

*Burden of participation: on the prospect for transformation from education*

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A thesis submitted to  
Auckland University of Technology  
in partial fulfilment of the requirements for the degree of  
Master of Philosophy (MPhil)

2013

Faculty of Education



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

## ***Acknowledgements***

This thesis is the culmination of an extended project over several years looking at the ideas of Alfred North Whitehead. I am indebted to Dr Jim Neyland, with whom I briefly studied at Victoria University Wellington (VUW) in 2008, and who initially proposed Whitehead's thinking as a methodology for amplifying the thinking of a scholar I had wanted to investigate as a thesis topic. That project remains incomplete, partly as a result of the sudden and tragic passing of Jim, and partly as I took up what I perceived to be a worthwhile task, understanding more deeply the approach of Alfred North Whitehead. His metaphysics is perennial, and it was typical of Jim, who had only recently come to know Whitehead's thinking, to propose a direction as rich and original as speculative philosophy. Subsequently, I found myself in the immediate hands of Fr. Kevin Connors, who generously spent several sessions initiating me further into Whitehead's philosophy. It was from this basis that I gradually became stronger with these ideas in the context of philosophy. I made a presentation to a small group convened from PESA one weekend at Auckland University of Technology (AUT). There I met Dr Ruth Irwin, who offered to develop a proposal with me on the thinking of Alfred North Whitehead. After some discussion with Ruth, I finally began work on my thesis.

I am grateful to all those who have supported my work including

- My family – my wife Joanne Kelly, who has been a companion throughout the entire process and, my children, Christopher and Hannah who were a constant source of inspiration.
- Te Papa reading group – Dr Bronwyn Wood, Andrea McMillan, Michael Harcourt, and Juvena Julal.
- I am grateful to Philosophy of Education Society Australasia (PESA) for the various opportunities that have arisen to discuss my research. I presented a paper based on my research in 2011 at their annual conference. A previous version of chapter 3 was presented at *The creative university - Education and the Creative Economy Knowledge Formation, Global Creation and the Imagination*, a conference held at Waikato University in August 2012.

I would like to thank Dr Ruth Irwin for her philosophical guidance and support.

***Abstract***

Present day education is goal directed in ways that ask to be examined critically. The successful delivery and assessment of a standard curriculum goes far beyond reading, writing, and arithmetic skills to suggest a value is being placed on standard attitudes representing social values, work ethics, and uniform goals. We need to reflect on the conditions of modern educational practice, however well-meaning, as prejudicial to intellectual progress and innovation. The term *transformation* is used here with the meaning of *alteration* or change as a desirable goal of education and a necessary ingredient of a healthy evolving social culture.

I examine the philosophical influences towards education in the 18<sup>th</sup> century focussing on the metaphysical thought of Descartes and Rousseau. Both philosophers uniquely made available empiricism as a suitable account for our mind coinciding with our action. I consider a time when empirical thought was strongly influential, and identify the process philosophy of Alfred North Whitehead, which recognised the limits of empiricism, and more carefully balanced its demands to return metaphysics as a fuller expression of our lives.

Currently the idea of transformation in education exists as a lifeless and worn out concept adapted from metaphysics of the 18<sup>th</sup> century that eschews its philosophical underpinnings. By contrast, there appears to be a large history in education scholarship that views transformation as addressing the whole person as enlivened and creative. Instead, learning operates in education as either a template for a pre-ordained notion of a curriculum, or narrow vocationalism that minimises the prospects that education plays in our lives.

Transformation is a key notion from metaphysics that Whitehead reworks as a central concept for viewing ourselves in process. We need no longer regard ourselves undertaking transformative education as static beings, but rather that our actions are never settled and are derived from within the world in process. Each action taken in process arrives from the coincidence of our mind with the actual world. We find our thought on display from participating in the world.

We can recognise the thought of educators when they adopt a particular stance, a position from which to act. Such participation requires educators to remain amidst the processes of the classroom. The burden of adopting a particular stance is supported from a process of transformation that is novel, creative and original. Our actions as educators that seek to return transformative education as worthwhile to us can be viewed as that which educators can never escape. The result will place thought in education on display and return professionalism in education from the actions of educators themselves. In this way, educators avoid acting as mere facilitators of a curriculum, and they can return a deeper purpose for education in society.

## ***Abbreviations and References***

*[works from which passages are cited in the text]*

**AE** Whitehead, A. N. (1929). *Aims of education and other essays*. New York: The Macmillan Company.

**AI** Whitehead, A.N. (1967a). *Adventure of Ideas*. New York: Free Press.

**CN** Whitehead, A. N. (1964). *The concept of nature*. Cambridge: Cambridge University Press.

**MT** Whitehead, A. N. (1968a). *Modes of thought*. New York: Free Press.

**PR** Whitehead, A. N. (1978). *Process and reality: an essay in cosmology*, corrected edition by D. R. Griffin and D. W. Sherburne. New York: Free Press.

**SMW** Whitehead, A. N. (1967b). *Science and the modern world*. New York: Free Press.

## ***Research Question/Problem***

Instrumentalised education is very destructive to the fabric of society. We are dealing with instrumental education which derives from a notion and premise of teleological transformation. The process of teleological change seeks to arrive at a utopia/dystopia. Such a progressive transformation relies upon the separation of the object from the subject that is being transformed as a method. I want to offer a new method that opens up a critique of progressive vocationalist neoliberal education that exists in the present. My emphasis will be towards the future, whilst resisting a particular teleological outcome. My thesis is itself an assemblage that will demonstrate the methodology I wish to exemplify. In this methodology the outcomes are open ended. This appears to be a worthwhile pathway.

## ***Introduction***

As an educator in New Zealand today, I am expected to deliver an instrumentalist curriculum and I'm faced with the drawbacks of a prescriptive approach to the provision of basic competencies. It appears to me that teachers find themselves focusing more on work related skills rather than the development of an ability to think critically and in new ways. Under such a system, teacher training at a tertiary level encourages the further streamlining of learning methods that reinforce such efficiencies into a culture of obedience with the promise of rewards and credits. It is in the interest of educators to rationalize the status quo, and the consequences of such targeting of educational outcomes include a diminishing of the imaginative and challenging components of childhood and post-childhood learning.

A stagnant curriculum rigorously enforced is poor preparation for success in a dynamically changing environment, and to abandon students to their fate having avoided their duty to prepare them to survive outside the safety of a school environment is not only selfish but a betrayal of trust. Educators have to do more than reinforce the collective conservative views of fellow educators or regulators. They have a duty to balance the delivery of life skills for society in general, with encouragement of independent critical thinking among individuals.

Instrumentalism is the outcome of a neo-liberal view of progress and teleology, which assumes life unfolds in a linear and pre-programmed (or controlled) way. I wish to offer a critique of education unfolding along teleological lines using *assemblage* as a



concept of transformation. *Assemblage* refers to the accumulation of knowledge from multiple sources and observations that itself provides the means by which it unfolds. Instead of understanding our activities as a progress from beginning to end, we can see education unfolding as events that retains a sense of the whole. It places equal emphasis on what has been accumulated or known with the nature of the inquiry and entails a risk of inconsistency. Education unfolding along the lines of an assemblage is messy and unpredictable, as it includes what is unknown and unpredictable. It de-emphasises the end-point as an outcome, whilst balancing more carefully what has been accumulated with a way forward in a world in transformation.

There are lines of thought in philosophy that have dominated neo-liberal education and have not served a deeper transformation available from education. I examine the determinist situation for educators from the perspective of initial teacher educators, where the influence of empiricism on education is evident today as a process for 'becoming a teacher', predicated on achieving consistency and uniformity of thought and action among the workforce. In examining the effect of empiricism on education we find the strong influence of Descartes and Rousseau.

The current processes in transformative education have their origin in 18<sup>th</sup> century rational science, which I term personal transformation or social transformation. Personal transformation seeks individualistic and determinate possibilities that have their origins in a Cartesian understanding of the world. Descartes tried to demonstrate that what we know from the world is unrelated to the world, except through our mind. This coincided with the arrival of Newtonian science as the means to determine what ought to be known. The arrival of mass education in the 18<sup>th</sup> century responded with delivery of the curriculum as if it was a blueprint. Learning in this process is termed the maturing of the child towards adult rationality. Social transformation by contrast seeks to facilitate learning already contained within the child-as-nature. Inspired by Rousseau, the child-centred approach views the adult world as corrupt, and instead relies on the children to bring about learning for themselves. Although non-interventionist, the educator generates spontaneous learning through contact with the physical world. Such a process of facilitation falls back on determinate possibilities informed from specific outcomes.

The underlying motivation for the tendencies of determinism in education has their origin in a mechanistic view of the world that developed in the 18<sup>th</sup> and 19<sup>th</sup> centuries. Despite the obvious specialisation in technology at those times, a deeper understanding of our world did not arrive. The mechanistic advancements made simply trivialised the setting for describing the nature of our existence. We were left with crude tools from an era sucked dry by its blindness to being human. Continuing in a mechanised fashion we fail to receive fuller self-knowledge.

To help shed some light on understanding in education it is worth considering a time in philosophy before the rise of a scientific approach to education. In the history of thought, science and metaphysics were synonymous with each other. The term 'Wissenschaft' is an example of this that persists today, based on the assumption that the world was divinely created and full of objects of marvel and mystery. With the arrival of print, access to information became freely available outside the control of the church, drawing in its wake the new construct of a world in motion and overrun by competing interests. With print came the abstract concept of knowledge as a possession and science as a category of formal understanding of the world, independently of religion. At the same time, human knowledge of the world was revealed as far from complete, creating a desire for an increase of knowledge as a defence against the forces of uncertainty. Scientific questions used to be asked as part of metaphysics. This was termed 'natural science' that nonetheless was knowledge of epistemological origins. But modern science adopted the Baconian method, and 'natural science' became empirical and experimental. Modernity relegated metaphysics to the non-empirical study into the nature of existence. Today this can be seen as a schism between the abstract, that which exists in our minds, and the empirical; that which is known to us through direct observation. The instrumental schism persists in education and distorts our understanding of education. It reduces the means by which we initiate others into that which we consider worthwhile, as available from determinate possibilities.

Education is certainly ripe for reform in the sense of better providing conceptual tools for handling a dynamic and relativistic worldview in which the imaginative faculty can better flourish. Whitehead's initial discovery as a physicist was that theoretical concepts arrived at by abstract mathematical reasoning could be shown to predict the existence and behaviour of counterintuitive real world events. Whitehead called into question the stable real-world view of classical science, along with the traditional goals of education

to reinforce a stable world view. ‘Vitruvian man’ as drawn by Leonardo da Vinci around 1490 is the idealised depiction of ‘man’ within nature based on the description of Vitruvius. Da Vinci attempted to relate the proportions of man to nature through idealised mathematical multiples. From Whitehead’s perspective as a university educator, it would no longer be possible to profess laws of nature that were now demonstrably uncertain at a microcosmic level. The question then was What and How does one instruct a new generation in a modified deterministic logic that takes account of the subjective ingredient of the individual observer and timeframe of reference. All of a sudden the comfortable, humanly-proportioned reality enshrined in Vitruvian man was no more than a limited local frame of reference within an expanding universe conforming to a different set of rules and boundaries.

There is potential for education to provide us with a stronger basis for transformation. Process philosophy offers us the means for accessing indeterminate possibilities, such that they sustain and nourish ourselves. Alfred North Whitehead (1861-1947) was one of the great metaphysicians of the 20th Century. He is generally credited as strengthening process philosophy from a line of thought that has its origin with the pre-Socratic philosopher Heraclitus. Whitehead’s metaphysical treatise *Process and Reality* (1978) is presented to us as a “necessary system of general ideas in terms of which every element of our experience can be interpreted” (PR 2). Whitehead’s work is persuasive because he attempted to relate human experience to organic unity of the natural world. This is a perennial issue, one that arguably has been overlooked for today.

At the time of Whitehead’s thinking in science, which is best represented in his work *Science and the Modern World* (1925), there was a crisis with the classic paradigm derived from Newton and before that Greek cosmology. Whitehead having devoted his scholarship to theoretical physics, did not wish to abandon science, but wanted to address wider concerns from philosophy with modern scientific discoveries at the turn of the century. What was at stake was the notion of the nature of our reality and how we perceive reality.

At present, education sees subjectivity as conforming to a preconceived set of notions that are said to be adequate for being human, and the role of education as ensuring we

conform to those notions. However, if we are to take education as transformational seriously, then there are a number of key steps that need to be considered.

1. Education has a dual task of a personal and social transformation.
2. Educators have adapted towards transformation in society along neoliberal thought typified as economic rationality.
3. If we wish to account for our existence from education in the world, both neoliberal social and personal transformation is flawed because they rely on the philosophical notion of individual determinism.
4. The processes of our mind do not coincide with the organising processes of the actual world. Instead, the Cartesian mind of determinism makes available physical objects dissociated in actual space. We only know this reality through its effect from a resultant cause, where conditions for knowing are either necessary, or necessary and sufficient.
5. Instead causality can transmit through efficient means. Whitehead explains the conditions for this transmission in spatio-temporal terms.
6. In this way, the processes of our mind are now said to coincide with organising processes of the world. This places educators amidst an assemblage, conceived as a free association of coinciding possibilities from a world in continuous change.

I hope that our work here can be viewed as informing our practice as teachers. I wish to offer teachers a more creative role from within the immediacy of the classroom that will provide greater prospects for transformation from society. It is Whitehead's approach in *Assemblage* that allows us to view ourselves in an awe-inspiring exchange with the world, where our readiness to intuit is supported from the self-acceptance of our perception.

### **Methodology**

My experience with teaching practice has been frustrating and unrewarding because it was so instrumentalised. As I put effort into my own situation of being a teacher, I became more aware of the parameters of teacher education and hence, sought to develop my own understanding within that context. I noticed that while my practice as a teacher had changed and improved, the purpose and aims of education appeared to be stronger and more clearly defined as economic rationality. Where I found enjoyment from the

process of becoming a teacher, I was met with an awkward and conflicted response from my colleagues, who saw that I no longer agreed with the stated goal of economic rationality in education. It was as if the transformation I was on towards becoming a teacher was suddenly invalid, and I was left with a conflicted picture of a purpose for education.

In order to retain a respect for my experience, and find a clear purpose or platform for education, I require a methodology that recognises education as transformational. It is beyond the scope of my project to document every instance of my experience from teacherhood, but I take this as a starting point and begin to generalise ‘becoming a teacher’ as a process within initial teacher education. Equally it is beyond the scope to document the aims of education, as they exist today. I require a method in transformation that returns to ‘becoming a teacher’ with a purpose for education that is ongoing and never settled.

It is clear from the research problem that we are dealing with an education system that is under the strong influence of the theories of neo-liberalism and economic rationality (Peters, 2012). A defining and righteous feature of these rationalities is that they unfold towards a particular goal or telos. From embedding themselves in the nature of education as dynamic and aware, we find the convenience of unfolding towards a particular goal with desired outcomes is made a priority. It is in the goal-directed processes that we are seeking satisfaction, but on deeper consideration do not offer us a picture we face as being human.

Whilst retaining the idea of a transformative world, one in constant change, we require a method that views our learning as stimulating and open. Assemblage is the mutual gravitation of ideas, a process of the accumulation of knowledge itself placed on ‘display’, as I explain in a moment. Transformative learning is the opposite of learning by the book, and even more so in terms of the world of Internet resources, where the accumulation of knowledge rarely shows any depth or creativity. Assemblage avoids the utopian aim by paying attention to the way things come about and unfold, which allows wider consideration of the whole.

A more accurate understanding of a methodology of change is ‘assemblage’. Assemblage is the multiple, disparate, realms and time frames that impact on a certain

set of circumstances at any given moment. In other words, it is not necessarily progressive in a linear fashion. Instead it has multiple elements, often sending it in different directions or having modes of influence in a variety of ways. It is unpredictable and uncontrollable.

Assemblage is about looking at a whole range of experiential modes/realms and investigating the way they impinge on the event in immediacy. It casts about for different time-space relationships. In resisting instrumentality, assemblage adds to the critique of education that highlights the flaws of neoliberalism. An assemblage displays itself as a disruption towards the assumption of an inevitable end. We display our choices with an awareness or sense that there are multiple assemblages being taken from within a multiplicity of layers.

### **Genealogy of Ideas**

I am making use of genealogy as a type of assemblage. My method requires that I assemble ideas together into a coherent whole. I require some means to sift through existing scholarship to focus my assemblage as a genealogy. To do that we focus on assemblages in our lives as an event and privilege the subject as the event. In focusing on events, it peels the assemblage back to *my* history of ideas, instead of just an objective history of ideas. Such a process helps me to critique neoliberalism as an aspect of the assemblage of education. A genealogy helps us look at the background of the ideas in question. Assemblage is a juxtaposition of ideas. For me, genealogy is important because it allows us to accept the linkages and the critique of ideas.

My method involves considering the wider history of ideas that currently informs transformative education. To do this, I employ the methodology of Foucault's "Genealogy of Ideas" (Kendall & Wickham, 1999). In philosophy, genealogy is a technique that questions commonly held assumptions that support an ideology. It looks to account for those contingencies or conditions that support the ideology, rather than focusing on the ideology itself. Foucault's approach of genealogy seeks to backtrack through the history of ideas in order to bring to light the assumptions we have accumulated today. The process of sifting through the accumulated archive of ideas, places on display the arrangement of those discourses and their ongoing character.

My methodology seeks to rework philosophy's involvement in education that allows insight available from Whitehead. In drawing upon a history of ideas, the method rejects their involvement in education as a linear development. From my reconstruction, I place on display the arrangement of those discourses that have been addressed by Whitehead. This allows my work engaged with a history of ideas to provide a critical lens on education today, which overcomes the stifling effect of determinism on education.

Foucault situates his genealogy of ideas on the individual. However, transformative education has been talked about in wider terms that speak to a sense of the whole. O'Sullivan (1999) presents an educational vision underpinned from a cosmological whole that takes in notions of globalisation, capitalism, consumerism, competition social justice, gender imbalance amongst others. His wide-ranging vision from education encompasses a very large and sophisticated grasp of the world as an assemblage. I have chosen to focus on one aspect from education that acts as a small case study for demonstrating his vision as a methodology. I wish to retain a sense of the cosmological whole that O'Sullivan advocates in his vision for 21<sup>st</sup> century transformative learning.

Whitehead's accumulation of knowledge as an assemblage retains a holistic notion of organic unity. Assemblage seeks to accumulate knowledge from the wider world, as we perceive it in dynamic relationship.

The idea of *assemblage* has been enriched and enhanced in the writings of Deleuze and Guattari (1987). Their work has important appeal to education for four reasons:

1. The French term *agencement* (often translated as assemblage) does not refer to a static condition. Rather it is the 'fitting together' or 'laying out' that is made a priority that relies on the process of arranging, organising, and fitting things together.
2. Assemblage creates territories or milieu which thrive. More than just a space, these territories are characterised by a sense of belonging and becoming. The object brought about as an assemblage stakes out a claim from amongst all the other possibilities from which it has derived.
3. Assemblage is as much about how something occurs as just what occurred. For example, not just that students listened to the teacher introduction to the lesson, but rather the lesson began with a teacher introduction-student listening event,

when there was some noticeable noise but with stillness, and the door was open, and the sun shone on desks and most eyes were on the teacher. Giving consistency and coherency to the object, is important. They are qualities that can never precede the event, rather they are emergent that may or may not arise from the assemblage. Whilst the assemblage is riddled with contradictions itself, there will be a recognisable quality that is consistent and inhering.

4. Humans enter into an assemblage by taking up the conditions that make up the assemblage. In a classroom for example, we take on the patterns of inhabitation, the slowness and speeds of moving in the space, the existing patterns of pedagogy that are familiar to students, the jargon of student language.

An assemblage, for Deleuze, is to be found from amidst the dynamic processes of the world:

“As an assemblage, a [classroom] has only itself, in connection with other assemblages and in relation to other bodies without organs. We will never ask what a [classroom] means, as signified or signifier; we will not look for anything to understand in it. We will ask what it functions with, in connection with what other things it does or does not transmit intensities, in which other multiplicities its own are inserted and metamorphosed, and with what bodies without organs it makes its own converge. A [classroom] exists only through the outside and on the outside. A [classroom] itself is a little machine” (Deleuze and Guattari, 1987: 4)

### **Assemblage of the research**

In my assemblage, I draw on process philosophy of Whitehead to demonstrate assemblage as a method. I am interested in overcoming the determinate possibilities of a static view of our actions and decisions that derives from a neo-liberal system of education. We want to embrace the dynamic and potential possibilities for learning in education as an assemblage.

Whitehead turned against a mechanistic view of the world that had its origins in Newtonian science. This was not an unknown approach to take at the time. Other thinkers in philosophy were looking to the roots of philosophy as the rise of scientific theory made inroads on a unified theory of the world. Whitehead saw within science the abstraction of empirical fact as concrete. He proposed instead to examine science from



its metaphysical roots in order to propose a unified view of the world. It seemed to him as if his discoveries in mathematics and theoretical science so far had been to no avail in elucidating a fuller understanding of the world. His magnum opus, *Process and Reality* was published in 1929 and was Whitehead's crowning achievement. Substantially based on the Gifford Lectures he delivered in Scotland two years prior, this was a work of hard technical metaphysics employing full-blown terminology from a distant age. This dense and difficult writing in which he delved deeply into the traditions of philosophy has arguably been overlooked today.

Drawing on the process philosophy of Whitehead, I offer creativity and novelty as once again available from the actions of educators themselves. Process philosophy is concerned primarily with our activity and takes a unified view of the world through speculating on the dynamic possibilities that arrive from our actions in process. Whitehead maintains that the activity of actualisation is self-explanatory, that is, that things come about in the world through their involvement in the world. Whitehead terms this irreducibility as 'creative participation', where our actions in dynamic possibility draw on the wider whole. My reason for acting in an open and indeterminate manner arrives charged with meaning from the immediate world. Our existence, now defined by our indeterminate actions, responds more carefully and tenderly, whilst drawing on the aboriginal whole. We participate in the whole. This allows for our practices in education to become a source from which we derive new possibilities for ourselves in society.

However, we have good reason to view the world as separate from our reality. Our perception lies just beyond that which we are aware of. We only ever perceive from what we already know to be the case 'in reality'. We tend to stick to what we know detected through our senses, such as light/dark, hot/cold. This has implications for our awareness of ourselves. Our conscious limits of our mind are those that we can never overcome. To be aware of my brain is nonsensical, when we can no more sense our brain than admit we have 'lost' our mind. Our brain assumes a conceptual form of the image that is detected through our senses, but we never catch ourselves in thought. Hence the brain and our mind are not the same. There is however, far more of the world in mind than is available to us through our senses.

In order to strengthen our understanding of a process world already available to us in sensory perception, Whitehead transplanted his ideas that were valid in mathematics and

offers them in another in the hope that they will take and flourish. Over many years, Whitehead generously turned his groundbreaking scholarship in symbolic logic towards an account of process theory that lay down its foundations. His effort resulted in an innovative metaphysical treatise published as *Process and Reality: a philosophy of organism* (1929), where our reality bounded by mathematics might be seen as requiring infinite possibility in thought. In presenting the material world as continually in a dynamic process, of which our brain is to be no less subject, Whitehead attempts to introduce ‘creative transformation’ as arising from the coincidence of the organising processes of the world with the processes of our mind. I refer later in my thesis to the way that Whitehead uses mathematics as the mapping function or transformation itself that gives structure and order in the world from our involvement in it.

The problem for Whitehead arises when Newtonian science makes its abstractive thought too definite. Whitehead termed this problem the ‘fallacy of misplaced concreteness’, in the sense that we place too much emphasis on that which is already known, instead of that which is yet to be discovered. He saw arising from science the way entities are abstracted from something actual, and then held to be the most concrete rendering of that actual thing. He contended that pursuing a rigid and abstractive science that had neglected its philosophic basis had ruined modern science. Instead, he saw that meaning cannot be abstracted from the world, but resides within the world and is available to us through perception.

Understanding of this type relies on a view of the world from monism. This is a dominant and pervasive approach to Western thought that persists today. This outlook takes the belief that our reality is a single rational system, and that our history and nature can be explained with a single all-embracing system of discoverable laws, which govern ourselves and inanimate nature alike. Monism is behind the quest for certainty within the world, and it arrives from our confidence to know how things are, and how they should be. We have a deep need to base our knowledge on a solid foundation, a place for our significance within the world. The monism of the 1700’s received an additional impetus from the rise and triumph of the scientific method. This was seen as the potent means available to us for uncovering the truth.

Whitehead and others wanted to live with a so-called ‘neutral monism’ where the cosmological whole would be seen in God’s eyes as either involving God, or not, and that God was neutral to the effect. Whitehead can be seen as taking a position within

modernism and, taking impetus from Kant, extends this into the natural world. In addressing a natural conception of the world, Whitehead's metaphysics retains its organic features, a sense of the cosmological whole. We are now literally subject to the natural world. Our mind is composed of the same neutral substance as our body. In turning away from modern mechanistic (meta)physics, we see the world as a subjective reproduction of the real world, that which lay beyond, but was still realised through our perception of it. Grasped by mathematics, this implies that the interior is inaccessible subjectively, that we can never grasp truth, but that "the exterior is reflected in virtue of causal efficacies originating from the physical world" (Patocka, 1996, pg. 1). This culminated in a turning away from the interior world, in order to grasp the full force of the world as it presents itself.

It is from this vantage point, that Whitehead addresses our quest for a solid foundation. Where Isaac Newton saw space as being inhabited by physical objects, Whitehead took a monistic account, where space and matter form a single field of entities. Matter passively occupying Newtonian space could be viewed, according to Whitehead, as active and in a dynamic relation with space. In reality, objects are inseparable from their spatiotemporal location. This incorporates new developments from science that were brought about with Einstein's theories of relativity and others.

Whitehead gives us the possibility for recognising novelty from the unity of our mind with the physical world. A series of objects with which we interact over time would be merely a disconnected series of events. Instead, we need to depict our activity as manifest within those objects. Whitehead understands the concept of activity as an assemblage, partly informed from our own awareness of those physical objects, and partly informed from processes within the world of those objects independent of our mind. A reality that relies on the coincidence of both aspects in process, allows us access to that which arrives at the origination of our actions. Whitehead's assigns a far more primordial status to our thinking than is ordinarily available. In this way our activity comes to pass as a cognate act through its representation in physical action. Our thinking is literally lived. I wish to demonstrate that Whitehead provides a new basis for an approach that is fruitful for education from his notion of assemblage.

## **Burden of Participation - Assemblage as educational**

The involvement of our mind in the world that I want to convey from our actions requires some means of validation in education from participating in the world. It is insufficient that our actions can be attributable to education merely because of their involvement in our mind. We require some means of attributing our actions in thought that come to inhere or instantiate as educational. Whitehead offers a means of stabilising our subjectivity in education from the immense flux of possibility through instantiation. I discuss later how instantiation supports our participation as an 'exfoliation' or peeling away of reality in process philosophy. For now, I want to mention that metaphysics of participation validates our assemblage as educational.

The metaphysical notion of the word 'participation' has its strongest association with Plato, who used it to express how many things attain the one name. From its Greek origins, the word participation means to be sharing in something whole, rather than taking (a)part. Early empiricists for the modern era inherited the problem of universals from the middle ages. Participation can be seen as linking a 'sense of the whole' with ontology in the modern era. Whitehead presented metaphysical participation as involving instantiation. He famously coined the phrase for his philosophy of organism as 'a footnote to Plato', because he saw a sense of the whole as available through our participation in the world as an instantiation in it. Involvement of this kind supports participation from transformative educators as sufficient for learning from what we come to place on display. We can never escape participating in the world, our burden of participation.

I have identified the research problem as transformative learning underpinned from a neo-liberal outlook. If what we want is transformative learning that retains the conditions of being human, my proposition is to view the classroom itself in process and return transformation from education to a much wider notion of unity with the world. As an assemblage, we can rely on ourselves participating in the process of the classroom as it unfolds. The actions of educators themselves as customary activities of their classroom practice intersect with their professional knowledge that has been accumulated. At this intersection we meet the needs of students by responding to the dynamic possibilities in the immediacy of the classroom. We inform the professionalism of education in our delivery of an agreed curriculum that has been adapted in process to the determinate possibilities that arrive in practice.

My project aims to return confidence to the actions of educators as sufficient for initiating students into a life-giving classroom. The inherent traditions of society that were once available to guide and lead us towards finding something to do in thought are no longer readily available. Theology and rationalism have had a long and intertwined history. Previous generations have been more interested in our existence in terms of our relationship with God. This is no longer necessary and with the rise of scientific rationalism we are left being convinced that we alone can account for our existence.

I wish to show that we require a new form of rational thought that will take better account of ourselves and the decisions we make through being in a dynamic process with the world. One way to view the problem of existing in the world is to take our participation as part of an unfolding process, never settled or completed. We are constantly changing, and in an exchange with the cosmos, to whose effect we hardly pay any attention. We can however begin to account for our existence, through our participation in it, which addresses our knowledge of the world.

Clarification of the word *ontology* will help support the distinction I wish to convey between *being* transformed in a static view of the world, and *becoming* transformed in a dynamic sense. The etymology of the word *ontology* has come to have two sets of meaning, both derived from the Greek words *ontos* meaning ‘to be’ and *logos* meaning ‘to know’. On one hand, this describes the beingness of being, which was first promulgated by Martin Heidegger in his work *Being and time* (1962). This emphasises the “open, dynamic, and changing aspects of self” (Neyland, 2008). The meaning from classical philosophy for ontology took *ontos* to mean essence, and supported the idea that there was a concern for the knowledge of the essence of things. This implies that objects are static and fixed in the world. Ontology with Heidegger refers to being as being-on-the-way, never fixed or settled, but nonetheless central to our being.

The notion with which we could ground ourselves concerned Neyland (2008) who described ‘ontological centeredness’ as “the modern tendency to reduce our primordial status as beings-on-the-way to that of static beings that *have* (in the manner of possessions) particular attributes, identities, ideas and so on” (p. 41). The distinction he makes has implications for education. According to Neyland (2008), there are seminal questions of a personal and educational aspiration. Instead of ‘Am I there yet?’, ‘Have

I met the objective?', 'Have I reached the standard?', we should ask 'How far can I go?', 'What is the extent of my reach?', 'What is the fatherest extremity of my capacity to love?'. Questions of this alternative nature Neyland believes are the substance upon which a programme for education could be built around.

Ontology as defined by Martin Heidegger represents selfhood as uncertain, and certainty in selfhood as a commitment to social identity. On one hand, a philosophy of uncertain identity is a shrewd allusion to a new physics, and on the other hand it reinforces a dependency relation of the self to national or corporate identity—ironically entailing a loss of self-value. Neyland (2008) has observed that a philosophy of the self in transition can easily be diverted into a sense of moral dissatisfaction: the “Are we there yet?” perspective of a child embarking on a journey to an unknown destination. That sense of unfulfilment can equally be co-opted into an educational morality of abstract achievements and quality goals.

What we need in its place is a refocusing of education on the whole individual with a view to developing skills appropriate for individual self-realization. The argument that such a change of approach is excessively demanding on the individual teacher ignores the reality that by their aptitudes and interests children are already manifesting their educational potentials and needs by the time they reach the classroom, and it remains for the supervising teacher to build on and allow for the potential of each to develop, in the knowledge that the process will be faster for some than for other students. Much of this is accepted as common sense within teaching; the problem today arises from an increasingly managerial approach to streamlining courses and outcome assessments for the benefit of political ideologies for whom the old fixed values remain paramount (Peters, 2011). Whitehead says “As we think, we live”—in other words, that a uniform school curriculum, rigidly enforced, produces a pliable but intellectually unchallenging, inhibited and entrapped population. “Transformation” does not have to be, and should not be, interpreted as education for uniform outcomes, but rather for richness, diversity, and specialisation.

We should be concerned primarily with education as intimately bound up with the human condition. It is insufficient to rely on a system that does not take seriously enough that education is inseparable from ourselves as humans. We need to participate in the world more readily. Neyland (2008) supports such an idea when he writes:

“Continuous change, then, is part of the human condition. As such, it ought not to be exempt from the education experience” (p.43).

A difficulty of the project for education that Neyland is calling for is bringing this arrangement about in reality. When things are said to be in ‘continuous change’, it is difficult to recognise what is real, when what had occurred a moment ago is now replaced by something else. My reason for acting arrives devoid of its meaning. Currently transformation appears to be more concerned with a reality that is separated from the world, rather than its connection to it. In dynamic process, we can return meaning to my reason for acting as an educator and view their actions as sufficient for learning what we consider worthwhile.

I propose a means for those in education to derive wider possibilities for meaning in education from our practices than is currently available. We can view the possibility for original meaning as available to us through experience. Whitehead proposes that we access that which lies within the world in order to access original meaning. The result is a coincidence between our action and our thought. “As we think, we live” (Whitehead, 1936). I am suggesting therefore education be conceived as “a concrete activity of self-realisation” (Siebers, 2002, p. 32). My thesis is not a rejection of knowledge, but rather that the way we come to knowledge is derived from processes that are more widely available in the world. In this way we initiate others, open to the wider possibilities in the world.

I offer a response to the project that Neyland (2008) is calling for by inserting a means for ontological becoming into the very existence of education derived from the action of its participants, as educators in process. It is not the case that the project of education needs redesigning, but rather that our approach from within the existing arrangement of education needs to be altered in order to return education to its rightful place in society. Our attention need only be directed to the conditions for participation in education that will provide resonance to our actions that we can never escape.

### **Chapter outlines**

Chapter one - ‘Transformation: prospects for society from education’ introduces the means by which education has become adapted for neoliberal transformation along two broad lines in scholarship. In light of a proposal for professionalism in education, I discuss teacher practice as either a personal transformation, or a social transformation.

Such an environment reveals the imposition of a form of rationalisation on becoming a teacher, which is static and closed to possibilities. I assess both of my propositions of transformation against a theoretical framework of transformative education (Mezirow, 1991, Boyd, Freire) to deepen and strengthen my premise as not supporting the prospects for society from education. The current proposal for professionalism in education (Ministry of Education, 2012) is a good one that asks us to take account of a dynamic world that offers better prospects for education. While the prospects for society from education lie within transformation, we come to view the current response from education as serving us poorly through instrumentalisation of the curriculum. We need an alternative understanding of transformation if we are to provide better prospects for society from education. We ought to view the educator as being in the midst of richness and diversity.

In chapter two – ‘Transformation: the material world’, I interrupt a determining view of transformation with a reconception of causality that has implications for the material world. Our educational practice is informed along two lines of freedom that underpins transformation, and presents our subjectivity as preconceived. On one side, there is a mechanical-causal arrangement, which says that I should act to fulfil that which has already been prearranged for me. On the other, we might choose to respond without recourse to something prearranged or come into some arrangement by some unknown means. This might be called undetermined. I argue that the inherent processes of our mind, first conceived by Descartes and then strengthened with Newton have not provided a basis from which we know ourselves in reality. I also consider Rousseau as offering an alternative of individuality that takes in the wider embrace of nature. Determinism is then shown to apply to both views of the rational individual. It is the causal influence of science on the Cartesian disembodied subject that becomes my ontological target. I want to highlight the flawed ontological basis for the subject as considered by Enlightenment metaphysics. The metaphysics of Whitehead is then offered as a more suitable ontological basis for the subject, one based in logic. Whitehead’s conception of reality argues that our mind coincides with the organising processes of the world. He does this by conceiving our existence as a series of events, which come about in a spatio-temporal sense that relies on a conception of efficient causation. The intended consequence reveals that the material world in undertaking continuous transformation is indeed alive.



In chapter three – ‘Transformation as creative novelty’ – I present Whitehead’s ontological position as ‘creative transformation’ in terms of our perception and intuition. Our actions as participants in the education environment draw on our experiences. I am proposing to argue that our experiences are more fundamental than is ordinarily assumed. Those experiences, that are available to us from our everyday, shape our actual existence and thereby give effect to something that we value as human beings.

In chapter four – ‘Burden of participation’ – I argue from Whitehead’s position that if we are to derive creative transformation for education from something innate in the world, our actions can be conceived as participatory, being amidst, both as subject and object. The implications for becoming a teacher lie with transformative practice as the coincidence of our practice as both personal *and* social. Our actions as an assemblage are derived from something innate in the world, which we perceive uniquely. Our burden is that we are always bound to the world, that our innate feelings, desires and ideas derive from the actual world, not something dissociated in our mind. We cannot escape the conditions by which we live in the world.

If we are to give deeper meaning to education from our practice as teachers, we require a broader range of possibilities for action from the responses that arrive from accepting our own limits. We need not dismiss others that disregard a particular position, but rather find ways to exist amidst disagreement. We ought to view becoming a teacher in creative transformation as an act of self-realisation for society, to become all that they may be, thereby affirming education towards its rightful place.

## ***1. Chapter one – Transformation: prospects for society from education.***

In considering the prospects for transformation for society from education, I examine pedagogical practice available for transformative education. I examine a pathway towards becoming a transformative educator in the 21<sup>st</sup> century that seeks to reconcile teacher training with government objectives. Such a pathway has been proposed by the Ministry of Education (2007a, 2010, 2012) and it merges both the means to become a teacher with the desired qualities as an educator, which leaves it open to abuse. It also reduces the contribution of teaching to a service role in delivering a state curriculum, equating the goals of education with the fulfilment of government objectives. Of necessity such a uniform and static policy ignores, or at best sidelines, the particular skills and motivations of individual teachers, setting up a situation where the most valuable contributions a teacher is able to make are under constant suspicion as unwarranted, unauthorized, or deviant practices. A classroom teacher is uniquely positioned to respond to the needs of the individual pupil and to bring special interest enthusiasm and knowledge to the classroom environment. A good teacher is more than an instructor, and should ideally be a role model for learning. We need to view a process for becoming a teacher as open-ended and dynamic, that views the educator themselves as sufficient for providing what we consider worthwhile to be learnt. Sometimes what is done by the teacher are not random actions but better interpreted as an assemblage. Becoming a teacher requires access to the dynamic possibilities available in process and, according to Whitehead, will provide creative and novel possibilities from our actions. This provides for better prospects for society from education.

Initial teacher education takes a privileged position in setting the broader conditions for education policy. Those settings are seen to influence the conditions by which future teachers will come to play their part in the wider project for education. A process of instrumentalised formation for beginning teachers is said to bring about a desirable alternative, now found in the very conditions that sanction them as teachers. I am aiming to unshackle teachers through examining those conditions and provide for a more subtle set of teacher practices, one that critiques the process of becoming a teacher and returns education to offer a deeper consideration in society.

I consider a recent proposal (Ministry of Education, 2012) to develop professionalism in New Zealand education. Currently teaching is not an accredited profession in New Zealand. This needs to change. In any other professional discipline development and change arising from personal experience are encouraged for the good of the profession as a whole, both because healthy discussion is positive, and because openness to new ideas is a virtue and encourages a sense of self-worth in teachers. Whitehead's experience of university administration, following his resignation as a Professor of Mathematics, galvanized him to challenge conventional practices in *Aims of Education*. It horrified him that the metaphysical component of personal and collective education had been so comprehensively ignored in the development of a utilitarian business model for the production of graduates many of whom were destined to become teachers themselves.

We require our practices derived from the immediacy of the classroom to be informative to the profession. I support such a move, where in dynamic process, customary practices come to inform the profession from the chance insights of classroom practice. The imposition of contributing to a professional understanding from our customary activity stands as a limit or burden on our practices in participation.

I briefly introduce Whitehead's life story and suggest that what we might assume from the pathway of Whitehead's scholarship, has in fact become too disillusioned with the process of education. His work *Aims of Education* (AE) was the result of his experiences as an administrator in higher education. He had arrived there after abruptly resigning from his position as Professor of Mathematics. His metaphysical insights derived from mathematics that I draw on later are perhaps an attempt at returning education for a deeper consideration in society.

### **Transformative education**

The response from education to a world that views transformation as static and mechanistic has been conceived along two broad lines in scholarship. The first is reproductive by a traditional path, that derives from the 18<sup>th</sup> century. The second is child-centred, whereby the child is said to contain all that is necessary for growth, lest the adult world disturb the 'nature-at-work' in a child's development.

In the past, education was broadly regarded as induction into societal values, corporate identity, and preparation for service. Such a process was designed to preserve society in its existing state. The child was an empty vessel to be filled with useful knowledge to play a part in society. Our transformative practices as educators have been strongly influenced along these lines, and currently support the prospects for society from education. Broadly speaking, pedagogical practice as an ‘initiation into practices’ implies the transmission of a cultural heritage. Transmission of cultural heritage as a conservative project was delivered through the Church prior to the universalisation of schooling in the modern era. Smeyers and Burbules (2006) regard a civilising process as stabilising the predominate ways of living together.

In contrast a Romanticised view of education is promoted by Rousseau who holds a child-centred approach. Here the child is equipped, as a product of nature, to discover within themselves the means for learning. The paradigm changed from the child as an empty vessel to the young savage to be civilized and tamed by discipline and regulation. This holds that the adult world, instead of being based in reason, is corrupt. As a product of nature, the child has all the potential available to them for learning rationally from their experience. The role of the teacher in this view comes with the child as an accompanier on a journey, mediating experiences for each party. This child-centred view of education is generally applauded for its reliance on an ethical outlook for the child. There is little that requires our intervention on behalf of the child, lest we disturb the rational child-as-nature at its source.

The relationship between the adult and the child under instruction has the primary aim of ‘the adulthood of the child’. In this sense, the child is drawn into what is thought to be worthwhile and bring them to the point where they attain a ‘dignified life-project’. Adults are the mere representation of what is thought to be objectively good, though certainly not the ultimate embodiment. Now from a position of adulthood, they are able to educate, or draw the child into adulthood.

Such a life project is dictated by reason. Being an adult means, “being in command of oneself, able to bind oneself to a law of one’s choosing, maintain steady relationships both morally and practically and not being reliant upon the judgements of others” (Smeyers, 2007). Not only do adults have access to objective standards, they are also able to place themselves under higher moral authority.

Whilst adults now construct a social life of some worth, the child is by contrast, helpless in the moral sense. They are unable to know what is good and worthwhile, and they are unable to take responsibility for their actions. “She cries out for guidance and only if such guidance is offered, if adults (first the parents, and subsequently the teachers) make the necessary decisions in relation to the child, will she be able to reach adulthood” (Smeyers, 2007).

The educational activity therefore appears educational because of the involvement of the educator to deliver the child to adulthood. The intention of the educator can only be justified as education from the contribution they make towards bringing the child closer to the moral standing of adulthood. The educator therefore stands in proxy of the values of society and taking responsibility for this process arrives at a relationship with the child based on trust.

Decisions are made on behalf of the child that is seen as being in their best interest. Confronting the not yet rational child with these rational possibilities “awakens the child’s potentialities to become a rational human being” (Smeyers, 2007). This is the paradigm of the German Enlightenment from which the relations between adults and children were conceived. This traditional picture implies a transmission model of education, where the child is as yet unmolded and recalcitrant, passively awaiting the arrival of the rational understanding said to dignify adult life.

The child-centred approach of Rousseau and his followers believe by contrast, that the adult world is essentially corrupt and hardly representative of reason. The child in this view is a product of nature, already formed in the good life, and accumulating learning through their experience. The educator in this view is given over to nurturing and cultivating the goodness that lies dormant within the child, such as an ambassador to childhood and emissary of childhood values to the adult world. Further they are to act as protector from the adulterated vagaries that are already contained in the world. The blueprint of the life of the child is already contained within them, least this be disturbed, that requires bringing into fruition. The activities of education in this realm need not be the sole domain of the adult world. Proponents view the adult as an advisor to the child, in order to facilitate what she really wants. The child herself is solely responsible for its learning. Such a child-centred approach to education, eagerly taken up by proponents of

early childhood education such as Pestalozzi and Froebel, has its risks, notably that observation and nurturing the development of the child can become and end in itself and lose sight of the child's actual needs. While the ethical viewpoint of child-centeredness has been accepted, it is not without problems. Some have questioned the non-interventionist claims. It has been argued that while it is claimed that their learning is generated spontaneously through contact with the physical world, much of what they need to learn is "of a conceptual nature and therefore social, not to say traditional, in origin" (Smeyers, 2007).

### **Becoming a teacher in transformative education**

We might consider that two ways of becoming a teacher in the twenty-first century neo-liberal tradition are by personal transformation or social transformation. We take personal transformation to mean setting out on a clear and structured pathway to demonstrate future success as a teacher and social transformation as being immersed with classroom students themselves, forming strong relationships to facilitate widely diverse learners who already contain a blueprint for learning. If the educator is to initiate students into something that is to become more valued by society then the educator needs to carefully decide what is in the best interests of students from within those existing interpretations from society.

In recent documents (Ministry of Education, 2007a, 2010, 2012), the Ministry of Education proposed a seamless pathway for becoming a teacher in the 21<sup>st</sup> century. All stakeholders of initial teacher education are being considered as making a finite contribution to the journey of a fully registered teacher. Their involvement will be prescribed and measurable to produce a teacher that possesses certain qualities. By contrast, learning as an apprentice in the job means that experience is gained in exchange and interaction with peers and students directly involved in undertaking education. Classroom students may be the best experience for training as a teacher.

*Becoming a Teacher in the 21st Century – a review of initial teacher education policy* (Ministry of Education, 2007a) aims to define a common understanding of the processes for becoming a teacher within the sector of education. The stages the teacher goes through in that process are clearly shown as a 'journey' to become a fully registered teacher. This shows three distinct phases, which are broadly similar to the existing

phases – teacher education, in-service induction of a provisionally registered teacher, and a fully registered teaching career.

Consider becoming a teacher as a personal transformation. This is consistent with the understanding of an educator as presented in legislation. The Education Act (1989) regards the definition of teaching as “the instruction” of students, which derives from 19<sup>th</sup> century models of schooling. Ministry documents are consistent in this terminology presenting the teacher as one who “causes learning”, or “creates a coherent set of learning experiences” (Ministry of Education, 2012, p. 61). This is transformative education along the traditional path, where a transmission of ideas is the preferred mode.

On the proposed pathway educators will need to pass from graduation to gaining employment. Committing to a personal transformation means absorbing the craft of teaching as already available amongst other teachers. However, principals argue that the training is poor quality, where students are unprepared in their new role as instructors and do not fit with existing practices of teaching. They are reluctant to carry the burden of retraining a new teacher. Consequently, teachers find it difficult to gain fulltime employment that counts towards accumulating experience. The schools of teacher education and principals are now being asked to work together to keep teachers on this ‘journey’. The proposed framework requires that assurance for the quality of graduates that meet the needs of the employers. The New Zealand Teachers Council is currently charged with providing that assurance.

In committing to gaining knowledge of the craft of teaching within the prescribed framework is persuasive for those wanting to become a teacher. People will be more likely to commit to a pathway with a singular focus taking them to full registration. All colleges of education are being asked to commit to a single formative process. Currently there are many different pathways to train as a teacher. When all the courses are within a single framework, those responsible for maintaining this journey will gain insight. They will all be recognised as adding value to the formation of teachers and therefore enhance the status of the profession.

Those who view this as a personal transformation to become a teacher will have to set aside their own vision of a teacher in return for more certainty in the ‘journey’. Only by

giving up one's incomplete understanding of the role of a teacher, can a new vision be assigned derived from the formative process being undertaken to become an "instructor". In setting the conditions for teacherhood, a previously agreed framework acts as a formative process, which supports the teacher as a technician, who has set aside their personal motivations for teaching. I want to reinforce that such expectations are inherent in the framework. In accepting the 'journey', it is unlikely that one's vision of teacherhood could be accommodated, since the knowledge of becoming a teacher is reliant on the process they undertake. The opportunity of becoming a teacher in this framework is overridden when examined at the points of influence. What counts is personal growth of some kind and transformation imposed as an alternative vision of becoming a teacher relies on the unfolding process.

By contrast, consider becoming an educator as a social transformation. In this view the child is informing their practice of becoming an educator, which is by contrast with personal transformation, the abandonment of a set of available instructions for the teacher. In this view, the immediacy of the classroom action informs the educator, who gently guides the student into a set of outcomes thought to be desirable to society. Social transformation arrives from the disrupted norms that arise from the involvement of new citizens. The classroom itself is viewed as a 'petri dish' of experimental possibilities informed, but protected, from wider society, that come to take their place later in society.

Educators wanting social transformation view their personal qualities as informative on oneself to educate others for a specific outcome. Our feelings as educators arise in response from the immediacy of the situation in the classroom. The social setting relies on my personal involvement in the circumstances we find taking place as a means of facilitation. This requires self-confidence from the social setting to convey what is to be considered as worthwhile to others. The metaphor of a teacher as performer has been used in scholarship to describe this situation (Whatman, 1997). The performance metaphor suggests that acting as an autonomous educator, we can maintain the culture of the classroom. Just like an actor on the stage, the teacher in the classroom responds from a rehearsed pattern of moves that represent the desired outcome, yet retains the individual freedom of expression of that outcome. With more experience, teachers can send the 'script' to the background, and rely more on the freedom of expression within the derived culture of the classroom to facilitate the desired outcome.



### **Becoming a teacher as a journey**

In laying out revised terms for teacher training the Ministry of Education (2007a) wittingly or unwittingly redefined the status of new entrants to the profession while at the same time making it the responsibility for existing experienced principals and staff to assist in integrating new staff into a potentially conflicting ideology. Among objections to change were that incoming teacher trainees were unable to cope with routine instruction and at the same time burdened with a Ministry-sanctioned ideology critical of traditional teaching practice in strict obedience to existing teaching protocols. To add to their woes, newly certificated teachers were required to find their own employment (as service personnel) in a deregulated market of conspicuously conservative taste. Over time the theory of teacher education has exaggerated the value of theory at the expense of developing competence in practice, which in turn made newly qualified teachers difficult to employ. Representations from schools seeking changes in teacher training to meet their own practical requirements only added to an already confused situation.

It follows that the personal “journey” to which a trainee is invited is not a yellow brick road to personal fulfilment, but rather a tram ride to an unknown parking lot. This is a very different situation from one where direct engagement with children and their needs is a major source of personal development (Snyder, 2012). To the individual trainee engagement with children is seen as a distraction from the goal of fitting in with an existing learning culture. Perhaps the answer is “to change the existing teaching culture”. To which the answer is, we are comfortable in what we do, and it is a newcomer’s responsibility to acknowledge that and not rock the boat.

Whatman (1997) identifies a potentially alternative view of teaching as performance. Performance in one respect is absorption in the activity of teaching, as an involved character in a play, rather than as a mouthpiece for the opinions of others. Performance acknowledges a transformative dynamic: the risk of doing so is loss of observational detachment from the material and sense of objectivity about the process. On the other hand, “performance” draws attention to the value of interest and engagement with the concerns and learning processes of the child, while at the same time implying a situation of undivided attention from a class that might otherwise be split into smaller team units.

We are dealing here it seems with the encroachment of management training on the teaching profession. While good management creates efficiencies, it is arguably within a structure of organized labour that has little or nothing in common with process management and discovery and everything to do with delivering a uniform product. It is not part of the remit of *transformation* to regard peer pressures to conform in the classroom as part of a cadet teacher's journey to self-fulfilment.

### **Introducing Whitehead**

A twentieth century philosopher, who considered ourselves within a world with a dynamic set of conditions, was Alfred North Whitehead. I initially set out here how he came to philosophy before applying his ideas to our project. The route by which Whitehead came to philosophy represents the conditions for his objection towards a transformative world.

Alfred North Whitehead (1861-1947) is better known as the co-author of the three volume *Principia Mathematica*. This enormous three-volume work was a collaboration between himself and a former student of his at Trinity College, Bertrand Russell. Each had written a book on the foundations of mathematics with Whitehead's work winning him election to the Royal Society. It seemed that their works had considerable overlap, and they began to collaborate. Initially they planned to accomplish this in one year, but in the end, they worked together for the first decade of the twentieth century, which culminated with the publication of the first volume in 1910. With its publication symbolic logic was launched in its modern form.

Whitehead had been teaching for 30 years at Trinity College, Cambridge, when he came to the end of this project. He was at the height of his powers as a logician, and moved to University College London and from there became Professor of Mathematics at Imperial College serving as Dean of the Faculty of Science and Chair of its Academic Council. It is from this phase that his writing in philosophy of science and philosophy of education arise. As Dean of the Faculty, he was involved in many practical aspects of tertiary education. His experience is recounted in *The Aims of Education and Other Essays* published in 1929. It was also during his time in London that Whitehead published several less well-known books, including *An Inquiry Concerning the Principles of Natural Knowledge* (1919), *The Concept of Nature* (1920), and *The Principle of Relativity* (1922). All of these works are technical in nature.

In 1924, at the age of 63, when academic people might be writing their memoirs, Whitehead launched a third phase of his career. With his appointment at Harvard as Professor of Philosophy in 1924, he moved to the United States of America. His prior exposure to mathematics and physical science overshadowed him and it was sometimes joked “the first philosophy lectures he ever attended were those that he himself delivered at Harvard in his new role as Professor of Philosophy.” The foundations of his thought were not only his intellectual work as a philosopher, but addressed the wider agenda of philosophy. The flourishing of philosophical thought that arose at this time produced some remarkable results that shaped the twentieth century. Whether Whiteheadian thinking can take a place in the canon of last-century philosophy is not yet settled.

Remarkably his thinking turns away from the empirical hallmark of mathematics and science, in search of an overarching theory for our understanding of world. This was not an unknown approach to take at the time. Arguably thinkers in philosophy were looking to the roots of philosophy as the rise of scientific theory made in roads on a unified theory of the world. ‘Theory of relativity’ was a phrase coined by Max Planck in 1908 following Einstein’s publication of his research into relativity in 1905. The foundations for quantum theory were laid down between 1925 and 1928 with the thinking of Max Born (1882-1970), Werner Heisenberg (1901-1976), and Erwin Schrödinger (1887-1961).

Whitehead turned towards elucidating an entirely new metaphysics. It seemed to him as if his work so far had been to no avail in elucidating a fuller understanding of the world, based on science. His magnum opus, *Process and Reality* was published in 1929 and is Whitehead’s crowning achievement. Substantially based on the Gifford Lectures he delivered in Scotland two years prior, this is a work of hard technical metaphysics employing fullblown terminology from a distant age. Consisting of five parts, it is generally understood that the second part of the book contains the bulk of the material presented in the lectures that sets forth his ‘philosophy of organism’. The first part is an introductory overview setting out terminology and defining the speculative framework into which he would develop his ideas. Part three develops and revises his concept of prehensions introduced in part two. The final two parts are very brief by comparison. Part four is a study of relativistic geometry that Whitehead had been undertaking over

many decades. This forms an important contribution to his earlier understanding of general relativity theory, but today is seldom acknowledged. Part five has by contrast received attention far beyond what was expected. Entitled *God and the World*, it contains some twenty pages of poetic reflections on the way divine experience might relate to his metaphysical scheme. It probably arose from the expectation that the Gifford Lecture series require a reflection on the implications for natural theology. This spawned an entirely new field of research now known as ‘process theology’ and has been the main source of Whiteheadian scholarship.

A year prior to its publication saw the arrival of Carnap’s work, *Der Logische Aufbau der Welt* (The logical structure of the world), in which he develops a rigorous and formal version of empiricism. Much has been made of the interconnection between *Principia Mathematica* on which *Aufbau* was based, and *Process and Reality*, spawning an entirely new field of research known as mereotopology, a mathematical formulation.

Further comparisons to other scholars at this period of philosophy serve to highlight the distinctiveness of Whitehead’s thinking. Heidegger’s *Being and Time* and Wittgenstein’s *Tractatus Logico-philosophicus* were both published around this time, and represent a refutation of the tradition that Whitehead appeared to embrace, namely metaphysics. Wittgenstein was a student of Bertrand Russell and would have come in contact with Whitehead. The *Tractatus* was intended to provide an elegant formulation in logic on the nature of the world. More importantly this was a radical rejection of metaphysical writing for one that viewed mathematics as pure form. The totalising effect of a style, which was aligned to Hegel, Spinoza and Aristotle, was rejected.

Whitehead’s principal contribution to our understanding of process arose as a critique of the mathematical basis of *Principia Mathematica* and his own role in its formulation. Pure mathematics is grounded on instantaneous assumptions: “Let  $x = y, z$ ” and operations that lead to definitive results. *Principia Mathematica* had achieved notoriety for extending the assumptions of pure mathematics to the real world of human awareness, as part of a broader movement within the discipline to re-establish mathematics as a reliable terminology for describing natural phenomena. Whitehead never quite shared Russell’s enthusiasm for mathematics as the ultimate solution. In *The Concept of Nature* he declared that in the real world there is no such thing as an

instantaneous assumption. What we tend to call a starting point of awareness is nothing of the kind; rather, it is invariably a momentary end-point of an accumulation of sensory and perceptual processes of greatly varying duration. In that respect the perceptual world is not a Newtonian collection of unrelated objects but a *terminus ad quem* of experiences and culturally influenced transmissions that are larger than an individual lifetime, including language and symbolic logic.

Whitehead was criticized both for obscurity of language and for appealing to metaphysics, especially from critics with a vested interest in preserving the sanctity and reputation of a mathematical logic that had so much unfulfilled promise. This was unintentionally ironic, since Whitehead was objecting to what he saw as the metaphysical impossibility of imagining an initial steady state. In 1814 Laplace had declared that if an initial steady state for the world could be formulated, it would be possible to know the beginning and end of time. Likewise Fourier had said that a given waveform could always be resolved into a system of partial vibrations in harmony with a common fundamental, conveniently overlooking the fact that a waveform by definition is already a temporal process and not a steady state.

### **Critically examining a process for becoming a transformative educator**

We see from the proposed process for becoming a teacher, that the current prospects for society from transformative education informed from a neoliberal ideology are poor. We want instead to present our teaching practices amidst learning that we come to know as returning a greater sense of vitality in the classroom. We are wanting to show that an educator is let down by the process of becoming an educator from the way the proposed framework currently responds to the transformative world. We want to view our practices that exist in the midst of learning, as an assemblage that responds more widely to change that lie at the intersection between becoming an educator and the educative practice available to us.

I critically examine becoming an educator from the context of transformational pedagogy. I wish to show that my arguments for personal transformation of teachers are based on a trend that leads to the importance of individual power and responsibility. I will then show that social transformation leads to personal integration and overcomes social hegemony. These are the critical features of transformative education that need to be overcome.

### **Transformative education as personal transformation**

Mezirow is a key figure in documenting and making available theoretical perspective of learning as personal transformation. He underpins the theory using *paradigm* of Thomas Kuhn (1962) and *conscientization* of Freire (1993). His is looking to identify learning as a volitional coming to an understanding, a *conscientization*, from within a paradigm of cultural milieu.

The critical aspects of the theory are taken from the Frankfurt School of German Philosophy, specifically Habermas (1984) in seeking to unmask hegemonic ideology. The post-Kantian theory of Habermas seeks to build a Kantian sense of “critique”. Emancipatory in outlook, Habermas seeks to refer our reflection to one situated in reason as a form of self-formation that is emancipatory towards our constraints of dysfunctional beliefs.

For his Transformation theory, Mezirow (1991) takes Habermasian concepts of “communicative competence and instrumental learning as the major domains of learning; the recognition of the central role of discourse in validating beliefs; and the idea of reflection as a form of self-formation that emancipates as it dissolves the constraining spell of unexamined beliefs” (p. xiii).

The core proposition of Transformation theory is to put on display the way adults learn in order to change their frame of reference and views transformative learning at the heart of significant learning. In order for critical self-reflection, transformative learning emphasises the context in which what we know and believe is embedded. Meaning is made from our experiences under the conditions from which they were expressed. Truer more dependable beliefs are said to derive from drawing upon the context of experience. Transformative theory seeks to explain the process and examine it (Mezirow, 2000).

### **Transformative education for social transformation**

My arguments for social transformation follow the other tendency of education to become merely socialisation. In seeking significant personal changes of individual psycho-socio development in order to free an individual from the unconscious, to unlock potential for self-actualisation.

Boyd (1989) introduces transformative education from the perspective of analytic psychology, to meaningfully integrate the first half of one's life with the second half. Where Mezirow focuses on cognitive conflicts as a result of our relationship with culture, conflict for Boyd lies with an individual psyche and its resolution that leads to a transformation. In that sense analytical psychology recognises the whole person, the self as total personality, including both conscious ego and collective unconscious. Mezirow focuses solely on the ego as the central psychic player to gather a perspective transformation. Boyd therefore offers a model for transformation beyond the narrow confines of gaining a greater sense of reason and logic and offers an opportunity for transcendence in a group involvement. Mezirow finishes at the autonomous self, where Boyd's individualism develops compassion and greater interdependence for society.

In practice, critical oversight of one's involvement in a social setting is through a process of discernment, with a goal of contemplative insight and personal understanding. It is said to involve receptivity (listening), recognition (a need to make choices) and grieving. "As radically distinguished from Mezirow's occasional reference to an individual's feelings of discomfort and disorientation, transformative education identifies grieving as a critical condition for the possibility of a personal transformation" (Boyd and Myers, 1988, p. 20). Within the acceptance of transformative education, Boyd claims to offer students recognition of their "spirit" – "that abiding within the person is a truth, a knowledge, which is not separate from socio-economic, political and other cultural interests, but transcends them." (Boyd and Myers 1988, p. 282). Transformation along these lines is individual, but claims social change through self-integration of our unconscious. In dialogue with our unconscious, we come to terms with hidden aspects of our social personality. Mezirow's transformative perspective is a rational autonomous perspective, where the ego consciousness is dominant. Boyd offers a transpersonal model derived from our ego set as a servant to our spirit.

### **Freire: Emancipatory transformation**

An education reformer from Brazil, Freire saw transformation as an emancipatory struggle amongst an underclass of oppressed peoples in his homeland. As a teacher of literacy in the Third World, Freire (1993) used an education method that was destabilising to those in power and motivating to those without. People were to take up an "ontological vocation" (p. 12), which saw their objectified and economic rationalised

situation to be transformed to viewing people as subjects, who reflect and act on a transformation of their world to be equitable and just. Such an unveiling of reality in process of socialisation is ongoing and dynamic.

Where Mezirow emphasises personal transformation, Freire is more of a social transformation that demythologises the surrounding reality by the oppressed. In critical awareness the workers articulate and speak out about the social and political contradictions that surround them. In Freire's (1993) words:

[The] more radical he [sic] is, the more fully he enters into reality so that, knowing it better, he can better transform it. He is not afraid to confront, to listen, to see the world unveiled. He is not afraid to meet the people or enter into dialogue with them. He does not consider himself the proprietor of history or of men [sic], or the liberator of the oppressed; but he does commit himself, within history, to fight at their side (p. 23-25).

The conscientization of the oppressed comes from learning the socio-political and economic contradictions in the world. Transformation education for Freire is either further oppression to taking up the values of the dominant group or liberating, allowing critical reflection as an awareness of the world to take action and change society. Like Mezirow, Freire views critical reflection from social dialogue with other learners as the key to transformation. In contrast, the purpose of transformation is for learners to rediscover social power and the more critically aware learners are to transform society and themselves. Mezirow doesn't view social transformation as necessarily an outcome from personal transformation. Instead he stops short of committing to any social outcome a personal experience.

Mezirow seeks reintegration not questioning of dominant social structure or act differently if they choose. Boyd reflects a psychological reintegration – instead of Freire who wishes to find new ways to act in society for social transformation.

Peter Mayo (2008) recently reviewed the contribution to education of Antonio Gramsci as a tribute on the 70<sup>th</sup> anniversary of his death. Gramsci sought to engage in counter-hegemonic activities in all spheres of social life. Education was at the centre of his vision for social transformation of Italian society. Gramsci was seeking the proletariat to



transform the bourgeois, a social class that dominated all aspects of social reality. Schools themselves were identified as places that had an important role to play in giving consent for the 'ruling way of life'. Some people interpret the lack of success of sub-dominant cultures in New Zealand schools as arising from this problem. Even from a position of disadvantage, those groups give tacit support to the ruling social divisions (Waitere-Ang, 2005).

Gramsci advocated education to become an experience of emancipation. It was only through rendering people capable of understanding their society through education that they would seize control of their society. Mayo (2008) notes that this came close to success, but that the reason for its ultimate failure was the lack of a homogeneous alliance across other sites of culture, not just the factory floor. The concept of education here is participatory, that through our involvement with others we make learning important. The breakdown of what is considered 'good for us' by high society is no longer meaningful. The consensus that arose from being educated amongst fellow workers would be not given up.

### **An alternative**

I have shown that education can be conceived as either personal transformation that seeks to enhance the personal status and authority of the individual or social transformation whereby the inherent hegemony of education is overcome through being immersed in social situations. Smeyers (1995b) argues an alternative position that places the individual educators themselves in the midst of what is considered worthwhile to be learnt. He successfully combines a Wittgensteinian postmodernist position and a 'conversation of mankind' suggested by Oakeshott with Frankfurt's importance of volitional necessity.

Following Wittgenstein, Smeyers (1995b) argues that there is a background from which we can be clear about, and still leave room for ongoing discussions about mankind. He discusses a 'language-game' idea of Wittgenstein that says that the meaning of a word rests partly with its context, and that when we put these words into a phrase, we can recognise an internal understanding of the phrases or sentence. Our choice of words relates to the context we are addressing. Indeed we can show our reasons for a particular course of action from the way we are satisfied by the meaning expressed. This reservoir of meaning, Wittgenstein suggests, is a 'form of life', a complete repository of the way

humans give life to their ideas from the way others have expressed meaning. This is the background from which we draw our language. Smeyers points out that our actions “cannot be considered as random activities which are just ‘done’ by me without knowing them” (Smeyers, 1995b, p. 403).

Following Michael Oakeshott, Smeyers (1995b) argues that education has lost its deeper calling to bring forth ‘traditions’ as a way of inculcating students into becoming ‘learned’. By being familiar with the great works of literature, philosophy, artistic and science, learners enter into a deep conversation with our civilisation. In coming to know ourselves and the world around us, we are guided into a relationship with the great works by our teacher. It is this person who comes to know the learner, and has something to impart having previously mastered it. In this way we enter into a conversation with those great works, both being familiar with their meaning, and making a contribution to an accepted understanding.

Frankfurt (1988) presents an argument for being on a course of action just because caring is sufficient to make it significant. It is through actively attending to something we care about that we show its importance. But more than this, Frankfurt argues that it is impossible not to follow a course of action, because what one cares about really matters. This he calls ‘volitional necessity’. Smeyers (1995b) combines Frankfurt’s ideas with Wittgenstein and Oakeshott as an ‘ongoing conversation of mankind’. Instead of being a form of liberation, we can experience education as a form of initiation into what is considered ‘worthwhile for us’. It is not just about being educated, but rather that education conveys what is worthwhile for us to learn. What is important is that those who share in the culture come to pass on what is significant. Not only is there a place for new ideas, but also a place where what is considered worthwhile can be preserved.

## **Conclusion**

In discussing the status of the teacher within a fixed curriculum, educational philosophy (as a branch of social science) risks diverting the focus of attention from reforming education to remediation of the individual teacher’s sense of self worth. It is perhaps ironic that Smeyers (1995b) should appeal to Wittgenstein as a model of teaching practice, since while an interesting and provocative philosopher of language; Wittgenstein was a largely ineffectual communicator in a practical sense. Educational

theory is like that. Smeyers (1995b) is clearly fascinated by Wittgenstein's thesis of the language game and the use of language as a mystical process of bringing words to life. "Smeyers points out that 'our actions cannot be considered as random activities which are just "done" by me without knowing them'." What that means on one level is that we *ought* to act (speak, teach) in full consciousness of the implications of our actions, that is, teaching should be delivered as a process of discovery, expressing an open mind, and not indifferently as a collection of facts nominated by an external authority. What Smeyers may not fully recognize is that for Wittgenstein as for Whitehead, *assemblage*—the compilation of a theory or statement from multiple thoughts or sources—inevitably runs the risk of self-destructing through an intrinsic absence of conceptual unity, and this "randomness" was interpreted by Wittgenstein as a potentially fatal absence of integrity not only to his own thoughts, but equally to his communication of meaning to students or readers. In many respects Wittgenstein is the antithesis of a good teacher, since his lifelong focus concerned the credibility of language and in a wider sense, the utility of any form of social communication.

Alternatively, drawing on arguments from Wittgenstein, Frankfurt (1988), and Oakeshott, Smeyers (1995b) proposes a motivation for education not as liberation from arbitrary limitations, but as induction into essential life skills. "What is worthwhile for us to learn" implies a sanitized utilitarianism in which the weasel term "worthwhile" can equally allude to a predetermined regime of facts as decided by political or industrial interests (in which case not much has changed). Or it may apply to developing skills of observation, communication, assimilation and inference that can be applied in any life situation, not just to work regime protocols. Only in the latter case is education truly open to a changing social and political environment, and the introduction of new ideas.

In addressing "education as transformative for society", we need to distinguish education for a society in transformation (transformation as a condition of a dynamic reality to which education needs to adapt) from education being used *to effect transformation* on a society already in transformation, which is not the same thing. I'm arguing from the position of the former, rather than the latter. For example, if on the other hand the teacher's role is first to accommodate one's own goals to those of the school, by implication *averse* to transformation, that would imply that by society one means transformative of one's fellow teachers. If so, that would be arguing that one

conforms in order to subvert and eventually prevail. That is not what is intended here. For actions to be regarded as transformative for society and not merely part of a broader pattern of transformation implies a peculiar distinction to education as a whole. The danger of such considerations lies in drawing attention away from the quality of education for learning to more pragmatic or politically orientated designs on how to win the transformative argument as a matter of principle. Theories of education are rarely about learning, and education for innovation by definition is a policy with unknown outcomes.

Whitehead offers a position that sees the educator in assemblage as self-referential, generative and creative. It is rare to view educators in these terms, due to the conditions of determinism that arise in education as I have outlined. I look more carefully at the conditions that underpin transformation from education as being available with educators. I will show that the conditions of determinism prevent ourselves being creative and novel in the world, and show how Whitehead comes to view our involvement as participating in the unity of the world as indeterminate. We return the educator in the midst of teaching and learning as open to the unity of the world, one available to us as an *assemblage*.

## ***2. Chapter two – Transformation: the material world***

I wish to make an initial attempt at examining an educator in assemblage. To do that, I turn to the philosophical underpinnings of positivism and reveal that the notions of being available to a transforming world can be readily accommodated as an assemblage. As a consequence we must accept that the material world in transformation is no less a priority than ourselves.

If we are to address the project of education as transformative for society, to join society in its transformation more readily through the work of an educator, we need to look at the context of the subject in the world. ‘Subjectivity’ refers to the separation of our mind as a source of interior reflection from the external world. We are looking for general principles that appear to defy any separation between our distinct selves typified by our mind, from the actual world as it appears in nature. In this way, the subject is always linked to something outside of itself, such as other people in society and material (physical) objects. It is through an exploration of subjectivity that we provide a possibility for a better understanding of assemblage that involves the material world in the process of transformation.

In my everyday life, I rely on the organising processes of the world, the apparent causality that exists in the material world. I could hardly do without it. Causality and to a lesser extent my culture, provide me with a grasp on my reality. It makes getting around in the physical world possible. Paul Smeyers (2012) also argues that we are dependant on it.

“If the laws of causality were not what they are, we could not be free; and if trust completely disappeared in human interactions, not only acting together but even communication would completely break down. Being free presupposes this kind of dependency which we could not do without” (p. 179).

Whitehead did not want to abandon science, but rather he saw that science needed widening and broadening. It was by turning back to the philosophic traditions of metaphysics that he placed science in a more upright position. In expecting more from science than had previously been intended, Whitehead came to value the nature of being

human amidst the material world, instead of its domination, and proposed ourselves in a different relation to the material world. In Whitehead's view, the transformative world need not exclude the fixed and immovable objects of the material world. This has implications for science, and in this chapter I untangle these interconnected threads of science and our existence. I argue that the scientific obsession of 'discovery' of a material world through positivist science is not worthless, rather it is misguided, and if our attention is redirected in the way that Whitehead proposed, there are implications for education which I suggest will allow us to better respond to a transformative world.

A notion of 'the subject' has been a constant source of reflection for philosophers and continues in contemporary philosophic debate. In order to access Whitehead's thinking for education more readily, I apply more general principals from philosophy to my position. I wish to deepen my positions in education from philosophy in order to discern more precisely the full impact of Whitehead's metaphysics.

We can delineate a scientific influence on education along two lines. Both are teleological, wanting to adapt to a world in transformation and seeking to unfold along either pathway, but seeking to arrive at a preconceived goal or outcome. The first line for becoming a teacher that we have already presented is as a 'personal transformation'. Such an individual approach is seeking to conform to the pre-conceived goal that reinforces themselves. Their own actions would assert themselves as conforming as much as possible to pre-agreed notions of teacherhood. Any critical oversight from their perspective is to be meeting an expectation of agreed teacher practice. Responding as a teacher to the classroom environment in this way is recognised from philosophy as determinism.

Becoming a teacher as a 'social transformation' is not to give up the possibility of aiming towards a goal, only that no goal is achievable, and ones actions are to subvert the expected norms. Subversion derived from the social impulses of the classroom are unrecognisable to others. Whilst clearly the teacher practice is responding to change, it is unclear whether my actions as a teacher coincide with a world that cannot be recognised at all. Philosophy has termed these conditions as undetermined.

## **The process of free will**

In order to present the broadest possibility for ourselves in assemblage, I begin examining 'free will' from viewpoint of a mechanised world. Traditionally this represented our dignity in mankind, because we could appeal to a higher power. Interpreted through the church, our 'free will' was said to account for man above all other living things. And with that came the power to rule over them and turn them to our own ends.

In a transformative world, we are free to make choices that are said to coincide with our actions. There is an obvious tension that exists between our freedom to act without access to a higher power. To know ourselves as free is primarily to know. Our desire for self-knowledge without recourse to a higher power in this sense is the "science" of our freewill.

The freewill problem from philosophy came to represent the coincidence of the external world with our understanding from our internal world. Existentialism is the key objection to a pre-determined world. Whenever we have choices over a course of action to take, we recognise our choices as either libertarianism or determinism. Presumably this contributes to our understanding from the world.

Not only do we make choices, but we also explain why choices are made and predict what they will be. In light of viewing our choices as a science of our free will, we reflect on our freedom in light of the choices we have made by invoking some sort of precise generalisation about the effect of the sort of thing that occurs in such a situation. The ideal limit of this generalisation is said to be causal or scientific law. Even if we doubted on reflection the existence of such laws, we cannot doubt all that occurs is fully explicable. This is termed the Law of Causation for which every event has a cause.

The first position, libertarianism, is that our distinction to make choices rises above causal laws, and could be termed undetermined freedom, which implies there is a determination to arrive at something. It can be seen as the negation of determined, and therefore retains the potential of something yet to arrive. Here we are acting freely in one's purpose, not as a moral or accountable being. Our will cannot be determined because that is governed by our 'motives'. We are independent of determination. It is not possible from this view to admit anything as factual, since those facts do not warrant

the inference they are based on. I might admit to act differently, but not before I was a different person. It is simply improvable whether my actions are related to my freedom or not. There is a denial of any rational connection between human actions. The result depends on the conditions I do not yet know about. There is simply insufficient knowledge. Such actions though are part of a scheme of some sort.

The second group of choices we make are those who accept the incompatibility, which the libertarian promotes between causality and freedom. Behaviourists do not accept that there is universal causation, and thus reject the belief that freedom exists at all. These are determinist *par excellence*. For the determinists, human action is like other processes that are determined by their antecedents, and consist of character and external circumstances. Without these antecedents, then there is no rational connection to our psychological sphere and therefore to deny psychology, is impossible. Because these topics exist, it shows that the principle of causal determinism applies. With known motives, we can predict our conduct using mathematics. There is a mechanical-causal sequence to our actions, the character of which can be reduced to 'causal laws' of prediction. We cannot know that character, because it is indistinguishable from the entire datum that arrives from the whole of life.

There are typical limitations which, in practice, make us unfree. For Taylor (1912) this comes down to the purpose we ourselves attribute to our actions. We are not free when our limbs are set in motion by some means external to ourselves. We are free when those actions are an expression of the purpose intended for our limbs. Expressing our purpose of our own movements, we can say that they truly belong to us, and therefore constitute freedom. It is not necessary to have the movement recognised as entertaining a purpose of our own. We might if left to ourselves have made that movement of the system of forces, or another person had done anyway. So long as we did the purpose of the act, this was a free act.

An impulsive action is not free action. It is merely automatic action and not genuine. There is no opportunity for reflection on our action, only that while we may feel some satisfaction afterwards, there is little awareness in an impulsive action to be aware at that moment of our purpose. So really, we are not free. We are of course in moral life held accountable for our impulsive action, but only with an expectation that we have modified our practice through some habitual practice of reflection. We are never really



held fully accountable for the 'deed of impulse' as we are for the fully worked out reflective practice, fully adopted.

We are also not free when we fail to execute our purposes. According to Plato, we must have our purposes that are 'coherent and abiding'. To be free simply means 'to know what you mean'. To be unfree means 'not knowing your mind'. A criminal for example is not free because their passions are constantly at war with each other and with his judgement.

### **Cartesian process of free will**

Rene Descartes (1666-1723) was an influential thinker who maintained there was freedom between our will and our mind. He claimed that our actions were not influenced by the natural world around us other than by our mind. The limits on our freedom come solely from our mind, as do our actions. The natural world does not play a part in this, except through our body. Our physical body is united and interacts with our mind, but not by a means that can be predicted or determined. In this way, he was attempting to overcome the unknown influence of an omnipresent God.

Philosophers gave the traditional picture of being human and human rationality as being beyond and outside our social existence and historical development. This view of man clearly belongs with Plato. Descartes showed instead that our external reality lay with a contemplation of our ideas that we need to turn away from any external reality that impresses upon us. Descartes allowed philosophy to make an inward turn towards the subjective sphere and metaphysics took the role of arguing for a distinction between the mind and the body. Such a focus on consciousness leads us to believe that our mind and body are distinct entities.

The ideas of Descartes therefore coincide with the origins of modernity, for which a unified system of the world was sought, that dispenses with the presence of a higher power. The ideas of monism arrived as a revision against Aristotle and Plato. Against Aristotle, Descartes denied that there need be a form or quality as features of the material itself. Entities can only be explained in terms of the matter itself, rather than the 'form' of that matter. However, his system of the universe was conceived to include both animal and non-animal entities. Descartes views the system of matter in motion

throughout the universe, as opposed to an otherworldly realm of the ideas (Plato) nor particular forms that belonged to various kinds of beings (Aristotle).

It is with some significance then that Descartes broke with these traditions as a scientist and an empiricist. “Whatever I have up till now accepted as most true I have acquired either from the senses or through the senses” (Descartes, 1998b, p 12). However, any truthfulness that one gains through the senses are open to error in various ways, such as deception from an evil demon, who could be either mad or in a dream, and therefore previously wrong.

Descartes says that we have not had genuine clarity and distinctness unless our perception is such that we cannot doubt it; that is, it has stood the test of a process whereby every attempt has been made to doubt it and yet its indubitable character is proved. The mark of truth is that our ideas are ‘clear and distinct’. The paradigm of ‘I think, therefore I am’ supports this notion of truth.

The implication of this idea is that the mind and the body are really distinct things. The mind simply posits ideas in our body as they ‘happen’. Our body is an extension of this mind approach, but independent from it. This has implications for human nature, which have become known as ‘Cartesian dualism’.

Next I examined attentively what I was. I saw that while I could pretend that I had no body and that there was no world and no place for me to be in it, I could not for all that pretend that I did not exist. I saw on the contrary that from the mere fact that I thought of doubting the truth of other things, it followed quite evidently and certainly that I existed; whereas if I had merely ceased thinking, even if everything else I had ever imagined had been true, I should have had no reason to believe that I existed. From this I knew I was a substance whose whole essence or nature is simply to think, and which does not require any place, or depend on any material thing, in order to exist (Descartes, 1998a, pp. 32-33).

This implies that while I can doubt the existence of the material world, I cannot doubt the existence of myself, and hence, I am not a material body. This is known today as Cartesian Doubt.

John Cottingham (1992) refers to this as “one of the most notorious non-sequiturs in the history of philosophy” (p. 242). The problem, he says, is that “Descartes moves from the proposition that he can doubt the existence of his body to the conclusion that he can exist without his body – that he is a being ‘which does not require any place, or depend on any material thing, in order to exist’” (ibid.). He has not justified the step from ‘I am not aware of anything belonging to my essence except thought’ to ‘nothing in fact belongs to my essence except thought’.

Descartes for the first time, made the mind-body problem available to the subject. It follows therefore that our thinking cannot be doubted, since what we know is known in and by ourselves. When our mind comes to know what is outside of itself, or the attributes of those things, then Cartesian mind has trouble showing that it does know those things. The solution for Descartes was to know the cause through that which was caused. Therefore the knowledge of that effect is directly related to the knowledge of its cause.

### **Determined processes of science**

During the 17<sup>th</sup> century our understanding of the physical universe came to be dramatically altered. From the middle ages onwards, our understanding of the physical world remained largely unchanged. For centuries, this static view of the world was largely “based on Platonic and Aristotelian elements incorporated within a Judeo-Christian metaphysic” (Cottingham, 1998, p. 61). The cosmos was available to us through what Aristotle termed ‘formal causes’, whose behaviours were graspable teleologically. “[W]e understand natural phenomena by reference to the functions and purposes of things: plants have roots for the sake of taking up nutrients from the soil; cats have sharp claws for the sake of catching their prey” (Cottingham, 1998, p. 62).

This resulted in humankind having a direct control over the environment, but nonetheless could take consolation from being the most favoured of God’s creatures. Such a privilege lay with the idea that the earth was at the centre of the universe, all of which culminated in serving a loving creator. The ‘revolution’ that unfolded over many years involved the systematic challenging of this view, the most famous of which is Copernicus’s hypothesis that the Earth was no longer at the centre of the cosmos, and was experimentally confirmed by Galileo in 1610 with his discovery of the moons of

Jupiter. This spawned a radical hostility to any notion of a teleological explanation from science. In its place arrived a method for “the new science [that] could claim to discern underlying structural patterns, whereby a host of seemingly diverse phenomena could be explained in terms of the mechanical interactions of the micro-particles involved” (Cottingham, 1998, p. 63).

This coincided with Cartesian principals of mathematics that was able to express for the first time, the underlying laws derived from mechanics. Descartes believed that the entire universe would be discernable from the causal interaction of particles along predictable laws. Such a model is mathematical and mechanistic rather than qualitative and teleological.

The new universe therefore was unconcerned for anything that could not be contained by a geometrical description of matter operating from the mathematical laws of motion. Such a view placed nature as essentially dead, now unavailable for the traditional ethic that saw fulfilment from the natural world. Man in this view is no longer part of the universe, merely describing and depicting what we find through a mathematical description. This change in our outlook to nature rejected any effort to integrate with nature, but rather to control and manipulate its order through mechanical science. Descartes sets out such an approach in his *Discourse on the Method* (Descartes, 1998a):

[The principles of my new physics] opened my eyes to the possibility of gaining knowledge, which would be very useful in life, and of discovering a practical philosophy, which might replace the speculative philosophy taught in schools. Through this philosophy we could know the power and action of fire, water, air, the stars, the heavens and all the other bodies in our environment, as distinctly as we know the various crafts of our artesian; and we could use this knowledge as the artisans use theirs, for all the purposes for which it is appropriate, and this make ourselves the masters and possessors of nature (p. 66).

It is clear then that Descartes makes a clear break with the ontology of medieval and scholastic philosophy. He no longer resorts to the final causes as an explanation of things in the world. According to Cottingham, the change goes much deeper than this “in effect, almost the entire ontological structure of the traditional world-view is ruthlessly discarded” (Cottingham, 1998, p. 65). In place of Aristotelian substances, his

scientific system offers *res extensa* – extended stuff. Cottingham (1998) describes the material substance as only available “by the formulation of universal covering laws, the values for whose variables are purely quantitative representation of dimension and motion” (p. 65).

All this does not consider ‘nature’ as a source of our reflection. That Descartes saw our mind as separated from our body, implies that it would only be accounted for in terms of our mind. Rather what has been presented as the extent to which we can say anything about the transformation from the world, is that it must be derived from a science, which considers itself discoverable and determinate. There are many examples from nature that we cannot explain under science, such as our experience as a source of our awareness in the world.

My project is addressing instrumentalised education and Cartesian thinking supports that approach. Descartes is cited in support of the principal that a human subject is a learning machine and education a form of programming to perform specific tasks within socially acceptable guidelines. Accordingly, the role of a teacher is primarily to be good at being a teacher, and being a good teacher as one who follows the standard curriculum. The determinist tradition is founded on cumulative exercises and routine graded assessments. It tends to inhibit experimentation and invention.

### **Rousseau’s process of free will**

We turn to the thinking of another late enlightenment thinker, Jean-Jacques Rousseau (1712-1778), whose writing combines the intense rationalism of enlightenment thought, with an emphasis on feeling and sensibility that would arise again in the wake of Romanticism of the late 18<sup>th</sup> and early 19<sup>th</sup> centuries. The thought behind *The Social Contract* (1762) of Rousseau argues for a rationalised world under an authority of the state that embodies the popular will of the people.

By contrast, his thinking of *Confessions* (1781) emphasises the uniqueness and governing freedom of individual experience. This is captured in the opening pages:

I have resolved on an enterprise, which has no precedent, and which once complete, will have no imitator. My purpose is to display to my kind a portrait in every way true to nature, and the man I shall portray will be myself. Simply

myself. I know my own heart and understand my fellow man. But I am made unlike any one I have ever met; I will even venture to say that I am like none in the whole world. I be no better, but at least I am different. Whether Nature did well or ill in breaking the mould in which she formed me, is a question that can only be resolved after the reading of my book. (Rousseau, 1987, p.17)

Not unlike Descartes' account in the *Meditations*, this work was Rousseau's attempt to provide a complete and uninhibited account of himself. In doing so, he claimed this was worthwhile for simply being a unique individual, that at its centre this story was new and original. Further he seeks to bind the various historical events of the story not in a thematic way, but of a particular experience, his experience. The work is grounded in the feeling and life at its centre. For Rousseau clearly, the sufficiency of individuality is all that is required. The complete picture of the 'I' that we read here is sufficient of the 'I' who is writing about himself. In this way Rousseau (1987) trusts the sufficiency of his own intuition about himself in his judgement of the world. In a famous passage, he contemplates the fallen nature of humankind:

I dared to strip man's [sic] nature naked, to follow the progress of time, and trace the things which have distorted it; and by comparing man as he had made himself with man as he is by nature I showed him in his pretended perfection the true source of his misery. Exalted by these sublime meditations, my soul soared towards the Divinity; and from that height I looked down on my fellow men pursuing the blind path of their prejudices, of their errors, of their misfortunes and their crimes (p. 362).

Rousseau conceives humankind as being born into the world in a state of nature's perfection and then simply reacting to the ills of history and social life that leave us engulfed in error and crime. While humans pursue their unnatural demands of social order in the world, they diminish their own natural potential by which they would otherwise be free. We need only recover our individuality with which we were born and receive nature's sanctity and promise.

An educational programme that was to derive from this social contract is found in Rousseau's novel entitled *Emile* (1983). This is a sketch of an educative programme for a well-formed human being, a thought depiction of becoming educated as a free and

rational citizen. Further Rousseau insisted that there need not be any recourse to his ideas in *The Social Contract* (1762), and that such an educative sketch would apply to anyone and everyone as they are found. This, Rousseau assured us, is the 'natural' way education proceeds, although he had no knowledge of actual children, so it cannot be said to be determined by science. Perhaps this is why no one has taken this as a literal account of education. It served instead as a powerful means to conceive a notion of childhood that we recognise today.

Whilst Emile is nothing but an ordinary child, the conditions for his education are highly specific and controlled. He is to be removed from society and guided by a Tutor. We are given an account of the first twenty-five years of his life. He has no siblings, but there are servants for Emile regulated by Emile's tutor Jean Jacques. Whilst the servants perform their tasks under direction for Emile's benefit, they regulate their performance in much the same way that the tutor does for himself. The servants are wholly dependent on their self-regulation in order not to disturb the natural flourishing of Emile as he develops. It is the Tutor's role to have Emile develop as a natural child. He nourishes him by turning to rely on the experiences of Emile himself rather than introducing political ideals or some programme of dogma that requires its adherence. To this end, the Tutor is never directly involved with Emile, but rather puts Emile in situations from which he might learn. The account we are given is narrated by the Tutor, and reads as a blueprint of his consciousness of a tutor immersed in a programme of education for Emile.

The tutor's idea is to shun anything that leaves Emile unaware of his promise for himself. Never offer anything that Emile does not ask about is the approach of the tutor. Better to offer fixed and determinate physical objects to learn from rather than people whose qualities are constantly changing. Anything beyond his experience should come from physical objects that he can actively use. In this way the proper thoughts of appropriate generalisation and invention are delayed until he is genuinely self-reliant and independent enough to be fully exposed to the world.

All goes well until adolescence, when the passions of love and affection that arrive with sexuality. Rousseau introduces Sophie as a love interest for Emile, with whom he is enamoured. The project of independence and freedom for Emile from his own experiences is to account for his natural reproduction. However, at this point the Tutor

presents himself as an authority to Emile, the only time this happens, and directs Emile to postpone the prospect of a life with Sophie. He is sent off to explore the world without her. If Emile is to be well formed and independent, it only remains for that to be exposed to the wider world, to cement the capacity for his own self-judgement. The other reason that Sophie should not accompany Emile on his journey is that she is not another Emile. She has not yet been initiated into this project of self-independence, and is assigned instead to a life of service to her man. Instead of rational autonomy, Sophie is given superiority over the sentiments and desires that Emile, in time, will depend on and be guided by.

According to Rorty (2000), there are several conflicting strands of Rousseau's account of the moral development of Sophie.

While her life is meant to accord with, and to fulfil, her nature, she does not choose her mode of life. At best, she chooses the husband who will see the guidelines and principles of her life. Although she is the Nurturer, it is Emile, and indeed the Tutor, who gives her the general principles that are to guide her children's education and the running of the household. Although Rousseau claims that she is Emile's moral equal, she is not, by Rousseau's lights, capable of choice, and so, by Rousseau's lights she is not a moral being at all (p. 249).

In the effort of Rousseau to present his theories worked out in a programme for education, Sophie presents a difficulty for this experiment. She represents the 'Eve' to Emile's 'Adam'. She is a creature, unable to be allowed to make choices for herself, least they disturb the project of Emile's upbringing. Rousseau attends to her importance, but fails to depict her in a love relationship of marriage. Rather Emile treats her with contempt and foreboding. Far from being the culmination of the thought depiction for a new society, Sophie remains a creature, neither subject or object, said to be of the world, but unable to make a moral contribution to it.

### **Stabilising processes in the world**

In order to rework our traditional view of the transforming world in a static and mechanised model, I have examined two important notions in philosophy that had their origin at this time and still inform us today. Assemblage can accommodate all of this when we take a processual view of the world, which I introduce in the next chapter. For



now I want to suggest that a processual world will be adequate to account for ourselves informed from the Laws of Causation.

Viewing the ever-changing nature of the world as a process, we require some way of stabilising this immense flux of causally occurring patterns that occur freely in nature. The traditional picture of causality was that some given effect was able to be isolated, its essential qualities specified and, according to Cottingham, “reasoning that these qualities must have been inherited or passed on by a prior cause itself possessing (actually or in some higher form) the relevant properties, or the appropriate degree of perfection” (1998, p. 66). We require a background of some sort sufficient to act as guide in determining ourselves. Previously this was said to belong to God, but in our secular world today, this is no longer available. We briefly examine here the way that determinism has been morally interpreted in the past.

The conception of determinism belongs to philosophy and derives from the ancient Greek thought of fate, or necessity, such that it governs all occurrences (Berofsky, 1966). For everything that happens in the world, determinism states that there are conditions, such that, given those conditions, nothing else could happen. Today we might view this as a desirable goal to which we conform, or otherwise. This is anthropocentric in its outlook and moralistic. Former Christian thinkers saw determinism in terms of God’s characteristics and relationship to the world. Neo-Platonism viewed the world and our actions within it as the “unravelling of God’s essence” (Berofsky, 1966, p.2). Neo-Platonism determined a process for our existence and its character as necessary and immutable. Such a universal character of determinism came to be taken up in a pantheistic form by Spinoza. The more orthodox view was that God had only a foreknowledge of our activities in the world, but nonetheless He played a role in the formation of determinism.

The conception of determinism in this more orthodox form is more available to free will because God is extrinsic to our actions, although our actions still depend on what is known by God. We might think of God as playing an incidental role. For example, our conception of determinism as rule governing may or may not require any reference to God. This was the thinking of the deists in the 17<sup>th</sup> and 18<sup>th</sup> centuries. At the same time, there were those presenting determinism as a science of mechanics, and viewed God to be the First Cause. “The more powerful and important God’s role in the world is

conceived, the more serious are the problems which are created for those who wish to retain a belief in human freedom” (Berofsky, 1966, p.3).

Physical determinism has wider implications than the previous depictions presented. It says that the goal to which we are to conform is available to us exclusively in the physical realm. Newton’s physics completely described the motion of particles in the world. Newtonian mechanics, a deterministic theory, showed that for a given position in space at a particular moment, it was determined by the state at any other moment. With complete information about the system at one time, all subsequent states could be determined.

A further development to this position was the universal governance of nature, typified by Rousseau. However, it was Pierre-Simon, Marquis de Laplace who founded determinism as a particular scientific theory that combines with nature. He finalised the work of mathematical astronomy begun earlier that took a mechanised view of the cosmos. “For Laplace contends that a knowledge of the mechanical state of all particles at some particular time together with a knowledge of ‘all forces acting in nature’ at that instant would enable an intelligence to discover all future and past states of the world” (Berofsky, 1966, pg 3). The Laplace Transform still widely used today in engineering gives a one-to-one correspondence of elements in sets. In other words, the transformation was such that it mapped things back onto themselves. This was one instance where determinism combines classical mechanics with the universal science of nature.

Smeyers (2005) points out that science continues to extend the Newtonian worldview that appear now in very sophisticated experimental and mathematical techniques. These are now being suggested as indispensable to understanding ourselves as humans. “The 19<sup>th</sup> century deterministic worldview has in some ways been extended by 20<sup>th</sup> century science, for instance in the field of molecular biology, where the mechanisms of heredity are explained exclusively in chemical terms. Thus scientists find themselves just one step away from explaining learning in terms of specific chemical changes that occur in the brain cells and from chemical understanding of feelings and emotions in the field of psychology” (Smeyers, 2005). Their ultimate goal is to explain how our mind has complete control over our actions. That we cannot predict with precise

determination our future actions is merely that we are yet to grasp the full effect of nature. In this view, prediction is irrelevant to determinism.

I want to argue that determinism in this form is insufficient to account for human actions. With its appeal to universalism, Newtonian mechanics by itself would not establish scientific determinism. Science is a construct that relies on the complete involvement of our senses, not just mechanical behaviour. John Locke (1632-1704) for example attempted to suggest in his metaphysics that we could account for qualities of sound and colour. He suggested that all substances are particular at their fundamental level in nature and that all particular characteristics of the macro object can be accounted for in terms of its motion of those particles. This is a determinist position of which the universal claim of determinism coincides with science. We are able with enough effort to give a complete account of the world in terms of physical characteristics of all objects available to us.

One objection to the ideas of materialism is that as humans we are not physical systems within what we mean by 'our act'. Physical objects are isolated from other influences, whereas human beings like other organisms from nature, are in perpetual interplay with their environment. They are continually taking in and discarding material and exchanging energy. They are exposed to wider and more fundamental aspects that are available in nature.

Laplace's formulation of determinism is where events outside our mind can be interpreted as phenomena available in nature. In a famous passage from Laplace (1951), he succeeded in dispelling superstition from scientific explanation. Drawing on Newton's prediction of the return of Halley's comet in 1759, he was able to show we need not rely on mysterious signs sent by inscrutable natural powers.

But as these phenomena occurring and disappearing at long intervals seemed to oppose the order of nature, it was supposed that Heaven, irritated by the crimes of earth, had created them to announce its vengeance. Thus, the long tail of the comet of 1456 spread terror throughout Europe....This star after four revolutions has excited among us a very different interest. The knowledge of the laws of the system of the world acquitted in the interval had dissipated the fears begotten by the ignorance of the true relationship of man to the universe; and Halley, having

recognised the identity of this comet with those of 1531, 1607, and 1682, announced its next return for the end of the year 1758 or the beginning of the year 1759. The learned world awaited with impatience the return which was to confirm one of the greatest discovery's that have been made in the sciences (p. 5).

We can almost conclude that events that are causally determined can be explained, and those that are explained can be causally determined. This leads us directly to conclude that our actions and decisions can be explained, that we cannot be free. At this point our moral responsibility disappears.

The more likely situation in making an explanation is that we simply do not have enough facts, and that in making an explanation, we can never be sure that a new condition might not turn up. “[We] can never exclude whether a further relevant subdivision of a reference class might be necessary on the basis of addition knowledge” (Smeyers, 2003).

For any explanation, there requires sufficient conditions for evidence of something that actually happened. Were we to dispense altogether with determinism, then we would have trouble relying on facts to take account of what has occurred. Laplace, (1951) argues similarly.

We may regard the present state of the universe as the effect of its past and the cause of its future. An intellect which at a certain moment would know all forces that set nature in motion, and all positions of all items of which nature is composed, if this intellect were also vast enough to submit these data to analysis, it would embrace in a single formula the movements of the greatest bodies of the universe and those of the tiniest atom; for such an intellect nothing would be uncertain and the future just like the past would be present before its eyes (p. 4).

Let us assign labels to two events, C and E, and between them there is a relation R. We assign the conditions of the relation R as either necessary or sufficient conditions or a combination of both. There follows from this division, a complex of arrangements to understand particular occurrences. A common example used is the burning down of a house caused by an electrical short circuit. The events might include the proximity of

flammable material, the source of ignition from electrical arcing (i.e. the flow of electrons in the wire), the absence of fire retardant, etc. Together, these conditions are unnecessary, but sufficient to cause the fire, since many other events may have conspired to burn down the house. Within this collection of events, the short circuit is insufficient alone to cause a fire (because perhaps the fuse had been replaced), but none the less plays a non-redundant part of a condition, which is itself, unnecessary. Each of these conditions is the so-called INUS (Insufficient but non-redundant (necessary) part of a condition that is Unnecessary but sufficient).

We can take a view of the world informed from science as indeterminate, the view that there is something yet to be discovered. In view of relativity theory, we should not assume determinism as a valid *a priori* principle. According to Smeyers (2003),

The challenge of the relativity theory is not simply that quantum mechanics is *prima facie* non-deterministic, but that under plausible constraints, no deterministic completion of the quantum theory is possible. In view of this it seems inadvisable to accept determinism as an *a priori* principle – and of course the truth or falsity of quantum mechanics is a matter of physical fact (p. 209).

Whilst causality plays a part in scientific explanation, even the quantized world relies on uncertainty. For any two parameters set to describe an event, there is a limit from science to our certainty. In our attempts to ascribe a value to momentum and position for atomic and subatomic particles, we rely on their statistical positions. We cannot know in absolute terms. Instead, we attempt explanation through a completely different means. Smeyers (2003) describes it as “the assembling of a total set of relevant conditions for the event to be explained” (p.211). We cannot know anything determinate from science through causal processes, unless those processes coincide with the processes of our mind.

Take two alternative events in the world, A and B. We seek out a common cause C, that is said to be statistically relevant to both events. Why would we want to introduce cause C to explain both events A and B? There is a new connection between these two events, which now passes through C. They exist because of the statistical cause C we have attributed to this. This is a new spatiotemporal connection passing from C to A and from C to B. We are unable to account otherwise for any direct causal connection

between A and B. Instead it is suggested that causal processes are capable of transmitting their own information. This solves Zeno's paradox that we cannot pass from one point without passing through all intermediate points. As we move from event A to event B, we occupy the intervening points.

These are the organising processes of the world that I have now shown to occur independently of human consciousness. We attribute a cause in order to be aware of objects around us. However, it is just as likely that causes are available to us, but by some means other than by attributing a cause. Our perception of the world may be available to us through some means other than direct observation or sensory input.

### **Unity of the world's process**

Whitehead's description of our perception of the world relies on the idea that the basic ingredient of our physical reality consists of events (Denkel, 1996) which is different from the more widely accepted idea of an object changing over time. The later idea says that we observe various objects around us located in space and time, each in a relation with each other, and conveying a rich diversity of qualities. My coffee mug for example sits before me on my desk. It has shape, hardness, texture and colour, amongst other things are located in relation to other objects. The light reflects off the shiny surface of the porcelain mug onto the desk. As I alter its position in space, the reflection will change. But also its surface will over time lose its lustre to reflect as it becomes stained and worn down. The object is made up of a fusion of parts that on their own are individual objects able to be detached from the whole. These small parts bear the property and alter with time. We might also see the object as nothing more than the qualities it is said to possess. If we were to look for every property over a region of space, there would be nothing but properties. But this would not account for the property changing over time. Every object changes by changing its qualities or its position in space over time. By taking a snapshot in time, we can see events taking place. This is the object located in space and time where we can observe its properties. Whitehead's idea compresses those properties of the object into a moment in time, by taking a temporal slice of the object, creating temporal elongation. Whitehead terms these events as actual occasions, or actualities.

This process has been likened to Marcel Duchamp's *Nude descending a staircase* (fig. 1). (Wordpress, 2009). It is a painting of a nude in motion of descending a staircase as

fragmented samples of the actual motion, as if it was a study in motion using time-lapse photography (fig.2). This is spatiotemporal process compressed over time. These are not stationary substances of a certain quality, but rather as the very unfolding and movement through time and space. This then is an ‘adventure’ across space and time.

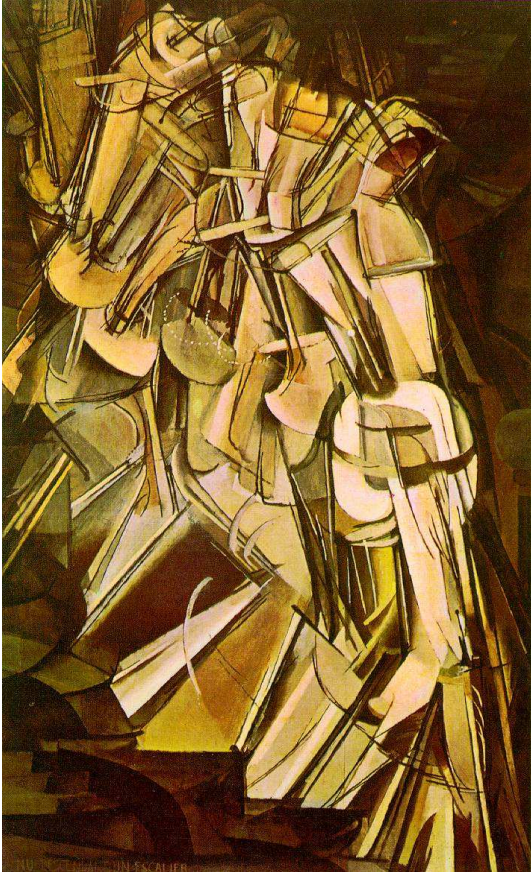


Figure 1 Duchamp's Nude descending a staircase



Figure 2 Duchamp descending a staircase. Eliot Elisofon. 1952. © Time, Inc

Rather than human experience ‘pasted on’ to the world from outside the world, Felt (2001) sees a “process of human experiencing is an instance of the process at work everywhere in nature....Within human consciousness that process now reveals itself to itself in reflective self-awareness” (p. 16). Duchamp’s staircase action is now revealed as a painterly ‘thought’ on display. One begets the other through efficient means.

Temporal becoming is Whitehead’s idea of feeling causal connectedness, which is related to perception. Just as we are part of the organic world, and our momentary ideas arrive from there, we have a relationship with the past. In this mode or dimension of

perception the present is literally felt as flowing immediately from the past and as issuing into the future. Felt (2001) describes this as “the immediate past is felt as laying its hand on the present as something to be reckoned with” (p. 17).

### **Summary**

My aim is to argue that an individual educator is able to address instrumental education through the treatment of teacher practice as an assemblage. Through causality, all individuals are embedded in their culture. I have introduced the idea that being open to the world supports conditions that avoid determinism. We require educators in assemblage to be both generative and self-referential.

The difficulty for transformation that education is attempting to draw on has been presented as either determined, where according to Descartes, our mind dissociated in the world issues control over our actions. Rousseau in returning as he does to nature, our existence is presented as residing within the world through the conditions that allow events to take place. For Rousseau these conditions are constructed from within society and are available to us in reason. Our choices now depend on that which is undeterminable. Only through conditions that exist outside of ourselves, can we come to know the world, just as Emile’s tutor facilitated his learning through setting conditions for his upbringing.

An attempt that draws our attention to overcoming the conflicts of determinism relating to the subject is through William James. His project is one of clarification and is titled, “Dilemma of Determinism” (James, 1965). In doing so, James moves the discussion of free will to subjectivity. He notes that ‘free will’ is merely those things that tempt our will. He looks at ‘chance’ in the world to examine the indeterminate as the subjective (p. 122).

This work begins with reviving free will from being dismissed as a worn out controversy in philosophy, “of what the ideas of fate and of free will imply” (ibid., p 112). In warming up his audience James sets the standard for the presentation of his ideas, as conditional on the listener having free will. He intends to elucidate two aspects of determinism, such that should they have freedom, they will be persuaded. Thus he can show that from this demonstration freedom is not about coercion, and that it depends on the fact that we are initially free.



Added to this is the discarding of the 'principal of causality' for this presentation. Instead James proceeds in order to produce some 'subjective satisfaction' and that the more rational is the truer of the two conceptions that may arise. Causality is an empty postulate whose demands meet some 'sequence of events' that will appear as 'a deeper kind of belonging, one thing with another'. Instead this is an 'arbitrary juxtaposition which now phenomenally appears'.

I have suggested that we ought not to be exempt from causal interactions. It is sometimes resisted from philosophers and scientists that our behaviour can be made clear through causal processes. According to Smeyers (2003), there is a long list of continental philosophers that humans *give* meaning to their lives, and so rather than resist causal processes, they grant that causal explanations still have significance for ourselves.

The autonomous individual is that fundamental nature of the human interaction with the world that can be known as a consistent, self-identical and coherent entity called the subject. This entity processes its experience into knowledge, where the goal is the maximisation of its self-consciousness. Such subjectivity is governed by some essential faculty – reason, or thought, imagination, etc. Something is required that is essence of subjectivity, something that comes to stabilise this immense dynamism, and recover what came before, above or inside this endless flux.

### ***3. Chapter three – Transformation as creative novelty.***

I have tentatively suggested that assemblage may be a suitable account for ourselves in the world as educators. I have taken notions of philosophical determinism found in a static notion of the transformative world and suggested that assemblage would accommodate those notions. I wanted to strengthen and build on those notions, by exploring in more detail the idea of an assemblage that provides creative novelty as outlined by Whitehead.

*Process and Reality* (1978) was published in 1929 and Alfred North Whitehead was by now in the third and final phase of his work. Written as a metaphysical treatise, it differed radically from his previous work. He saw this as his ultimate scholarship, the culmination of many years of meditation and reflection. It is credited with establishing the field of process philosophy with its publication. The thoughts contained within this work are archetypal of process philosophy. However, other thinkers at this time can also be recognized as making a contribution independently of Whitehead from within speculative metaphysics. Looking back, we see a rich field of speculative thought that relates to process philosophy from diverse thinkers such as Henri Bergson, Charles Peirce, Martin Heidegger, Nicholas Rescher, and Gilles Deleuze. It is beyond the scope of this study to look at those links formed with Whitehead.

#### **Process philosophy**

Accepting that the world is constantly changing and available for transformation, I introduce the idea that those changes can be found in process, the idea that all of the changes are in fact following a process of some kind. In a static view of the changing world, those processes appear as we've seen as deterministic. We are looking for an account that views our relationship with the world as dynamic, that informs our every expression, one that appears as an assemblage.

Whitehead is credited as laying the doctrinal foundations of process philosophy, but in no way does this field pivot on his scholarship. There were previous thinkers who contributed to this theory whose thinking was not exclusive to process theory. Indeed it was Whitehead who came to an understanding of what he wanted to explore in scholarship, finding a wide range of thinkers to draw upon. Rescher (2001) states that Whitehead's contribution was to provide for the first time dogma upon which process

philosophy could call its own. While I will later draw directly on his thinking, I will first survey the field of process philosophy and put on display the basic tenants that concern this field of scholarship.

Whitehead proposes that we experience the world in process. There is no “now”, but rather a series of events that are linked over time in organic unity. There is no material thing, but rather a reality that is constantly in volatile “flux”. Experience is not an isolated event in our reality. We are connected through our experience with the complete world. We do not know the world, but we are connected to it through the indeterminate. This challenges the Cartesian idea that our mind is dissociated from the world and introduces in its place the possibility that our experience coincides with the organising life of the universe.

Any process is a coordinated and sequential series of actual events. These events are integrated to form part of a pre-arranged set of occurrences that are linked causally. A natural process reassembles materials from the past to project to the future. There is a forward-looking teleological aspect to natural processes, but further, the process brings together events into regions that are more possible had the process not occurred. In this sense, processes are inherently future aware, and leave behind an exfoliation as the real from the successive actualised possibilities as the process unfolds. Felt (2001) describes exfoliation as “What has already become is being and is real, but is only the static husk of what was once dynamic process” (p. 15).

Processes arrive connected to other processes. A variety of subordinate processes that form are part of the overall process, that themselves are connected to. In ordinary experience we might focus on a feature of a large complex process, such as in science where we study only one aspect or a much larger whole. However, nature’s processes remain connected with one another as part of an integrated whole. It is only for convenience that we separate science into various aspects such as physical, chemical or biological. Nature does not distinguish this, nor can its processes be distinguishable from the larger whole. The successive stages of a biological process, such as an enzymic cascade and the life cycle of an organism are not connected by arbitrary factors. They are causally connected under some agency of lawful regularity.

Organismic models can be represented by processes combining to form two levels of units. The units that form from micro processes combine to form macro processes. Cells combined into organs form an organism. This is a paradigmatic model that reveals the deep nature of things, rather than merely by analogy. An organism for Whitehead with its interconnected levels of process is a paradigmatic model of nature at work everywhere.

### **Material world in process**

It is generally recognized that there has been a tendency in Western metaphysics to be concerned with things that is explaining our reality in purely physical terms. Much of Aristotle's work focused on primacy of substance. But there are other ontological categories that come from these ancient times that also make equally good claims, such as processes, events, and occurrences. These items are better indicated by verbs than by nouns. For example, this allows us to address events such as a heat wave, or the storms, which are equally as real as a dog or a cat.

For process theorists, becoming is no less important than being. This relies on the idea of a world ever changing, situated in nature, where being is continually emerging in constant flow. But equally, process theorists would also see that being is more important than becoming, since to become is merely the means by which one is. Process theorists see the difference between the world as a series of objects in a museum and the ever-changing nature of a real world as crucial to our understanding of reality.

If we look more carefully at what we mean by understanding our reality with process, there are many processes that do not depend on the nature of things. For example, the heat of a fire causes water to boil, but clearly heat is not a thing. Other times, we can see that some events are related to their process, for example, a bridge collapsing, or learning a song. What is more interesting is that some events occur without a subject, such as a frost, or a magnetic field. Now these subjectless events do not rely on an agent, but rather on "forces".

Heraclitus (c.535-c.475 BCE) was the instigator of this idea. He saw reality not as a collection of things, but rather as made up of processes. The fundamental reality of the world is not made up of material substance, but 'volatile' flux, or fire, and all things are

some version of this. The sun is not an object, but an enduring fire. Rescher (2001) describes reality as

Not stable things, but fundamental forces and the varied and fluctuating activates they manifest constitute the world. We must at all costs avoid the fallacy of materializing nature (p.4).

Gottfried Wilhelm Leibniz (1646-1716) is widely acknowledged as bringing this line of thought into the modern world. He saw that all “things” that appear in our experience are “mere phenomena” and not actually really “substances”. He described this world as consisting of monads, or clusters of processes which are literally bundles of activity. Leibniz argued that processes rather than things actually constitute our world.

Process ontology addresses to what extent something can be said to be as a result of a process. There are many processes in nature, occurring across a wide variety of activities. But we can also ask about the significance of those processes. Reality may be replete with processes but do any of them hold any significance, enough for instance that we might have some insight into their subject? Every verb must have a subject. On the other hand, we are interested in the autonomy of the process, rather than insisting, “that all there is in the world are things and their properties and actions” (Rescher, 2001). This idea reasserts the bias of western philosophy towards substance.

When we look more closely at the processes of the world, there are many that have nothing to do with the action of things. For example, when water freezes, there is no active “thing” that is bringing about this result. Changes in the earth’s magnetic field can be identified by their impact on things, but these processes are not the activities of things. A change in atmospheric pressure is a process, but not a substance being that process. There is no thing “pressure” in the atmosphere. For the process philosopher being follows process, since whatever arrives at the end is a product of those processes. Products or things are secondary and derivative to the process. It takes mental processes to extract “things” from the world of buzzing physical processes. To categorize a property of something for a process philosopher is a stable cluster of “process-engendering dispositions”.

### **Process as mathematical transformation**

According to Felt (2001), Whitehead was concerned with “rendering intelligible the multifarious aspects of natural events as we experience them both in immediate perception and by means of science” (p. 14). Whitehead’s metaphysics is an account of temporal becoming, which draws on two approaches of process theory; the organising life process that is aligned to the universe, and the mind itself in the universe, that is, our experience of the universe. Whitehead named this philosophy of organism, which aims to provide a unified conception of reality.

The flowing effect that belongs with *becoming* can be viewed in a mathematical sense as a function. Mathematical function lies at the heart of Whitehead’s speculative philosophy. He sees our thought as “generalised mathematics” (AI, 109), that is that our mind is available for depiction in terms of “the algebraic method”, “an examination of pattern with the use of real variables” (AI 130-31).

Whitehead generalises the mathematical function in two ways. First, the nature of meaning is sought in the most generalised function of the mathematical operation. Second, there is the range over which the function is said to act upon any identifiable entity, anything that can be considered an entity, from rocks to people, in order to provide a description of the nature of all that is. Whitehead assigns functional structure the ‘ultimate’ status. There can be derived nothing further from higher principle, so it is primitive and also it is transcendental, that the range of the function is universal. This universal range is to extend not only from our consciousness of this, but also as the instantiation of all order. Bradley (2003) describes this as “His ontology of functional structure provides a self-explanatory description of the nature of things which he terms ‘process’ or ‘creative process’” (p. 446).

*Process and Reality* is a further revision of his work *Principia Mathematica* that he collaborated with Russell, and it continues the foundation of a generalised mathematical function already established by Frege and Russell. Other Cambridge figures such as Frank Ramsey and Wittgenstein also adopted this approach. However, Whitehead’s position is remarkable for the extent to which he generalises the mathematical functional structure.

The generalisation of the functional structure attributes ultimate status to that generalisation. This is consistent with Frege, Russell and early Wittgenstein, where in attributing ultimate status, nothing further is able to be derived from a higher principle, and is said to be irreducible. However, the transcendental theory of Whitehead takes impetus from Kant, in which he sets out to account for the constituent order of all things. This theory, according to Bradley (2002), includes the “irreducibility of the generalised function” where order now rests not “on an appeal to any kind of *a priori* rational intuition”, but rather that it is to be “a particular kind of self-explanatory ultimate” (p. 2), which Whitehead termed ‘process’ or ‘creative process’.

One of the main uses of set theory in mathematics is for constructing ‘relations’. The relation between two sets of numbers is given by a mathematical function or schema. This is simply a rule for a set of elements that are ‘mapped’ from one domain to another set, or ‘codomain’. For example, the function ‘is a prime number of’ is associated with numbers that divide into a prime number. In this relation, for example, the prime 2 and prime 3 are associated with the value 6, but not 13. This is what is meant as many-to-one relations, where many values can have a relation with just one value through a rule. This can further be represented as a set of ordered pairs  $\langle x,y \rangle$  where  $x$  belongs to the domain and  $y$  to the codomain.

In adopting this mathematical approach, Whitehead is aligning the definition of many-to-one relations with the philosophic questions of plurality and unity, taking this to the most generalized metaphysical expression. According to Bradley (2002), Whitehead is both “laying out the fundamental issue which a philosophical account of the nature of the function must address, and defining the concept of the ultimate as the concept of *the function in general*” (p. 3, italic emphasis in original). Here Whitehead, in seeking to portray creativity derived from ‘many, one’ as the function in general, shows that the mapping function itself provides structure and order.

This is a constructivist appeal, where a claim to the generalized concept of mapping of order is not to a specific order, but to the generation of order from process. Whitehead sees mapping as the ordination of order, the process of ordering up pairs into sets. He is not interested in the attribution of a specific rule, but rather the differentiation of difference in general, that allows for rules to arrive, the “formation of forms” (ibid, p. 4). The consequence of this, argues Bradley (2002), is that mapping in general is the concept of activity in its generality.

Because mapping is distinguishable from the domain out of which it proceeds, from the codomain to which it proceeds, and from any relation or rule, which it establishes as such, the concept of mapping is the concept of the activity of actualisation as the actualisation of relations of rules (p. 4).

### **Transformation as actual entity**

Thus mapping now as an activity is not reducible to its components. It is the ultimate condition of transformation that establishes through activity a relation between the structure of what results and that which is required for the result.

Whitehead is committed to this idea because he is attempting to identify the act of the actual entity within its own act of becoming. These actual entities do not move relative to one another. They have their own micro-world of existence, a locus or quantum of space and time, within which it is said to *become*. But it does not change in the sense of movement.

An actual entity never moves: it is where it is and what it is....The fundamental meaning of the notion of 'change' is 'the difference between actual occasions comprised in some determinate event (PR 74).

Each actual entity is divisible within itself. But what Whitehead does not want is that the divisibility is attributed to the act of becoming itself. If it were, then the act would be endlessly shrunk and like Zeno's paradox would take an infinitely small amount of time, such that there would be no time left for becoming to occur.

Alfred North Whitehead in his metaphysical treatise *Process and Reality* (1978) is concerned with the creativity of meaning. Whitehead sees meaning as inherent in the world, unable to be abstracted from it. The concept world itself gives us meaning. I have drawn on the ontology of Whitehead to argue that we need to allow meaning to step forward such that the created outcome is respectful of all the elements involved in the creative act. We can think of this 'stepping forward' as an 'exfoliation of the real', a transformation.

### **Creativity as organic unity**

Whitehead's rational scheme of organic unity is an obvious place to begin to deepen our understanding of creativity for today. As a scheme of organic unity it implicitly rejects



the ‘bifurcation of nature’. There is no division between objects known to science (entities thought to be *in* nature) and our mind (entities thought to be *outside* nature). Whitehead intends that we need not make any fundamental ontological distinction between what we call an electron, the appearance of rocks, or the setting of the sun. Here the organising life of the universe coincides with our mind in the universe.

Whitehead discusses his theory of unity, which is a metaphysical idea underlying his work.

[One] way of phrasing this theory which I am arguing against is to bifurcate nature into two divisions, namely into the nature apprehended in awareness and the nature which is the cause of awareness. The nature, which is in fact apprehended in awareness, holds within it the greenness of the trees, the song of the birds, the warmth of the sun, the hardness of the chairs, and the feel of the velvet. The nature, which is the cause of awareness, is the connected system of molecules and electrons which so affects the mind as to produce the awareness of apparent nature (CN 30-31).

Creativity for Whitehead is an ‘imaginative leap’, ‘an adventure of ideas’ that arrives from within the world. However, to speak of something as ‘creative’ is to immediately deny the genesis of meaning, which is non-rational. Instead Whitehead’s scheme emerges from the non-rational aesthetic. Our “imaginative leap” depends upon the “generative power of metaphor” (PR4). To talk *about* this creativity is to determine the event towards a closed world, instead of remaining open to the infinite possibilities of originality. Taking the broadest possible perspective, the cosmic forces that give beauty within the world, or the puzzling features of the universe are available to us, in light of our experience.

### **Static view of being**

The Cartesian world by contrast would readily have our experiences mediated through some rational process that derives from our mind. Prior to Descartes there was a unity between our mind and physical reality from simply being in the world, but not one based in reason. There ought instead to be some reasonable means by which we can know the world through our perception of it.

David Hume (1711-1776), the Scottish enlightenment philosopher, argues that our logic of perception could not account for our sensation of the event. Hume radically challenged that we have valid comprehensive rational grasp of the world in terms of truth, which at that time was depicted as formal reasoning. He argued that we do not have a reason for asserting the way I see because there are limits on the conditions of formal reasoning, of being truthful.

Formal reasoning cannot reveal causation because we cannot deduce the nature of an effect from a description of the cause, or the nature of the causes from a description of an effect (Smeyers, 2003, p. 208).

We once took it for granted that the seeing and judging of things was valid. Hume said it was invalid, and turned away from deductive logic to empirical investigations. According to Smeyers (2003),

On the basis of his observations he concludes that in situations where we believe that there is a causal relation, there is a temporal priority of the cause to the effect....As there is, in his [Hume's] opinion, no physical connection between the cause and the effect (the connection does not exist outside of our own minds), the relation between cause and effect is to be found in custom and habit (p. 208).

In other words, Hume drew our attention to the idea that there was no objective or necessary connection between cause and effect, and dispensed with any need to rely on ephemeral powers that lie beyond our grasp. Hume (1958) wrote: "When I enter most intimately into what I call myself, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch myself at any time without a perception, and never can observe anything but the perception" (p. 252). Hume is describing his search for himself within himself as if it was an object. He considers the possibility that the self to be encountered is in fact the subject doing the experiencing. A camera can never be caught taking a picture of itself. Nonetheless the camera has framed the photo up such that an experienced photographer would recognise the camera that had taken the photo just by studying the photos. By analogy, we are aware of ourselves as subjects as a result of our experiencing, but we are unable to catch ourselves with it as an object. According to Felt (2001), "it itself is

not an object but a necessary condition for any objects at all” (p. 41). Those conditions for our perception, Hume argued, lay in our customs, or habits, that come to be associated with the event.

Between 14<sup>th</sup> centuries and the 17<sup>th</sup> centuries there was a universal static view of being, that was set in opposition to ‘becoming’. Our unity with the world resided in our Being. By contrast Hume argued that meaning arrived only from our sensations. These ideas represent atomism that is that we associate objects in the event with our sensory perception of them, by reducing them to their smallest perceivable parts. We are only able to perceive subjectively, not as a subject or Being. Where once reason was seen as the truth, reason would now be subjective to reason, and account only for the things that reason saw as necessary.

I am arguing that our conditions for perception are far more generalised, that we can perceive the world far more unitively than we give ourselves credit for. While David Hume saw perception in terms of logic and distinguished this from the sensations of the event, Kant reacted against this and argued that we see the world unitively. Our understanding of the world as shaped by our mode of perception was exposed by Kant in the late 18<sup>th</sup> century as unreliable and he brought order to the unity of our mind and body. That order was still derived from universal reason. Kant said, “that although our knowledge begins with experience, it does not follow that it arises from experience.” Knowledge arises for Kant from the transcendental, which is a form of all possible experiences.

### **Dynamic process of becoming**

Whilst Whitehead addresses epistemology, leading up to 20<sup>th</sup> century, our cognitive faculties were exposed as unreliable through science. Kant in the late 18<sup>th</sup> and 19<sup>th</sup> centuries had already combined the rational/cognitive world with the real world and transformed metaphysics. Whitehead saw that philosophy had lived with not knowing cognitively and instead became committed to the idea that nothing happens in thought, which has not already happened.

Whitehead therefore takes impetus from Immanuel Kant, to replace the subjective with a move to order our reality through the subject from an organic unity. This is a relational experience in nature, neither purely subjective nor purely objective. Human

experiencing is representative of process at work everywhere in nature. This is not some vague interconnection where human experience is 'pasted on' to the world from outside. Whitehead instead sees that our experience is available in nature as process. To quote Bergson (1975), "The matter and life which fill the world are equally within ourselves; the forces which work in all things we feel within ourselves; whatever may be the inner essence of what is and what is done, we are of that essence" (p. 124).

Whitehead links our experiences of the world directly to the unity in the world. He intends to order our reality through the subject. Experience of this kind means that our intuitions are derived immediately within the organising processes of the world. We become grounded in the process of the world through our experiences. This idea is a reversal of the Kantian understanding from subject to object. The structures of the thinking subject are to arrive from the past activity of the universe, from object to subject.

In committing to a scheme of organic unity, Whitehead took a lead from William James as a radical empiricist, who saw that our reality is made up of "drops of pure experience". For the radical empiricist there is nothing that is not thought of that does not exist in nature. Our mind is part of the existence of nature. Whitehead took this a step further and suggested, according to Pred (2005), that each momentary experience is really an "act of experience" (p. 99). The so-called drop of human experience is merely a prototype for the "actual entity" of Whitehead who understood these to be the final reality:

Actual entities – also termed "actual occasions"- are the final real things of which the world is made up. There is no going behind actual entities to find anything more real. They differ among themselves: God is an actual entity, and so is the most trivial puff of existence, and diversities of function, yet in the principals which actuality exemplifies all are on the same level. The final facts are, all alike, actual entities; and these actual entities are drops of experience, complex and interdependent (PR, 18).

Our reality therefore is a special entity devised by Whitehead that brings together intuition, or the plurality of sensations and perception, with our grasping of the world. A moment of human experience is an event that cannot be broken down any further.

Whitehead's events are over and done in a flash, a window of perception that opens in our reality. The actual entity is more fundamental than the object by which we know the event. Whitehead termed these events as actual entities, because they represented something active. Our intuition brings together the plurality of sensations perceived through one event.

An actual entity is an event defined by spatio-temporal terms, that is, it is a self-contained entity, a micro-bubble of the universe. The entity conceived by Whitehead has a role in human reality that relies on the process of their existence, their *becoming*. Halewood (2005) describes them as the "ultimate characterization of being and of materiality" (p. 63). It is with good reason then that Whitehead names his over all system as a philosophy of organism. Actual entities might be considered "creatures" in which they possess both materiality and subjectivity.

The philosophies of substance presuppose a subject, which then encounters a datum, and then reacts to the datum. The philosophy of organism presupposes a datum, which is met with feelings, and progressively attains the unity of a subject. But with this doctrine, "superject" would be a better term than "subject" (PR 155).

Consider an educator in action as a 'creature' or 'superject'. Where once Rousseau's Sophie was neither subject nor object, philosophy of organism presents a creature as both subject and object. Philosophy of substance might read: I receive the data that arrives from my practice, to confirm my teacher judgement. The philosophy of organism by contrast might read: what I recognise as my practice up until now, I should set aside in order to make sense of these new feelings that have arisen. This type of transformation relies on our perception in the world.

These feelings arise in response to their environment, in which our mind is in a dynamic relationship. There is a future being created here. We perceive subjects as an 'exfoliation', a *becoming* as a representation of the real, where the transformation of subjectivity is respectful of all the elements involved in the creative act. "The metaphysically real is the relational complex of events grasped in perception" (Kraus, 1973).

Creativity is manifest within the dynamic possibilities that arise from these entities prehending or 'feeling' one with the other. The 'act of experience' metaphysically defined by actual entities is our reality in dynamic process. Creativity occurs from the dynamic processes of the actual world, now represented by these entities prehending.

Each actual entity is conceived as an act of experience arising out of data. It is a process of 'feeling' the many data, so as to absorb them into the unity of one individual 'satisfaction.' Here, 'feeling' is the term used for the basic generic operation of passing from the objectivity of the data to the subjectivity of the actual entity in question (PR 40).

Pred (2005) suggests, "Whitehead deals fully and systematically with the internal constitution of actual entities" (p.141), where actual entities are Jamesian drops of experience. Pred (2005) suggests that Whitehead took inspiration from William James, but may well have come up with these ideas regardless of James, however, and in any case took them much further than James knew was possible.

They enable the description of the complexity of the process whereby subjects are both created and create themselves through the assimilation of previously diverse elements (p. 138).

Subjectivity now redefined in this sense is the "past hurling itself into a new transcendent fact. It is the flying dart...hurled beyond the bounds of the world" (AI 177). It is the act of being thrown from the past into the future. This is termed the being of becoming. Whitehead insists that in order for subjectivity, there must be novelty. This of course is not limited to humans, but is an integral element within the universe.

Experience involves a *becoming*, that *becoming* means that *something becomes*, and that *what becomes* involves *repetition* transformed into *novel immediacy* (italics in original, PR 136-7).

We can see this as relying on things in flux, a continual becoming of material objects through the processes of the universe, in order to access 'the whole of our senses'. By this I mean that our experiences perceived through one event are available to us in process. The *how* of this process is an important notion that Whitehead articulated. He

terms this prehension, which can be taken to mean how the actual entity ‘grasps’ or ‘feels’ its environment. This is the coinciding of the temporality of the data with that which comes to me outside the data. Its importance reflects the relational character that Whitehead intends, the means whereby anything exists at all.

While events come about all at once in a spatiotemporal sense, their process can be analysed in terms of their antecedents. Whitehead terms this “genetic” because the sequenced stage of each event is backward looking, that is, events are sequenced with respect to the content of each event. Each event is generated uniquely from that which it is comprised. Think of events as having their own unique universe. Each universe is composed of two kinds of things, eternal objects and previous events. The eternal objects lie outside space and time, and are available to all events. Think of this as God insisting on a structure from the indeterminate, the primordial nature of God. The other kinds are finite instances from previous events. Those previous events that go to contribute to the current one are restricted by the relativity principle that no causal influence can travel faster than the speed of light. Just how events come to be from their antecedents is a key theme in Whitehead’s thinking. Whilst the details between events differ, the basic process of becoming is the same for all things.

Before I look further at that, I want to summarise briefly how Whitehead might view the process of acting as a “creature” or “superject” in terms of the three elements. The “subject” that is prehending, is someone ‘acting’ as a teacher. The “datum” that is prehended by the subject is the act that results from some action and, finally the “subjective form”, or *how* that subject prehends that datum is the manner in which the act was made.

### **Creative transformation**

In the process world, everything is a creative act that takes account of its antecedents and in the same moment gives something of itself to be taken into account by future events. Traditionally, this was called *instantiation*, but Whitehead terms this *ingression*. We are describing here the genesis of events. As we previously noted there are two parts that contribute to the events, eternal objects and previous events. Eternal objects are not real, but become real through their ingression in events. These are nothing but pure potentialities.

Peter Simons (2009) describes the genesis of events in quasi-psychological terms.

We imagine a would-be event striving to come into existence. It surveys all the eternal objects, is related to them...We might say the would-be event is “aware of” all the eternal objects. But it cannot be all ways...So it must “select” among the eternal objects those, which are to ingress into it (p. 186).

When the selection coincides with the eternal object, this is a positive prehension, which Whitehead calls *feeling*. The event feeling a universal now coincides with the universal’s ingressing into the event.

The other way that events come into existence is from within the concept world itself. These are termed *physical prehensions* because they are real. The antecedent events come to have an influence on future events. A small part of the event is made available for other events to be formed. They arise in later events, which increases the complexity for formation. In general each event is made up completely from the total summation of its prehensions.

Novelty comes to pass with each event, because each is uniquely derived from their own microcosm. Since neither has the same universe, each event is new. Whitehead regards this as a supreme category because he sees the novelty as inherent in the event. This category as we have noted is creativity. Creativity consists therefore of the one becoming part of the many (its antecedents) through creative novelty in order to advance by one. As soon as it exists, it dies, and others take up the quantum of space-time said to exist.

Creativity is the principle of novelty. An actual occasion is a novel entity diverse from any entity in the “many” that it unifies. It is that ultimate principle by which the many, which are the universe disjunctively, become the one actual occasion, which is the universe conjunctively. The “creative advance” is the application of this ultimate principle of creativity to each novel situation, which it originates (PR 21).



### **Unity of the process world**

Whitehead does not intend that entities come into existence in isolation from other entities. This is a scheme that emphasises the individuality of all entities, but only so far as entities of becoming derive their existence from a wider complex of becoming. This wider complex is termed by Whitehead the extensive continuum. “This extensive continuum is one relational complex...It underlies the whole world, past, present and future” (PR 66).

The act of becoming is contained with the extensive continuity that is the realm of all possible entities. “The extensive continuity of the physical universe has usually been construed to mean that there is a continuity of becoming. But if we admit that ‘some thing becomes,’ it is easy, by employing Zeno’s method, to prove that there can be no continuity of becoming. There is a becoming of continuity, but no continuity of becoming...Extensiveness becomes, but ‘becoming’ is not itself extensive” (PR 35).

Halewood (2005) notes that this statement might suggest that Whitehead was seeking a foundationalist or essentialist perspective, as if this was providing a basis for finding objects derived from an inert, fixed, eternal world as persists in conventional science. On deeper examination this is not a complex with relational character as the case might suggest. While the complex takes up an infinite, unbounded space, it is comprised entirely of actual entities. “Actual entities atomise the extensive continuum” (PR 67). However, as we have noted, actual entities are said to exist for a brief momentary slice of temporal becoming before perishing again. The continuum is the graveyard of entities that have given up their existence to other entities and are said to attain “immortal objectivity” (PR 29). The continuum is a correlative absence of becoming that is still said to exist, through making available an element in the potential of a new entity. “In the mere continuum there are contrary potentialities; in the actual world there are definite atomic actualities determining one coherent system of real divisions throughout the region of actuality” (PR 67). Thus Whitehead makes a distinction between the abstract notion of potentiality, merely informing the creative processes of the world, and the region of actuality. While there is unlimited potentiality in the world, the actual entities are said to be bounded through their derivation from the extensive continuum, that itself is informed from the real world. Thus there is no potentiality in its own right, only that which is informed from previous instances of entities.

‘Creativity’ is another rendering of the Aristotelian ‘matter’, and of the modern ‘neutral stuff’. But it is divested of the notion of passive receptivity, either of ‘form’, or of external relations; it is the pure notion of the activity conditioned by the objective immortality of the actual world – a world that is never the same twice, though always with the stale element of divine ordering. Creativity is without a character of its own in exactly the same manner in which the Aristotelian ‘matter’ is without a character of its own. It is that ultimate notion of the highest generality at the base of actuality. It cannot be characterised, because all characters are more special than itself. But creativity is always found under conditions, and described as conditioned (PR, 31).

This describes Whitehead’s conception of nature from creativity, that he intends to replace the predominate mode of science in a static view of the world. The whole of nature is available to us as interrelated experiences of subjects. Our immediate experience results in something that is available to us uniquely, arriving from nature. Nothing happens in thought, which is not already available to us in nature. This is not a denial of science, but according to Halewood (2005) “his ontology (and that of Deleuze) emphasises the need to develop theoretical approaches that can describe the complex interrelations of reality and the processes by which materiality is attained” (p. 67).

### **Summary**

Whitehead’s scheme seeks something determinate, but is not limited in its means of becoming, and in this respect is ‘free’ and unlimited by what arrives in actuality. Neither is this a scheme of infinite reality, because the realm of eternal objects derives from those entities that have themselves given up something to be made available again. Thus in contrast to Aristotle, eternal objects are wholly passive, not active, and, in contrast to Platonism, there is no such thing as potentiality in its own right. This effectively reverses the notion of participation, whereby eternal objects participating in the actual depend wholly on what is finitely arrived at.

I wanted to show that my action of temporal becoming would build up in me an intuition that might affect my future actions as an educator. Freire (1993) said that there is no divisibility between humans and their world. “Authentic reflection considers neither abstract man nor the world without people, but people in relations with the world. In these relations consciousness and world are simultaneous: consciousness

neither precedes the world nor follows it” (p.62). We are part of the world as creative creatures, rooted by our consciousness of the world, and yet subject to the world through our participation with it. We must take comfort from the fact that to exercise our creativity is characteristic of us as person.

Creative transformation therefore requires an educator to be in the midst of what is considered worthwhile learning, and results in the display of assembled actions brought about from our unity with the world. The transformative world taken as processes of many-to-one relations, allows us to access the unity of the world. We avoid the disunity of our mind with the physical world as an authority over nature, and view nature as coming to reside outside of ourselves as informative and awe-inspiring.

#### ***4. Chapter Four – Burden of participation.***

I am arguing that transformation in education needs to account for our existence in the world in order to challenge other metaphysical accounts of our existence that I have shown provide a static view of transformation in education. Instead, education requires inclusion in the dynamic possibilities world, one informed as an assemblage. The term employed in metaphysics for our involvement in the world is participation, where we desire individual educators themselves to be in the midst of what is considered worthwhile learning. By remaining participatory and open to the unity of the world, we come to inform more carefully the professional practices for education from the flashes of customary insight.

##### **Process philosophy as participation**

Within a philosophy of participation, Whitehead holds an important and distinctive position that attempts to resolve an ancient dilemma between Plato and his pupil Aristotle. The conventional understanding is that Aristotle (4<sup>th</sup> century BCE) rejected the metaphysics of his great teacher Plato. The writings of Aristotle though were discovered by the west centuries after they were written by Islamic writers. Our understanding of his writings came through Islamic interpreters of Greek texts. However, there were Jewish interpretations of Aristotle usually from Avveros and Maimonides, who are more useful to today. These writers lived at a time (10<sup>th</sup>/11<sup>th</sup> century) when Islam had just brought to an end a golden period of Jewish faith on the Iberian peninsular. The contribution of Islam in sustaining Greek thought for today is generally overlooked. The Scholastics developed Greek thought in the 11<sup>th</sup>/12<sup>th</sup> century with Thomas Aquinas, Peter Abelard, William Of Ockham, and Anslem of Canterbury. Scholasticism established itself during the Middle Ages as 'the' interpretation of Greek and dominates our understanding today using Latin. There are many examples of this in education, which generally assumed via the church scholastic thinking into learning institutions. A "grammar school" for example has a notion of the trivium (curriculum), but aims to meet objective scientific measures (assessment) (Jackson, 2008).

Despite the rise of the enlightenment secular thinking in 18<sup>th</sup> century for mass education, scholasticism was seen as a moral force for the good of education. Galileo, who was rejected by the blinkered scholastics of the church, challenged Aristotle's understanding of the cosmos. On the other hand, is our understanding of the world right

because of Galileo? I do not think so. We are really at a point today where scholasticism and mass education converge, which Whitehead remarkably predicted and wanted us to avoid. In doing so, he turned back to reinterpret Aristotle and reworked his own ideas for modernity.

Plato and Aristotle were interested in resolving the tension between the 'generative world and the divine', 'universal and particular', 'social and spiritual', 'whole and part'. Plato responded to so-called "pre Socratics" who said things like, all things on earth are full of gods. This is known as an Eleatic influence of philosophic thought. The world it was believed was divinely saturated. Plato devised his famous Theory of Forms, which tried to account for materialistic things in constant change in the world, but with some divine unreal world acting on the world. He called the relation between the two worlds participation, or *Metexis*. There are two realms, Formal and embodied. The Formal participates in the embodied temporal form. A beautiful rose, Plato suggests, is beautiful by virtue of its participation in Beauty itself. A good horse participates in the Good and in the form of Equinity. The two realms are neither identical nor entirely different. We attribute these Forms because we ourselves are in a relation with them, such that we recognize Beauty itself in the case of a beautiful rose. We don't attribute the quality, but we are in a relation to it. His intention with participation or this relational thing is set to expose the ever-changing world to the "contagion of the Good" (Sherman, 2008).

Aristotle derived his ideas, according to some, to oppose his great teacher. He said that rather than the divine informing us how to sculpture a table as we participate in the Form of Tables, the master craftsman notices the potential within the wood as he cuts into the wood to make a table. Sometimes he makes big cuts, and other times he uses light sanding, but the wood tells him the way it needs to be formed as it releases its potential to become a table. There is no outside Form telling the craftsman what the timber should be, but rather from an intimacy with wood can the table be coaxed out into a table. This is a rejection of participation in the Formal from Aristotle, because he suggests instead that the form is inherent in matter from our participation with it. This is referred to as the potentiality of matter, where matter contains some potency in our reality. This challenges modern science that seeks to reduce materiality to that which is discoverable through processes of science. This results in a naïve reality, one informed from determinate processes of a static conception of the world.

Whitehead tried to resolve this tension between these two ideas. There is a millennial debate over whether Aristotle was opposed to Plato or with him. Whitehead stated that for modern times, Plato needs a footnote, a reconception or reform for modern times. For Whitehead, participation is replaced with the 'creative' where the genesis of meaning resides, termed creative participation. Whitehead addressed Aristotle's potentiality residing within matter in terms of Plato's participation. He presents matter as a compressence of time residing within a continuant and that the form of matter derives from a cosmological whole, a potency that is itself a Form. The generative, temporal world contains within it an ordering 'process' that is constituent of the whole. Now the cosmological whole is taken as the Formal from which meaning originates. The Form for Whitehead now originates in this world, rather than from another as Plato would have it, and represents 'determinate possibilities' that haven't yet been actualised, against Aristotle, who views them as active. This space might be called the indeterminate, which addresses how we get to know knowledge (Sherman, 2008).

One of the problems I am looking to overcome is the ontological isolation that I presented with Descartes. The validity of our thought is restricted to that which is known from a static view of science. It simply doesn't appear to be the case that our reality is informed from determinate possibilities. Rather, our involvement in the world is known to us through the indeterminate, informed from the unity of the world. In ontological isolation, our thought is restricted by the action of thinking about thought, rather than responding to the immediacy of what is taking place around us.

Educators in creative transformation are required to accept their existence as derived from their actions in the world. Such an approach is a very high threshold, one rarely achieved. However, the difficulties that teachers face impinges on their subjectivity. I have referred to the curriculum as a blueprint for adoption, which is generated by experts as a template for transmission. It acts as a process of excluding teachers or teacher unions. They might act as teachers, but it will be in vain. They come to view their actions as a rejection of their existence. Instead, we require educators to accept that their existence derives from their actions. Educators in creative transformation act by remaining open to the indeterminacy, my little picture, my existence that I now accept as belonging to myself, I allow the big picture to arrive. Our meagre attempts at remaining open to the whole rarely achieve creative transformation. Such possibility relies on the whole, to which we ought to make ourselves routinely available.

Teachers ought to be asked to accept that the life of the classroom is within their control in so far as their own conditions contribute to it. We can think of this as an inhabiting the classroom as a creature, both subject and object, whereby educators enter into a process of taking on the conditions that already exist in the classroom. The involvement of other teachers, the principal's vision, student presence, all contribute to the creative transformation in education. That we would seek to meet the demands of many social commentators calling for an end to inequality, injustice, or some other moral vagary needs to be set aside. We cannot meet their demands, not now, not ever. We can however respond openly to the possibilities that arise spontaneously from our interaction with the world. The more openly we respond to the meanings that arise from within ourselves as we inhabit, the more likely we are to arrive closer to the truth. We will never achieve truth, but we can contribute through our actions as the conditions for truth. We should expect nothing less of ourselves as teachers.

### **Assemblage in process**

Assemblage therefore is causality assembled in process as creative transformation. Our reality lies just beyond our perception, but we intuit that there is something larger than we can ever account for, that nonetheless informs us. Assemblage is the collection of items perceived by us from reality, self-generated in participation with the world. Our actions appear in determinate forms through a process of ingression, assembling parts both from our participation of our mind in the world, with the organising processes of the world.

I wish to propose we accept 'assemblage' as a series of events unsynthesised into a meaningful whole, to be a reasonable representation of our reality that accepts the ontological processes of Whitehead, and presents a wider picture of our existence. Our acts of education as an assemblage lie somewhere between their suggestiveness for education and a full explanatory power said to occur as concrete acts of self-realisation. I will turn my discussion of Whitehead to assemblage, which we might see as that which gives life to our perception of reality. Think of this as participating or acting in order to transform ourselves in light of a sense of the whole.

Whitehead proposed the activity of assemblage in order to remedy what he sees as a deficiency of metaphysics. He sees assemblage dealing with the prejudice that arrives

from undertaking the process of systematic philosophy. For example, the builder of the system is likely to avoid facts that don't compliment his ideas, and so unconsciously turns away from them. Whitehead proposes that assemblage will rectify this situation by widening our philosophic horizons. Activity gives us access to the origination of experience. Whitehead terms the concept of this activity as "the origination of patterns of assemblage" (AI 107).

While systematic philosophy is the attempt to construct a coherent framework of ideas, Whitehead intends assemblage as a process before arriving at the systematisation of ideas. Such a process is "an adventure in the clarification of thought" (PR 14). Assemblage is a method for creating meaning from the indeterminate. This stage is prior to knowledge and belongs with the getting to know what we know.

Our ideas are dynamic and ongoing, arriving from our imagination, and yet they carry meaning pregnant with experience. Our activities that inform our experience are unfolding, producing themselves through time. They have no fixed qualities, but exist only as they unfold, 'becoming' in time and space in a spatio-temporal sense. There is no now as they are, but merely an adventure accorded across time and space.

For example, Whitehead's book *Modes of Thought* (1938) does not provide a sequenced pathway that readers can follow to undertake their work. His writing is inventive and highly original in character. It might be that in the act of reading his work, we are speculating on what he wanted to convey. We are not at all directed to a firm grasp of his ideas, but rather to find our own way through his work as fellow thinkers.

Whitehead sees that our philosophic reach is further than systematisation. The landscape is now littered with schemes that barely refer to important features of our experience. Whitehead pointed out that metaphysics excuses itself for including important features of human nature by simply stating, "that of course we are not thinking of such things" (MT 2), and therefore have no need to account for them. Whitehead termed this approach the "pedantry" of systematic thought.

Whitehead (1968a) presents assemblage as an approach in "a free examination of some ultimate notions, as they occur naturally in daily life" (MT 1). By these notions Whitehead (1968a) means "the generalities which are inherent in literature, in social



organization, in the effort toward understanding physical occurrences” (MT 1). For assemblage it is unimportant to present these notions with *a priori* validity, or even whether they form a coherent system of ideas. Assemblage is not a systematic inquiry. Whitehead would be comfortable with the fact that there is no existing system of ideas that could satisfy the nature of our reality. Such a system has to be constructed. Whitehead is determined to show that not only the speculative philosopher, but the non-specialist provides insights from philosophy. “Philosophy is the attempt to make manifest the fundamental evidence as to the nature of things” (MT 48).

Whitehead describes the nature of the work of assemblage as consisting in “the entertainment of large notions of adequate generality” (MT 4). This implies what is to be addressed by assemblage, which is consistent with the presuppositions of philosophic thinking. Instead of a field for investigation, we take the items under consideration without analysis.

### **The process of the classroom as assemblage**

The classroom is a good instance where assemblage regularly takes place. Assemblage is a means to describe things in terms of themselves. It unveils a dynamic field and aims to perceive the classroom in process as a cognate whole.

Take for example a teacher about speak to the class to begin a lesson, an intervention that is routinely undertaken in classrooms. A useful aim of the teacher speaking to the class is to both gather attention to herself, and provide information for the students. As she is speaking, she can respond “in thought” to maintain attention through deploying a wide range of alternatives to speech. But before speaking and putting her thoughts on display, the teacher can assemble herself from the wide variety of processes that are currently available in the moment. To deepen her “thought” about to be spoken, she tunes into the classroom processes without thinking to broaden her intuition. She adopts her creaturely instincts to trust herself in-the-moment. The more attuned to the wider processes on offer, the more effective her intervention.

As assemblage is being performed by the teacher, assembling from disparate elements, the created outcome is respectable of those elements it has included. Cooper (1998) has noted that the word “assemblage” comes from the Greek *sumbolon*, the act of bringing together separate parts. The Greek meaning came from ancient religions where two

pieces of pottery were “jigsawed together” to form a whole as a sign to unite the initiates. Something of that meaning resides in our words symbol and simple, which both suggest something disparate coming together. “If the thing understood be composite, the understanding of it can be in reference to its factors, and to their ways of interweaving so as to form that total thing” (AI 36).

For Whitehead, assembling in process aims to achieve more than “mutual agreement” from disparate parts. He refers to the continuous movement of parts, a relentless change in which the identity of the parts are negotiating a space. This is what Cooper (1998) means when he wrote “It’s the continuous movement of parts in a restless flux in which the separate identities of the parts give way to a mutual coming and going, uniting and separating; and in which identities as self-contained units simply, seem, seem, feign pretend” (p. 110).

Commonsense is somewhere we find generalised notions readily exchanged for other notions. Sometimes we take an approach of “unity and “oneness” while other times we see “diversity” and “plurality”. Gandhi (1973) sees that commonsense is full of these “shifts” of interest. Commonsense is able to grasp notions of adequate generality and metaphysical importance without paying attention to how general knowledge can be extended systematically. This is equivalent to assemblage. However, assemblage is not wholly lacking in some uncritical or analytic sophistication. Neither does it go all the way to seeing the human condition as possessing qualities of the analytic or systematic philosopher. Gandhi (1973) summarises it thus.

Commonsense is open-minded, it has freer access to a variety of important philosophical ideas. We are not tempted in the ordinary course of our experience and thinking about the world to downgrade the importance of an experience or idea for the sake of vested metaphysical interests. We are more interested in “assembling” a variety of ideas and an increase in our stock of philosophical insights (p. 6).

As well as generating these notions, assemblage also seeks to display them in adequate notions of generality, according to Gandhi (1973) “to show how each notion is necessary to the meanings of other notions of equal depth with itself” (p. 7).

Commonsense does not do respect the other, and instead is overcome from the success of those notions that create new meaning from their inter-relatedness.

We find familiar notions in unfamiliar contexts, requiring and clarifying each other. The aphoristic profundity of mystics and poet and some philosophers consists in just this ability of theirs to reveal unsuspected relationships between familiar notions of large and adequate metaphysical generality (ibid., p. 7).

### **‘Becoming’ an assemblage**

What results from assemblage depends intimately on a self-determining process of becoming. Instead of an emphasis on being, Whitehead views the world as a series of events in process, available in becoming. In this view, there is nothing now, rather what is real has acquired unity from the potential of the past to meet the needs of the immediate future. Felt (2001) gives a standard interpretation of Whitehead. “What has already become is being and is real, but is only the static husk of what was once dynamic process. Subjectivity resides in the process, as does freedom, rather than in the determinate being that is its outcome” (p. 15).

Whitehead’s idea seems implausible at first in attempting to account for what is real in terms of our existence. He relies on describing human reality as part of an organic unity, which can be said to account for all things. Whitehead (1978) describes it thus:

Our datum is the actual world...this world spreads itself for observation in the guise of the topic of our immediate experience. The elucidation of immediate experience is the sole justification of any thought; and the starting point for thought is the analytic observation of components of this experience (PR 5).

Whitehead’s ‘immediate experience’ is derived from the sum of our past experiences. Our sense of being is literally an experience in a moment of time. It marks the real coming together - “concrecence”- of all our past “selves”. As I have already described, Whitehead argues that our perception of being depends on this organic unity of experience, for which the substance of our existence depends on us thinking. “As we think, we live” (MT 63).

Experience for Whitehead is the means or vehicle by which we exist. 'To be' in the full existential sense and be devoid of any occasion of experience is impossible. According to Gandhi (1973), our fullness of experience "is intimately bound up with our recognition of ourselves as experient subjects" (p. 13). We cannot but escape our being any more than a finite experience of the world. In Whitehead's view 'to become' means the act of the presentation of a temporal slice of an object, an object now born from the organic unity of experience.

Assemblage unveils a dynamic field, an adventure in thought, because it perceives the world as a cognitive whole. Care is intrinsic to perception<sup>1</sup>. "Our enjoyment of actuality is a realization of worth, good or bad. It is a value experience. Its basic expression is – Have a care, here is something that matters! Yes – that is the best phrase – the primary glimmering of consciousness reveals, something that matters" (MT 116).

While I accept myself subjectively, I also include my sense of responsibility for my acts. In this way I become an agent for my actions that has built up in me a sense of my agency. This now becomes wedded to my own self-identity that has built up over time. Felt (2001) describes this as "Because it is ontically the same I, I must take responsibility for my choices of yesterday as well as of today, and I try to provide for that same I of tomorrow." (p. 41)

In the classroom we are immersed in this dynamic field and feel the processes of cosmic animation. Assembling discourse that has arisen over centuries we take this to another level arriving at the classroom situation. As a teacher then we notice our deliberate intentions as arriving from the material world around us. Our deliberate intentions are a qualitative form.

Whitehead asks us to consider music as an assemblage. Whitehead (PR 233-235) discusses the process of hearing music as a "creature" or "superject" in terms of three elements. The "subject" that is prehending, the person listening to music, the "datum" that is prehended, the music that is being listened to, and finally the "subjective form", or *how* that subject prehends that datum, the way in which the music is being listened to. The notes of a melody arrive in patterned succession from their instrument. But the

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<sup>1</sup> reminiscent of the theme from Heidegger, "Care [Sorge] as the being of *Dasein*." *Being and Time* (1963), p. 181.

pattern does not exist from the sound of the individual notes because each is made physically independent by the instrument that produced them. Musical tone can be analysed into its various wavelengths that make up the partials and overtones. The wavelengths transform into music. We audition these wavelengths with our ear and recognise the sensation as sound. But this particular combination of wavelength occurs as music, that as the arrangement of various intensities of wavelengths within the tone, we perceive as loudness. This is a relational event of which the receiver is part. The co-presence of the ear of the listener and the musical tone means that the tone as sound, and the ear as a sensing organ. Without the ear, the sound is not music, and without the music, the ear is protruding piece of flesh and cartilage. Both are interrelated events from the unity of the world, where the sound is the music-event in relation to the ear, and the ear-event in its relation to the music.

Our intuition brings together the plurality of sensations perceived through one event. The more available we are for intuition, that draws on a plurality of sensations, the more 'an event' will be perceived by others. Aristotle gave an example of such plurality for the classroom and is described in his *Physics* book III, chapters 2 and 3, and presented in Felt (2001). From one event, of the teacher and the student, "the teacher's activity of teaching is realized in the students activity of learning. It is one activity with two perspectives" (p. 32). We want to view assemblage as respectful of both events in the process of teaching.

Assemblage is a method of discovery. It allows us to begin from vague notions of understanding as a means to elucidate complex objects. It operates in the indeterminate, the getting to know knowledge, as we relate to the evidential world. By contrast, the undetermined is seen as having the potential to be determined, and therefore create knowledge. In carrying out Assemblage we rely on events unsynthesised into a meaningful whole and relate to them as they are. We have a sense of the relationship to the whole, but address the illusion that there is a whole available for those events to arrive at. Assemblage seeks the whole in terms of the events themselves. Instead of ourselves taking those events up into an intended whole, we describe them as they arrive.

Because this is a scheme of disparate elements in relation with one another, response occurs as we bring meaning of those elements into the world. Our response to those elements instantiates in the meaning that arrives derived from the passive possibilities

that ‘sought’ our involvement. As we ‘become’ from the feelings and experiences of other elements, there is a consequent reaction to our feelings. We are moved in response to those actions, but always aiming to fulfil the self-referencing actual entity. We respond through the creativity of meaning, its genesis, which is truth itself. Our minds are no longer dissociated in the world, instead they are informed by responses that convey meaning as a response. Meaning arrives to us *in* the world. An interpretative reality is one that accepts that meaning cannot be abstracted from the world, but is contained in it. The concept world itself gives its meaning to us through creativity.

In this way Whitehead asks us to take responsibility for interpretation of disparate elements by way of creativity, now derived from the genesis of meaning in process with the world. The crisis of interpretation that Hume was addressing was implicit. Whitehead makes interpretation for us explicit. “Unfortunately for this objection, there are no brute, self-contained matters of fact, capable of being understood apart from interpretation as an element in a system” (PR 19).

### **Summary**

We are proposing to prevent practices in education as either an uncritical accumulation of ideas, or as left to the private concern of individual students. Practices of an educator need no longer be seen as entities, detached from ourselves, to be exchanged as if they were a commodity. Instead they come into existence from their relation with our actions, and not just intrinsically assigned. We are interested in practice that engages us, the nature of the activity, and what we do within the practice.

According to Smeyers (2012b), there is an “interrelation between the nature of the activity and how people think about and act within the practice...Practices transform the self but at the same time there may be subversions of a practice that give opportunities to the self. Practices have reasons behind them, even if these are not always made explicit, but these are reasons that also can be re-examined and questioned; this may also bring forward unintended dimensions” (pp. 466-467).

We ought not to determine what notions can be used to compare from amongst others. Only the success of the intersection of those notions, where there are “chance flashes of insight” (AE 36) can assemblage be seen at work. A wealth of material might obscure important relationships, whereas assemblage provides insight from the vantage of poetic

semblance. Whitehead (1938) writes, “Philosophy is akin to poetry. Philosophy is the endeavour to find a conventional phraseology for the vivid suggestiveness of the poet” (MT 50).

I am arguing that in order to return a deeper meaning for education we need to replace means-end reasoning with a consciousness in dynamic self-awareness. No longer should our responses be separated from the meaning inherent in the world. Through our consciousness as participants in education we connect with nature by addressing the indeterminate, and sharpen our responses to education. To do so, it is necessary to appreciate knowledge in terms of events unsynthesised into a meaning whole, as an assemblage. We can work with the goals of our project that relate to the world as it is. But our experience as a contribution to deepen our understanding of education comes from the necessary whole. In this approach, we are subject to an organic whole from our participation in it, where remaining ‘amidst’ informs and strengthens our professionalism.

To maintain a sense of the whole, Whitehead argues for the reality of eternally existent forms. These forms are always already involved in what we know scientifically and religiously feel to be the process of cosmic animation. The actual world does not take sway from itself. In every moment the universe is repossessed from the past to live in the eternal possibilities of the future. We live in a ‘life divine’ in which every moment is ethically conceived by the universe from its cosmic memory. We live in the divine, not the divinely omnipotent, but one in which our soul is the soul of this universe. “The account of the sixth day should be written: he gave them speech and they became souls” (MT 41). In other words, our language begets the soul of the universe. We speak from the cosmic animation of the world.

## *Conclusion*

This thesis project began with an impetus from Jim Neyland. In 2009, he generously provided me with an outline sketch of a methodology for examining the thinking of another scholar, Paul Smeyers that I was attracted to. It is worth considering briefly what Jim had in mind for examining the thinking of another person using Whitehead.

In preparing for this work, Neyland indicated to me that our actions of writing about someone else require careful interpretation, and that what we come up with should not settle things in a definitive way. Neyland noted that “*Becoming Critical*” from Carr & Kemmis (1986) divides research into three broad categories. The scientific (chapter 2), the interpretive (chapter 3), and action research (chapter 7, amongst others). He wrote:

“In their treatment this doesn’t apply to your project, but a version of it does, in a way. I’m referring to the fact that your study of Smeyers builds up within you an intuition that will affect your future actions as an educator. Freire 1. always challenges the status quo; the conventional reading, and 2. builds up an intuition about an alternative” (J. Neyland, personal communication, October 14, 2009).

He wanted me to provide a convincing argument that this research need only be one of assemblage following Whitehead. That is, that my study assembles without going any further into intuition or systematisation. The thinking of another complex human could not possibly be systematized, who themselves are presumably adapting, changing and doing assemblage. This approach presents a research space that has not yet already been definitively systematized.

He also wanted to show me that it is worth denying that all research spaces are ‘classical’ and instead we have the necessary language and categories to define what we know or will find in the chosen research space. For example, I may find categories that appear suitable to my research, but they will be open to challenge, or I might seek new ones. It would be sufficient to assemble a range of perspectives on the ideas of Paul Smeyers or the ideas of Whitehead. Not only this, but my own perspective from interacting with his work, should build up in me an intuition that will guide my future practice.



“Assemblage is not easy because you are forced to abandon conventional categories, use your own imagination to think outside of the square and use narrative reason to forge tentative links that draw the newly imagined ideas together into an intuitive whole. The education philosopher Paulo Freire argues this way. In fact he argues that education should have this as its most fundamental goal” (J. Neyland, personal communication, October 14, 2009).

Jim wanted to offer a definitive means to overcome a systematized method for conducting research. The relation between the determinate order of things and the indeterminate as an assemblage is a critique.

More than anything Jim wanted me to enjoy learning as a wonder-filled process of engagement. What was required was a methodology that addressed our subjectivity, that is, our existence in the world that brought about my perspective. Jim viewed the process of assemblage as self-referential, determining ourselves from that which we discovered through a means that was inherently unavailable to itself. This demanded that our actions be subjected to the full scrutiny of advancement. This was to be a daring project of genuine research that required me to discover from uncharted areas and return with a tentative advance on what was already known.

Although that project remains incomplete, I hope that in some way, my research in the scholarship of Alfred North Whitehead has built up in me an intuition from education that gives impetus for future harvest. My engagement with these ideas will hopefully be viewed as informing my future actions as an educator. My work should not be seen as fulfilling a project that was left incomplete from Jim’s passing, but rather through drawing on the passive possibilities that remained, I have attempted to bring some notions into a cohesive whole that places my intuition for education on display.

Present day education is goal directed in ways that ask to be examined critically. The successful delivery and assessment of a standard curriculum goes far beyond reading, writing, and arithmetic skills to suggest a value is being placed on standard attitudes representing social values, work ethics, and uniform goals. We need to reflect on the conditions of modern educational practice, however well-meaning, as prejudicial to intellectual progress and innovation. The term *transformation* is used here with the

meaning of *alteration* or change as a desirable goal of education and a necessary ingredient of a healthy evolving social culture.

One place where instrumentalisation occurs in a transformative education system is recognisable in the training of teachers. Here we have the convergence of adulthood, work environment and teacher practice, a convenient convergence for determining the future of the profession. Originality of thought that arises from the classroom is to be set aside from the immediate concerns of determining the teacher workforce. At the same time, teachers require a means to retain their creativity and spontaneity from our interaction with students, who desire to be introduced to broader and deeper conditions that make us up as humans. Whitehead offers an alternative that provides a critique from the action of teachers themselves within the transformative processes of the education system. How do we create a methodology for education that is transformative and more open, and not progressive or teleological?

My thesis is a critique of the process of education, in the form of a series of questions “What is education for? What is the difference between classroom teaching, which is practical management of a student’s learning needs, and educational theory, which today is tending more than ever to insist on education as a product?” I have chosen to focus on what has been described as the business model of education in which learning is regarded as an accumulation of life skills in preparation for a job, and the value of education is measured in terms of standard examination success in numbers. Such a perception of education is assumed to be essentially static. Its origins are eighteenth-century and its morality arguably directed at maintaining, growing, and controlling a compliant labour force.

There are powerful moral objections to such a policy, and to philosophies of mass education that continue to defend it. The utilitarian approach to education for jobs fails to recognize the potential contribution of the individual to society’s understanding of itself, and to value knowledge per se as a human resource. In seeking to reduce education to efficient training for yesterday’s business model, the same policy can also be interpreted as a political device to resist social change. While touching on such issues as they arise from my own experience as a trainee teacher, I have opted to address the aims of education from a philosophical rather than a pragmatic or political perspective. I draw on the difficult and esoteric writings of philosopher Alfred North Whitehead to

argue that the theory and practice of education in a changing world should be education for change. The implications of such a proposal are that instead of directing our focus toward increasing production to arbitrary qualifications, standards, and targets, education policy should return to its primary original focus of encouraging students to develop thinking and communication skills in an open-ended way. In one sense this is already happening with the arrival of the Internet to enable students to access a world of information outside the classroom; in another sense however the globalisation of instant information has created its own traps and appetites for what might be called “knowledge gratification” at the expense of deeper understanding.

To sum up, the requirement of delivery of a fixed curriculum with measurable outcomes is obsolete and inefficient. Obsolete because it implies a static hierarchical ideal of society in which conformity to pattern is a sufficient goal for education; obsolete also because such a view of the world has long since been overtaken by an understanding of the world as a dynamic and potentially unstable environment requiring education in techniques of recognizing trends and managing change. Inefficient because a doctrinaire fixed curriculum *in practice* fails to take full advantage of the specialist skills of the individual teacher; and also inefficient because achievement targets imposed on classroom performance also fail to give due credit for risktaking and failure experiences as ingredients of learning.

I have considered the broad prospect for transformation from education. I began with two means that education has responded to transformation in society. I proposed that becoming a teacher is currently conceived from education along two lines, either as a personal or a social transformation, where personal transformation seeks to enhance the personal status and authority of the individual and social transformation overcomes the inherent hegemony of education through being immersed in social situations. I strengthened these positions in philosophy by showing that these positions coincide with our freedom to act, which on deeper consideration doesn't give us a complete picture of the world. Our freedom to act was based on a model that separated off our minds as if we were objects in the world. We require a means to access the unity of the world, in order to return transformation to education. Such a conception of education need not rely on the separation of personal and social transformation. In creative transformation, we answer the need for personal transformation that determines an individual, from the passive possibilities that arrive from the wider world. Whilst social

transformation seeks a structural hegemony in society from education, this can be set aside for the determinate possibilities are already available in the classroom.

I considered the relationship between the child and the adult, and found the two approaches apply either with traditional methods, or through a child-centred approach. I argued that an approach along traditional lines leaves our practice as the uncritical reproduction of a culture at the expense of the exclusion of social groups and such an approach between the child and the adult is evidence of determinate conditions. I argued that our freedom in this arrangement leads to a confirmation of myself. The Cartesian mind is behind this. Our practices sustain themselves as self-affirming unavailable for any criticism, since the background they are drawing on is said to be already known.

The child-centred means is a relation between the adult and the child that relies on “cultivating” the child in nature, and sees the adult world as corrupt, that I term undeterminate. There is insufficient knowledge of our actions, but at any rate belongs to a scheme of some sort. The thinking of Rousseau lies behind this, who maintained that we need to avoid the ills of our society to maintain my individuality. Born as a unique individual, I consider my actions as undetermined amongst other actions in order to sustain my freedom of purpose.

In an ideal world a teacher should be prepared and able to understand and engage with the needs of students of all ethnicities with respect to their cultural preferences. Instead of there being just one prescribed way of answering a relational problem in the classroom, a teacher should have the training and tact to temper a response to the cultural priorities of the individual, and encourage discussion as a way of sharing opinion on a range of priorities and how they can be accommodated in a multicultural real world. The example of a teacher being able to adapt to and reconcile multiple value systems in class is both essential for the successful integration of learning and also a conduit of student respect for the individual teacher and the educational system as a whole.

I argue that teachers can also be satisfied in their role when they can adapt to any student because of their cultural background. They replace the formal learning of becoming a teacher with learning on the job, gaining experience from young people, and being supported by colleagues. In the context of a classroom, there is a persistent

need to be an individual teacher. It is just not possible to attribute every student difficulty to better social understanding with that student. The loss of one's individuality in the teacher-learner relationship is the too-high price to pay.

If we are to bring about the possibility for education to be transformative, we need to find a means for our actions to coincide with our purposes. It is unacceptable to have our actions determined as this leads to processes available in nature through causality that do not coincide with our mind. I argued that causality as conceived by Newtonian science prevents the organising processes of the world as coinciding with our mind. We need no longer rely on science in purely mechanical-causal principals of Isaac Newton in reality. We also ought to reject the radical social constructivist approach following Descartes, who says that our actions are unable to be intuited by our mind, but are informed by a scheme of some sort.

Underpinning determinism is the idea of causality or the coinciding of time and space that is said to account for the way things occur in the world along these two lines. In my discussion of causality, we find that causal processes are limited by Zeno's paradox that is that we can never locate changing or moving objects other than through a fixed moment in time. Taking a snapshot of a moving car, we can locate its position at a moment in time. We cannot say much about where it was before hand, or to be later, without thinking about it.

Whitehead addresses that limitation. Instead of a time bound causality to describe an object in space, Whitehead prioritises events as a thin slice from a moment in time that contains those objects in space. He doesn't see that we need a linear conception of time and space to understand how things are in the world. Rather, he conceives our understanding in very different ways, as drops of experience, made up of events of discrete and finite means, which contains our perception of the world, and coincides with our understanding of it. Our experience is unique, but in conceiving the world as Whitehead presents it, we have to accept that all material objects in the world have a mind, indeed are alive, the idea of pantheism. What appears to be without life is in Whitehead's conception given life, termed organicism. He termed his scheme a scheme of organic reality for that reason. Assemblage is a convenient means to conceive his ideas in actual situations.

In a classroom, the furniture, the sunlight, our clothes, all objects in fact possess thought and to some extent their “minds” are affected by the assemblage in which they are participating. They can’t help but participate because they would not exist from the event or snapshot in known material form if they didn’t participate. Things are on display as we find them. If we take a sequence of events over time, we are unaware how each of those events will differ, except from the arrangement of the objects themselves now framed up over time. We won’t know the influences or determining pressures on the objects themselves, except from our intuition of them, which itself has been informed from our perception of the world in process or change. Whitehead claims from mathematics to have accounted for the process by which we can be assured that an assemblage of objects now taken in relativistic terms is sufficient to account for the way things are in the world. In order that anything is, there first has to be something, which itself is formed from processes in a transforming world. That is our burden, that to be known or appear in a world of dynamic possibility, we participate, as a means to remain alive in a constantly changing world.

Whitehead’s repeated objective was not to reform education but to eliminate or modify traditional precepts of educational practice to acknowledge a new dynamic of knowledge acquisition, including the influence of terms and conditions of knowledge exchange on the kind of knowledge deemed to be socially acceptable and/or necessary. His contribution is all the more significant in the context today of education as career training, in the age of the internet as a navigable but diverse information resource, and as an ethical alternative to a number of still powerful educational doctrines predicated on state ownership of language and civil values. An assemblage then is a free association of things in the world, without discrimination. It takes in all objects and unveils a dynamic field, from which new possibilities are derived for the assemblage. According to Whitehead, we notice in ourselves the affect of this field as a prehension, a relating to the field of dynamic possibilities, as a feeling or desire.

When I begin to speak from in front of my class, I feel an intensity informed from the wide field of possibilities on dynamic display before me. I don’t have a script, I can only respond from the wider possibilities, which will hopefully inform my students. I notice myself, my clothes, those in front of me, other objects, the sunlight, etc. I assemble in perception through relating to the dynamic field as widely as possible in order that I put my thoughts on display. I want to communicate meaning to my students

that takes in a wide field. My new utterance contributes to the ongoing and unending process that is being undertaken in education. I can never predict what form my intensity takes, but only shape it up from the determinate possibilities that lie before me. For example, by appreciating my role as a teacher, the mood of the students, the time of day, the extent of contact time we have already had, all these are qualities we can appreciate and gain informative meaning from. There is far greater sense of feeling alive from amidst the determinate possibilities in a classroom. Knowing that our feelings are informed from the dynamic whole is far more reassuring than trying to ascertain whether I have met a particular outcome of teaching practice.

By the same token, we ought to include those determinate possibilities of outcome and clear direction, but only in so far as they assist us. That is a challenge to the management of education that is trying to address the determinate possibilities in education. We can never govern education for a transformative, changing and dynamic society with determinate possibilities alone. Rather, we should acknowledge that determinate possibilities, outcomes, standards, could be used only as a limited blueprint for management. Nor should initial teachers be invited into a guidance system of teacher training that gives over the tools to bring about on task student behaviour for example. We do need those tools, but more importantly is the idea that we need to prepare others for a changing world, and that we have the capacity within ourselves to do that. Those tools might be better derived from an experience in the classroom that reforged our tools of education and offers insight and new possibility for other teachers. Creative transformation is difficult to bring about and rarely achieved. But we at least participate in the dynamic possibilities before us.

Whitehead offers us the possibility of our mind coinciding with nature through what he termed an *assemblage*, an intuition of what comes to mind from the ordinary everyday occurrences in our lives that coincides with our perception of things. He views the process of our mind as coinciding with the processes of the world, to which we are inherently bound. An assemblage is simply a means by which we inhabit the world in thought. Our action as educators can be conceived from Whiteheadian metaphysics as a moment taken from all other moments of action for all teachers. Conceived as a spatio-temporal slice 'in time', our actions in education give up a small amount of novelty to be available again within the world. Think of this slice as an aboriginal resource, one that comes with a potential from the form we prescribe for ourselves in education

practice. We have a tradition to our practice, not the dry, soulless husk of the past, but one that perhaps can't yet be identified, and comes to inform our future.

The implications for transformative education in process is that our actions coincide with our freedom for all possible outcomes, but only if we accept limitations on our subjectivity. We can never claim that we will have discovered everything about the world from the advancements made in technology for example. There will always be the need for indeterminacy in the decisions we make. Whitehead makes that quite explicit. However, we need not give up determinate possibilities in the world, only that they need to be set amongst the wider conditions that are available to us.

Transformation reconceived as our 'burden of participation', is a potential that resides *within*, made real through self-determining means. It is made real from our actions actualised into a form that might address the stifling effects of determinism. This potential resides as a primordial action within our subjectivity and is available to ourselves. We are always already available for creativity from within the world. It only remains for us to actualise this with our participation in the world.

For education, we might apply Whitehead's ideas of participation. Taking a lead from Paul Smeyers (2007), he sees education as an initiation into a practice. This is immediately helpful, because a practice is a known action that is part of an accepted understanding and 'forms of thought', 'patterns of understanding', 'habits of mind'. An initiation supports the notion of the recipient participating in something larger than an initial start, but self-referential all the same.

As a teacher confronted by a classroom of students, I stand ready and as open as I can in that moment. What is at stake? The whole nature of a future relationship between an adult and a student. This is why 'initial' is important to consider. We are better to consider all our actions as teachers to be an initial action. It ought not be that teachers who begin teaching are considered more 'initial' than any other teacher. Others with experience should not be conceived as an authority over teacherhood more than any other. One's action as a teacher cannot be separated from the circumstances in which they find themselves.



As an initial teacher myself, I recall the all too often on-rush of decision-making and attention that demands our action. We can't avoid action. What we can offer is the confidence that the effect of my following action could not have been predicted, nor is it unreasonable. We should take enjoyment that these students respond to my meaning. What meaning is generated for me from their response? And so we participate, each side with the generous intent on seeking truth, rather than speaking it. My act with students is like no other, unique, novel, creative. It begets all the other moments of adult-child classroom relations.

Everyone acts with good intentions. We can't help but act towards something of value in the world. In metaphysical terms participation occurs as an "instantiation", one thing inhering in the other. Meaning is derived from our instantiation with each other, and is respectful of the elements it has included. Response occurs as meaning comes into the world. It occurs as a greater desire for meaning. For example, in interacting with young people, I was once a child, but now I draw on my perception of childness in light of those I find around me. I wish to retain my sense of responsibility as an adult in the world, but on behalf of the child I instantiate their wishes as meaningful to me. The possibility for meaning needs to be broadened to accept one another intersubjectively.

The burden of our participation is that we cannot escape our limits, and that these arrive from within the world. These are the Forms that arrive from within the world, the potential that already resides within the world known as essential forms. My freedom to act comes with constraints, that I am touched and moved by others, "who expresses herself by whatever evocation she is capable of" (Smeyers, 2012b).

One of the most sustaining and defining contributions from Whitehead for philosophy is his "perception in the mode of causal efficacy" (PR 4), that we literally feel the pervasive presence of the world, a causal influence on the world. These feelings have an impact on us and must be dealt with, as we can't escape them. This is our burden of participation.

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