded in Western culture, that identifies movement as mechanism directed from a 'higher' centre of reasoning and intentionality. To separate the sensory experience of action from perception, meaning-making, and intentionality is a meaningless construction of 'reality', as even when focusing at the 'level of physiology' the holistic integration of function is obvious. The most mechanism-minded researcher will have to admit that the sensory-motor system is at the core of human experiencing, and the complex feedback loops of neural functioning are distributed through and dependent upon the whole of a person's being and being-in-the-world. The disruptive value of the arts, whether observed or participated in, is that artistic disciplines vaporise the conditioned illusory veils of the divisions of self. They create challenging experiences of holistic, psychophysical complexity, and thereby bring us back to humanness, to what it is to be a creature of substance – an active being in the world.

Connie Frey, a dancer, movement therapist and creativity coach, writes about kinaesthetic awareness, improvisation and Western cultural perspectives in her PhD thesis, *Improvisation: ? Motions for Living Texts*.

¹⁰ This is a link to Utube video of Swan Lake: <https://www.youtube.com/watch?v=4sMc-p19FIk>

Improvisation calls discipline into play, requires paying attention to what is happening with possibilities. Discipline abides with freedom. Constraints – what’s a river without banks? – are associated with shaping expression while freely generating movement, sound, concepts, or concrete forms. ... Because improvisational shaping depends upon direct experience, awareness is our means whereby. (Frey 1997, p.20)

We have been systematically enlisted to see motion attendant to objects, not to our living sentience. ... Diminishing felt experiencing enacts reductionism differently and crucially by reducing lively awareness. While the lively awareness of dance is fundamentally kinesthetic, the distinction that dance is a kinesthetic not a visual art jolts many listeners. What Fraleigh (1987) notices as “a direct ‘this means that’ association of meaning with movement” belies our vivid individual felt experiencing. (Frey 1997, p.17)

Not noticing – that is, not sensing, or kinesthetically resounding – means our kinesthetic astuteness and fuller proprioception has been desensitized for perceiving others ... Our capacity for kinesthetic empathy, or felt resonance ... comprises part of everyday living. Recall recognizing someone’s footsteps, or remember identifying a friend from a distance when one’s attention – not eye alone – is caught by walk or gestures. Another’s expressive characteristics awaken felt resonance. Yet, ... “It is the object in motion and not movement which commands our attention”. It is not incidental that the objects are ourselves, perpetuating an *idea* of organism Cartesian style. (Ibid., p.16)

Though I have focused thus far primarily on the disciplines with which I have extensive direct experience, music and dance, there are similar understandings of embodied agency and meaning-making expressed from across the arts disciplines. The plastic arts – painting, sculpture, and ceramics, produce some-thing which, though it is not ephemeral in the way of a performance, is an invitation to present experiential engagement. Still, it is often the case that ‘visual’ art is understood as expressing a visual conception that is appreciated in a distanced scopic way by a spectator, full stop. Paul Crowther, a philosopher who focuses on the philosophy of art, describes art as ‘the making of symbolically significant form out of, or into, sensuous manifolds’ (2001, p.4). He writes that the phenomenological analysis of works of art needs to address the substance, demands and transformative qualities of the media engaged in their creation. This resonates with my understanding of Arts Phenomenology, which starts from the presence of being-with, of acting-with, in order to. In the engagement with works of art, Crowther speaks of ‘the role of imagination which – at will – allows us to project how the world not immediately present to perception might appear, and by implication, what it would be like for us to occupy different perceptual positions from the one we presently occupy, and which allows us to form playful associational chains of such imagery’ (2013, p.43). From the perspective of Hurley’s SCM model and the cognitive science that I have

referenced, the developmental grounding of such capacities can be found in sensory-motor imitation and subpersonal simulations. But art takes one beyond the defining of functions to the immediacy of holistic, extended engagement that structures our experiential meaning-making. Crowther writes:

...our body's hold upon the world is of enormous complexity. In even the simplest experience, rational, sensory, affective, and socio-historical factors are interwoven in an inseparable unity. This inseparability has both a phenomenological and a logical basis. The phenomenological element is the fact that our body's primary reciprocity with the world is largely pre-reflective, that is, it is one wherein we do not consciously separate all the different factors (the rational, the sensori-motor, the socio-historical, etc.) which are being brought to bear in a particular experience. The logical aspect is that all the elements operative in a moment of experience form a qualitative whole. Remove any one of them and the character of the whole is changed. It becomes a different experience. (Crowther 2001, p.2)

Crowther's description of the creation and experiencing of works of arts shows the complexity of embodied engagement in the human life-world.

[As well as imagination] ... The other major feature of phenomenological depth is those switches of cognitive emphasis ... sometimes ... our sensuous animal being and, at other times, ... as rational beings. Related ... is our sense of being a part of nature and tied to physical limits, yet ... able to create artifacts that can have effects far from the location we presently occupy, and ... long after we are dead. The most fundamental aspect ... is our capacity to form a sense of who and what we are, and our place in relation to the universe. We are finite, but more than just finite.

[Echoes of Philalaus – both being and harmony are expressions of the union of finite and infinite – S N-B]

All these aspects ... can be described explicitly through philosophical explanation, But since the artwork is a sensuous or imaginatively-intended individual, it shows phenomenological depth rather than states it. In a Cezanne still-life – of apples, say, the picture creates an appearance ... that deviates from how they would appear in real life. They look more palpable because of the way they are painted, yet, at the same time, have an intensesness of being that almost transcends corporeality. Viewing the work ... requires that we attend to how compositionally, and texturally ... the way the perceived group of apples emerges from a 'flesh' of details, and the way it seems to be pregnant with other potential viewpoints ... we also know that it is an image of apples which discloses how Cezanne has understood the concept of 'apple' in particular sensuous terms. ... It has come to be and will pass away, but whilst here, it is fecund – not just biologically, but perceptually, and spiritually.

The above analysis resolves the picture into different aesthetic aspects. But ... in the picture itself, they are present simultaneously and inseparably as a part of a whole that encompasses creator, image, subject-matter, and spectator. We intuit this complex whole on its own terms – as a phenomenon which is full of meaning that

cannot be paraphrased except in terms that lose the fullness of its immediate unity. This is why aesthetic meaning – with all its phenomenological depth, is shown rather than said.’ (Crowther 2013, pp.43,44)

For Crowther, the ‘ontological reciprocity’ of being-in-the-world is best expressed ‘through the creation and appreciation of art. Art is the making of symbolically significant form out of, or into, sensuous manifolds’ (2001, p.4).

...between our most fundamental reciprocity with the world *qua* embodied subjects, and our attempts to express it explicitly in philosophical or other kinds of theoretical concepts, there is an abyss. Abstract concepts alone cannot fully recapture the concreteness of ontological reciprocity. We can offer an analysis and description of it, but the act of analysis and description is at best a kind of looking on from above. ...the ontology of the artwork [reveals] a symbolically significant sensuous manifold. In such a work we have a concrete particular which is charged with semantic and conceptual energy. It is this integral fusion of the sensuous and the conceptual which enables art to express something of the depth and richness of body-hold in a way which eludes modes of abstract thought. (Crowther 2001, pp.4,5)

It is and has been my intention in this section to show that between different ‘arts’ disciplines there are commonalities of perspective, and that the nature of experience in the arts is challenging to dualistic and atomistic conceptions of mind-body and embodied action. Complex, holistically meaningful expression through performing and creative arts demonstrate that word-language – practically integrated and rich though our communication through words may be – is not the foundation of meaning-making or of the structuring of our conceptual capacity. Those aspects of being-in-relationship are co-constructed through all of our sensory-kinaesthetic-visceral, attentional, and intentional engagements with the environment and other beings. Articulation through words does not define experience; words have meaning through sharing in, and the resonance of, experience.

Musicians in rehearsal communicate the meaning and feeling of the music to each other through playing together. Dancers demonstrate meaning, qualities, and characters through their embodied motion. Painters create depth of meaning through paint, canvas, and the associations generated by symbolic visual textural representations and symbolic forms. Sculptors create substantial forms that define space, shape, and movement, and inspire bodily sensory and emotional resonance. And all of that meaning-full engagement is grounded in and expressive of our social, historical, and cultural embeddedness in the world we experience first hand. When humans meet structured forms, their interpretations are interactions-with, and are reflective of prior knowledge-from-experience, the intrinsic active and substantial qualities within the forms, and the intentional expressions embodied in creative processes.

7. The CPP, Propositioning, and Reflective Self-discipline

There is another commonality that is a foundational aspect of human learning and social being, and which is exemplified in the processes of the arts. That is the development of reflective self-discipline, and the CPP is central to that development. Here is a direct practical question: how do we learn? It is not simply a matter of engaging with ‘the world’ because we do that all the time anyway. We are in a synchronous harmonising equilibrium of extended being from before birth. We learn by attending to engagement, and that attention – as I have already explained in many different ways – is not predominantly visual or from the brain.¹¹ The foundational resources of our capacity to engage are sensory-motor-visceral, and *organisational*, in that the complexities within our corporeal beings and of our capacities are intra and inter- responsive such that meaningful relationships emerge. We survive as cooperatives, as eukaryotic autopoietic organisms¹², and *in resonance with that*, we create families, societies, structures, and expressive means whereby we can negotiate the life-world. Beyond survival, our capacity to build on and improvise from coordinated associations, and reflect on our experiences, develops attentional and intentional capacities that are called ‘conscious’. To experience, reflect and improvise is to learn. The aesthetic qualities of our experience (the *Aisthētiké*) are the integrated sentience of being and are expressed through our creations – imaginative and concrete.

I return to my question: how do we learn? Music study provides a very clear exemplar and that can be described through the elements of the Core Psychophysical Process. As I have explained, the CPP isn’t a two-dimensional or linear string of events, though I have listed the elements in an order (perception, reaction, reflection, choice) that can be identified in one expression of the process which is Startle Reflex. And though the presentation of language on this page is linear, my writing and your reading of these words is imbued with the richness of our accumulated experience and meaning-making, as are improvisational and learning processes. To discuss learning in music, I will take on the role of ‘piano student’, start with Choice – the intentional direction of action/thought in response to experience and deliberation – and describe processes somewhat simplistically/superficially.

Every step at every level of skill involves complex underlying associations and capacities, however to organise myself and initiate action, I articulate aspects of action

¹¹ This is examined again in Chapter 7 with Aristotle’s idea of the development of the second self through interactive learning

¹² Margulis (1997)

to attention. I intend to play a major scale, a sequence of pitches-notes, which is produced by depressing the keys. I do that, and listen as I do (perception). I notice aspects of the playing and sound that displease me because: the pitches resound unevenly – some are louder than others; the notes don't flow at the steady pace – some notes speak sooner than others and I played faster at the end; and my fourth and fifth fingers felt weaker than the others. I have articulated through words for your benefit a range of sensory experience in order to describe my perceptions and reflections on experience, but they happened in the process of action. Sometimes I describe my experience in words to myself as well, often accessing the memory of my teacher explaining to me why my playing of scales is uneven. I inhibit the desire/intention to just do it again. I continue my deliberations, partly articulated to attention and partly in an integrative subpersonal way and decide how best to proceed. I have already learned that the weakness in action of my fourth and fifth fingers is likely the result of the way my arms are balanced, and a bit more pronation might support more fluent action. Rhythmic emphasis provides an organising impulse that shapes movement, so I decide to play my scale in 3/4 time instead of 4/4 time which will shift the emphasis and sensations of timing the key depressions, and that might shape my action differently and steady my pace. I have reflected (articulated to my attention and strategised) so as to decide what to do (Choice), and now I will act on my intentions and play a scale. I said I would make this description simplistic, but you will have been filling out the story with your imagination, and realising the layers of underlying complexities of experiences, meaning-making, and articulation to attention in this engagement.

The processes just described involve various kinds of propositionising at different levels of experience. They were partly but not entirely 'abstract'; they were informed by verbal language, but not founded on words or the syntactical structure of word-language. For instance, I intend to play 'a scale' – a series of sounds that have certain associations and expectations for me. The proposition is embodied in the intersections of my intentions and expectations of environment and capacity, and actions. Do this, create sound sequence of scale so. Piano + actions = sound sequence expected. $A + B = C$. But it doesn't, so I try again. And that reflective process leading to intentional action is reflective self-discipline. Reflective self-discipline is evident in every learned, skilled action. To learn to walk we: desire, intend, move, fall down and stop, having expanded our capacities and understanding through action, assess, then try again. You can imagine without my stating it, all the psychophysical connections, associations, motivations and experiences that go into that intention to try to walk, trying it out, figuring out what happened and whether that got you what you wanted or something different or better, and trying again. Incorporated in those fundamental human

processes are the inter- intra-actions of being-with-others-in-the-world, and they involve (Hurley's) subpersonal processes of imitation, simulation, inhibition, comparative deliberation, and the cumulative capacity developed through experience and the articulations of attention.

All of this is extended engagement with, corporeally resonant with, experience that is in concert with, the discovered nature of the substances and beings with which we engage. Desire and curiosity are hand in hand in our approach to engagement. Desire is cumulative, and can reflect habitual expectation, or need, as well as responsivity in the present. Curiosity is the impulse to engage, the foundation of autopoiesis, creativity, and discovery.

Most important in ethical engagements – the practical interconnection of acts – for social beings like us embedded in a world of needs, and with the capacity for generative and constructive imagination, is the development of reflective self discipline. Inhibition is a capacity we are primed for by the CPP, right from the level of the neuronal interactions of excitation and inhibition that generate resonances within the amplitude of responsivity that maintains coherent equilibrium. Humans learn what to do, how to be-with, how to make sense of the world and their relationships to act in concert-with through experimental processes. The CPP is one of the fundamentals that builds that proportioning ability, and it is particularly evident in aesthetic disciplines. The arts are holistic activities, demanding and stimulative at every level, for the development of reflective self-discipline.

...the civilizing process is organized around the development of self-restraint. What makes this possible is its emergence from various cognitive capacities ... language, empathic identification, aesthetic experience, and imagination in general. These are foundational to embodied subjectivity. ... As well as the need to satisfy physiological needs and procure the means of subsistence and security, humans develop needs related to self-consciousness itself. They need to know who they are as individuals and members of a collective, as well as their relation to the universe as a whole ... Self-consciousness and self-restraint develop around this through various symbolic practices that refine the scope of language and imagination. This refinement also leads to technological development and a greater ability to adapt the world to human needs. It allows also for increasing complexity in modes of social organization and religious ritual. The civilizing process just is the generation of these changes. It is self-consciousness regarded from the viewpoint of its diachronic development. (Crowther 2014, p.3)

Movement (and therefore interaction with others) throughout life is a continual improvisation, which is always bounded within the constraints of physicality and

enabled by structures of possibility. Possibility is created with infinite varieties of complexity through prior structuring experiences in a unified environmental, social and cultural domain. Systems of meaning-making and communication, and acts of intentionality and the understanding of consequences, are generated, experienced and learned in relationship. In the performing and creative arts, the relationships of engagement reflect that richness of embodied experience in the world. Ethics is the learned coordinations of 'sounding' together, the harmony of human engagement, which is intrinsically improvisatory – dynamic and creative, and grounded in action. It is an energetic resonant engagement of embodied relationship and extended co-being. The foundation of moral being is not instrumental, but rather *in the nature of being-with*.

Chapter 7 - Bodily 'I'dentity

What is a self? People develop a presence of being, or qualities of presence in the world, in an infinite variety of ways. We do have current and historical commonalities, because we develop, learn, make meaning, and communicate in and through our interactions with other beings and the environment. One version of the 'I'dentity of self is that 'I' is a useful designation of the autopoiesis of one's being in relationality and agency, a referent for oneself as cognising subject who organises engagements with the world in part through the construction of narratives (Gillett 2008). Having already argued against dualistic divisions of the self, in this Chapter I will explore the idea that the self is a presence of being-in and being-with the world, and that identity and the identification of self are developed through the experiences of a corporeal being situated within its life-world. I will present a range of historically, culturally, and environmentally grounded ideas that resonate well together, including with mine those of Gillett, Watsuji, Levinas, Miller, Diprose and Suzuki. To begin the discussion, I head back to neuroscience and cognitive science to sum up some ideas about psychosocial developmental processes in embodied human engagement with-in the world.

1. The Self as Identified through Cognitive Neuroscience

The human brain is subjective and reflects the life of a being-in-the-world-with-others whose identity reflects that complex engaged reality. Human subjectivity is shaped and in-formed (formed by inner processes) that are adapted to the human life-world and embody meaning and the relatedness of a human being. Questions of identity relate to this complex and dynamic reality to reflect the fact that biology, human ecology, culture, and one's historic-political situation are inscribed in one's neural network and have configured its architecture so that it is a unique and irreplaceable phenomenon. So much is a human individual a relational being whose own understanding and ownership of his or her life is both situated and distinctive that neurophilosophical conceptions of identity and human activity that neglect these features of our being are quite inadequate to ground a robust neuroethics.

(Gillett 2009c, p.5)

The quotation above entangles the concept 'human brain' with an holistic perspective on human being-in-the-world-with-others, and the development and expression of self and identity. Hurley's SCM, referencing current research in cognition and neuroscience, offers subpersonal processes of simulation, inhibition, mirroring and imitation as foundational in the development of self and self/other identification through sensory-motor empathy. The concept empathy has had a predominantly 'emotional' connotation – i.e. feeling what someone else feels – but in the context of the ideas that I have already presented, empathy can also be defined as the experiences of inter-reflective sensory-

motor-experiential responsivity. It is difficult, in the language of cognitive science, to find a way to inclusively express the complexity of embodied meaning-making, and qualities of ‘felt’ experience, hence the value of metaphor and the arts. However, to write and attend to ideas in the linear manner required here, a focus blinkered toward the descriptions of understandings generated by current cognitive neuroscience is a useful starting point. We are nonetheless being who we are, with interpretations grounded in the fullness of our experience present in the background of attention as we proceed.

Referring back to Hurley’s model, with echoes of Hughlings-Jackson, sensory-motor actions are integrated with every level of functional engagement, whether they are overtly interactive or subpersonally simulated and inhibited. Right from the start, humans are embedded in a sea of sensory-motor responsive interactivity. Newborn children mirror actions and facial expressions immediately, and it doesn’t take long to connect up all the layers of experiencing, as we are primed for learning, and the growth of our organismic being is fed by contact as much as by food. The identification of mirror and canonical neurons in the brain has contributed toward making sense of the integration of action and sensation with thought and meaning-making. The development of empathy is integrated with active motor learning processes, however often in cognitive science experiments the visual sense and the in-here/out-there scopic perspective is central both to the way the experiment is set up and in the description of results. Person as subject/actor imitating other persons as actors manipulating objects with a hand or finger is the standard focus. What isn’t often written about or analysed is the real life-world centrality of multi-sensory mirroring and imitation: not only subject to subject, but person – tree, person – water, person – air, person – cat. My niece’s first word was ‘miaow’.

Our early life is constant motion and *contact*. Not just the manipulation of objects, but the constant shared feeling/sensing of touch, texture, taste, density, breathing, movement, space as the environment through which and the distance between, tempo, the rhythm of interactions, et cetera. Boundary-making of the self is not primarily visual, it is summed-up and continually evolving through the sensory experiences of contact.¹ The fluidity and commonality of early richly sensual experiencing is all part of the ebb and flow, push and pull, doing with, inhibition, reflection, and *self*-direction that defines an ‘I’ in relationship-with. And our ‘emotional’ responsivity and reasoning is sensually embodied and expressed (Damasio 2013).

¹ Chapter 8 includes ideas regarding the importance of the sensual nature of experience, and challenges some of the ways in which Western culture is suppressive of, or distorts understanding of sensuality.

Cognitive science is providing useful understandings of the parallels between evolutionary development and 'biological' growth processes and the increasing cognitive complexity expressed in communication, concept formation, self-identification, skills and memory capacity. Hurley identifies inhibition as a key step in the development and identification of a bounded self in relation to other agents. Inhibition has been shown in this thesis to be intrinsic in organic functions and, through the CPP, as foundational in learning skills and for embodied holistic propositional reasoning. It facilitates social learning – the intentionality of a self acting in responsive interaction with others – in part through the dynamics of means and goal imitation. True imitation, involving flexible means and goals focus with means as centrally important, has been identified as key both to creative action and sophisticated social capacity in humans. Babies are observed to both emulate actions and focus on goals from birth; this gets us into contact with the world in terms of both ends *and* means. By the second year, toddlers are observed to imitate means by preference, in order to coordinate with others and also to learn action skills that inform their choices about how to go about acting and connecting with the world (Nielsen 2008). The processes of imitation and experimentation with self-generated means inform a child's sense of agency, and the boundary-making of inhibition is key to that process.

I have referenced neuroscience, physiology and research in cognitive science in order to show the harmonic resonances of understandings developed in what are often considered disparate disciplines – sciences, the arts, and philosophy. Neuroscience is a hot topic, and is branching out in the promotion of its applications to the practical human life-world in ways that may or may not prove to be life-enhancing for humans.² I take another brief kick at the can in the context of this chapter regarding the limits of brain-centric conceptions of self and agency, and the concern that they are problematic when they aim to achieve explanations – how it works, full stop – of intentional actions and the structuring of identity. Two examples of orientations to neuroscience and its explanatory role, Adolphs' and Gillett's, are presented below to give the reader a feel for the different approaches and expectations that are influential in neuroscience and bioethics, and increasingly in public policy and beliefs. Adolphs is enthusiastic about identifying where and how human emotions, intentions and actions are located in the brain, framed by the interesting information generated by neuroimaging techniques. In common with other researchers, his perspective is oriented toward representation and structural mapping as functional actions of the brain that underly person level decision-making and actions. [bold emphasis added]:

² In Chapter 10 some pros and cons of neurobiological interpretations are addressed.

In fact, neuroscience might offer a reconciliation between biological and psychological approaches to social behaviour in ... that its neural regulation reflects both innate, automatic and cognitively impenetrable mechanisms, as well as acquired, contextual and volitional aspects that include *self-regulation*. ... Specifying those tracks ... and how they must ultimately be coordinated to regulate social behaviour ... is the task faced by a neuroscientific approach ... Emotions can be thought of as states that coordinate homeostasis in a complex, dynamic environment ... Most [brain] structures that have been shown to be important in processing emotions have therefore also turned out to be important for social behaviour ... Higher cortical regions are then involved in the **construction of an internal model** of the social environment, involving **representation** of other people, their social relationships with oneself, and the value of one's actions in the context of a social group.' (Adolphs 2003, pp.165,166)

Recent studies ... elucidate the roles played in social cognition by specific neural structures, genes, and neurotransmitter systems. ... questions remain about the domain-specificity of social cognition, about its overlap with emotion and with communication. ... **As we come to better understand the mechanisms and causes ... [it] becomes important to consider their impact on social policy issues – to what extent can they inform guidelines for raising children, for prescribing what is permissible, and for therapeutic intervention when the regulation of social behavior breaks down...** (Adolphs 2001, pp.231,237)

Contrasted with this is the approach taken by Gillett, who puts the brain in its place, as it were, as a part of the corporeal being-in-existence that is structured by experience and integral in but not determinant of action. His perspective (through his work as a neurosurgeon, philosopher, and professor of medicine, cognitive neuroscience, and bioethics) is grounded in the experience of inter-relationships with other humans in the medical and wider world. Gillett has written in the context of clinical ethics regarding self, identity and agency:

The first point one might examine is whether we emit or enact 'outputs.' The neurophilosophical model implies that bodily activity (including verbal communication) results from inner processes which are the real causes of human action and decision-making, and are not under conscious control. But ... actions and decisions arise ... such that a course of action or a decision takes shape and guides ... a dynamic flow of discursive activity reflecting and influencing his/her thinking in a holistic 'loop,' the result of which is to enact or give effect to a tract of a person's story ... [which] structures his/her interaction with the world.

A decision is... the culmination of a ... radically interactive process of meaningful engagement with others, structured by narrative skills of argument (or reasoned discussion) and self-formation. ... equating the isolated with the embedded brain is neither empirically nor conceptually plausible... (Gillett 2009a, pp.333,334)

Though experience continuously builds habitual resources and capacity, including neural capacity, the CPP – at subpersonal and person levels – provides, at any moment, the possibility of responding to the potential in the time-out of inhibition (whether micro-seconds or minutes) to deliberate and choose action. This enactive *process* is intrinsic in psychosocial engagement and practical matters of all kinds.

Simple examples: each time I edit a sentence or log into my emails, I extract myself from the computer, bring my attention to my wider presence in the room, and let the reflexive release of motion in my spine toward more comfortable equilibrium reshape my posture. When in conversation I disagree with what I hear and interpret, I intentionally inhibit speaking by a method taught to me: I breathe through my nose (speech impossible) for a while, attend to my breath, sensory presence, and spatial awareness in the environment, listening further as I do, all the while reconsidering my interpretations, attitudes and possible contribution, and decide whether or when I will speak. Gillett refers to this in stating that:

Aristotelian *phronesis* – conducting oneself competently or having the skill to attune oneself to the world and deploy sound thoughts in structuring one's activity – is not based on posited inner causes but rather looks holistically at the agent's ability to translate reason into action. ... Thus, if we follow Aristotle, the role of reason is to enact determinations sensitive to argument that are endorsed by the agent and take due account of the truth of his or her situation as revealed by discourse and critical reflection or discussion. The ability to translate reason into action is dependent on neural function, and is a skill enhanced by training ... Persons in conversation are subjective nodes in a structured nexus of signification. They are acted on by things around them and they enact their subjectivity in the world. (Gillett 2009a, p.335)

Lived narratives comprise a succession of events and the responses one makes to them, and they are the basis of our identities. One's identity may or may not be ... enacted in a given situation depending on one's competence in situations of that type ... [it] depends on skills developed and refined in conducive interactions and conversations with others who are effective in the sphere of activity concerned and who are prepared to provide the scaffolding ... enactment of one's identity changes the direction of the brainworld trajectory. ... Brain events realize or are the vehicles for this activity but they do not determine it, and the model that pictures them preceding and causing our decisions and actions is faulty. The ability to enact one's own character or commitments is created interpersonally and through discourse ... it reflects one's being as a creature of the world of discourse and not merely as a sample of human neurobiology. (Ibid., p.336,337)

The Core Psychophysical Process, as I have presented it, is a way of attending to a flow of elements of active being-in-relationship that are experienced at multiple levels of engagement. It is reflected in understandings of biological processes, in experiences of oneself as a responsive intentional actor in the world, in the practical actions of learning processes, and in the negotiations of social being-with-others. Those processes are at

the centre of how we make sense of the world and our place within the environmental and social realms. Self as the presence of being in resonant, expressive, meaning-making exchange cannot be reduced to a particular configuration of biological functions.

2. Self as *sonzai of ningen*

There is consonant harmony in the understandings about the identification of self and other put forward by Hurley (referencing cognitive neuroscience) and those of the twentieth century Japanese philosopher Watsuji Tetsurō. Hurley locates the earliest identification of self as occurring through shared action (emulation to mirroring to imitation), the awareness of which is generated and then identified (as self-awareness) through the acts of inhibition and attention such that one's own acts are known as **different-from-other** and self-directed. Watsuji describes **being-in-existence** as the **intra-relationship** of the one and the totality. Being – *sonzai* recognises self through actions within active relationship with the totality – *ningen*, a process which is defining of and situated in spatio-temporal action. 'The disruption of subjects and the reunification of these disrupted ones, that is, the movement of disruption and then of unification, is fundamentally spatio-temporal' (Watsuji 1937/1996, p.19). The acts of separation from the whole lead back to connection (a birth metaphor), and the recognition of the other is intrinsic in the assertion of difference through action. There is also resonance here with Barad's understanding from quantum physics of 'agential separability' enacted when 'relata-within-phenomena emerge through specific intra-actions' (Barad 2003).³ The origin of the word *sonzai* is analysed by Yuasa from the meanings of Chinese characters in which the syllables appear:

...the words son and zai ... *Son* is a term that originally shows the condition of being *in the midst of a temporal process*, ... the meaning "being" is a derivative usage. As for *zai*, this indicates the condition of being *in a space* (either ideally or really), as in *zai-ke* ("being in the house", i.e. "a layman") *zai-taku* ("being at home").

(Yuasa 2005, p.181)

Watsuji's challenge to dualism and internalism, through the example of a narrative about himself as a philosopher-writer, makes the embodied relational nature of human

³ Reprise from Barad in Chapter 4: 'In other words, relata do not preexist relations; rather, relata-within-phenomena emerge through specific intra-actions. Crucially then, intra-actions enact *agential separability*—the local condition of *exteriority-within-phenomena*. The notion of agential separability is of fundamental importance, for in the absence of a classical ontological condition of exteriority between observer and observed it provides the condition for the possibility of objectivity. Moreover, the agential cut enacts a local causal structure among "components" of a phenomenon in the marking of the "measuring agencies" ("effect") by the "measured object" ("cause"). Hence, *the notion of intra-actions constitutes a reworking of the traditional notion of causality.*' (Barad 2003, p.815)

existence and thought unarguably obvious, and at the same time (resonant with Wittgenstein) shows words as having meaning only through the shared experience in which they are created and used.

I now confine myself to this study, alone, and in which I am writing these sentences. This is the same sort of situation in which other philosophers have written about the evidence for the existence of the *I*... But they assumed a strangely different attitude ... even though writing about the evidence for the *I* they nonetheless did not simultaneously recognize the evidence for the other *I*. Is one justified in holding that the operation of writing has developed without anticipating its readers? To write that "only I am evident" is itself contradictory. For writing is an expression of words, and words are what have come to shape themselves in anticipation of partners who live and talk together. ... for us to read books or to write sentences we are already involved with other persons. No matter how much we concern ourselves with the consciousness of *I*, this concern itself implies our ... being connected with others. ... Even when sitting alone in your study, you have already come into contact with my sentences, insofar as you have read them ... that these sentences are written and read bears witness to the assured fact that we recognize in each other the relationship of self and other, as established through letters. ... that this familiar fact is not "the consciousness of *I*" but rather "the relationship between an author and his reader" ... indicates precisely that we take our departure not from the intentional consciousness of "*I*" but from "betweenness." The essential feature of *betweenness* lies in this, that the intentionality of *I* is from the outset prescribed by its counterpart, which is also conversely prescribed by the former. ... No matter how temporal and accidental, the relationship between a writer and a reader cannot be established without this reciprocal determination. (Watsuji 1937/1996, pp.49-52)

Watsuji was familiar with Heidegger's *Being and Time*, but argued that the words/concepts 'Sein' and 'Dasein' were not equivalent to *sonzai* and *ningen*, which is not the consciousness of *I* as a being-*in-the-world*, but rather (a) human existence of being-with – within the whole of human beingness. 'We Japanese have constructed the concept of *sonzai* in line with that original meaning of the word ... it is beyond doubt that *sonzai* cannot be equivalent to *Sein*. But just because of this, we are able to use the notion to describe the subjective, practical, and dynamic structure of human being' (Ibid, p.21). For Watsuji, ethics is the realisation through the practical interconnection of acts of the nature of relationship between beings (as at once embedded and intrinsic in the being-with of human existence). The 'totality' encompasses the differences of self/other, and the opposition of self (as self-defining) in relation to the totality. The embodied interrelationships of life happen in the space between, the spatial and temporal field of

engagement. 'The locus of ethical problems lies not in the consciousness of the isolated individual, but precisely in the in-betweenness of person and person' (Watsuji 1937/1996, p.10).

Watsuji's book *Rinrigaku* covers all aspects of human experience, relationships and ethics from an holistically embodied perspective. He grounds human actions, self-awareness and meaning-making in the nature and demands of the natural environment in which people find themselves – another betweenness, and sees culture as developing in response to environmental/climatic conditions. In his work one can also understand climate as a metaphor for the culture, history and artifacts of civilisations that shape and are shaped by people's lives, the in-betweenness wherein they engage in the practical interconnection of acts. Watsuji challenges the objectifying of 'persons' in scientific mechanistic terms from the common sense perspective of embodied, socially engaged interaction.

...the question that remains concerns precisely what individual persons are ... we can say that they have bodies ... and that they come and go by their own will. Therefore, persons are said to be determined by their ego consciousness and through their bodies. Psychology and physiology are established on such a basis. The knowledge acquired through these sciences has, in turn, contributed to the reshuffling of common sense. ... let us first take into consideration the body of an individual human. There is no doubt among us ... that the body is an organism of the sort that physiology expounds. This does not mean that physiology has already exhaustively resolved the hidden issues surrounding the human body ... we need not oppose the attempt to deal with the human body as an object of physiology ... whenever we become sick, we consult a physician. ... the question to ask is whether in our daily life we actually deal with our body as an object of physiology ... on seeing my friend run toward me while calling my name, [do] I pay attention to such things as the movement of muscle and the vibration of vocal chords? ... this is not the case. In the movements of the human body, that is, in its behavior, we catch a glimpse of the expression of an acting subject, rather than the mere object of physiology. ... in daily life, we see ... expressions of certain practical act-connections ... Through such practical act-connections, the human body is viewed as a "person" and not as a mere biological organism.

(Watsuji 1937/1996, pp.59,60)

Watsuji's other major work, *Climate and Culture*, has resonance with the naturalism of Aristotle's *De Anima* in that it embeds philosophical comprehension of being through examining the phenomena of sensual being in relationship with aspects of the world. As with social being (*sonzai* of *ningen*), the apprehension of self in the phenomena of climate is 'not the I as subject, but rather the engaged participant, the responder engaged in experience ... It is the actions we take in response to our existence in climate (and they are most often in concert with others) that are the subjects' (Watsuji 1961,

pp.5,6). For instance, the building materials and the way in which people design and build a home is dependent on the materials and the climatic conditions. According to Watsuji, 'We can also discover climatic phenomena in all the expressions of human activity, such as literature, art, religion, and manners and customs' and 'to interpret artistic style in relation to climate is to indicate the inseparability of climate from history. ... the space-and-time-structure of human existence is revealed as climate and history' (Watsuji 1961, pp.7,9).

Watsuji's philosophy has both consonance and dissonance with Levinas', though the idea that the dynamic relationship between self and other generates obligation to the other is common ground between them. These intersections will be explored in Section 3. Some summary points of Watsuji's philosophy, from *Rinrigaku* (1937/1996), that are foundational in the ethics of *sonzai/ningen* are:

- the practical interconnection of acts includes the mutual understanding of subjects ... On the basis of these subjective connections, obligatory consciousness arises. (p.33)
- The subject is not something static like a mirror, whose only business is to contemplate objects, but includes within itself the connections between oneself and the other. And these connections operate subjectively and practically, prior to contemplation. (p.31)
- Conscience is the call of the original totality. (p.24)
- The interpenetration of the consciousnesses of self and other is conspicuously recognizable in emotion. (p.70)
- ...the home, the village, and the town are all burdened with historical tradition and re-create their history day by day ... the connections themselves of family, neighborhood, and friendship together constitute the content of this history. Therefore, the spatio-temporal structure of *sonzai of ningen* must already be a climatic and historical structure when it is materialized in the form of a system of social ethics. (p.26)

In his writing, Watsuji embodies abstract concepts of relationship in the vividness of present human experience in such a way that one cannot disconnect thoughts from the living engagements that they are about. It is my intention to portray the Core Psychophysical Process in a similar way, to generate an understanding of its expression as intrinsically relational and expressed within active being-in-relationship. Identity is embedded within the constraints of being with others; culture and history informs and in-forms the identity of a self as an autopoietic relational being in existence-with. The CPP is expressed at many levels of the self as an agent acting with others in creating structures and meanings through interaction and the communication of abstract concepts. Concepts have meaning through their experiential resonance, which is the intermingling of the present active and past echoes expressed in the bodily 'I'.

The phenomenology of arts disciplines starts in the interfusion of being-with. Creativity is resonant, shaping and shaped by the constraints of material and relationship. In the improvisatory acts of being-with, spatial and temporal experience is made tangible and meaningful, contextualised in culture and history. Environment (climate) and culture together are the *ningen* (the totality) through which art – *sonzai* – is created, in which it resides, through which it has the substance of its being.

The arch of my hand

The arch made by the shape of my hand
is the curved stone arch of an ancient doorway.

Space in the palm of my hand is filled by light,
light translucent as coloured reflected energy radiating
through stained glass windows in the Cathedral at Chartres.

And
Resilience in the shape of my hand has the strength of the
Roman aqueducts, steel bridges, the dome of an Arabian Mosque.

Creation,
The music that resonates through my hand expresses the same
richness of human culture, constructiveness, that is found everywhere,
in all places, created from our common ground and capacities to experience, imagine & reflect.

Suzanne Noel-Bentley

3. Levinas: self and difference

Levinas' focus is, in a certain way, more attentive to the relations between the one and an other, whereas Watsuji's *sonzai* of *ningen* is the being as identified and self-active within the totality of beingness. For Levinas, ipseity exists in the nature of being, not simply as biology, and as presence of being before explanation or definition. True respect for the Other is not to look for Sameness, not to project the self in order to define the other, but to recognise profoundly the difference that is *existent in otherness*. That is, to harmonise with found dissonance, and not seek to create consonance to satisfy one's own self-desire to create a harmony that only resonates in consonance with the key of 'me'. Watsuji would harmonise the improvisatory engagement of Same and Other in the betweenness of the practical interconnection of acts, which still respects Levinas' 'ipseity', from a distance. To comprehend one's own ipseity as 'distinguished from the identity which allows a being to enter into discourse, to be thematized, to appear to consciousness ... [and as] an indefeasible unity that has never been separated from the self ... in a sense, the content itself' [makes it possible to see the Other as a one-self], 'a

unity in both form and content ... a singularity this side of the distinction between the particular and the universal' (Levinas 1996, p.84,86). The recognition of the Other as Other-than-self, face to face as Levinas says, disempowers ego, 'forbids murder and paralyses my impetuous freedom' (Ibid., p.16), and therefore the desire to create in the Other a reflection of self-same is turned back on itself, challenging the Same to be present in engagement with the Other that is not shaped by intention, habit and goal-orientation.

Levinas writes of knowledge as appropriation, when 'truth means the adequation between representation and external reality', whereas, 'the knowledge of being that produces itself in the soul ... is a primordial event of being itself' (Levinas 1996, p.13). Being in that sense is prior to consciousness, and 'since being, by its essence, appears, consciousness is consciousness of' (Ibid., p.101). In the "dramatic event of being in the world ... we are thus responsible beyond our intentions ... our consciousness and our mastery of reality through consciousness do not exhaust our relation with reality, to which we are always present through all the density of our being ... this fact of being involved ... this existence is interpreted as comprehension' (Ibid., p.4).

Levinas calls 'the relation which binds the I to the Other (Autrui) the *idea of the infinite*' (Ibid., p.19). The infinite is the engagement with the unknowable such that it is continually experienced as Other.

The *idea* of the infinite is not an intentionality for which the Infinite would be an object ... by the fact that contrary to the perfect mastery of the object by the subject in intentionality, The Infinite unseats its idea. This overturning consists in the fact that the I *receives* absolutely and learns absolutely ... a signification that it has not itself given (Levinas 1996, p.19)

...To be an I means then not to be able to escape responsibility, as though the whole edifice of creation rested on my shoulders. But the responsibility that empties the I of its imperialism and its egoism, even the egoism of salvation, does not transform it into a moment of universal order; it confirms the uniqueness of the I. The uniqueness of the I is the fact that no one can answer for me. To discover such an orientation in the I is to identify the I with morality. The I before the Other (*Autrui*) is infinitely responsible. (Ibid., p.55)

The realisation that one is in the presence of another I, a unique being that is not the projected object of intent, need or expectation, confronts the I with the full presence of the vulnerability of a fellow human being, and undermines the socially learned identity structures that block the immediacy of sensory responsiveness and empathy. 'It does not allow me to constitute myself into an *I think*, substantial like a stone, or, like a heart of stone, existing in and for oneself' (Levinas 1996, p.143).

Levinas also critiques the objectification of the Other that is inherent in technicity, and the concept of the knowable as an exteriorised truth that can be apprehended and fixed.

Knowledge is a relation of the *Same* with the *Other* in which the Other is reduced to the Same and divested of its strangeness, in which thinking relates itself to the other but the other is no longer as such; the other is already appropriated (*le propre*), already *mine*. ... Even before the technical ascendancy over things which the knowledge of the industrial era has made possible and before the technological development of modernity, knowledge, by itself, is the project of an incarnate practice of seizure, appropriation, and satisfaction. The most abstract lessons of the science of the future will rest upon this familiarity with the world that we inhabit in the midst of things which are held out to the grasp of the hand. ... but this is also affirmed, across European philosophy, *knowledge* esteemed as the very business of the human to which nothing remains absolutely other. The doctrine of absolute knowledge, of the freedom of the satisfied man, Hegelianism – in which many different attempts of Western thinking result – ... promotes a thinking which, in the plenitude of its ambitions, takes no interest in the other qua other.

(Levinas 1996, pp.151-153)

Levinas' ideas about the appropriative nature of a certain kind of intentionality, and knowledge as the attainment of fixed objects of truth, have resonance in the context of experience with the Alexander Technique and the CPP. To presume to know at the start, and to intend a particular experience – a prefabricated construction of a goal, leads to a shutting down of presence in engaged responsive creativity. There is a profound respect in approaching an interaction without presumption, with curiosity about what will be the nature and direction of the flow from the instigation of an experimental process. The integrity and capacity of Self and Other, each in an equilibrium of past and present experience and capacity, meet in the practical interconnection of acts that generates responsive rebalancing and discovery.

To perceive is not to know an *object*, but to respond within the proportioned capacity of one's being. To inhibit reaction is to recognise the responsibility of the Self to the Other, and of Self to one's existence as a being in the life-world. To reflect is to be present to the possibilities in the in-betweenness of person to person. To choose to act, is to move in a way that creates consequences for Self and Other. That choice in Watsuji's philosophy is ethical if made from respect for the totality of beingness that is embodied in the culture, history and community. I think that Levinas' perspective is more radical, in that responsibility to the Other is absolute. The I, in not responding to the call of the Other, is also betraying or harming self – as a fellow human being – with the almost universal foundational capacity for and responsivity of empathy. The acknowledgement

of the existence in Otherness of a person, as an-other being, is fundamental to their development as a social being. Therefore the responsibility of Self to Other is not only to respond to vulnerability with protection, to need with care, but to be present to the Other with respect and without the appropriation of projection and expectation of gain.

4. Self in Relationship - from Ego to Empathy

The CPP and Hurley's SCM describe processes that are foundational in the psycho-physical development of human beings from childhood to adulthood, and which are still present in learning and relational processes throughout life for social beings such as we are. Becoming a person starts with corporeal intra-inter-active experiencing, grounded in the mutual responsivity that is described by the concepts mirroring and imitation. Though experiments and the manner of framing results in cognitive science and experimental psychology tend to focus on the visual, face recognition for example, the fundamentals are movement and touch. Before we see we are moving and in contact. Sight establishes space between one and another, and allows us to connect with and interpret that with which we are not in contact – it expands our field of awareness. And also as we see, we are scanning, engaged in visual and oculomotor interaction with 'objects' that are present to us. In that way, the focus on the visual connections between a mother and child, a child and otherness in its world, makes sense.

Alice Miller, in *The Drama of the Gifted Child*, writes of the need of a child to see herself reflected in her mother's eyes in the early developmental stages. In the SCM, evolving a sense of self and identity through that symbiotic relationship involves a flow through undifferentiated self/other, to self – other distinction, to intentional relational deliberation and action – emulation to mirroring to imitation, to be simplistic. From Miller's perspective, in the earliest stages of what is called ego formation, a child's actions and corporeal presence as a being-in-the-world need to be reflected back to him/her.

The child has a primary need to be regarded and respected as the person he really is at any given time ... (emotions, sensations and expressions), and as the center – the central actor – in his own activity. ... we are speaking here of a need that is narcissistic, but nevertheless legitimate, and whose fulfillment is essential for the development of a healthy self-esteem. ... the child's narcissistic needs [are] for respect, echoing, understanding, sympathy and mirroring. (Miller 1981, pp.7,9)

The layers of the intraactivity of mutual responsivity are interwoven, such that one's capacity for imitation and the realisation of empathy are both intrinsic and also learned through interactions where one both imitates and is imitated. Miller assumes that a child

whose mother (parents) are not sufficiently capable of acknowledging that child as an 'Other', will not develop the skill to acknowledge 'Others' and will therefore seek rather than give that acknowledgement. In part I disagree with Miller, to the extent that each person has his/her own unique capacity for responsivity, both inherently and through ongoing experiential learning, and a predisposition through the CPP for resonant engagement that already places one in a self-defining relationship with the world. Each family and whanau is a unique dynamic of relationships. Albeit based on her own and clinical experience, Miller offers a presumptive value judgement based on an idealised scenario. Both parent and child are in a learning trajectory in this world, and the perfect, consistently available, wholly responsive and attentive mother is archetypal. To expect an adult to fulfill a paradigm that reflects the qualities of life in the womb is to misunderstand the developmental process. It is in the nature of human life that we continually experience the harmonies of separation and union, consonance and dissonance; that dynamic dance is the social context of learning.

In corporeal presence in responding, I exist. Inhibition creates a spatial and temporal separation from that to which I have responded. Reflection happens in the in-betweenesses of actions and self and other, and also in the mirror of propositions. To choose to act is to be self-active in the world. The mutual resonance of sensory-motor action is our mode of being from before birth. Empathy, feeling what others feel, is generated from the fundamental processes of inter-reflective sensory-motor-experiential responsivity.

I found Miller's hypotheses interesting and well-supported by case studies, but somehow incomplete, and in a way unacknowledging of the complexity and capacities of human beings. That we yearn for nurturing is also a reflection of our capacity to nurture. Our potentialities are developed as we learn and engage with others and the environment through our perceptive, responsive, reflective, mirroring and imitative capacities. An infant is not a blank slate defined by needs, (or solely driven by reactivity to respond to stimuli as in the Behaviourist model), but rather comes into the world as a whole being whose potential is already engaged by experience. The interactions of experience are multi-sensory, and intensely (fully) interconnected within self and between self and others. And, as I have demonstrated in my exposition of the CPP and throughout this thesis referencing multiple disciplines, we are 'hard-wired' for inhibition and deliberation, supporting responsive improvisatory engagement at every level.

Growing up, developing a sense of self-in-relationship, involves learning to inhibit behaviours and choose actions in relationship not only to one's desires, but also in empathetic responsivity to experience with others. Human beings coordinate their behaviour fluently through their multi-sensory-motor responsivity. Aristotle's idea – the development of a second self – is an enculturation process in which the 'I' learns to match and then choose behaviours that fit not only with one's own wishes, but with what works in the psycho-social-physical environment. Gillett writes that 'the real essence of the human subject is best understood within a neo-Aristotelian framework as a human-being-in-the-process-of-becoming, by its very nature an entity with a developmental or narrative character' (2008, p.65). For Gillett, that subject is in-formed as an 'holistic embodied subjectivity' by the community of others who train him in:

...applying the relevant rules through supervision, guidance, and correction of ... judgements about things. This is a "hands-on" or practical activity highly reminiscent of Aristotelian training and it cannot be formalised because to seek rules for the application of those rules is to chase a will-o'-the-wisp (the infinite regress is well-recognised). Judgement, exercised in applying concepts correctly to experience is a "natural power" or "natural gift". (Gillett 2008, p.68)

That 'natural power' is based in our empathetic responsivity. We develop our natural gifts in part through the capacities to inhibit, reflect and choose, which develop first primarily through the 'external' discipline of others' responses to our actions. As we are able to articulate experience in various ways to our attention we build in-formed skills of judgement into our ways of acting in the world. The skills of social being develop in very much the same way as skills in the expressive arts, and the improvisatory nature of true learning in and through relationships-with cannot be the imposition of abstracted preformed concepts. As Ribot wrote, 'Le moi, c'est un coordination' (1898a, p.155). We coordinate concepts with and through experience, and the 'self' is a coordination of our experiential being- in-relationship .

The ways in which one attends to the world get channelled as well, and that includes filtering one's own attention to what touches us as sensory experience. The constantly reinforced dominance of the visual sense in Western culture favours the scopic, distanced perspective, and to inform and filter experience primarily through that sense removes the most basic levels of direct experiencing – movement and touch – from deliberation. Movement and touch are where we first define our existence, learning through and from undifferentiated self/other to become a self in relationship with others. ⁴ Egocentricity reflects not only immaturity in social being, but also diminished

⁴ The importance of touch is addressed in Chapter 8 – Dark Ethics.

and unintegrated sensory awareness in relationships-with.⁵

Barad offers a perspective informed by quantum science on the influence of a scopic view in defining the relationship of self and world.

Gazing out into the night sky or deep down into the structure of matter, with telescope or microscope in hand, Man reconfirms his ability to negotiate immense differences in scale in the blink of an eye. Designed specifically for our visual apparatus, telescopes and microscopes are the stuff of mirrors, reflecting what is out there. Nothing is too vast or too minute ... Man is the center around which the world turns ... Man is an individual apart from all the rest. And it is this very distinction that bestows on him the inheritance of distance, a place from which to reflect – on the world, his fellow man, and himself. A distinct individual ... his separateness is the key. Representationalism, metaphysical individualism, and humanism work hand in hand, holding this worldview in place. These forces have such a powerful grip on contemporary patterns of thought that even some of the most concerted efforts to escape the grasp of these anthropocentric forces have failed. Bohr's philosophy-physics poses an energetic challenge not only to Newtonian physics and metaphysics but to representationalism and concordant epistemologies, such as conventional forms of realism and social constructivism. ... a posthumanist performative approach to understanding technoscientific and other natural/cultural practices ... specifically acknowledges and takes account of matter's dynamism. The move toward performative alternatives to representationalism shifts the focus from questions of correspondence between descriptions and reality to matters of practices, doings, and actions. (Barad 2006, pp.134,135)

5. Empathy and Responsibility

Diprose's articulated concept of 'corporeal generosity' is resonant both with Barad's quantum physics-shaped philosophy and Levinas' challenge to western ideas of knowledge as appropriation of the Other by the Same, and his belief that the basis of ethics is that self, rather than 'existing in and for oneself' is defined by the call to responsibility in recognition of the Other qua Other. In her book *Corporeal Generosity, on Giving with Nietzsche, Merleau-Ponty, and Levinas*, Diprose grounds identity in embodiment, as 'body-identity ... arises through the organisation of the body given to and by the corporeality of others. And this constitution of the body-subject through the other occurs not by conscious intervention but by mimesis and 'transitivism': by identification with other bodies and by the imitation and projection of gestures' (p.69). With Merleau-Ponty, she describes the inter-subjectivity of identity through the structuring of experience by language, as the 'indistinction between self and other

⁵ Chapters 8, 9, and 10 address the negative effects of visual dominance and excluding or devaluing the sensory-motor aspects of inter-personal experience, meaning-making, and reasoning.

[which] is reduced by saying "I," by taking up one point of view as the subject of language ... the structure of language is such that each person, while being an 'I' for herself or himself, is also a 'you' for others' (Diprose 2002, p. 69). Diprose shares common ground with Barad in understanding self-identification as performative, and as action in the world with others generates and shapes one's self-awareness and definition, it reciprocally also shapes the cultural commonality of beliefs that ground ethics.

By performing body-identity I mean that the self does not have an identity except through action. The deed, act, or performance is the self actualized. And as action implicates the body, then the self's identity is performed through the body... [But] our morality and politics depend on another idea: that the self's identity is located in consciousness, and this self-reflexive consciousness comes before, causes, and remains unchanged within the act. The idea that the thinking self or the will causes the body to act in this way or that ... is the rock upon which morality and the law are built. ... So to say that the self's identity is performed and reconstituted within the act is no trivial claim; it challenges the very foundation of the moral, social, and political relations of modernity. (Diprose 2002, p.61)

That what we know and how we know are matters of relativity and evolve through and in the context of the actions of beings-in-the-world, does not equal 'there is no truth or responsibility'. Lives are intertwined and interdependent, and the 'I' exists only through 'the good graces' of others from and with whom one learns how to survive and thrive in the human life-world. Understanding other-than-self identity and actions is not a subject to object affair – simply a matching up of memory schemas and experiential objects. Recognition of the Other qua Other is inter-subjective, the resonance of being and responsiveness that happens in being-with, that engages the embodied active empathy in the dances of perception, reaction, reflection and intention. Relationship-to is a secondary attribution, developed through experience in space, time, environment and culture. Diprose offers 'corporeal generosity' as a foundation for social ethics, rather than the abstraction of propositionising based on scopically constructed truths.

...understanding generosity as a prereflective corporeal openness to others ... requires moving away from the model of generosity understood simply as an individual character trait that inclines one to give to others as a result of choice guided by deliberation. The problem with this understanding ... is that it assumes the individual is already constituted, prior to the act of giving, as a reflexive, self-present self separate from others ... on the contrary, [generosity] is not reducible to an economy of exchange between sovereign individuals. Rather, it is an openness to others that not only precedes and establishes communal relations but constitutes the self as open to otherness. Primordially, generosity is not the expenditure of one's possessions but the disposition of oneself, the being-given to others that undercuts

any self-contained ego, that undercuts self-possession. ... generosity, so understood, happens at a prereflective level, at the level of corporeality and sensibility, and so eschews the calculation characteristic of an economy of exchange. Generosity is not one virtue among others but the primordial condition of personal, interpersonal, and communal existence. (Diprose 2002, pp.4,5)

6. Climate and Cultural Narratives

As discussed earlier, for Watsuji, *sonzai* – a person as a human existence of being-with, within the totality of human beingness – *ningen*, exists in and is self-defined within climate and culture. Because culture develops within and responsively to the environment, the subject finds and defines herself not only in relationship to other human subjects, but also through active interrelationship with other creatures and the natural world. Most cultures are grounded in mythologies that represent human origins as arising from their grounding in nature, and have practical traditions and rituals that acknowledge human dependence on the environment. The narrative of this relationship of corporeal interbeing in Western culture has been shaped for some time by the distancing of the scopic perspective of science, the extraction from corporeal being provided by abstraction, as it were. This was supported by a creation mythology that put humans in the position of dominion over the earth and other creatures, the earth being there for us, rather than our being in at least mutual dependency, if not subject-to (the earth, not an authority from somewhere else). Granted, we are relatively near the top of the food chain, and have developed capacities that allow us to exert power over our environment – often in a sort of ‘bull in a china shop’ way. But in the scheme of things, our influence is short term, and for the sake of other species on the planet some people these days would probably consider that a good thing. The good that we do, and the extraordinary capacity we have to create meaningful structures – conceptual and substantial – that are life enhancing, aren’t sustained by metaphysical individualism and the reduction of relationships to use-value. There are far more harmonious possibilities than the appropriative dominance, power-over paradigm – for instance the giving of oneself to the improvisatory creativity of being-with that is intrinsic in the phenomena of the expressive arts, as I have described in this thesis. And the mature reflective self-discipline that sustains social being develops in the inter-dependence of being expressed through processes such as the CPP.

As in the CPP, multi-level reflections of processes manifested in relationships-with are evidenced in many aspects of culture and the adaptations to the demands of living in the world. A contemporary multi-disciplinary intersection between science, philosophy and ethics that has resonance with Watsuji’s emphasis on enculturation within and to the environment, as well as the ideas I have put forward, can be found in environmental

activism. David Suzuki is a geneticist and environmental activist who, in his writing about the natural world, draws together narratives from diverse cultures that express the interfusion of self-other-culture-environment and the respect and responsibilities that inhere in those ways of being-with-others-and-the-world. Suzuki critiques the limitations of certain scientific methodologies in the way that they frame what is 'true', what is appropriate behaviour for humans, and for the distortions that reductive methodologies produce. At the same time, he acknowledges the trends in science that contribute to understandings that are holistically grounded and demonstrate the interdependence of life. He challenges the either/or style of propositional argument as:

...*arguments* from the Cartesian world, where mind acts on the world, observing, analyzing, quantifying. Above all, they are arguments, and in every *argument* there is a winner and a loser. ... The scientific method is a refinement of the way we in the western world learn to see and understand the world from the beginning of life to its end, cleared (as we are taught) of all the confusions and irrelevancies of transitory personal experience. Modern science confirms and reenacts this picture of reality, examining and exploring nature piece by piece, in the hopes of re-assembling it into an intelligible, rational abstract system that contains everything-that-is.'

(Suzuki 1997, pp.278,279)

Suzuki offers a different vision of mind and brain as an integrative function for the creation of narratives of being that organise experience and facilitate life in the world.

Some scientists compare the brain to a relay station that merely coordinates incoming signals and outgoing responses, whereas others see it as an immense computer that processes information and then arrives at an appropriate response. Francois Jacob, the French molecular biologist and Nobel laureate, suggests that the human mind is far more; it has a built-in need to *create order* out of the constant flow of information coming from its sensory organs ... In other words, the brain creates a narrative, with a beginning, a middle and an end – a temporal sequence that makes sense of events. The brain selects and discards information to be used in the narrative, constructing connections and relationships that create a web of meaning. In this way, a narrative reveals more than just *what* happened; it explains *why*. When the mind selects and orders incoming information into meaning, it is telling itself a story.

(Ibid., p.20)

It is in our heritage and science to experience and represent ourselves as embedded in and accountable for our actions in nature. We are *sonzai of ningen*, autopoietic beings, along with all other organisms in 'Gaia, the totality of the living earth' (Suzuki 1997, p.211).

The interconnectedness of all things on Earth means that everything we do has consequences that reverberate through the systems of which we are a part. When

we reclaim this ancient understanding, we will recover the sense of responsibility that it entails. (Suzuki 1997, p.149)

Earth itself is often referred to as a spaceship. But it is a mistake to compare living systems with machines. Mechanical devices constantly wear out with time unless they are carefully maintained and repaired by people. Living things persist on their own, healing, replacing, adapting and reproducing in order to continue. If the total of all life on Earth is a superorganism, then it must have processes that perpetuate its survival. James Lovelock has called that totality of the living Earth Gaia, the ancient Greeks' name for Mother Earth. (Ibid., p.210)

Suzuki, in concert with Margulis and Tomasello, sees biology as demonstrating the cooperative nature of evolution as a foundation for social being, as 'each cell in our bodies is an aggregate of species functioning as a single unit' (Suzuki 1997, p.206). The west coast of Canada, where Suzuki lives and works, has a long tradition of fostering environmental activism. Greenpeace started in Vancouver, for instance, and that is where I grew up. The First Nations people (an overall name for the indigenous people of Canada) of the west coast have and live rich narratives about their origins, and traditions and rituals of acknowledgement and respect for other creatures and the environment.

Their stories portray humans as sentient creatures among others, and the basis of their ethics – the practical interconnection of acts – is balancing one's needs with respect for the living substance of other material beings. If you were to walk through ancient coastal forests, you might come across a huge 700 year old cedar tree, still growing even though you can see the evidence that 300 years before a First Nations boat maker carved just enough from the tree to make a boat and still allow the tree to survive. The underlying fundamental is not acquisitive, but oriented toward survival through sharing.

I have written about the west coast of Canada because the cultures there are my foundation. Everywhere in the world, there are stories and traditions of unity and respect within the interfusion of being-world, within which people find their identity as selves, and which provide a basis for the intra-inter-actions of being-with Others. Bodily 'I'dentity develops and evolves in the resonances of climate and the richness of culture and history, and in the current of relationships.

My spirit name is Seastar –
that chosen name speaks
of my place in the world
and the qualities of my being.

I fell from the firmament
 then rose from the sea.
 My substance is stardust
 and my life blood is saline.

I cling to earth with the tenacity
 and strength of a starfish,
 yet yearn for the infinite in
 the expanse of the night sky.

From space my cousins the stars
 reflect in the calm ocean water;
 as my paddle dips and moves,
 phosphorescence sparkles in the depths.

The currents in my body create
 lightning in my mind, thunder
 like the rapids, ebb and flow
 with the elliptical pull of the moon.

I am a coalescence of energies,
 born through the marriage of
 materials, in the interminglings
 of earth, water, fire and air.

Suzanne Noel-Bentley

It is about creatureliness really, grounding in organismic life, rather than an abstract conceptual structure. Just because we have complex brains, languages, logic, abstraction, imagination, constructive capacity, civilisations, we don't by nature or brain structure need to disconnect from our creatureliness. That's a particular cultural development in an historical stream. Our enlightenment should not obscure our lightness – that we are condensed, organised, protoplasmic starlight. The need to define by disconnection, to 'rise above', is not a 'higher level developmental skill', it's just fear of vulnerability and creature empathy. When the desire to control – fate, survival, food, (and at another level the desire to define, quantify and make fixed), is directed *against* the environment and our responsive social natures, I don't think it is a positive cultural trend for human evolutionary or planetary survival. And when we consider Aristotle's deeper questioning, requiring us to reason about goodness and truth through which we identify the true foundation of our being, rather than more superficial questions about achieving ends, our creatureliness, by Aristotle's lights becomes of central importance.

In the realisation that we will die someday, and when confronted with the loss of those we love, it is understandable that we create complex belief systems about transcendence of corporeal being, a soul/mind that is independent and eternal, and then end up with 'a body' that is in service of some entity 'self'. So then the question needs to be asked about whether that entity pre-exists our conception or comes into being as a creation through our corporeal existence. Then again, perhaps it is an autopoietic creation that arises out of our complex cognitive capacities as reflective social beings capable of linguistic abstraction – and therefore a metaphor for embodied mind. The good of the soul/self idea is as an illumination of the dimensions of the 'self', which may be informed but not fully determined by our natural creatureliness.

Perhaps to distance ourselves from human suffering, we use our capacity to imagine, empathise and create concepts in order to comprehend experience in and through time and in relationships that transcend distance. And once we accept that, *sub speciae eternitatis*, each person is of unique value and the same inestimable value as each Other, then that empathic connection is likely to be at the heart of ethics. So the addition of that one abstract, universal thought, or intuition or inspiration, creates a zone in which the imaginary experience of the other (as an embodied being like me with whom I resonate) becomes inseparable from what I ought to do.

Still, there is something about that complex capacity to experience and reflect, a capacity to intuit that the soul as the resonance of being is unbounded and extended, but not in a way that is 'not of' creatureliness... transcendence as resonance in relationship (with everything), not as a way out of humanness. We can find in harmony – consonance and dissonance and their resonances – the source of inspiration, and realise improvisation as the heart of the ethical composition of a life.

Chapter 8 - Dark Ethics

Why 'dark' ethics? I will shine a light on the topic in this chapter... Just to make it obvious that light is a central metaphor for thought in Western culture, which is not to say that light and sight are not important in our experiencing. We see *in* the light; we see the light; light brings the world into our scopic dimensional grasp; and we are thereby enlightened as to the nature of things. However, as I have shown by argument and example throughout this thesis, movement, not sight, is the integrating fundamental constant of experience. But, particularly in the modern world, the visual sense often dominates perception and interaction, and also, the articulation and communication of experience that happens through words (read and spoken) is the most recognised, and provides the dominant medium of exchange in social, cultural and political spheres. Visual and verbal modes are dominant. Reasoning has been assigned to verbal propositioning, which brings things into the light of reason, to the surface plane of abstraction. The reasoning processes moving through the currents of our multi-sensory experiential being-with-the-world are relegated to the 'illogic' of intuition.

I won't keep the reader in the dark about my intentions in this chapter. In this chapter, the light and dark dichotomy is the place from which to examine some conceptual divisions of self that are embedded in Western cultural paradigms, particularly the constructs of conscious and unconscious minds. To be cliché, these ideas are associated with consciousness and conscious thought: male, rational, scientific, predictable, the acquisition of facts, intentionality, thinking, the power to control, and the Light. The *unconscious* is associated with: female, intuitive, artistic, emotional, imagination, sensuality, physical drives and fear, and the Dark. Elements and modes of being assigned to the mysterious hidden self of the unconscious are nonetheless present in all human engagements and ethics. Hence 'Dark Ethics' as a way of bringing those aspects of being-in-the-world out of the background and into the discussion about the foundations of our social being-with.

As Drury noted, the creation of the 'unconscious' is a relatively recent development¹, though there have been other ways of assigning responsibility for unattended-to, devalued, or unacceptable thoughts, intentions and actions ("the devil made me do it") over the centuries. Cultures generate norms of engagement in the responsive

¹ Drury attributed the origins of the concept 'the unconscious' to late nineteenth century experiments in hypnosis, wherein patients recovered forgotten memories, or responded to hypnotic suggestions while unaware of doing so. As the explanation for such things was complex, which 'the language of everyday life is not equipped to describe except in terms of long circumlocution ... So it became convenient to introduce a special terminology and to speak of "unconscious" memories and "unconscious motives" (Drury 1996, p.138).

equilibrium of ongoing negotiations between people. Rules and metaphors develop that help to guide people to understand how the community works and to channel behaviour. Just like any habit, those structured beliefs and ways of doing things can be reactionary and unresponsive to the inherently improvisatory and creative nature of embodied being in the world of relationships. Add in a background assumption that propositional reasoning is über-defining and exists as abstracted from experience – through language as a fixative signifier of meanings – and ‘every adjective is in deadly danger of being transformed into a substantive’ (Drury 1996, p.138). Humans, in part because of their means/goal imitative flexibility (which is foundational in learning and developmental processes), have a powerful capacity to choose action creatively. Dividing up the intentional self does serve some social purposes, but in the dominant Western model, much of the ‘nature’ and experiential substance of being in relationship has been historically, and still is to an extent, hidden from view and excluded from power in the field of social constructions and interactions.

1. Conscious and Unconscious Minds and Intuition

Gendlin has written extensively about the ‘felt sense’ – for instance of a situation, or of what we mean to say but haven’t yet found the words to express. What is generally called intuition can be understood in his paradigm as the continual holistic embodied reasoning that happens in the background and generates the meanings behind the words that people speak to communicate with others or to articulate thoughts to themselves. That reasoning is not linear, it is globally integrated, environmentally extended and complex. This example is very clear:

There are occasions when everyone has a felt sense ... when someone did not understand what we said, we rephrase it. We do that by referring directly to what we meant ('Let me see, what was I trying to say?'). We separate 'it' from the words we have just used. ... The separation is the effect of referring directly to the implicit as such. (Gendlin 2009, p.341)

Gendlin calls Implicit Understanding (IU) the knowing that is grounded in our embodied experience and appears to us without having been first articulated through words.

IU is an implicit consciousness. We live always in implicit consciousness. The word ‘consciousness’ has long been considered merely as the content of attention. But attention is very narrow. *Consciousness is vastly wider than attention.* We could never attend to each thing of which we are implicitly conscious. Consciousness is not a separate ‘reflection’. We humans can ... ‘reflect’ on behaviour and perception after they happen, but consciousness is not that kind of separate reflection. *Consciousness arises in behaviour formation ...* We are definitely not unconscious of our IU. If it

suddenly disappeared we would be horribly disoriented. We would not know what we're doing or how we came here. (Gendlin 2009, p.340)

The separation that Gendlin describes is the moment of intentional inhibition, which interrupts the reactive effort of trying to articulate a thought, and creates an attentive space in which we listen to the integrated and holistically referenced thinking of the whole being. The Alexander Technique methodology is a way of accessing implicit understanding (embodied intuition) through engaging with multiple simultaneous layers of expressions of the Core Psychophysical Process, at once attending to: the reflexive ebb and flow of contraction and release through the core; intentionally inhibiting overt action; choosing metaphors as organising impulses for action (motifs of kinetic melody); referring again to the qualities that the next act brings to awareness. The implicit understanding comes through the attentive presence to and within the flow of active engagement.

Gendlin, in common with Barad, describes organismic being as extended environmental interaction, such that 'the body, also behaviour, and then also cognition, *is* body-environment interaction. The whole body consists of environmental events. And every cell *is* an interaction with its local environment in the body and in the whole body's environment' (Gendlin 2009, p.342). He describes our holistic, multi-sensory environmental interactivity as responsive and sentient to the space of behaviour possibilities, such that our implicit understanding is interfused with our actions, felt senses and articulated thoughts. Rather than a constructed verbal self running the show (ego), with a potentially unruly unconscious other self residing in a chaos of perceptions and generating unthinking impulses that need to be suppressed, a human being is an altogether, an at once engagement-with. What is interesting to me is that so much training and belief in Western culture goes into pretending that isn't so.

From the standpoint of childhood behaviour training, at the same time that humans are developing sensory-motor skills and building a foundational repertoire of experienced sensations and actions, they are learning to control 'bodily' actions to fit within their communal world. Identifying oneself with positively reinforced actions which gain a pleasureable flow of shared energetic connection, being the "good girl", would be 'I' identified as outwardly directed and engaged. Whereas "bad" behaviours – those that generate reactive inward contractive withdrawal from others (mirrored by self), and receiving censure which triggers reaction (which primally equals fear), would be associated with disconnection from others and inward focus. So perhaps the inward direction of attention, the call of reactivity to deliberate before acting, can feel like in-hereness about out-thereness. Within a culture oriented toward scopic reductive focus,

that channels behaviour by blinkering attention away from the complexity of felt senses, the implicit understandings generated from holistically embodied implicit consciousness might well seem to come from an unseen, unreasoning and mysterious place – not out-there in the light, but in-here (in the non-visual sensing of me-ness) in the dark.

So how does one reclaim the dark? You could close your eyes and see what you notice. I have just tried it, and this is what I noticed. When I close my eyes, my sense of presence becomes more substantial. I am suddenly in a huge environment at night under a moonlit sky. Mystery is allowed, and I am happy in my curiosity. The Dark inspires imagination. I feel myself in space which has substance and connection. My inner space is defined, yet infinite, the boundaries of my being are permeable and have depth, are definite, thick and flexible but not exactly solid, not a shell. I am being in the midst of my presence at the same time that I am all that I am in the midst of. And as I open my eyes and type I simply *define* my presence from a different view, from the all that is me that includes viewing and viewed, but is nonetheless encompassed in the context of presence in corporeal attentiveness. My behaviour space is expanded and extends in all directions and there is more of the sensory in the felt sense of my awareness. I guess I can *see* how Descartes got himself divvied up... but I experience being differently. Gendlin's ideas about 'perspective' and the self resonate with my experience.

The first person process is not a 'perspective' ... First person process has been widely misunderstood as being inside an externally-observed body. ... first person process is bodily-implicit environment interaction. Our conceptual systems are explications developed from within environmental interaction, and then tested in it ... only the third person is a perspective, a view ... The word 'perspective' assumes that the environment is something merely viewed, not interacted with and behaved in. ... If first person process is understood from first person process, we can explicate how it is bodily, implicitly conscious, far exceeding the objects of attention (of viewing), always an implicit understanding, needing no added observer.

(Gendlin 2009, pp.348,349)

And from an ethics based in implicit understanding that 'everyone is a first person process', we move to the view that no one has their being as an object (or goal) of my intent, and neither am 'I' the object of appropriation for an Other.

From an embodied perspective, the idea 'intuition' reflects holistic reasoning that underlies actions in the processes of inter-relationship. The ethics of inter-relationship are learned partly through the Core Psychophysical Process, and human social skills grow throughout all the developmental and learning processes in life experience. Reactivity is ingrained in us as a stop-action function. It creates the space for

deliberation and negotiation. Thinking that one can extract the processes of critical analysis from embodied experience short-circuits our capacities to engage and negotiate, which are learned holistically. Ignoring the sensory-motor-visceral responses that are present in every thought and that mediate the resonances between self and world that ground thought, doesn't make them go away. Denial of the implicit understanding in implicit consciousness excludes reasoning processes that are by nature extended and relational, thereby impoverishing our understanding of the human life-world and our places within it.

Just because you don't believe her, doesn't mean she didn't experience it

Beware of what you say in an academic context.
If you speak from experience, you might
encounter one of those confident young men
who is empowered by his success with methodologies.

Having read many books and reflected critically,
done studies and written articles from his results,
he will have figured out how things are done
and be sure of his prowess in an academic context.

So when you talk about some women's observations and
the conclusions they've drawn from experiences,
he will feel that it is incumbent upon him to
challenge you, and to say that they might be mistaken.

He'll ask if there has been an empirical study, controlled
for self-delusion, excluding anecdotal and intuitive factors.
A large and varied population would need to be included
in the study to produce statistically significant results.

Inwardly you will sigh, and consider whether it's worth
the effort to educate this outgoing young man,
or should you, like a mother wolf with her pup, just
give him a verbal swat and let him figure it out.

Suzanne Noel-Bentley

2. Language and Difference

In this section, I will briefly look at language with Luce Irigaray, regarding ways in which the multi-sensory meaning-making of embodied experience is devalued and unspoken in word-language, in as much as it is embedded in and generative of hierarchal dualistic

constructions in Western thought. In this case, her ideas have some commonality with Levinas regarding appropriation to sameness, and with Gendlin's conception of thought as embodied in implicit consciousness.

An eidetic structure commands the functioning of our truth. No existant, no relation to the existant, can state itself without reference to a model that determines its manifestation as an approximative miming of its ideal being. *The generic dominates the appropriation of meaning.* No language is capable of speaking truth without submitting to the common or proper terms that mold it into adequate, that is to say essential, forms. How do we ask this question of such a logical economy: what happens to nature in this discursive functioning? Always already reduced in the subordination to ideas, it can no longer be represented except through categories that remove it from immediate sensory perception. This natural causality, however, subsists and ... maintains the production of ideas. Where and how does it appear in the forms of discourse? What remnant of silence resists such formations? What is said or made of sensory immediacy by truth? The logos? (Irigaray 1989, pp.193,194)

Yes/no, inside/outside, good/bad, true/false, being/nonbeing, and all consequent and subsequent dichotomies, remain the oppositions in terms of which the subject enters into language, though not without their bending to language, to the principle of non-contradiction: yes or no, not yes and no at the same time, at least ostensibly. ... Alternatives that are then measured, tempered, temporalized, and determined in the hierarchical mode, the assumption always being that the contradiction can be resolved in the right term, can come to a proper conclusion. (Ibid., p.196)

I would add to Irigaray's list: the dichotomies of conscious/unconscious, mind/body, and the on/off stringiness of digitised processes, a mechanistic information processing model that is often used to represent brain function and thought (Noë 2009). The linearity of word-language, such that meanings have to assemble by lining up and then tumble over each other in the race toward the goal of definition affects conceptualising. In implicit consciousness, reasoning processes are inclusive, multi-level and dynamically simultaneous (as are actions in neurological function). Attending to a stream of thought as words does not obliterate the ongoing intelligent propositionising that happens through the integrated reasoning of corporeal being. However, as shown through the Alexander Technique, the CPP, and the processes indwelt in artistic pursuits, articulating thought through language can provide explicit intentional structuring to the complexity of embodied deliberation.

Irigaray understands language as a reflection of culture, as shaped by cultural norms, and identifies some underlying belief structures in the Western orientation of language use as based in dominant male-defined concepts of nature and being. In archetypal

description, she represents men as caught in the scopic distancing perspective of subject-object duality and women as aligned with embodied relationality and nature.

...the determination of a natural world ... is already a creation of man. The perceived movements of this phusis are already subjected to the imperatives of his culture, to his own spatio-temporality, he who discovers of nature only what his measuring instruments can progressively dominate. (Irigaray 1989, p.197)

Irigaray writes that a mechanistic utilitarian attitude toward nature (and the archetypical feminine as embodied responsivity) are ingrained in the dominant Western discourse of relationship. Disembodied reasoning, the belief in abstract reasoning as independent of bodily-being in engagement, creates the illusion of power over and knowledge of the world that is appropriative and at the same time disconnected.

On the level of consciousness, on the level of feelings, we make our own what we approach, what approaches us. Our manner of reasoning, even our manner of loving, corresponds to an appropriation. ... to learn, to know, is to make one's own through instruments of knowledge capable, we believe, of seizing, of taking, of dominating all of reality, all that exists, all that we perceive, and beyond. We want to have the entire world in our head, sometimes the entire world in our heart. We do not see that this gesture transforms the life of the world into something finished, dead, because the world thus loses its own life, a life always foreign to *us*, exterior to *us*, other than *us*. (Irigaray 2004a, p.23)

In language, as an articulation and definer of ways of being in the world, Irigaray identifies male perspective with a consistent objectifying gaze as it were, a subject-object dichotomy, rather than the subject to subject recognition that is found in Watsuji's ethics and in Levinas' responsibility to acknowledge the other as Other rather than to assimilate the other to sameness in union.

My experience as a woman demonstrates, as do my analyses of the language of women and men, that women almost always privilege the relationship between subjects, the relationship with the other gender, the relationship between two. ...it is interesting to compare the three just mentioned with ... aspects of masculine Being and speaking. With men, one finds both a relationship between subject and object, be this object material or spiritual, in place of the intersubjective relationship - however incomplete - desired by women. There is another difference: the relationship with the object, with the other, with the world is realized through an instrument which can be the hand, sex, and even a tool added to the body, language, or a third mediator. Finally, instead of the feminine universe's relationship between two, man prefers a relationship between the one and the many, between the I-masculine subject and others: people, society, understood as *them* and not as *you*. (Irigaray 2004a, p.13)

Irigaray writes of the meaningfulness and reasoning of embodied relationality as articulated through experience and sensory expressiveness for women, which is not necessarily able to be translated into a word-language shaped by objectivity. I will move from language as articulator to the articulation of roles within psycho-social dynamics in this next section. But first a word about the word 'feminism'.

In recent years I have heard young women take pains to distance themselves from 'feminism'. In conversation where issues about sexual identity and power are discussed, and when asserting an opinion about issues of gender, rights and equality that is supportive of women's interests, a woman will often insert a disclaimer, 'But I am certainly not a feminist', or some such comment. I thought at first that the world had changed so much that young women didn't realise that some of the careers, opportunities and social self-determination that they take for granted were 'won' by feminists' actions. That may be partly true, but I believe there is another factor involved. The meme of 'feminism' has been co-opted by economic rationalism. Particular rights and recognition that women demanded that have been in the forefront, and in many circumstances are still barely and inconsistently achieved, are mostly about resources: equal pay and job opportunities including advancing through the 'glass ceiling', being treated as equal as in *Same*, and the control of reproduction and some protection for job security when they dedicate some time to child-rearing. What is strongly presented in Irigaray's philosophical writing, is the call to empowering and honouring the difference between female and male embodied experiencing, and the articulation of difference. That is an aspect of 'feminism' that is less spoken in public discourse, still in the dark.

My criticism of Western philosophy above all has concerned the forgetting of the existence of a subjectivity which is different from masculine subjectivity: a subjectivity in the feminine. ... this oblivion goes hand in hand with the oblivion of the importance of nature, outside or inside humanity, and of the Goddess(es). It is possible to understand why and how the pre-Socratic masters began to construct Western logic starting from the oblivion of ... woman ... my criticism of Western culture above all concerns the forgetting of her - as woman, nature or Goddess. From then on, phallocracy or patriarchy, as necessities for a masculine subjectivity, have become the main parameters in the elaboration of Western cultures and societies. In fact, the question is less about criticizing these values than it is of showing that they correspond to a male subjectivity. And the effort that some thinkers make to demonstrate that such values are universal and neutral is remarkable. What is astonishing is that the sophisms, the mistakes in reasonings, the force in argumentation being-with-the-other without mediations for the feminine gender and, for the masculine gender, of a being-with-the-tool, hand, object, money, or language at the expense of intersubjectivity and of recognition of the other. We must, therefore, define a relation of indirection between the genders in which we

overcome the obstacles posed by appropriation or fusion between persons and by substituting relations with tools for intersubjective relationships.

(Irigaray 2004a, pp.11,12)

There were many concurrent movements for social change that burgeoned in the 1960s, including feminism, environmentalism, alternative health practices, and interest in spirituality grounded in the natural world, among others. There were correspondences and integrations between feminism and these different movements at the time; feminism was grounded more generally in examining relationships-with, extending beyond particular economic and political issues.

3. Embodiment and Sexualised Identity

In previous chapters I have critiqued ways in which Western culture has pushed sensory meaning-making into the dark closet of human experiencing, and relegated embodied sensory-motor-visceral processes to subsidiary status. The reflexive level of the CPP response is very much engaged in survival mode. Fear of the power of nature over life and death and the provision of food, and the dichotomies of life as predator and prey, are fundamental aspects of human experience. As social beings who are vulnerable for the extended period of nurture in childhood, mother love and nurture is deeply associated with survival and emotional connection. Learning to cope with fear, through inhibition and the skills of deliberation, negotiation and action, is grounded in elements of the CPP. At the person-society level, culture generates normative ways of coping with human need and impulses. In many cultures, women's capacities and roles as creators of life and as nurturers have inspired both honour and fear, and for men have also been the subject of the desire to control. In Western culture the qualities of creativity, relationality, sensuality, and nurture have been identified with sexual identity in 'woman'. As a means of appropriation of power or control, those qualities – and women archetypal representatives of them – have been subordinated to the rational, scientific, and mechanistic systems of defining the world as a suitable object to be worked on. That was a blanket statement. The actual engagements between men and women are not archetypes, but it is useful to examine the underlying psychosocial currents that flow underground and shape the structure of societies.

In the 20th century the psyche of Western culture was expressed and shaped through the development of psychoanalysis, Freud's work being central. Interestingly, Irigaray is both bound up with and critical of Freudian psychology. Her critique significantly brings into relationship many elements that I have written about in this and earlier chapters.

If the geometric, and more generally the mathematical, model that he has applied to the deciphering of the natural existant has permitted man to elaborate a theory and display its effectiveness, the dominion of this mathesis over the discursive function has constituted him, but just as surely dispossessed him, as subject ... hasn't it at once assured his power, his mastery, and mortified/annihilated his relationship to living nature?

If psychoanalysis interprets something of this schiz of the subject-man, it reintroduces certain philosophical a prioris. It describes and rearranges man's sexuality according to the pre-eminence of the death drives over the libido, the automatism of repetition as a privileged spatiotemporal scansion, the triumph of the principle of constancy, the desire for homeostasis, etc.: the love of the same and the rejection of difference. It resubmits the unconscious to the most fundamental laws of the consciousness. Or, more exactly, it discovers the unconscious to be the wrong side or reverse of the consciousness, reclosing the circle of the constitution of the subject, but leaving it substantially unchanged. Psycho-analysis unmask, at least in part, the underside of a functioning system, but it doesn't disturb it. It maintains, indeed confirms, man in his destiny, his perennial discourse. It doesn't go so far as to question the sexuation of discourse itself, of the theoretical in general. A theory of sexuality, it fails to recognize the sexual determinations of its theory. In this, it remains naively metaphysical. Submitted to the auto-logic of a subject appropriated ... the Dominion of the One, of the sameness of the One ... supports itself on a binarism that is never radically called into question. (Irigaray 1989, pp.195,196)

An aside before my comments on psychoanalysis: Writing this chapter gave me pause, as I considered whether to speak from my experience, or couch my ideas in academic indirection, when writing about an aspect of the dominant discourse based in male presumption about female experience. I came around to the realisation that if I feel that I cannot speak of embodied experience that is particular to my femaleness in this context, and my experience is certainly not unique, then I am not being true to what I have written in this thesis. Self-censoring in response to presumed assumptions about academic receptivity, the fear of speaking with a woman's experiential voice to challenge the dominant discourse about embodiment, isn't speaking from embodied truth. So:

In reading Irigaray's responses to psychoanalysis and reading references to Freud's theories, I was again shocked at Freud's bizarre conceptions of sexuality and sexual identity. And it is almost incomprehensible to me that his systems of definition and understanding could have been so accepted, and be foundational in psychiatry and pervasive in Western culture. I was reminded again of the experience I had as an 8 year old when my mother 'told me the facts of life'. We sat on her bed and read through a book together, and then came to a page where the author said to the little girl reader something like: 'now just because boys have penises and you don't, you mustn't be

jealous...’ I found this idea absolutely hilarious, and said, laughing, to my mother: ‘why would I want one of those!’ There was more to follow in the book – I don’t remember the words, only the tone and intent, which was sort of condescendingly reassuring girls that though in some way inadequate they could still be just as good. I did wonder at the time about why I was supposed to feel inadequate. Later as a teenager when I read or heard something of Freud’s theories I realised where the ideas in that book came from. I thought that Freud must have been a misogynist or an idiot. If he and his early followers had simply asked any 8 year old girl they would have had a bit of a wake up, but then again they would not have respected her enough to credit her response.

In the process of researching for this thesis I sought out writing by women about embodiment. Time and again I encountered the identification of embodiment with sexuality. I thought, ‘If I want to talk about embodiment do I *have* to wrestle with that awful legacy of sexual objectifying, of the lack of boundary between sensuality and sexuality that has been so pervasive for hundreds (thousands?) of years in Western culture?’ Well yes, to an extent I do. I speak of my own experience of female identity formation growing up in the 1960s and early 1970s.

I never bought into the self as object of another’s projection. I think I was lucky to have something to react against in the formation of my identity as a young woman, as I grew up right in the midst of the rise of feminism in North America. The mixed messages about female identity and my potential place in the world were rife. On the one hand, in my family the women were respected and I was encouraged to pursue intellectual accomplishments in the world. On the other hand, my very beautiful (ideal woman), brilliant and educated mother was a ‘stay at home Mom’, who nonetheless was the intellectual and adventurous companion in the world with, and researcher for, my father in his work. When I became a cellist and intended a career in music, I was told that the only woman in the London Symphony was the harpist, and she smoked a pipe. But then there was Jacqueline du Pré...

I was an attractive child. But it was always obvious to me when the man/boy was looking at me as a projection of his desire, as his object, and that that had nothing much to do with me as me. Sensations that I had were me, and they were something other than a response to or reflection of his projection. There is an undercurrent of exchange of energy, or common sensory-motor-visceral responsiveness, going on all the time between people, but that is not the same as the projected sexualised appropriative twist. Interestingly, perhaps the recognition of an objectifying gaze is what facilitates one (allowed me) to refuse the designation – the assignment of self and of feeling to that

projected construction of responsivity. I acknowledge that I was very fortunate in that my family dynamic in early childhood was conducive to my developing a boundaried sense of self, as touch, affection, and shared 'physical' activities were not sexualised. The community and cultural environment that I grew into provided the developmental foundations of particular ways of experiencing and defining my experiences and relationships. I acknowledge that many women do not grow up in an environment with that particular kind of clarity about boundaries, and that others would understand and define themselves and their boundaries quite differently.

The sexualising of sensuality in present day Western culture is so pervasive and blatant that perhaps people have to learn to set their boundaries differently; there is certainly more to react against. I am occasionally shocked when a 'people-interest' news item is shown on television where a young child is lauded for being talented or cute when dancing like Michael Jackson and doing aggressive pelvic thrusts – the more so because they look awkward imitating something which has no embodied meaning at their stage of development (one hopes). This against the proliferation of child pornography and the stated fear and concern for our children. But the fear of touch and touching seems a tragic accommodation, on many levels, and it blocks the integration of essential aspects of human-being-in-relationship in the development of embodied self-awareness. The CPP is constantly present as a foundation for training boundaried self-awareness and behaviour, and inhibition and deliberation about actions leading to respectful behaviour of the Self with Others is the foundation of socialising. Reflective self-discipline works both ways – we demonstrate and imitate boundaried behaviours thereby generating a social climate of respect, not the use of others for self-expression.

I think it is important to keep in mind that every society generates norms of relationship in a climate and culture of relationship. The evolution of cultures happens in responsive equilibrium through negotiations between people with regard to their needs and their capacities for reflective self-discipline and responsivity to and with others. There are practises in every culture that are recognised as a violation of being. The current Western social hegemony dictates that certain kinds of accommodation to sexual identity and responsivity are good, and others are oppressive to women. Women live in cultures; they are not abstractions of potentiality. In a culture where the expression of men's sexual desire is defined and channelled such that women's uncovered bodies seen in public 'legitimately' invite appropriation, women make choices about how to set boundaries. To wear the Hijāb can be understood, experienced, as a statement of boundaried self-respect. That doesn't equate to repression of the awareness and expression of sensory being-in-the-world, or sexuality. Belly dancing, though sexualised

and objectified for men's entertainment in the West in the twentieth century, was originally a shared dance practice among women, sharing appreciation, expression, and the development of the strength and beauty of women's bodies and their movement. Not everyone longs for the 'sexual freedom of expression' displayed by Miley Cyrus.

4. Touch - Reclaiming Sensory Meaning-making

We are in bodily contact from before birth, and we learn through contact, through the support and guidance of touch. The intimacy of touch, the loving nurturing of a mother with her child is not only communicated through a reflecting gaze. The textures of touch, sensations of warmth, cold, density, the dynamic presence of attentiveness, and the ways in which shared movement bring us into contact-with and define experience-with are qualities experienced in touch.

Gendlin writes of Aristotle's belief that touch is the defining element of bodily experiencing and of the practical wisdom from meaning-making within it.²

In Aristotle's view touch-sensing proportions and defines the concrete qualities that define bodies ... animal sensing is an activity in nature. The sensible (touchable) qualities **define the elements** ... Again I emphasize that in Greek, 'touch and 'contact' are the same single word. (Gendlin 2012b, p.193)

We share prudence ('phronesis') [intelligence in practical thought] with the higher animals ... for Aristotle the sense of touch is very much involved with our thinking, since the fineness of our touch is the 'reason' we are the smartest animals (II-9 3) ... 'An indication of this is the fact that in the human race, natural ability or the lack of it depends on this sense-organ, and on no other (Aristotle, 421a23-26)'

(Gendlin 2012b, pp.172,173)

We are defined and defining of self through experiencing the world through touch-contact. The energy of embodied being in engagement is generated, refined and expressed through our contact with others and the world. Irigaray understands the grounding of human relationships and learning in touch:

In fact, touch takes part in all of our sensory perceptions, all our living relationships, but our culture is dominated by looking at. Furthermore, this looking at aims at seizing, more than at contemplating ... [Touch] provides us with the experience of the invisible that differs from the darkness of our first sojourn in the mother and our relationship with her. It reveals to us that invisibility has, and must keep, a share in our adult identity and relationships. (Irigaray 2011, p.137)

² This has been explored in Chapter 5 as well, with Gendlin and Aristotle.

Touch, not a visual sense though nonetheless central to generating visualising and imagination, for Irigaray is an 'invisible [that] cannot be seized or understood' (Irigaray 2011, p.137), especially when dissociated by the denial of experiential reasoning. Irigaray suggests that 'this is probably the reason why it has been excluded from a culture that favours a rather inquisitive rationalism and naturalism, and that has retained of the touch above all the means of grasping and appropriating (Ibid., p.138). But her focus is on touch in the sexual dimensions of relationship. 'But this [appropriating] does not correspond to the touch that constitutes the most intimate core of ourselves and is concerned with the god Eros, and our erotic life' (Ibid., p.138). And her central idea is that 'perhaps it is through training our sexual instinct to act in a human way that we can reach our human individuation' (Ibid., p.133). She writes that:

Only taking account our sexed belonging and the way in which it determines our being, we can reach a human individuation and relate to and with the other(s) in a human manner. This entrusts a responsibility to us with respect to our becoming, our growing, our appearing in the world, to the other(s). We are no longer undifferentiated living beings dependant on our mother for our individuation; we are sexuate individuals who have to care about our specific natural belonging and cultivate it.

(Irigaray 2011, p.133)

While I agree that the 'human energy ... is also a relational energy that needs to be learned, to be educated' (Ibid., p.131), I do not agree that that energy, as a flow within 'the most intimate core of ourselves' is fundamentally 'sexuate'. Rather it is sensuate, and central in our extended being and *sensuate* life as corporeal beings in extended relationship with others-in-the-world. And that is where the CPP, and experiences in disciplines such as the Alexander Technique and engagements in the arts provide a foundation for the education of being-in-the-world-with-others, and for an ethics of responsive equilibrium grounded in the harmony and improvisation of the practical interconnection of acts.

5. Sensuate Being-in-Relationship and the Aesthetic Dimension

Western science often presents a certain orientation toward the natural world that is reductionist and mechanistic. It is a reflection of its history and the development of its methodologies, as well as the social theories and environments which shape it. For instance, I have quoted Hubbard's and others' critiques of Darwinism and its influence in shaping science's and public views of human, animal and environmental life. A practical example: Nature programmes about animals emphasise killing, eating, and sex, also

dying. Almost everything else is treated as peripheral. What about the other 95% of experience: the sensory pleasures of experiencing the environment; the embodied awfulness of freezing pelting rain and looking for shelter; the pleasure of contact with others, the ground, the sun; affectionate grooming; big cats also sleep more than two thirds of the day and the social ones snuggle with each other when they do; and playing, (which is not just rehearsal for killing, eating, sex, and asserting dominance as the Darwinists would have us believe)?

I have written various critiques about scientific perspectives within this thesis so far and will do so in the next chapter. Yet for this project I researched extensively and learned from certain areas of physiology, physics, neuroscience and cognitive science, and that has informed, expanded and influenced my understandings of the CPP and processes that I have experimented with and studied in other contexts for many years. I started this project with the desire to find informative correspondences between scientific research and ideas, and the practical and theoretical knowledge I had developed from experiences in the Alexander Technique and the Arts. I was following up on prior academic research in education and philosophy, but I was particularly curious about ways in which the CPP seemed to be integral not only in developmental and learning processes, but also throughout the dimensions of human engagement from 'biological functions', to cognition and imagination, and to responsive, responsible social being-with-others. And not just human function, of course, because the CPP is a process that we share on many levels with other creatures. I had an implicit understanding that there is a bio-logical aspect of human being that informs ethics, and beyond biology, that our corporeal beingness in *intra*-action (Barad's term) with the world is supportive and educative for our social being-with. I found consonant and dissonant resonances with the sciences. Harmony is resonant co-existence with difference.

I argue against the Western scientific *domination* of discourses about the dimensions of human experiencing with-in the world, defining the 'whole truth' of natural processes and nature, and ethics based on how we are 'designed' to engage with each other and the world. I very much appreciated Gendlin's comments in a journal article in 2009, where he mentioned a conversation on an airplane with other conference attendees who were railing about the evils of technology. While sitting in an airplane... He acknowledges the capacities that humans have to create and construct through pattern recognition, the boundary production of thingism, reductive analysis, and mechanical inventiveness. However, those capacities need to be in balance with and in service of the embeddedness and inter-dependence of human social being with others and the environment. The expression and reasoning of intuitive sensual embodied being has

been relegated to the dark, as unseen. Everything is nonetheless present in the dark; we just attend to it all differently.

Reclaiming awareness of and pleasure in the expressions and experiences of sensate being is fostered by attending to the aesthetic and qualitative dimensions of life processes and relationships. In appreciating the beauty of a rose, taking pleasure in its colour, scent, shape, the softness of its petals and the spiral of their arrangement, we know the flower in a complex way. We can also apply numeric symbolic references to its petal arrangement and see that, in common with many other plants, it expresses a pattern of relations known as the Fibonacci series (1, 2, 3, 5, 8, 13, 21, etc.). This is called a 'golden spiral' in the case of the rose and the seed pattern of a sunflower. The Fibonacci series is also identifiable in many plants and animals, for instance in the arrangement and number of branches in many trees, and even in the common ratio of lengths of people's finger bones (it works with mine). In aesthetic responsivity with their experience in the environment, architects have been influenced by the Fibonacci ratio in their construction of buildings for many thousands of years. In Chapter 6, I explained correspondences between the overtone series and the Greeks' generation of musical melodic scales. They did this intuitively, through response to sounds and their resonances as they occur everywhere in nature. Those overtone resonances can also be represented by mathematical ratios, and the chosen notes in a Major scale also express a Fibonacci series of auditory sense-priority: tonic (whole string), 8th scale note (half string vibration), 5th scale note (one third string vibration), 3rd scale note (one fifth string vibration). They are listed there in order of their divisions in a resonant body's natural overtone series. We are responsive to and expressive of patterns of relationship in the natural world, and our creative engagements and constructions profoundly reflect this, even though we may not recognise (*see*) the origins of our inspirations.

Intuition is the implicit understanding that flows from reasoning through multi-sensory meaning-making that already takes account of past experience, and the sensual and aesthetic dimensions of the present environment of relationships. Relationships-with are also informed by the ebb and flow of interwoven expressions of the CPP in the balancing integration of motion, emotion, sensory responsivity and active expression in all situations.

Gillett offers this perspective on the scientific view that universally true answers to questions about human life, the universe, and everything can be discovered and known through research in the 'hard sciences'.

It may remain an article of faith that, at some fundamental level, all explanations can in principle be reduced to the terms of hard sciences like physics, chemistry, and

biology, but we should recognize that this is based on an ontological commitment and no real evidence of success or even argument giving us reason to expect success in psychological explanation. What is more it shows a peculiar hypocrisy. The scientific world view is itself a memic production. Therefore in claiming reductive primacy it privileges one holistic and relatively self-contained set of memic productions over all others. It then refuses to look at the means by which it has been elevated to its position of privilege and the possible explanations for its own hubris. If that investigation were undertaken then it would have to begin by recognizing that this world view is itself a certain kind of social phenomenon and therefore subject to an epistemically comparable kind of explanatory reduction (perhaps Foucaultian) to the one it itself posits for all other knowledge.

There is a certain appeal in the scientific presumptions because they seem to deliver a fairly straightforward characterization of the world as it really is. But it is always salutary to recall that at the really fundamental levels of science there is imagery, metaphor, and mysticism. Thus, for instance, we have to remain quite agnostic about whether when we get down to basics about the actual world, we are talking of particles and forces, energy condensations, mathematical constructs or even 'configurations of spirit'; all of these are espoused by certain cognoscenti in fundamental physics. (Gillett 2010, p.19)

Chapter 9 - The CPP and the Phenomenology of the Arts as a Basis for Practical Ethics

That doesn't make us nice or good

Just because this planet is intensely beautiful,
creatures are stunning in their complexity and grace,
humans are resourceful, inventive, and imaginative,
creative, empathetic, and capable of kindness...
that doesn't make us nice or good.

But then humans are simply part of the flux.
There are layers and clouds of relationship
in fields of resonance, reflection and diffraction.
From quantum bits to bodies to universes,
it's all particles dancing in the waves.

Energies are bounded, unbounded and rebonded,
creating patterns of engagement and beautiful
structures of meaningful relationship, like
elements, snowflakes, cathedrals and symphonies,
time, dimension, trees, experiments and civilisations.

But the planet can be hell – a human invention, *mind*.
We are capable of destruction on a massive scale:
rivalling meteors with bombs, strip mines and extinctions;
trumping fires and floods with pollution and deforestation;
and perverting nature's cycles of survival
with intentional cruelty and senseless killing.

It's clear that we have to learn to be good, to take care,
to be constructive, sociable creatures.
Otherwise we're likely to get booted out of the evolutionary
continuum and back into the species recycling bin.
And if that prospect doesn't make us pull up our socks
and be nice, nothing will.

So if we have to learn to be good, how do we do it? Certainly the Core Psychophysical Process is foundational in learning processes, and is integral in the flow of inter-corporeal being-in-relationship. That the dynamics of the CPP are active in many levels

of being provides a way in to engaging one's resources holistically to develop active relational skills and reflective self-discipline, and also to changing habitual behaviours. Humans are equipped to and learn to be social creatures. The CPP is foundational in learning and developmental processes at all ages, and I have described ways in which performing and creative arts activities call upon and develop fluency in negotiating the psychophysical tides of responsivity, inhibition, deliberation, and active intentionality. Disciplines, such as the Alexander Technique, that are based on an holistic psychophysically integrated concept of human function also engage the facilitative potential of the CPP, either explicitly or intrinsically in their practises. Of course, all human intra-inter-actions are supported and informed by the CPP. However, it is within disciplines like the arts that the CPP is readily made plain, as they involve the commitment to engage-with as a starting point and the long-term development of skills through process-oriented interaction, and call upon the creativity and expressivity of embodied action. In this Chapter I will explore further how the Core Psychophysical Process supports these activities and ways in which they reflect the human capacities to act and to learn to act, as responsible, empathetically responsive sociable beings with-in the world.

1. Holistic Embodied Learning through the Alexander Technique and the Arts

Holistic embodied learning is very clearly demonstrated through Alexander Technique methodologies, where the interplay of possibilities generates harmonious improvisatory motion, a coordinated responsive expressivity that is based in prior capacities and constraints and yet fosters the flow of creativity. All of these aspects and more are acknowledged explicitly as present in the mix of: reflexive action; simultaneous attention to sensory-motor feedback, the awareness of spatial orientation, and self/other intra-actions; neural and subpersonal level imitation and inhibition, resonating with person level intentional imitation and inhibition; and the intentional attentive experimenting with instigating ideas such as metaphors, images, words, qualitative concepts, kinetic melodies, and the guidance of touch-contact. In many ways, the initial study of the Alexander Technique takes one back to childhood learning activities, such as how to: walk, stand and sit; manipulate objects and make things; pay attention such that you can be comfortable and responsive but choose to set boundaries; say NO to your *own* impulses and take account of what's going on 'inside' and 'outside' before deciding what to do; and so on. And all of this involves sensual, kinaesthetic, vocal, communicative, imaginative, imitative, multi-sensory meaning-making, and coordinating contact with others and the world. Really, all that and more is present and concurrent. Trust and responsibility are central, for both the teacher and the student. The teacher acts in the

same way that she represents action through language. These are foundational elements of engaging with the world, and underlie the responsive empathetic interactions of social being. The central thing that one learns in that sort of engagement is not how to do each particular act in a repetitive way, but rather how to engage in processes in an exploratory, respectful (of self and other) creative way, even in actions and situations in which one could *react* habitually – without attention to the potentials and complexities in the present.

In musical relationships, with an instrument and other people, the above descriptions also apply. In the particulars of musical activities, as in Watsuji's writer and reader example, a person is always already in relationship-with. The encounter with an Other – a cello, a musician, a composer, a teacher, is always clearly a negotiation within difference. I cannot appropriate the beingness of a cello to sameness with me; we have to work together in the development of our capacities and are mutually responsive. If I don't 'play well' I get that feedback from the cello and the experience of the process. My responsibility as a performer of composed music, is to learn about the origins and traditions of expressive meaningfulness that the music resides in and lives through. Yet, when I learn and play that music, I and my expression of it are not made into a Sameness with the composer. The composer, the music, the cello and I reside and originate in climates and cultures, and the expression of the music is an improvisation in our betweenness of space and time. Improvising with other musicians is an engagement in communicative flow on the common ground of encultured natural elements – sound resonances, pulse, vibration, textures and tempos of touch – it is sensory-motor responsiveness, empathy, in cooperative creative action and expression. The above examples of encultured social being-with, grounded in empathetic attentive cooperation, clearly offer a paradigm for social being-in-relationship that is more respectful of Otherness than cost benefit analysis, for instance¹.

The 'visual arts', called that because they are generally seen more than heard I suppose, offer another angle of view on the topic. When observing a work of art (painting, sculpture, or tapestry, for instance), one is nonetheless present in embodied sensory engagement, and sensitive (whether or not aware of it) to the dimensions of the artist's creating with and out of substances – paper, paint, brushes, turpentine, clay, fabric, marble, et cetera. The uniqueness and impact of a painting is not simply in itself as a product, or in its representation of a natural or a cultural idea. It is fully expressive of the processes with materials, the environment, and the being of the artist in climate and

¹ An excellent analysis and critique of the ethics of cost benefit analysis, referencing Levinas, can be found in Wolcher, L.E. (2007) "Senseless Kindness: The Politics of Cost-Benefit Analysis", *Law and Inequality: A Journal of Theory and Practice*, 25(1) 147-202.

culture (Crowther 2014). Substantial art engages the artist and inspires the viewer in touch-contact with the environment. To create with substances one must be responsive to, interested in the nature of, take pleasure in contact with, and be respectful of the capacities and actions of those substances. A child learning to paint is not just learning to accurately represent a thing out there on a flat surface here with colour. She is experiencing a dimensional relationship with what she is looking at, bodily, in space and time. The actions of painting, the touch and texture of the brush and density of the paint has substantial resonance with the colour and shape of the thing, and her actions with it shape her holistic experience of it. I could write paragraphs elaborating all the elements and aspects of this, but I respectfully leave it to the reader's imagination. Because you have done this.

'Seeing' the world is an holistic sensory experience. I read an article last night: 'Babies "benefit from iPads at a young age": study'. The theme is similar to others I have read in recent years. A neuroscientist professor at the University of London has done a study with infants from six to ten months old. They were given iPads to play with. First they tried to eat them. Then they got engaged with the movement of images on the screen and figured out how to scroll images up and down. The researchers measured the 'recognition' by children of numbers on the pad. The researchers were dazzled by the results: 'It is shocking how fast they learn – even faster than adults – to do things like scroll up and down text' (Hartley 2015, p.1). And they understood what they were looking at? The writer of the article asserts that 'Professor Annette Karmiloff-Smith now recommends that all babies be given tablets at birth'. The author spoke to a psychologist from Western Australia who commented that perhaps as the researchers were focused on neuroimaging they assumed that brain activity equals learning. I believe that it is important to remember that abstraction is based in experience. I have a story of my own that is relevant.

I have many richly detailed memories from early childhood, and this particular one from the age of 2 ½ or 3 years old concerns visual attention and ethics. I remember very clearly kneeling, with my hands down on the cement pathway that ran along the back of the house. I was aware of the grass on the other side, the fence ahead, and the sky and clouds. I was staring at a snail. I was watching it slowly slime its way along the hard surface and trying to decide if it was right to squish it. It was a moving thing; they have these little feelers like pointy ears on top of their heads that go in and out, and a sort of face. I remember pondering what my relationship to this thing was, how I should regard it. I decided not to squish it. Thinking back, I'm pretty sure that if I were looking at an image of a snail on an iPad, I wouldn't have had the same experiences of relationship and

ethical dilemma. For one thing, the snail and I wouldn't have been sharing the same space. Abstract space is not the same as touch-contact space. Even if the brain is shadowing with (simulating) sensory-motor activity, that is only memory, prior interconnections from experience, with a lesser contribution from present real-time spatial-sensory action. What memory is a baby drawing on to 'make sense of' its interaction with an iPad?

The visual arts, as engagements with substance, ground our representational and symbolic constructions in embodied experience. To learn how to paint, sculpt or model requires a back and forth process of sensory-motor interactions, assessment, and drawing possibilities out of the intuitive blending of ideas, skills, prior learning and associated meanings. Then, in light of perceptions of the way that intention has shaped creative action, new directions of intent evolve. This expression through processes of creating with the substances of the environment demonstrates that our being-with-the-world as empathetically resonant beings is a cooperative project..

Though I have taken pains in this thesis to shift the focus of communication, reasoning, and meaning-making, even propositioning, away from word-language and onto the many other ways that humans make sense of their experience and communicate, it is surely obvious that I love words, and the processes of putting them together. I will leave the last flurry of descriptive analysis of an expressive art form to Simone Weil, who writes so beautifully about the multi-level embodied process of writing poetry.

...beautiful works of art are examples of *ensembles* in which independent factors concur, in a manner impossible to understand, so as to form a unique thing of beauty ...Simultaneous composition on several planes at once is the law of artistic creation, and wherein ... lies its difficulty. A poet, in the arrangement of words and the choice of each word, must simultaneously bear in mind matters on at least five or six different planes of composition. The rules of versification – number of syllables and rhymes – in the poetic form he has chosen; the grammatical sequence of words; their logical sequence from the point of view of the development of his thought; the purely musical sequence of sounds contained in the syllables; the so to speak material rhythm formed by pauses, stops, duration of each syllable and each group of syllables; the atmosphere with which each word is surrounded by the possibilities of suggestions it contains, and the transition from one atmosphere to another as fast as the words succeed each other; the psychological rhythm produced by the duration of words corresponding to such and such an atmosphere or such and such a movement of thought; the effects of repetition and novelty; doubtless other things besides; and finally a unique intuition for beauty which gives all this a unity. Inspiration is a tension on the part of the soul's faculties which renders possible the indispensable degree of concentration required for a composition on a multiple plane ...

(Weil 1952, pp.10,207)

That concentration of being is a field within which a myriad of possibilities interconnect and are tried, deliberated about, inhibited, recombined to generate other possibilities, and then finally articulated as intention through expression, then yet again subjected to negotiations within a wider field of engagement. This process develops the skill of reflective self-discipline in relationship-with. It is also the essence of scientific experimentation. The reflective questioning and intention of the artist/creator/performer is not simply a matter of having an idea and using fixed means to create, to materially dominate and force, a product that exactly matches that initial intent.

...in creating an artwork, an artist is ... experiencing some subject-matter or creative idea, not just with his or her body and mind but with the artistic medium. ... When it is complete, the knowledge gained by the artist from this specific enterprise is integrated into the continuity of his or her life, ready to inform future creations.

(Crowther 2001, pp.45,46)

...‘Making’ in its customary artistic sense involves taking raw material and working it into symbolically significant form. This process of making, indeed, can radically alter the idea or conception which originally gave rise to it.

(Ibid., p.116)

Those quotes express ideas in relation to art that are central to the process-oriented focus of the Alexander Technique and to all genuinely creative endeavours. The process transforms, educates and inspires one beyond any initial imagination of a goal. Humans thrive in these experiences. The ‘product’ has its substantial expression and meaning through the process. And the process has resonance in and shapes the product.

You might hear a ‘perfect’ performance of a Beethoven Quartet, but intuit that somehow the performers ‘just aren’t fully into it’. You can appreciate the beauty of the music, the harmonies, melodies, rhythms, fast and slow and exciting and tragic parts, and so on. But the process of creation does not have all the qualities of engagement that give the music its full depth of expressive potential. We artist/performers all have our good days and bad days and do our best. I bought a cheap ex-school music programme cello to haul around for teaching purposes when I was an itinerant music teacher. It was made in China in a ‘factory’, which meant that its parts might have been made by different people in an assembly line environment instead of by a single skilled luthier. It had a few dents and scuffs, but the chosen wood was actually quite fine with nice even grain, and it was modelled on an Italian shape. I played it everyday and got to know it. I decided that someone, or some people, must have taken care, paid attention to the creation of this object as an expression of beauty and potential in the process of making it. Because it actually sounded quite good, and grew into a lovely instrument through being played. The consequences of our engagements within the world are reflected back

to us. We have the capacity within our active beings to learn from this and choose what to do next. The CPP facilitates this learning and choosing.

2. Ethics as Harmony and Improvisation in Responsive Equilibrium

The capacity to act creatively comes side by side with distinctions – distinctions in the recognition of and respect for difference. The foundation of learning as becoming experienced with functioning in the world cannot then be training patterns of automaticity, predictable reactions and means-goals tracks (patterns of behaviour, engraved brain wiring). The paradigm for human interaction with the world illuminated by the CPP and Arts Phenomenology is not pattern programming – the ability to recognise patterns is only the first step, an active being in the world is interactive, creative, and intentional. Reactivity may be part of a core biological process, but it isn't the defining element of active being in the world. Even at the most basic level of function, there is a flow of processes that involves corporeal responsiveness and generative deliberation. Understanding other than self is not simply matching memory programmes with previously experienced objects, but rather, is referencing experience for possible *offerings* of engagement of self to other, which are made sense of in improvisatory intra-inter-actions.

Understandings of inter-relationship underscored by experiences in the arts are resonant with the ideas of many philosophers of social ethics; I have cited Watsuji, Levinas, Gillett, Gendlin, Barad, Suzuki and Diprose among others in this thesis. Their ideas developed through experiences in very different situations, times and cultures. I have brought them together in a particular harmonisation in which their consonances and dissonances resonate together and with my own fundamental (the CPP) and the overtones generated through my researches and experiences. All of us are seeking and expressing understandings of the nature and capacities of humans to live as responsible social beings together with-in the world.

Diprose's ideas have resonances with Levinas', Barad's and Watsuji's for instance, as she describes 'corporeal generosity as the nonvolitional, intercorporeal production of identity and difference that precedes and exceeds contractual relations between individuals.' She sees that 'the power of the affectivity of intercorporeality [can] be both conditioned by but thwart the social norms and prohibitions that subject us and devalue difference'(2002, p.95). Diprose offers her conception, intercorporeal generosity, as responsiveness to alterity that is not egoistic, and as empowering for the defiance of social and political injustice. Throughout history expressive and creative arts have both

represented and challenged the socio-cultural-political climate in which they are made and shared. Contemporary challenges from the arts disciplines to dominant political and social discourses of technicity, appropriation and exploitation are elucidated by both Crowther and contemporary philosopher Krzysztof Ziarek². Ziarek sees the alterity of the arts providing a force that has the power to illuminate and resist the dominance of technicity.

Intensifying the flows of power, technicity forecloses the very space of relating; it “forms” the site of all relationality into a *techne*– ... all a matter of calculation, conversion into data, manipulation: in a word, of technicity ... It is art that may allow us to see technicity for what it is: not simply the omnipresence of technological products or the growing impact of technologies on all aspects of modern being, down to the elemental level of genetic information, but the specific valency of relating, the power vector, so to speak, of relations, which becomes increasingly constitutive of how contemporary reality unfolds. Acting as a critical mirror to technicity, art, and specifically the kind of *poie-sis* that occurs in artworks, opens up the possibility of an alternative disposition of relations, released from the formative patterns of power. To the extent that art both incorporates in its works the social reality of its origin and, at the same time, calls it into question and transforms the very modalities of relations which constitute the social forms of power, it can bring into view the underlying technical organization of modern relations and open up new avenues of resistance. Thus, art’s difference points to the possibility of resistance to the technological forms of power, resistance that occurs already on the level of relating – that is, before power becomes articulated and organized into its characteristic flows and configurations. (Ziarek 2002, pp.143,144)

Crowther, from an embodied perspective grounded in the phenomenology of the arts processes, writes of the loss of influence of the aesthetic through the dominance of consumerism:

The modern world in the twentieth-century and beyond has developed around consumerism and the technologies associated with it, and this has now been taken to a global level. ... As embodied beings, we exist in a world – both natural and cultural – that is rich, diverse, complex, and full of different aspects. However, **Supermodernity** ... is permeated by the cult of management that seeks to promote ‘efficiency’ by reducing everything to models of social interaction and outcomes derived from cybernetics and the advertising industry. What it is to be human, and what it is to change oneself and be encultured in a deep sense is lost. Indeed, the very notion of freedom itself is reduced to consumer choices. ... in most eras there was always a strong sense that some things were more important than money-

² The thesis bibliography lists some other works of interest by Ziarek which explore the transformative power of the arts in society and critique the dominance of technicity and the influence of economic globalisation (Ziarek 2004a, 2004b, 2010). Heidegger’s reflections on technicity can be found in *The Question Concerning Technology and Other Essays* (1977).

power. Values of a moral and aesthetic nature, and such things as self-development and bettering oneself and one's community, were acknowledged as things that had to be protected from market forces. This critical distance has been lost.

(Crowther 2014, pp.1,2)

And Levinas' words placed here bring his ideas about the qualities of intersubjective experience and responsibility to my harmonisation of ideas toward an understanding of the imperatives of social being-with as grounded in embodied responsivity rather than abstracted calculative 'reasoning':

'In such a situation, individual consciences are necessary, for they alone are capable of seeing the violence that proceeds from the proper functioning of Reason itself. To remedy a certain disorder which proceeds from the Order of Universal Reason, it is necessary to defend subjectivity.'

(Levinas 1996, pp.22,23)

Watsuji describes conscience as the call to one (*sonzai*) from the totality (*ningen*). Our social responsibility to Others is to demonstrate, and educate for, reflective self-discipline, respect for difference, and not to abuse human nature by manipulating reactivity for exploitive gain.

The expression of the CPP in the Startle Reflex is a foundational constant in engaged vulnerable human experience. Fear is a necessity for human survival. It balances curiosity, and it is part of our experience as creatures who are both predator and prey in the natural environment. The CPP, and Startle Reflex as an expression of it, provides elemental capacities in a flow of intra-inter-actions that support improvisatory responsive action. In early childhood learning, parents provide person level inhibition. This is gradually taken on by the child as s/he matures, and through embodied experience develops fluency in negotiating the human life-world. Teaching bounded behaviour by teaching fear of one's sensory beingness and responsivity is not an optimal choice for the development of human society or selves at ease with themselves. Ethics, as the practical interconnection of acts, is better informed by narrative-somatic metaphors that reflect the synergy of corporeal experience and meaning-making that is the foundation of human relationships.

Curiosity drives the fascination with mechanical creativity, but only reflective self-discipline grounded in agential realism, the understanding of the interconnectedness of all beings in and within environment, can direct human aptitude toward beneficial ends, through empathetic means. Dominance or cooperation are stark dualities in the human life-world. As Weil wrote, from insights in response to war and the rise of Naziism, '...power is not an end. By nature, by essence and by definition, power is a means. It is to

politics what a piano is to musical composition ... Fools that we are, we had confused the manufacture of a piano with the composition of a sonata' (Weil 1952, p.209).

Humans *have the capacity* to inhibit tribalism and avarice, and to grow up out of egocentrism. Reactivity and fear are aspects of a larger pattern, the trajectory of which in human society appears to include the duality of either expansive learning and inclusive respect, or the habituated constrictions of dominance, aggression, and social entropy. Gaia provides the parental discipline for her children (species). Within and between her being and our corporeal natures, she has generated endless expressions of the intra-actions of life processes reflecting the ebb and flow of responsive equilibrium that sustains life. The aesthetic dimension, responsiveness to the nature of substance and relationship-with, teaches us to recognise the inherent beauty in nature and in acts of creation. Humans develop tools of substance and thought to understand and shape their relationships: a world of different sciences, the evidence of our senses, languages and narratives of histories, artistic disciplines, healing traditions, empathy, and social structures that challenge us to recognise the Other and our responsibilities. Gaia reflects our actions and beingness back to us constantly so that we can learn to recognise the intrinsic beauty of balance, to love in respectful communality, and develop reflective **self-discipline** so that we can survive through improvisation and thrive in the harmony of responsive equilibrium.

Human action rides a current...

History moves us all like pebbles in a river.
We settle for a time, building islands of community
and stone structures that house our purposes
and shift the flow that shapes our times.

Culture is the current of social evolution
that permeates experience. It is the liquor amnii that
nourishes our souls and carries the contents of our inheritance
as past, present and future mix in the continuum.

Habit is the sediment we acquire through experience
or the bog without oxygen that binds us.
Definition, prediction and control make meanings substantial
but cloud perception and the capacity to respond.

Learning washes our souls and cleanses our hearts
in the spring of human interaction. It awakens us
to question the accumulations of belief that both
ground and restrict imagination and understanding.

Intentionality coordinates creativity in the sea of potential.
Human endeavours thrive in the floodtide
that pools knowledge with curiosity and desire
in the generative tidal flux of the unknown.

Empathy generates coherence and responsiveness
in the communality of social being. The resonances of
our engagements surge like waves across levees
and soak through the membranes of our conditioning.

Each existence, coalesced as substance,
is a confluence of forces that make contact tangible
and through sensation inform the human capacity for good.
Grace and love reside in the corporeal being of humanness.

Human action rides a current through spacetime.
We are con-current creatures – each a focus
of the energy of creation, living in and through
the flow of interbeing that carries us into history

Suzanne Noel-Bentley

Chapter 10 - Illustrations and Applications - Signalling Future Directions of Research

This research project, though multi-disciplinary, is based in the field of bioethics. Though historically bioethics emerged as a response to developments in healthcare and in the life sciences, the field of bioethics has expanded in recent years to a broader focus that takes in ethical issues in all of these areas: biological and biomedical research; the applications of theories about human psychosocial engagement with the world developed in experimental psychology, cognitive science and neuroscience; the social and political implications of new technologies; the underlying cultural dimensions and foundations of beliefs about human capacities and motivations; and how ideas about 'human nature' shape expectations about our relationships and responsibilities. Cognitive neuroscience, biomedical research and biotechnology are particularly influential in contemporary Western societies. Bioethics brings philosophical groundings and reflections to current research and ideas in those fields, and often challenges their ambitions to define human nature through their methodologies.

In this Chapter I will apply elements of my research and understanding to addressing some questions about topical issues in the central stream of bioethics, which is still grounded in biomedical ethics, including: mainstream medical and alternative healthcare practices; drugs, psychosurgery, and the medicalisation of behaviours; feminist perspectives on healthcare; cross-cultural understanding and communication; and organ donation for transplantation. I will also briefly outline some potential topics for research or expansion in those areas based the ideas I have put forward in this thesis about the Core Psychophysical Process, embodiment, multi-sensory meaning-making and the importance of the kinaesthetic and haptic senses.

1. Traditional Western Medicine and Alternate Healthcare Practices

I begin with the public interest in what are termed alternative healthcare practices. Why do people in places like New Zealand, Canada and many Western European countries, all of whom have relatively accessible medical care, flock to what are called 'alternative practices' even when large statistically based double-blind studies have questioned the efficacy of some of those treatments and practices? And a related question is, does EBM – Evidenced Based Medicine – actually support physicians to provide more individualised and effective care?

In my years of active practice as an Alexander Technique teacher, I taught, exchanged work with, and was referred students by mainstream Western medical practitioners and a wide variety of alternate practitioners. I also experienced traditional Chinese medicine

practises including acupuncture. There are fundamental differences between traditional Western medical approaches and those that are common in alternate practices, which are generally more holistic, communicative, and educational in their approach, and empowering for the patient in their intent. Whereas a mechanistic attitude and the objectification of a self and body divided are omnipresent in Western cultures and to an extent in medicine. That already sets up the possibility of feeling alienated from an aspect of oneself when sick, seeing 'the body' or parts of as separate from what is the essence of self, or as a damaged housing or dysfunctional robot actor for the intellect and will. That perspective suits an externally chosen mechanical or chemical interventionist approach. I wouldn't argue that surgery and drugs are not highly effective in saving lives and restoring function in many cases. However, that Cartesian/mechanistic attitude does militate against a belief in the capacity for healing through self awareness, observation and experimentation – of a kind that takes full account of the patients' perceptions and interpretations of experience. And against reflective understandings of the complex life circumstances that predispose and/or generate illness, understandings that often provoke and provide a more enduring and life-enhancing path to healthy engagement with the world.

No one system of the person functions in isolation from any other—so any illness is not *simply* a weakness or dysfunction of one part, it is an integrated expression of imbalance throughout the system. And that system extends beyond the boundaries of an individual body, and is inclusive of environmental, social, inherited and experiential contexts. Acknowledged or not, those factors are all present in clinical interactions and in the negotiation of a healing process. If one aspect of a being is less resilient, in a well-balancing system it is supported by the whole and thereby continues to contribute to the holistic functioning of the organism (an understanding of inter-relationship that generates and supports healthy human societies as well). Healing is therefore at once a re-balancing process and a re-creation of functionality.

Mainstream Medical practice is increasingly dominated by mechanical and chemical interventions. A typical doctor consult doesn't allow time for the kind of detailed interaction and hands-on approach that would allow a more complex multi-sensory assessment. With the increasing focus on technology in society, the multi-sensory diagnostic skills that supported many 'doctors' intuitions' and creative problem solving are less commonly known and taught. Many alternative healing practices provide more time and a more hands-on and interactive process. And many of them work for people in ways that aren't able to be repeated in double blind statistical studies.

As an Alexander Teacher I often worked with people in their longer term healing processes after injury, and found that the CPP was relevant on many levels. For instance, broken bones heal and doctors aid the process by setting them, putting on a cast or inserting pins. However, the protective contractive reaction to trauma often gets integrated into movement patterns and psychophysical expression. In balancing to protect an injured part, and in fear of pain, people develop stressful, inefficient postural habits. Integrating the core reflexive balancing process in re-learning balance and movement patterns addresses structural re-alignment. Working with the continual centring and de-stressing release from reflexive reactivity from an holistic psychophysical perspective, inclusive of qualities (not simply mechanisms) of sensory-motor awareness, reflective attention and self-observation, takes the healing process further. Coping with injury then becomes a learning process that enhances skills beyond the particulars of that injury, rather than 'trying to get back' to a prior conception of functional status. Beyond the topic of mechanical injury, reactivity is part of a process reflected in the whole of our human functioning. Systemic reactivity is a major factor in autoimmune diseases, and the health enhancing value of 'stress reduction' through psychophysical practices such as yoga and the Alexander Technique is recognised in medical literature.

Evidence-based medicine is strongly influenced by chemical, mechanical, and statistical foundations in medical research that don't easily allow for individual organic, experiential and social contexts. It seems to be another version of creating more 'efficient and effective' *procedures* to follow, which can sometimes actually add to the burden. 'We have a procedure in place for...' isn't a statement about empathy and the responsibility to care for vulnerable fellow humans. The actual need is for more time, which equals more funding and more doctors, and more varieties of medical (healing) expertise. And that then draws the issues of medical ethics outwards to the social, economic and political foundations in society. That is, ethics as it happens in the space that we inhabit as interdependent social beings.

Areas for further research or journal articles: reactivity, injury and healing; the CPP and systemic reactivity; conceptions of embodied being and healthcare approaches; training doctors in kinaesthetic and haptic awareness and diagnostic skills.

2. Drugs and Psychosurgery

Many people question the increasing use of drugs for children diagnosed with behavioural problems and the appropriateness of psychosurgery for a range of

dysfunctional behaviours. What sort of fundamental social and cultural issues may be at the heart of these matters, and are medicalised solutions the best we can do?

I have written about the value of the Core Psychophysical Process and arts processes for the development of psychophysically integrated intellect and skills, and most importantly for learning the skills of reflective self-discipline. Reactivity is central to human responsiveness, and improvisational flexibility in responding to the demands of practical and social life grows through experience. To develop and maintain a civil society, citizens need to learn and exercise self-discipline rather than acting reactively to difference and challenges. The CPP, in its expression at different levels of human engagement with the world, provides intrinsic processes that enable people to learn such life skills.

The Alexander Technique practice demonstrates that habits, beliefs, thoughts and qualities of attentiveness affect the tone and effectiveness of our actions, and our 'physical expression' affects the ways that we perceive, describe and shape our experiences. Alexander Technique work and other kinds psychophysical training can have profoundly beneficial effects on people's psyches and function. But they are not a quick fix, and require supportive experimental work over time. In considering drugs and surgical interventions, it seems important to keep in mind the wider societal context of the behaviours that are targeted. The presumption that particular behaviours or emotions can be localised in certain brain parts has been questioned in this thesis.

I have been a secondary school teacher, and I sometimes have a way with kids with 'behaviour problems'. It is my experience, and I think it is pretty obvious, that lots of people don't thrive in a static verbally/visually oriented environment. The increasing use of computers, which is supposed to help individualise teaching, increases the stress level for many people, provides a very constrained physical environment, and surely thwarts the development of young children. Manipulating images on a screen doesn't provide the complex interactive developmental and learning needs of multi-sensory active meaning-making creatures. It is telling that the drugs for ADHD put the body-mind into a startle reflex based chemical clamp-down in order to induce behaviour inhibition. Skills developed through the CPP support people to choose behaviour through inhibition and deliberation such that they can direct their energies in a positive fluent way. Here again, hands-on, psychophysically engaged complex activities that demand reflective processes and creative expressive learning develop skills for self-directed, disciplined, focused attention. Such activities use and focus a person's energy, rather than stifling that energy through fear or the chemistry of reactive withdrawal.

Human beings are equipped to develop life skills and do so in engagement with others and the world. The contemporary enthusiasm for behaviour control and moral and intellectual enhancement through drugs and technology – genetic engineering and mechanical implants and surgical interventions – needs to be questioned in the wider psycho-social-political context. Aside from the hubris and reductive mindset evident in assuming that we can figure out which bit of brain is in charge of a particular emotion or motivation, a mechanistic focus re-directs attention away from societal influences on behaviour (including the effects of hunger and poverty), and our human capacity and responsibility to educate.

The prevalence of focus on technological solutions in biomedical research does draw attention to the dominant presence of technology in Western societies. It's a short step from letting a 2- year old play with an ipad for hours a day to hooking your children into virtual world machines to 'educate their brains' for 6 hours a day. Or to thinking that implanting little brain stimulator modules is the right way to make everybody smart and nice. I think that is disempowering, creates a socio-pathic disconnection from our existence as human creatures on a planet, and short circuits our capacity to develop the reflective self-discipline that we are designed for.

The reflexive level of the CPP is an undercurrent in experience throughout life. In early childhood, fear is an important inhibitory impulse, and it is used, as it were, to teach basic survival behaviours and protect the inexperienced from harm. Self discipline is provided by others and learned through imitation and the constant feedback of CPP processes. Ideally, as humans mature, they learn skills for **inhibiting** imitative and habituated responses to fear at subpersonal and person level. Such skills allow for responsive deliberation and action, and provide resistance to the manipulation from others through the fear response.

Autonomy and communality (*sonzai* and *ningen*) are inseparable in the improvisatory negotiations of social ethics. Autonomy and free will are founded on educated inhibition, the capacity to reason holistically, and abilities developed through corporeally interactive experience to recognise and function in psychophysical complexity.

Areas for further research or journal articles: reactivity and technology in the classroom; arts education and the development of reflective self-discipline; the CPP and societal manipulation through fear and scarcity; medicalising behaviours – shyness is not a disorder; negotiating with difference; the CPP underlies socialisation and the development of reflective self-discipline.

3. Women's Perspectives in Bioethics

Are there particular women's perspectives in bioethics, particularly biomedical ethics, and how influential are they? This is a major topic, and I can only touch on some aspects here. Whether or not 'women's concerns' are in some ways biologically inherent, role-dependant, or societally conditioned, the feminist focus in bioethics that is most often politically and publically recognised is directed toward issues from the perspective of embodied experience and psycho-social relationship. Susan Sherwin, the Canadian philosopher/bioethicist, has written extensively about feminist theory and health ethics. In 'Feminist Approaches to Health Care Ethics' (2008), she described 'four main feminist responses to the exclusionary assumptions of traditional ethics' (p.80), though acknowledging the limitations of reductive categorisation.

The four positions are: (1) liberal theorists whose central aim is to emphasize the facts about women's equal capabilities (relative to men's) to act as moral agents and, on this basis, to demand explicit inclusion and attention to gender equality; (2) care theorists whose followers believe that women approach ethics differently from men and insist on equal recognition for women's distinctive approach; (3) oppression theorists whose proponents focus on the political injustice of oppression and look for ways to modify the concepts and applications of traditional ethics to ensure recognition of this problem and redress for inequalities; and (4) continental and postmodern theorists whose proponents challenge both the underlying conceptual scheme of gender that rigidly dichotomizes the world into two categories and the effort to identify universal moral values, demanding more local, situated approaches to ethical problems. Each of these strategies has its counterpart within feminist approaches to bioethics. (Sherwin 2008, p.81)

Sherwin identifies ways in which these streams in feminist theory apply to healthcare issues [with my own apology for distilled summaries]:

- 1) the liberal tradition is concerned with issues of equal access to healthcare and medical training for women and minority groups (p.81,82);
- 2) care ethics is fundamentally grounded in relationships rather than abstract principles, prioritising love, trust, care, and inter-personal respect and responsibility, and promotes a contextual approach the ethical reasoning (p.82);
- 3) oppression theorists focus on power dynamics at many levels, and address wider social issues related to healthcare provision, research and evaluation, attitudes toward biological reproduction, and inequities of many kinds in the provision of healthcare (pp.83,84);
- 4) feminist bioethicists apply continental and postmodern approaches in various ways – critiquing the influence of masculinist bias in language and therefore thought, and

identifying assumptions about gender categorisations and universalist ideas about body-mind norms, as disrespectful, exclusionary and dysfunctional in medical practice and ethical discourse (p.84).

When I began researching bioethics topics, I found that reproductive technologies and reproductive rights, which are generally seen as women's issues, were common topics in writing by women bioethicists in the public sphere. Some of the other issues that women predominantly address and define are not at the forefront of general bioethics discussions, Care Ethics¹ being a prime example. It is a Western societal cliché that women prioritise and define experience in terms of empathy and relationship, and men define in terms of and prioritise acquisition and control. Cliché or not, it is the case that in medical ethics, the foundation of which is human empathy-based responsivity to vulnerability and need, Care Ethics is a site where compassion has been addressed as a priority, and yet Care Ethics has less impact in medical ethics discourse than it warrants.

There are wider social issues of the economic and practical relative devaluing of what have traditionally been identified as women's roles – the emotionally responsive and hands-on practical caring for, nurturing and healing activities. Though nurses have traditionally provided those comprehensive dimensions of care, the dominance of modern economic rationalising has made it much harder for nurses to provide that care. As I have touched on in Chapter 8 – Dark Ethics, the issues are deeper than role assignment however, as the devaluing of human 'physical' interaction has led to many changes in health care delivery: the increasing use of long distance computer interface in diagnosis; the assumption that chemical solutions will do the work of disinfecting hospital environments instead of thorough cleaning techniques by the conscientious salaried staff; and the general underfunding of hospital care, adjunct practices (physiotherapy for instance), and primary care. That does not support equal access to care for people, or provide enough time for practitioners to spend with their patients.

I have addressed the devaluing of intuitive understanding, sensory-motor-visceral experience, and touch-contact in Western society and their assignment to the 'feminine'. In this context, it is worthwhile to remember that knowledge of the properties and interactions of substances, and healing traditions, grew out of direct experimentation with the natural world, by both men and women, without the mechanical equipment for

¹ Virginia Held's Book, *The Ethics of Care – Personal, Political, Global* (2006), is comprehensive and is available at Oxford Scholarship Online. An example of Care Ethics applied to medical contexts is found in Hamington, M. (2012) 'Care ethics and corporeal inquiry in patient relations', *International Journal of Feminist Approaches to Bioethics*, Volume 5(1), 52-69.

chemical analysis. Women, sensual interpretation, and touch-contact were central in nurturing and healing traditions in most eras of Western civilisation. The persecution of women (witches) for their knowledge of and skills in the healing arts was about power in society, not an indictment of their skills. The implicit understandings that arise from our multi-sensory deliberations and meaning structuring have an important place beside traditional Western medical modalities. Healing traditions from other cultures have developed systems of organising and working with knowledge and experiences of touch-contact and sensory awareness in diagnosis and treatment. These aspects of humanness in relationship bring us into direct contact with our responsivity to each other, and therefore the empathetic foundations of ethics, without the intermediation of technology.

Areas for further research or journal articles: ‘implicit understanding’ in diagnostic deliberations; cost-benefit analysis undermines healthcare by objectifying and categorising patients; diagnosis and healing through touch and sensory interpretation; sensate being and ‘women’ – as constructs and participants – in psychiatry.

4. Cross-cultural Understanding

How do we make sense of life, and of other people’s intentions, needs, and ways of being in the world, such that we can act with respect and beneficence? Experiences are defined in part by what we articulate to our attention. Different societies, within different cultural traditions and environments, create varied and often fluid definitions of experience and relationship according to their selective attention to what is of importance in their climate and culture. Sensory attentiveness, physical expression and modes of communication differ in many different ways that reflect individual, family, community and cultural experiences. Words have meaning in the context of their use, which is an engagement between people with-in a situated embodied experiential perspective about cognition, meaning-making, and being-in-the-world.

Some cross-cultural misunderstandings come from these different ways of being, communicating, and articulating through action one’s being-in-the-world. The arts not only reflect the norms of social engagement and communication within their cultural contexts, but also express aspects of experiential, sensate, corporeal being-in-relationship that are devalued, ignored or suppressed by the dominant socio-cultural-political discourses². In that way and other ways that I have written about in this thesis,

² Sherwin and Baylis, in ‘The Feminist Ethics Consultant’ (2003), propose that feminist perspectives from alterity to dominant discourses in medical ethics provide both possibilities and an imperative for feminist bioethics consultants to speak from clear moral positions on injustice and health issues.

experiences with arts processes develop the capacity for creative rather than habit-bound responsivity, and train abilities to improvise with consonance and dissonance in harmonious relationship. Verbal propositional reasoning and functional mechanical explanation are useful but not necessarily the most effective modalities for communicating, deliberating and enhancing autonomous decision making in a clinical environment. This is well-known in medical ethics discourse and often written about. But there is room for more training in reflective psychophysical awareness for doctors, the lack of which is a reflection of a wider Western cultural commonality of experience. A site for considering cultural differences in a medical context is considered in the next section.

Areas for further research or journal articles: understanding embodied being across cultural difference; arts therapies and Western medical discourses; embodied communication and multi-sensory interpretation.

5. Transplantation and Organ Donation

Why would the idea of organ donation not have intuitive appeal for many people? After all, there is a long history of belief in Western cultures that the psyche, mind/soul, is either separate from or transcends the body in death. Even without the spiritual component, many people view the body as a vehicle or housing that has meaning only in and through its intentional use. So if once you are dead you've left the building, why not deconstruct it for much needed parts? Sense of self and identity develop in community and in cultural traditions that also have a spiritual dimension. Many cultures and spiritual traditions carry beliefs about respect for bodily integrity, and have rituals associated with death, which make the idea of giving or receiving transplanted organs unacceptable. Even so, why would someone not want to give 'the gift of life' by donating organs after death? It's a big topic, so I'll talk briefly about it from my own multi-cultural dilemma, rather than trying to present someone else's...

I'm embedded in western culture. I grew up in an intellectually-oriented community of people committed to ideals of social justice and making a positive contribution to people's lives. When I was a young teenager, I was interested literature, politics and the sciences. Then I heard about the early heart transplants. I was amazed and fascinated, researched all about it, and for a few years I wanted to become a doctor. I didn't, I became a cellist, a dancer, an Alexander Technique teacher, a school teacher, and a researcher and writer. Through those disciplines and my life experiences within a variety of places, cultures and spiritual traditions, I have at present a particular

embodied sense of self and soul, a kind of presence in being that feels whole. If I had to answer the question what is my soul, I would say that it is the resonance of my being.

And so the dilemma for me is that I believe that donating one's organs after death is admirable, a great gift and the right thing to do. I can imagine choosing, while alive, to donate a kidney to save the life of a family member or under some circumstances to someone in my extended community. But the thought of being strip-mined for parts when I die seems like a profound violation of my being. And against the poetic narrative of my life within my family and community.

I moved to New Zealand from the city of Victoria in Canada, which is on a large island the size of the South Island. It is west of Vancouver – the mainland, and there is some ocean and many small islands in between. I have sailed those seas, and also for a time lived a kind of wild natural life on the water and the land. There are huge ferries that cross between Victoria and Vancouver, and they pass through a narrow channel between Galiano and Mayne Islands called Active Pass. The current is very powerful there, but at slack tide there is an area of deep quiet water. Every time that I have made that crossing since my teenage years, that has been my place of reflection – on my life thus far and my imagination and hopes for the future. And then I throw a 10 cent coin into the sea, to pay the ferryman.

My mother didn't know this, but I learned after her death that her wish was to have her ashes scattered on the waters in that place. We did this together as a family, from the lower deck of the ferry. And that's the only dispersal after death that makes sense to me...

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