

*Bergson and Whitehead:
Consonances, Dissonances, and
Complementarities*

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Abstract

This dissertation outlines the key ideas of French philosopher Henri Bergson, and the key ideas of British philosopher Alfred North Whitehead. It then undertakes a comparison of these ideas, showing the consonances and dissonances. The thesis of the dissertation has three layers:

- (i) despite claims of influence, on the one hand, and counter-claims of fundamental distinctions – even contradictions – on the other, the philosophies of Bergson and Whitehead can instead be seen as complimentary;
- (ii) despite the intention by both philosophers to overcome the subject/object distinction, both nevertheless find themselves leaning towards one rather than the other - Bergson towards the subjective, and Whitehead the objective;
- (iii) Bergson thus is in fact the braver and more radical philosopher, in respect of the nature of *free will*, whereby the French philosopher's bridge between mind and matter is more successful than Whitehead's which, the thesis concludes, fails, due its leaning toward the objective.

Finally, then, the dissertation offers an approach to a combination of these two thinkers' ideas, taking Bergson's *oeuvre* as a starting point with useful modifications from Whitehead.

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*No part of this dissertation has been submitted previously for a degree or other qualification at
The Open University or any other university or institution.*

This entire work has been prepared by myself, alone.

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Abbreviations of Bergson's and Whitehead's Works

Bergson's and Whitehead's works are referred to in the references by their abbreviations, as set out below, and page numbers refer to the editions listed below:

<i>TFW</i>	Bergson, Henri. 2005[1889]. <i>Time and Free Will</i> . Adamant Media Elibron Classics reproduction of 1913 edition translated by F.L. Pogson, New York: George Allen and Unwin
<i>MM</i>	Bergson, Henri. 2004[1896]. <i>Matter and Memory</i> . Translated by Nancy Margeret Paul and W. Scott Palmer 1912. London: Dover.
<i>IM</i>	Bergson, Henri. 1946[1903]. 'An Introduction to Metaphysics' (Essay in <i>Revue de Métaphysique et de Morale</i> Jan 1903) in <i>The Creative Mind</i> tr. Mabelle L. Andison New York Philosophical Library
<i>CE</i>	Bergson, Henri. 1944[1907]. <i>Creative Evolution</i> . Translated by Arthur Mitchell, with a Foreword by Irwin Edman. New York: Random House Modern Library
<i>ME</i>	Bergson, Henri. 1975[1920]. <i>Mind-Energy</i> . Translated by H. Wildon Carr, Westport CT: Greenwood Press.
<i>DS</i>	Bergson, Henri. 1965[1922]. <i>Duration and Simultaneity</i> . Reproduction of 1929 4 th edition. Translated by Leon Jacobson. New York: Bobbs-Merrill Company
<i>TSMR</i>	Bergson, Henri. 2006[1935]. <i>The Two Sources of Morality and Religion</i> . Notre Dame, IN: University of Notre Dame Press
<i>CM</i>	Bergson, Henri. 1946. <i>The Creative Mind</i> . tr. Mabelle L. Andison New York Philosophical Library

<i>PNK</i>	Whitehead, Alfred North. 1919. <i>An Enquiry Concerning the Principles of Natural Knowledge</i> Cambridge: Cambridge University Press
<i>CN</i>	Whitehead, Alfred North. 1920[2007]. <i>The Concept of Nature</i> , New York, NY: Cosimo
<i>SMW</i>	Whitehead, Alfred North. 1925[1932]. <i>Science and the Modern World</i> . The Free Press, Simon and Schuster
<i>PR</i>	Whitehead, Alfred North. 1927-28[1978]. <i>Process and Reality</i> New York: The Free Press.
<i>AI</i>	Whitehead, Alfred North. 1933[1967]. <i>Adventures of Ideas</i> London: Simon and Schuster Free Press
<i>AN</i>	Whitehead, Alfred North. 1941. 'Autobiographical Notes', in <i>The Philosophy of Alfred North Whitehead</i> , ed. by Paul Arthur Schilpp (ed.) 1951. Library of Living Philosophers. New York: Tudor Publishing Company 2 nd Edition
<i>MT</i>	Whitehead, Alfred North. 1938. <i>Modes of Thought</i> . Toronto: The Free Press

1. INTRODUCTION

Both Bergson and Whitehead are most famous for their philosophies of time, which they put forward in distinction from the more commonly accepted, and more positivist scientific view, of the nature of time. Both philosophers clashed with Einstein on this point - and drew support from quantum theorists. Their theories of time underpin radically different ontologies to the prevailing world view. Both philosophers have been dismissed, in the past, but are today enjoying something of a renaissance of interest.

The judgement of this dissertation is that the work of Bergson and Whitehead can profitably be seen as complementary. The thesis of this dissertation is that, whilst they both try to bridge the gap between subject and object, Bergson errs somewhat on the side of the subjective, and Whitehead somewhat on the side of the objective. It concludes that in doing so, Bergson is probably the braver and more radical philosopher, focussing on the facility of free will and its place within the universe. Whitehead, by contrast, although much in the same context as Bergson, ultimately retains the causality favoured by physics, albeit located within his logical structures, that would by contrast deny free will.

Nonetheless, there are elements of Whitehead's approach that can be considered not only complimentary but an improvement upon Bergson's, and although a coherent combination of the two approaches is not possible, because of their foundational disparities, such complementarities between them exist that are worthy of collating into an approach that does not of itself require the logical coherence that Whitehead would prefer.

The dissertation therefore falls straightforwardly into four chapters, following this brief introduction: an introduction to Bergson's ideas; an introduction to Whitehead's ideas; some of the key consonances and dissonances between their approaches; and then the key points at which a reading of Whitehead may be used to modify and improve upon Bergson's ideas.

2. BERGSON'S CORE IDEAS

Bergson's core ideas - *intuition philosophique*, *durée réelle*, and the *élan vital* - incorporate some primary methods, which should be considered prior to addressing the ideas themselves.

1. *Monistic Dualism: The two sides of one coin.* Bergson often presents his readers with pairs of opposites that he assures us are never found alone, purely one or purely the other, but always, in reality, in combination. Yet for the purposes of his argument he asks us to imagine each half of these pairs in its pure state, in order better to understand them, and their combination. For example, he asks us to do this with space and time.
2. '*Deconstruction*'¹ is another method with which Bergson addresses pairs of ideas – taking the two opposite sides of a debate and showing how they in fact both share a common misunderstanding at the root of their division. For example, he does this with idealism and realism.
3. *The nature of difference.* Many of these pairs Bergson enjoins us to understand differ in kind, rather than in degree – another of his favourite distinctions. For example, this is his distinction between quality and quantity.
4. *Mobility, multiplicity and continuity.* More a perspective, perhaps, than strictly a method, Bergson frequently enjoins us to understand what he is describing as multiple, continuous, and on the move, rather than as singular or fixed. Multiplicities appear in many of his arguments, and mobility is often used to counter assumptions about 'things'.

¹ Famously attributed to Derrida and his book *Of Grammatology* - and certainly more foregrounded and more fully developed in Derrida's work - I believe, nonetheless, that one could attribute the roots of the method of deconstruction to Bergson, and have therefore used the term to describe how Bergson undertakes many of his critiques of opposing debates.

Of all Bergson's core ideas, the *durée réelle* may perhaps be regarded as Bergson's primary insight: an understanding of the nature of time published as his first book, *Time and Free Will*. His understanding of intuition depends on this perspective on the nature of time. This faculty of intuition – as it is envisioned by Bergson – is the means, the method of his philosophy. It is in a universe that can only be seen through the lens of this understanding of time, apprehended by this philosophical intuition, that Bergson's understanding of human perception, and of the nature of memory, are situated. Finally, the impetus that drives this time forward, Bergson calls the *élan vital*, an impulse so creative it belies any teleology: any plan such an impulse could be said to follow would imply that such a plan's end point somehow pre-existed its arrival at such a pre-determined goal, rendering its creativity merely one of implementation. Bergson's *élan vital*, by contrast, has no such plan: his is a universe that is making itself up as it goes along. Far from being some kind of substance, essence, or mysterious or divine force as suggested by vitalists such as Stahl, Driesch² and others, the *élan vital* is a property of matter understood through the lens of Bergson's understanding of time: matter that is not, is never, fixed, but is constantly, ineluctably on the move.

On the intuition philosophique

The distinction in Bergson's thought between the rational mind of science and what he termed the *intuition philosophique* of consciousness has perhaps been the most contentious of his insights. It has led some to assume – wrongly – that Bergson was a mystical philosopher, anti-scientific, wedded to a wrong-headed idealism or a belief in mystical intuitive powers. He was none of these things. He made extensive use of the science of his day in his arguments, e.g. in relation to studies of the brain, and in his evolutionism. Notably, Bergson was very particular about the way in which he used the word, 'intuition'.

² Georg Ernst Stahl (1660 – 1734) proposed a theory of animism and Hans Driesch (1867 – 1941) a theory of entelecheia, both of which opposed the discoveries of the physical sciences with alternative theories.

As noted by contemporary philosophers of science (Cartwright 2005), science presents us with a great number of theories, each of which, in its own partial view of the totality, supported by its relevant facts, presents us with but a partial understanding. This, Bergson asserts, is where philosophy steps in. ‘The reality of which each of these theories takes a partial view must transcend them all. And this reality is the special object of philosophy, which is not constrained to scientific precision because it contemplates no practical application’ (*CE*: 94). Arising from this overview, and no doubt the root of the contentiousness of his philosophy, was his critique of rationalism and scientific realism.

His challenge, ultimately, is that the way science goes about its work excludes too much of the universe for it to claim to be able to understand it in total. Firstly, science makes incorrect assumptions about that which – with its rational methods that capture only fixities – it fails to grasp: *viz* the mobility of the universe. Secondly, because it privileges only the faculty of reason - to the exclusion of all else - science cannot know the nature, and place within the universe, of consciousness, for which reason is but one of many faculties. Thirdly, in abstracting to the universal, positivist science - by the nature of the case - fails to register the significance of true particulars.

On intuition

Intuition, in common understanding, is the ability to understand something without the need for conscious reasoning. The implication that one can ‘know’ anything somehow by instinct, or gut feeling, or some kind of mysterious inner perception, is clearly anathema for the rationalist, for whom only the intellectual faculty of reason can bring knowledge. For Bergson, indeed, ‘intuition’ is a word he chose with some hesitation: ‘Because a Schelling, a Schopenhauer and others have already called upon intuition, because they have more or less set up intuition in opposition to intelligence, one might think that I was using the same method’ (*CM*: 33). Clearly, however, he is not. On the contrary, Bergson’s understanding of

the nature of his *intuition philosophique* is more an ‘apprehension,’ even a ‘gestalt’ presence in the moment and in the world, that in fact implies or presupposes the *durée réelle*. In this sense, for Bergson, intuition is ‘neither a feeling, an inspiration, nor a disorderly sympathy, but a fully developed method’ (Deleuze 1966: 13) or philosophical approach. In this sense, for Bergson, his *intuition philosophique* is indeed the ‘true empiricism’ (*CM*: 206-7), focused upon immediate sensory experience of the real.

This strong appeal to an empiricist intuition earned Bergson many critics. He characterised it specifically as the best approach to precisely the absolute kind of knowledge Kant had firmly regarded as impossible (*CM*: 151). Bergson’s argument – contra Kant – concerning this absolute knowledge is that there are two ways to know a thing, either relatively, from a range of perspectives in fragments, or absolutely, by going directly into it, and grasping it whole. Analysis gives a relative knowledge; an empiricist intuition gives an absolute knowledge. Using language, relative knowledge calls upon symbols and generalised ideas and fragments of knowledge and tries to weave a patchwork description around a thing that inevitably distorts it. The object’s particularity is ignored. Absolute knowledge, by contrast, dispenses with symbols, and is apprehended through the intuitive method, by which what is unique and ineffable about the object can be grasped. Direct, empiricist, experience is thus the key to absolute knowledge; representation, symbol and interpretation the character of relative knowledge.

These ideas are a key challenge to Kantian philosophy, wherein the very idea that such absolute knowledge is possible was challenged and disregarded. But, as Bergson points out, ‘in order to reach intuition it is not necessary to transport ourselves outside the domain of the senses and of consciousness. Kant’s error was to believe that it was’ (*CM*: 151). The very transcendental and metaphysical view of intuition that Kant and others rejected, Bergson also rejects. Yet this does not mean that intuition does not exist, in a much more present,

sensuous and conscious form; and Kant himself made very strong arguments that were intuition to exist, it would indeed be the way in which to grasp absolute knowledge of things. As Bergson asserts, ‘One of the most profound and important ideas in the *Critique of Pure Reason* is this: if metaphysics is possible, it is through a vision and not through a dialectic’ (*CM*: 164). Yet this ‘intellectual’ intuition, as Kant termed it, he deemed impossible, because he conflated it with the metaphysical intuition favoured by the post-Eleatic Greeks and the history of philosophy thereafter: an intuition of Schelling or Schopenhauer, which they all understood as ‘a faculty of knowing which would differ radically from consciousness as well as from the senses’ (*CM*: 164). For Bergson, true intuition is the opposite: it is to ‘grasp change and duration in their original mobility’ with the faculties of our senses and consciousness undimmed by the habits of our intellect (*CM*: 167).

On Durée Réelle

In *Time and Free Will*, published in 1889, Bergson argues that the idea of a homogeneous and measurable time is an artificial concept, formed by the intrusion of the idea of space into the realm of duration. Duration - the *durée réelle* – is in some senses difficult to grasp, because, as Bergson would argue, of the many centuries of intellectual thought that have built up describing things in the wrong way. In other cases, it remains common sense, something that we intuitively grasp without recourse to intellect. He reminds the reader of ‘the specific feeling of duration which our consciousness has when it does away with convention and habit and gets back to its natural attitude,’ and enjoins us to remember this understanding of the *durée réelle* as he shows us how ‘at the root of most errors in philosophy’ one can find precisely this ‘confusion between ... concrete duration and the abstract time which mathematics, physics, and even language and common sense, substitute for it’ (*TFW*: vii). This is the core idea of the *durée réelle*: a conception of a continuous reality that is tempero-

spatial, in direct contrast to the discontinuous, scientific conception of the spatio-temporal discrete moment that science casts as the real.

Bergson approaches his argument around the nature of time through an essay on the difference between quantity and quality in the context of the intensity of conscious states – e.g. pleasure or pain, and then through a discussion of the nature of number.

If, as both common sense and biological interpretation would suggest, ‘we’ – and in this he includes the entirety of life, not just humanity - ‘rise by imperceptible stages from automatic to free movements,’ and the ‘latter differ from the former principally in introducing an affective sensation between the external action and the volitional reaction which ensues’ (*TFW*: 33), then such experiences as pleasure and pain, making their appearance ‘only in certain privileged beings,’ (*TFW*: 34)³ are quite probably faculties enabling us to resist the automatic, to understand what is in preparation, what is on its way, and make a choice: in other words, ‘either sensation has nothing to do, or it is nascent freedom’ (*TFW*: 34).

Table 2.1 Two sides of one coin

REAL	duration	conscious	quality, kind	mobile, multiple	representative sensation e.g. brightness	absolute knowledge - intuition
	space	physical	quantity, degree	fixed, singular	affective sensation e.g. light	relative knowledge - intellect

Choice, then, or ‘indetermination’ – that which is not determined by automatic mechanical or organic laws that constrain the possible – is what enables the conscious mind to opt for one pleasure, rather than another. But this brings us immediately to the distinction

³ Interesting to note, here, that Bergson does not, here or anywhere in his published work that I have found, explicitly restrict consciousness to human beings.

between quantity and quality when describing such an affective sensation as pleasure: ‘What do we mean by a greater pleasure except a pleasure that is preferred?’ (*TFW*: 38).

Bergson then succinctly encapsulates his crucial distinction between duration and space in this image of time being conceived of in spatial terms:

...let us imagine a straight line of unlimited length, and on this line a material point A, which moves. If this point were conscious of itself, it would feel itself change, since it moves: it would perceive a succession; but would this succession assume for it the form of a line? No doubt it would, if it could rise, so to speak, above the line which it traverses, and perceive simultaneously several points of it in juxtaposition: but by doing so it would form the idea of space, and it is in space and not in pure duration that it would see displayed the changes which it undergoes (*TFW*: 103).

A crucial point is reached, here, concerning the direction of time. In mechanistic physics, if time is conceived of as space, ‘the idea of a reversible series in duration’ (*TFW*: 102) arises, and in the terms of mathematics and mechanical science the reversibility of such spatial time seems both inevitable and common-sensical. An operation represented in the symbols of measure can flow in either direction. Yet, in conscious terms, if we conceive of time, instead, in terms of duration, time is not reversible at all, or only in the novels of H.G. Wells and the fantasies of science fiction.

On perception and memory

Bergson’s argument in his next book, *Matter and Memory*, is focussed on the mind/body dilemma. Ideas current in Bergson’s era, he tells us fall into two categories:

epiphenomenalism, and parallelism. The first – still perhaps the default position of scientific realism and most neuroscience to this day (Libet 2005: 5), and key to much eliminative materialism, reductive materialism, behaviourist and functionalist approaches to the mind/body problem in philosophy - suggests that thought is merely a physical function of the brain (Noë 2006: 3), that consciousness is somehow an epiphenomenon of the brain (Juarrero

1999: 51-52), or a non-functional supplement that is caused by brain events but has no causal effect upon brain events. There are fine distinctions between the various positions, but all are related ultimately in reducing the mental to the physical. The second – parallelism – whilst avoiding reduction and acknowledging the reality of consciousness, suggests that mental states and brain states are ultimately just two languages for the same thing. For Bergson neither of these explanations is satisfactory. He certainly believes there is a connection between brain and mental states, but denies that this implies either one can be reduced to the other, or a simple parallelism. Memory, he suggests, is the key to unlocking this problem, as it is situated at the intersection of mind and matter. Contrary to the assumptions of materialism, for Bergson, memory is not - cannot be - physical. If memory is not physical, then much else that goes on in consciousness must be of a similar ilk, and then we are faced with something that is not physical, which is not matter, but which is intimately associated with and couples to it.

If memory is to be considered non-physical, then perception must be conceived of as physical, and thus distinct from consciousness and from memory. Perception, for Bergson, is an integral part of how conscious beings are situated in the material world – a ‘skilful activity’ (Noë 2006) - but this has nothing to do with knowing (*MM*: 17). The brain, clearly, cannot be isolated from the rest of the universe, made up as it is of the very substance of our bodies. Nerves that run from our fingertips to the brain and back take part in transmitting messages to and fro and the brain and its various nervous states are entirely within the universe and a part of it. Perception thus must be a physical, biological series of stimuli and electrical signals moving centrifugally and centripetally between the brain and the nerve-endings.

But if this brain-body flow only perceives and reacts, who, then, does the knowing? Most importantly, who acts? Bergson’s solution to this dichotomy is to – characteristically –

talk about time and motion, rather than fixity, and to style the body as a centre of action, or ‘indetermination’ (i.e. choice), ‘an object destined to move other objects’ – which, because it can perform new actions, ‘must occupy a privileged position’ with regard to other objects (*MM*: 5). This has been termed, recently, the ‘enactive approach’ to perception (Noë 2006: 75; Thompson 2007).

Pragmatic as ever, Bergson the empiricist suggests that our perception is basically choosey, that we apprehend what is of use to us. Perception, thus, is concerned directly with action in a way that selects and isolates what is relevant, or useful, and ignores that which is not. The fact that the objective world appears to be different according to the subjective perspective of each of us does not, however, present any paradox: our subjective perception of these objects has isolated that which is useful to us about them, and ignores that which is not. Our relationship with the objects we perceive is directly related to what actions we may or may not perform in relation to them – from what is good to eat to what we need to avoid bumping into.

The flow of time, moreover, is key to Bergson’s argument, whereby consciousness is anchored in the past, and engaged in the process of determining appropriate action directed towards the immediate future, in light of the past. A more spatialised, mechanistic, and reversible understanding of time would suggest that there are laws of nature that ineluctably govern all aspects of all ‘things,’ and in particular all action and reaction; this, however, would imply that the future is in fact contained in the present and implicit in the past. Such laws place us in a very deterministic universe. Bergson disputes this with the common sense understanding that once consciousness enters the picture – when choices can be made – physical cause is not always necessarily followed by physical effect: something new enters the universe, rendering the strict causality of such absolute determinism false. ‘Things,’ in this view, can begin to be considered but snapshots of a mobility guided by choice.

So, the present – pure perception – is a physical consciousness of the body. The past – pure memory – is therefore an unconsciousness of the body, the realm of fancy and dream. The reality of the human condition is of course always a blend of the two. Memory, in the human being, is something that gives the flow of our perceptions from periphery through the centre to periphery, the possibility of choice. We can pause, in the centre of action that is our body, and compare the motor mechanism action ready to react to our perceptions with previous ones, in our memory, and weigh up the pros and cons of different outcomes. We may, indeed, choose not to act at all, which is where Bergson refers to the ‘virtual’ – actions that are potential, neither occurring, nor merely memory.

At the junction, then, between memory, perception and action, ‘the hyphen which joins what has been to what will be,’ (*ME*: 9) consciousness acts as a bridge between the past and the future, neither a part of the physical, objective world of perception, nor wholly divorced from it in the temporal field of the past. For Bergson consciousness is that which exists in the moment, in the *durée réelle* that links past and future. The survival of the past, by which memory is possible, is therefore not physical. It is not in the brain. It is not – cannot be - contained by the body. ‘The fundamental illusion consists in transferring to duration itself, in its continuous flow, the form of the instantaneous sections which we make in it.’ The past does not cease to exist, it ceases to be useful. It is wrong to define the present ‘as that which is, ... the present is simply what is being made’ (*MM*: 193).

Bergson’s *Matter and Memory*, then, presents us with a picture of the universe that is perceived, and of the consciousness – memory – which acts within it, in its own duration, distinct – different in kind - from the measurement of space, and of spatialised time, with which we are familiar from our intellectual pursuits such as mathematics and scientific parlance. Choice and free will lie at the heart of this distinction. We must therefore add, to

our table of distinctions Bergson makes in his characterization of the real, the distinction between movement and trajectory:

Table 2.1 - Two sides of one coin (ii)

REAL	conscious duration	quality, kind	mobile, multiple	movement	representative sensation e.g. brightness	absolute knowledge, intuition
	physical space	quantity, degree	fixed, singular	trajectory	affective sensation e.g. light	relative knowledge, intellect

On the élan vital

In his most famous book, *Creative Evolution*, published in 1907, Bergson addresses the problem of evolution. He does so as a philosopher armed with the notions of *intuition philosophique*, *durée réelle*, and his conceptions of perception and memory, and not as a biologist. In a nutshell, he puts forward a version of a structuralist orthogenesis: a combination of functionalist Darwinian natural selection, in second place to a unique formalist/structuralist approach founded on an original impulse (the *élan vital*) and a theory of tendency and divergence driven by that impulse. Bergson rejects both the 19th century ‘radical mechanism’ of a Newtonian mechanics-based biology, and the ‘radical finalism’ of traditional, pre-Darwinian (and orthogenetic) structuralism - and both in terms of how the *durée réelle* makes each nonsensical. He then addresses Darwin and his ‘insensible variation,’ De Vries and his ‘sudden variation,’ Eimer’s version of orthogenesis, and the neo-Lamarckism of his day on the ‘hereditability of acquired characters.’

For Bergson, the fundamental problem with the Newtonian, clockwork mechanism of most 19th century science is that it has no room for the possibility of any real change or creativity: if effect must always inevitably follow cause, then the effect is somehow pre-

ordained, already contained within the cause. Such a universe is in fact predetermined from beginning to end. Such ‘radical mechanism’ is anathema to Bergson, for whom, as we have seen, consciousness is the locus of indetermination – choice, free will – where change, creativity, and alternatives arise, where that which is not pre-contained in a mechanical cause may transpire: the effect of conscious choice.

By the same token, however, Bergson also criticizes – in the same terms, and for the same reasons - the teleological approach of traditional finalism – and all other orthogenetic theories. The notion most popular among such theories derives ultimately from the patriarchal religions, whose Creator God made the world and made Man to put in it. Only barely modified from a seven-day *fiat*, the Creator God, in this revision, sets evolution running in a grand progress from origins up to a pinnacle in the human being. Such teleological progress equally makes genuine creation of the new impossible, since, just like mechanism, it rests upon an assumption that the whole is ‘given,’ from the start (*CE*: 40). Neither mechanism nor finalism, therefore, can be a satisfactory explanation – for Bergson – of the phenomenon of change, and its inherent properties of indetermination and choice, which for Bergson is the most essential aspect of life.

For Bergson, then, we must get beyond both mechanism and finalism. But how? Considering the phenomenon of vision, and the appearance of eyes in nature, as the focus of his argument, Bergson suggests the solution to this conundrum lies in the ‘contrast between the infinite complexity of the organ and the extreme simplicity of the function’ (*CE*: 100). Reprising arguments from *Matter and Memory*, concerning the distinction between movement and trajectory, Bergson suggests that the mechanistic evolutionary theories see only the positions, the various points along the trajectory, and that the finalist approach would take only the order in which they appeared into account. Both would actually miss the movement – which is reality itself. In this, Bergson is in fact echoed later in the work of

Waddington, Needham and von Bertalanffy, all of whom stressed, in their different ways, the processual character of living systems. It is, indeed, still a very topical and highly regarded position (Dupré 2016).

Applied to the example of the eye, Bergson thus argues that whilst there is more to vision than just the component cells of the eye and their mutual coordination, there is also nowhere near the ‘most formidable of the labors of Hercules’ attributed to Nature by both mechanism and finalism in making it possible: ‘Nature has had no more trouble in making an eye than I have in lifting my hand,’ says Bergson (*CE*: 102). Paradoxical as it may seem, this ease is in fact what complexity theory grants to evolutionary biology, as well (Botkin 1990; Goodwin 1994), and the tendencies Bergson describes can be seen in terms of attractors in dynamic networks: cases where a high level of diversity is required yet in which ‘order’ arises out of ‘chaos’ (Prigogine and Stengers 1985; Kauffman 1995). Yet still the facilities of action, choice, and consciousness are presented as essential to life, in the context of movement, and thereby to evolution. The complex eye is not only easy for Nature to have manifested, it is inevitable, and a core element of how consciousness – life – becomes a centre of action.

A universe on the model of consciousness

Bergson’s task in the succeeding chapters of *Creative Evolution*, is to trace out these notions of tendency and diversity, the workings of the *élan vital*, and how these notions and the phenomenon of consciousness are interrelated. In this way, he sets out to tell the story of the relationship between the evolution of life and the evolution of consciousness, by which ‘The intellect is thus brought back to its generating cause’ (*CE*: 25). He does so by distinguishing first between vegetable and animal life, and then between instinct and intelligence.

It is important to underline that Bergson at no point suggests that the *élan vital* is in any sense some kind of vitalism. He is explicit in stating that this *élan vital* is a force whose

existence cannot be scientifically verified – a crucial distinction from the traditional ‘substantial’ vitalists who contended that there must be some fluid or other organic material at the spring of life. Some of these vitalists also believed that there must be some divine force outside of matter. The *élan vital*, however, is a property of matter itself, consistent with the reconception of the material inherent in the concept of the *durée réelle*. The *élan vital* is a tendency, with no divine predetermination, but which nonetheless continually pushes evolution in certain, key directions.

Bergson describes the action of the *élan vital* as a tendency that creates a ‘sheaf’ of divergence, bifurcating along a host of different and varied lines. His vision of cladistics, therefore, is of an original impetus exploding down lines of ancestry, like the fractal tendrils of an encroaching frost or the growing leaves of a giant fern. He is quite clear that there have been many ‘blind alleys’ and that there are survivors amongst the great panoply of living things of many different lines of divergent development, but also that there are two or three principal ‘highways,’ one of which, the vertebrates, happens to lead up all the way to ‘man’ (*CE*: 111). Between these highways, ‘run a crowd of minor paths in which ... deviations, arrests, and set-backs, are multiplied’ (*CE*: 116).

But one of the most significant aspects of the *élan vital*, for Bergson, for all its challenge to the mechanistic negativity of the failure of the unadapted - Darwin’s all-encompassing natural selection mechanism - is its absolute lack, on the other hand, of any teleology, in the manner of the finalists’ approach to evolution. For Bergson there is no ‘particular impulse towards social life’ (*CE*: 111) for example, and it has appeared in different forms, amongst the ants and bees on the one hand, as well as amongst humans, on the other, each form accentuating either equilibrium, in the first case, or continual change, in the second, whereas a combination of the two might have been the best of all worlds.

Bergson reminds us that, ‘The role of life is to insert some indetermination into matter. Indeterminate, i.e. unforeseeable, are the forms it creates in the course of its evolution. More and more indeterminate also, more and more free, is the activity to which these forms serve as the vehicle’ (CE: 140). The vegetable excels at the gathering and storing of energy, but sacrificed its own potential to move in order to achieve it. The animal preys upon the vegetable, unable to gather energy itself, but needing movement in order to gather its prey. Thus, the nervous system, in all its complexity, becomes ‘a veritable reservoir of indetermination. That the main energy of the vital impulse [*élan vital*] has been spent in creating apparatus of this kind is, we believe, what a glance over the organised world as a whole easily shows’ (CE: 140). Bergson is not ascribing any great overarching power to the *élan vital* here – indeed he is keen to point out this force ‘is always seeking to transcend itself and always remains inadequate to the work it would fain produce’ (CE: 140). The *élan vital* in evolution he likens to the effort of conscious freedom in the human self. We are all, always constrained by a myriad contingencies over which we have little if any control, and the moments of true freedom, when we are able to make truly impactful choices, are inevitably rare. So, too, with the *élan vital*: ‘Even in its most perfect works, though it seems to have triumphed over external resistances and also over its own, it is at the mercy of the materiality which it has had to assume’ (CE: 141).

Here, then, with consciousness linked to mobility, Bergson introduces another distinction – that, within consciousness, between instinct and intellect. Intelligence and instinct, like all things in the kernel of the sheaf, were originally all but indistinguishable, and still ‘retain something of their common origin. Neither is ever found in a pure state’ (CE: 149). But different, nonetheless, they do become, and the distinction between them is not, as one might surmise, the fact of tool use: all too often, as Bergson points out, the apes and elephants in particular, have been shown to be adept at the use of tools. It is in the

manufacture of tools, in invention, that the intellect distinguishes itself from instinct. For Bergson, this is what makes the human race above the rest: ‘we should say not *Homo sapiens*, but *Homo faber*. In short, intelligence, considered in what seems to be its original feature, is the faculty of manufacturing artificial objects, especially tools to make tools, and of indefinitely varying the manufacture’ (*CE*: 153). The ultimate manufacture, being, of course, thought alone, for while instinct and intelligence both involve knowledge, ‘this knowledge is rather acted and unconscious in the case of instinct, thought and conscious in the case of intelligence’ (*CE*: 160). Thus, intelligence is something concerned rather with form, and instinct rather with matter, and therefore, in the human, the one really cannot do without the other: ‘There are things that intelligence alone is able to seek, but which, by itself, it will never find. These things instinct alone could find; but it will never seek them’ (*CE*: 165).

What Bergson is getting at is a description of intelligence as an aspect of consciousness – instinct being another – that is focussed outward, upon matter, upon the inert, upon the fixed, because it is only thus that it can be of use to us. As we have seen when considering the ideas of the *durée réelle* and of matter and perception, the physical, objective reality that we perceive is in fact a property of our perception, fixing what is in fact mobile, apportioning the outlines of solidity to that which is in fact integral to the undivided flow of the universe of which we too are a part. In short, we perceive objects - and we perceive fixed objects - and we apportion to them, signs: the constituents of language. But these signs are not fixed any more than the objects, indeed language cannot be rooted to objects it refers to - the ‘referent’ - if it is able to be used internally, beyond instinct, for intellectual ideas. But because words are made initially for things, when they are used to designate ideas they treat them as things: fixed, solid, immobile. Because of this natural bent of intelligence to perceive fixed objects and treat ideas as of a similar ilk, we are ultimately at a disadvantage when it comes to

understanding what evolution is actually about. ‘Just as we separate in space, we fix in time. The intellect is not made to think evolution, in the proper sense of the word— that is to say, the continuity of a change that is pure mobility’ (*CE*: 179). Thus, in the end, life is something that the intellect is not designed to comprehend. Here, then, the *intuition philosophique* must be called upon, if we are to apprehend the true meaning of evolution.

Life, in summary, then, is consciousness itself, impacting upon matter, either sleepy - in plants - or wakeful – in moving organisms, and there either as instinct or as intelligence. Human life, in particular, is special because of the peculiar nature of intelligence. Intuition alone gets shrunk into instinct. Intellect, focused outward onto matter, has a potentially unbounded horizon, and can even turn back in on itself to free up the potential possibilities of the intuition which remains within. Here, Bergson reveals his belief - not by dint of any finalistic plan - in human exceptionalism: ‘Between [man] and the animals the difference is no longer one of degree, but of kind’ (*CE*: 200). Not only is consciousness, in other words, the ‘motive principle of evolution’, but among all the various mobile organisms, all the conscious beings, ‘man comes to occupy a privileged place’ (*CE*: 200). Manufacture, and invention, have indeed become key: the animal is focused entirely on those tasks necessary for its well-being, the human is focused on automating those tasks, in order to free its consciousness to contemplate other things.

We may suggest then, a final variation upon our table of Bergsonian distinctions:

Table 2.2 - LIFE

LIFE	conscious	movement	animal	relations, form	MAN	intuition intelligence
	insensible	fixity	vegetable	things, matter		instinct

3. WHITEHEAD'S CORE IDEAS

Introduction

For Hartshorne - one of Whitehead's most prolific interpreters - 'Whitehead matches and surpasses the introspective subtlety of Bergson, Croce, and William James, and embodies the living process of experience in his philosophical description' (Hartshorne 1978: 11).

Together, Whitehead's three books *The Concept of Nature* (CN 1920), *Science and the Modern World* (SMW 1925) and *Process and Reality* (PR 1929) comprise a more or less complete statement of his metaphysics. For the purposes of this dissertation, I shall restrict myself to these three works, with only minor mention of others of his many books and of his many interpreters. The scope of Whitehead's work is genuinely vast and all-encompassing, and so radical that he chooses to create and define a bewildering number of new terms by which to describe it. '(Once, when asked why he did not write more clearly, he replied, "Because I do not think more clearly")' (Hartshorne 1978: 9). This makes, often, for very difficult reading. I will try, therefore, to limit the number of new terms used here to the most essential and give definitions as I go.

To begin with, in the context of Whitehead's work, "Metaphysics" Hartshorne defines for us as 'the study of the necessary, eternal, completely universal aspects of reality' and "cosmology," the attempt, combining metaphysics and scientific knowledge, to discern the large, comparatively universal features of nature as now constituted' (Hartshorne 1978: 9).

The key concepts of Whitehead's cosmology and metaphysics that I wish to focus on are his (i) *concept of nature* - an attempt to conceive of nature in a non-bifurcated way as *events* rather than as *substance*, beyond what he describes as the fallacy of misplaced concreteness; this includes his (ii) *four-dimensional geometry* in which the process of

concrecence of Actual Occasions into Objective Data is described; and (iii) the *organic philosophy* that results from this process-relational ontology.

Concept of Nature - Process rather than Fixity

In his very accessible introduction to Alfred North Whitehead, *Process-Relational Philosophy*, C. Robert Mesle relates a sudden, gestalt realisation, that came to him in an, ‘Of course!’ moment standing by Lake Michigan, staring across the waves: *the future does not exist* (Mesle 2008: 4). Whitehead represents, then, for Mesle, ‘an effort to think clearly and deeply about the obvious truth that our world and our lives are dynamic, interrelated processes, and to challenge the apparently obvious, but fundamentally mistaken, idea that the world (including ourselves) is made of *things* that exist independently of such relationships’ (Mesle 2008: 8). Once we have grasped this shift in perspective, fixed, independent things all around us begin to blend into a web of multiple interrelationships that is constantly on the move, shifting, changing, becoming, at every moment poised to go in a range of potential directions, and the building blocks of reality, no longer fixed *things*, are recognised, on the contrary, as *events*.

It was, as Mesle points out, simply Whitehead’s misfortune, in the early years of the 20th century, to be ‘developing his profoundly new vision of the world just as Anglo-American philosophers were throwing out the metaphysical baby with the bathwater’ (Mesle 2008: 4). In his first book in this period, *The Concept of Nature* (1920), Whitehead acknowledged his debt to Bergson (*CN*: 54) and underlined the unity of a monistic conception of the world. As we shall see, below, Whitehead’s philosophy incorporates a duality, just as Bergson’s does, but, just as Bergson’s philosophy does, it resolves immediately into a monistic unity, although in a different way.

But Whitehead’s first duty is to attack the false duality of previous philosophical perspectives. What Whitehead protests against, in his work, ‘is the bifurcation of nature into

two systems of reality' (*CN*: 29). Both are real, but they are real in different senses. 'Thus,' he continues, 'there would be two natures, one is the conjecture, and the other is the dream.' The way in which we 'bifurcate nature into two divisions' creates a 'nature apprehended in awareness' and a 'nature which is the cause of awareness.' The former, 'apprehended in awareness' gives us '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 latter, 'which is the cause of awareness,' is the 'conjectured system of molecules and electrons which so effects the mind as to produce the awareness of apparent nature' (*CN*: 29-31). Whitehead sets himself the task of resisting and avoiding all such theories that make nature bifurcate in this way, to approach, as best as he is able, a concept of nature that is monistic, unified, and comprehensive.

As we have seen, Bergson argues that the idea of a homogeneous and measurable time is an artificial concept, formed by the intrusion of the idea of space into the realm of duration (*TFW*). In the *durée réelle*, he argues, our conscious states are basically qualitative, and cannot be adequately described or measured in terms of quantities, and quantities are understood only spatially, and qualities only durationally. Whitehead's approach is similar but subtly different. Rather than distinguishing between quantities and qualities, Whitehead addresses what Bergson described as 'concrete duration', by focussing upon the notion of the 'event' as a core unit of existence, in a 'structure of events' (*CN*: 52), but which contains both the physical and nonphysical elements we currently describe in separate ways, *as they unfold*. As he describes it, 'What sense-awareness delivers over for knowledge is nature through a period' of time (*CN*: 57). Whitehead speaks of 'a duration' as 'a concrete slab of nature limited by simultaneity which is an essential factor disclosed in sense-awareness' (*CN*: 53). This 'duration' is something that is both our subjective experience of an event: a non-physical consciousness of what is unfolding; *and* what the physico-chemical sciences would say about the materiality engaged in the event: the movement of molecules, dynamics of

forces, mass, volume and charge of the particles engaged in what is unfolding – the enactive perception (Noë 2006; Thompson 2007) of the concrete. The accent, in this notion of the ‘event’ and the ‘structure of events’ in which each single event flows, is upon movement: how all is continuously unfolding, changing, never fixed: reality is thus describable only in terms of ‘periods’ during which conscious and physical interactions and shifts occur. Hence the term, ‘process’ philosophy, used to describe Whitehead’s approach.

Four-dimensional geometry

This durational grasp of reality that is at once physical and nonphysical, at once the world as it unfolds and how it is experienced by us, Whitehead characterizes as a focus upon the ‘event’ – termed by him within a ‘four-dimensional geometry’ as ‘Actual Occasions’ or ‘Actual Entities’. Actual Occasions only exist as long as they become, i.e. they are to be conceived as a process, or, as an ‘event.’ Any ‘event’, in this sense, will thus comprise physical and chemical processes as well as personal subjective experience, and be part of a ‘structure of events’ that contain, are contained by, and overlap or interpenetrate it. One example Whitehead uses is that of Cleopatra’s Needle: an old piece of rock mounted on a plinth by a river (in this case The Thames, in central London, England), yet steeped in a myriad timelines of history, politics, cultural significance, tourist attraction, graffiti, and the ravages of different eras of pollutants. The Needle is not merely the old bit of north African rock – indeed ‘daily it has lost some molecules and gained others,’ (*CN*: 167) - nor solely any one of the many stories that course around it: it is all these things, and also only those which come to mind as I see it, sitting on the bus crossing the river, on a winter’s afternoon; and this experience of the Needle is an ‘event’ within a ‘structure of events’, a ‘concrete slab of nature’ that includes both the personal and the time it takes to unfold (*CN*: 53).

The Needle, then, indeed any ‘object,’ for Whitehead, all matter, in fact, is not ‘senseless, valueless, purposeless’ (*SMW*: 17). The physical, and conceptual (mental)

feelings, for Whitehead, always go together, forming two poles within every entity. The physical or conceptual may be of more or less significance in each Actual Occasion, but both are always there. It is their integration, different every time, which makes up what Whitehead calls ‘concrecence’ – the *process* by which an Actual Occasion, or ‘event’, comes to be, becomes, and passes. When the event is over, the Actual Occasion is ‘satisfied,’ or finished, and, ceasing to be an Actual Occasion any more, it becomes an Objective Datum: it is in the past, now, and can be studied as such with all the tools of the material sciences. When an Actual Occasion is ‘satisfied,’ then, it crosses the boundary between Becoming and Being. But once it is an Objective Datum, it is immediately available for the concrecence of new Actual Occasions. Thus, everything is related to everything, for each Actual Occasion must build up a relation, through concrecence, with all the Objective Data in its world. The succession of Actual Occasions makes up time, or the process of duration, as we know and experience it. This is Whitehead’s ‘process-relational’ view of reality.

Organic philosophy

For Whitehead, ‘Biology is the study of the larger organisms; whereas physics is the study of the smaller organisms’ (*SMW*: vi). Moreover - as will already be apparent - there is a clear element of panpsychism (which we will come to towards the end of the dissertation) in Whitehead’s refusal to restrict sentience to the higher mammals - his insistence, on the contrary, within his concept of ‘prehension’, that ‘every singular actuality’ as it takes part in the concrecence of new events ‘must be related to - in other words prehend - a world of antecedent actualities. In this regard, the actuality is a subject whose object is a world of antecedent subjects’ (Mays 1959: 11-12).

Thus, the signature uniqueness of Whitehead’s approach is that it manages to combine the substance-based theories of time with process-based theories of time (like Bergson’s

durée réelle) into one ongoing conception. On the ‘micro level’ of concrescence, there are processes, constant change, interrelation; on the ‘macro level’ of Objective Data, there are enduring objective entities describable and measurable in everyday and in scientific terms. Yet all of this is, in varying measure, sentient. Nowhere are there abstract divisions.

Whitehead’s philosophy, above all, then, represents clear thinking about the role of abstraction in our understanding of, and relationship with the world. For Whitehead, we are all too often guilty of imagining our own abstractions to be far more concrete than they actually are. The primary abstractions Whitehead focuses upon, of course, are the dualisms by which we bifurcate the world in our understanding: natural sciences *vs.* social sciences, objects *vs.* subjects, reason *vs.* experience, nature *vs.* culture, mind *vs.* body, agency *vs.* structure, man *vs.* woman, organic *vs.* inorganic, Being *vs.* Becoming. All these dualisms are abstractions, and our greatest mistake in trying to understand the universe is to mistake those abstractions for concrete facts. Entire social ills and tragedies are founded upon such fundamental mistakes, which Whitehead describes as the ‘Fallacy of Misplaced Concreteness’ (*SMW*: 58).

The clarity of Whitehead’s analysis here is eye-opening:

The advantage of confining your attention to a definite group of abstractions, is that you confine your thoughts to clear-cut definite things, with clear-cut definite relations. Accordingly, if you have a logical head, you can deduce a variety of conclusions respecting the relationships between these abstract entities. Furthermore, if the abstractions are well-founded, that is to say, if they do not abstract from everything that is important in experience, the scientific thought which confines itself to these abstractions will arrive at a variety of important truths relating to our experience of nature....

The disadvantage of exclusive attention to a group of abstractions, however well-founded, is that, by the nature of the case, you have abstracted from the remainder of things. In so far as the excluded things are important in your experience, your modes of thought are not fitted to deal with them. You cannot think without abstractions; accordingly, it is of the utmost importance to be vigilant in critically revising your modes of abstraction. It is here that philosophy finds its niche as essential to the healthy progress of society. It is the critic of abstractions. A civilization which cannot burst through its current abstractions is doomed to sterility after a very limited period of progress (*SMW*: 58-59).

Bursting through the abstractions of 19th century positivism, Whitehead's ontology reconfigures the meanings of 'object' and 'subject,' treating them differently to how we have become used to understanding them. Because for Whitehead all is process, and becoming has priority over being, 'subject and object are relative terms' (*AI*: 176). In other words, each actual entity only exists for as long as it is becoming. It is in this sense a 'subject'. When it has become, it 'perishes'. Of course, in 'perishing,' it does not somehow vanish from the universe. Rather, it becomes a potential item of data for the creation of new entities. In this sense, it is an 'object'. In this manner, the processual interrelated flow of the universe is not undifferentiated. The connectivity of the universe does not cancel out the distinctiveness of individual entities. Rather, each 'becoming' unfolds in its own distinctive manner, incorporating different elements from every other becoming. Every kaleidoscopic pattern of the possible is a unique one. It is, moreover, *how* it becomes that makes it not just unique but what it *is*. Whitehead thereby manages to combine both the differentiation of individual concrete things in the world with a fundamental interrelatedness and connectivity of them all, in the way that they come to be, the way that the universe unfolds.

Perhaps the most succinct summary of this 'organic philosophy', (from an essay by Peter Sjöstedt-H) would be that 'the error of dualism is to take mind and matter to be fundamentally distinct; the error of materialism is to fall for this first error then omit mind as fundamental; the error of idealism is also to fall for the first error then to omit matter as fundamental. The philosophy of organism seeks to resolve these issues by fusing the concepts of mind and matter, thereby creating an 'organic realism' as Whitehead also named his philosophy' (Sjöstedt-H 2016).

Scientific approach

Yet - perhaps mindful of how Bergson's approach had been labelled 'mystical' and 'irrational,' (by no less than his own pupil and collaborator, Bertrand Russell) and no doubt in keeping with his already highly accomplished background as a mathematician, Whitehead remained very close indeed to the methodologies and language of science - even, or despite, in his 'Final Interpretation' in *Process and Reality* where the section devoted to new - and sometimes 'radically different' definitions - of the meaning of 'God' has spawned a whole field of process theology (Mays 1959: 53).

As Mays (1959) points out, in his preface to *Process and Reality*, 'Whitehead puts forward what he considers to be the true method of philosophic construction - ... that it consists in framing the best scheme of ideas that we can, and unflinchingly exploring the interpretation of experience in terms of it.' The reason there is a familiar ring about this is that as a method, of course, it 'resembles that used by science, where from the particular observed data one frames the best possible theory and proceeds to see how it works out in practice by applying it to other facts' (Mays 1959: 29). In other words, for Whitehead, 'the constructive procedure whereby we attempt to formulate a general scheme of which the particular facts are instances, is a method owned in common by both metaphysics and science' (Mays 1959: 29).

In *Process and Reality*, confusingly with yet another new set of terms, yet broadly in keeping with the gist of earlier work, Whitehead sets out to elaborate a philosophy - which he terms 'speculative philosophy' - in which 'everything of which we are conscious, as enjoyed, perceived, willed, or thought, shall have the character of particular instance of the general scheme' (*PR*: 3). Unlike Bergson, then, Whitehead seems to wish to put forward a philosophic *system*, whole and coherent, and all-inclusive in its reach; a system, moreover, that is arguably an assimilation of philosophy by mathematical theory. But Whitehead's

philosophy is in fact more subtle than this. In his *Principia Mathematica*, penned with his former student, Bertrand Russell, this assimilative tendency is much clearer - stark, even - and Russell indeed took this tendency to its 'logical' conclusion, as did the Viennese logical positivists, with their verificationist approach to philosophy. For Whitehead the abstractions of mathematical theory remained, however internally coherent, abstractions to which the natural world only, perforce, approximated. As Mays describes it, 'He believed that the community of occasions is bound together by a logical framework which approximates to the sort of structure one investigates in mathematics. However, nature is not such an abstract system' (Mays 1959: 31).

In fact, Whitehead emphasizes that in our actual world the abstract mathematical scheme is given a content by the creative advance of nature. 'There are two sides to nature, as it were, antagonistic to one another, and yet each essential' as he puts it, in his earlier *Principles of Natural Knowledge* (*PNK* '26.1': 98). Thus, the metaphysical situation (the actual world) to which Whitehead's speculative philosophy applies is a dualism that resolves into a monism (just as Bergson's universe does, but in a different way). On the one hand, there is '(a) the logical framework of order,' and on the other '(b) the temporal process which actualizes it (or gives it factual content), transforming the abstract scheme into the spatio-temporal structure of events' (Mays 1959: 31-32). On the one hand, (b) development, creative advance, *process*, and on the other, (a) the permanence of things. Becoming, and Being, two sides of a coin.

Again, unlike Bergson, however, for Whitehead there is 'a systematic framework permeating all relevant fact' (*PR*: 327). Indeed, 'it is by reason of this disclosure of ultimate system that an intellectual comprehension of the physical universe is possible.' But we should never take our eye off the concomitant fact that whilst it is 'by reference to this framework [that] the variant, various, vagrant, evanescent details of the abundant world can

have their mutual relations exhibited by their correlation to the common terms of a universal system,' those details remain variant, various, approximations of the system (*PR*: 327). One is reminded of Bergson's notion of *tendency*, in which direction is given, but success never guaranteed.

Whitehead's 'speculative philosophy', then, albeit one he describes as being a 'coherent, logical and necessary system,' is more the systematic framework that the natural world 'interprets,' such that 'each element shall have the character of a particular instance of the general scheme' (*AI*: 250). This is different from a philosophy wholly assimilated by mathematical theory. This is where Whitehead's metaphysics truly lies - the general scheme, or systematic framework, applies to every cosmic epoch, albeit that in our own particular epoch the 'electro-magnetic occasions' etc are not metaphysically necessary - other epochs might have other types of order and characteristics. Thus 'the categories listed in *Process and Reality* Part 1, Chapter II, are empirical principles applicable to our particular cosmic epoch and in terms of which the 'Theory of Prehensions', or Whitehead's cosmological scheme, is to be elaborated' (Mays 1959: 34).

Philosophy's chief error, then, according to Whitehead, is 'overstatement.' There are two primary overstatements:

1. 'the fallacy of misplaced concreteness' - 'which consists in considering experience in terms of such notions as space, time, matter and mind, and then by supposing them to have an independent existence gives them a concreteness they do not possess' (Mays 1959: 45)
2. 'a false estimate of logical procedure in respect to certainty, and in respect to premises' - 'Philosophy has been haunted by the unfortunate notion that its method is dogmatically to indicate premises which are severally clear, distinct, and certain; and

to erect upon those premises a deductive system of thought' (*PR*: 10) - in contrast to Whitehead's own approach in which his premises are 'in no way self-evident, but have a purely hypothetical character. They are generalisations (or abstract concepts) based upon certain features discriminated by us in experience which are afterwards elaborated into such a system.' (Mays 1959: 46)

Also - although the idea is that the premises should be generally applicable, 'this universality of application remains, however, an ideal,' because, of course, there is no guarantee, logical or otherwise, that the premises upon which such a scheme is based are metaphysically necessary, i.e. that they will apply to all events. As Whitehead points out, 'owing to the limitation of our powers of observation our metaphysical notions have only an approximate character' (Mays 1959: 46).

Whitehead's approach to philosophy is therefore very like the scientific method - and perhaps reminiscent of Bergson's desire for continual development of philosophy. Whitehead asserts that whatever is found in 'practice' must 'find its place in philosophic theory' (*PR*: 17), and the scheme should be revised each time any variety of fact is found wherein the scheme does not apply. Clearly, no metaphysical system can hope entirely to satisfy all these pragmatic tests, and such a system will remain at best only an approximation to the general truths which are sought - i.e. put forward hypotheses, test them, improve them in the light of fresh evidence, and so on.

In the final analysis, then, 'The method of philosophical construction put forward by Whitehead resembles the hypothetico-deductive method used by the scientist and the mathematician... [but] ...Whitehead's approach comes closer to that of the mathematical physicist, where mathematics is treated as a tool in its application to natural phenomena,

rather than as an end in itself. Philosophic schemes, he tells us, must not only satisfy the demands of logical coherency - they must also agree with experience (Mays 1959: 52).'

Philosophical principles, for Whitehead, are therefore regarded by him not as eternal truths, but rather as approximations - as working hypotheses. In this there is an echo of Bergson's wish for philosophy to grow incrementally, through the careful work of many, yet fleshed out into a scheme and a geometry much more in keeping with the language of science.

4. CONSONANCES AND DISSONANCES

There are arguments made by some authors that Whitehead and Bergson are essentially ‘singing from the same hymn sheet’ and can be lumped together as the fathers of contemporary process studies. Supporters of this position include Paul Arthur Schilpp (Schilpp 1951) and many of the contributors to his 1941 edited volume in the *Library of Living Philosophers* series, including Northrop, for whom a Bergsonian influence ‘presented the basic concept and doctrine of Whitehead's entire scientific and philosophical outlook’ (Northrop 1951: 169), and Urban who wrote of Bergson as the man ‘from whom, he [Whitehead] admits, the organicist philosophy has got its main insights’ (Urban 1951: 304). It would certainly be going too far to suggest that Whitehead’s ‘entire scientific and philosophical outlook’ could be derived from Bergson’s. There are far too many disparities, in some cases on fundamental issues. Nor would it be correct to suggest that all of Whitehead’s ‘main insights’ are to be found in Bergson’s work: there are crucial differences of approach. It is not clear, either, that Whitehead ‘admits’ any such thing - at least not in the published work.

There are arguments made by other authors suggesting that in fact Whitehead’s position is fundamentally different from Bergson’s, to the extent that they should be considered very different philosophers indeed. Perhaps one of the clearest voices in this position is Victor Lowe, (1949) who takes Schilpp, Northrop and Urban to task in a *Journal of the History of Ideas* paper, insisting not only that the ‘direct evidence of Bergson's influence is slight’ (Lowe 1949: 270) but that, when Bergson’s position is summarised as ‘consisting of two Cartesian propositions, namely, the affirmation of a division between extended things and consciousness, and the proposition that consciousness is the more certainly known, and one Kantian proposition, to wit, that time is the essential characteristic of consciousness’ one’s

only proper reaction would be to ask, ‘Can anything less Whiteheadian than this be imagined?’ (Lowe 1949: 289). Certainly, if such an interpretation of Bergson’s position were correct, one might find Lowe’s complaint worthwhile. But Bergson’s monism, underlined by his critique of Cartesian positions (*MM*: 255), and especially of idealism (*MM*: 17), render his position far more nuanced than Lowe’s depiction. Both Bergson and Whitehead, moreover, in their (differing) definitions of both time and consciousness, have issues with some of the classic Kantian positions. For Bergson, his notion of one of the primary faculties of consciousness, *intuition philosophique*, is characterised specifically as the best approach to precisely the absolute kind of knowledge Kant had firmly regarded as impossible (*CM*: 151). For Whitehead, Kant’s critical philosophy is grounded upon a set of seventeenth century pre-suppositions which are ‘discarded’ in *Process in Reality* (*PR*: 50). As he says in his ‘Autobiographical Notes,’ in 1941, ‘by the time that I gained my fellowship in 1885 I nearly knew by heart parts of Kant’s *Critique of Pure Reason*. Now I have forgotten it, because I was early disenchanted’ (*AN*: 7).

It is my contention that both the similarities and the differences, above, are overplayed. There are, clearly, some fundamental areas upon which the two philosophers agree, and to deny this is short-sighted. The later philosopher, Whitehead, himself openly acknowledges this fact, in *Concept of Nature*, in *Process and Reality* and in *Science and the Modern World*. There are, nonetheless, also, some particular aspects of the approach of the two philosophers that do very pointedly diverge, and in any study of the work and influence of these two great thinkers these divergences should also be acknowledged. As Whitehead states in the preface to *Process and Reality*, whilst acknowledging that he is ‘greatly indebted to Bergson, William James and John Dewey’ his project in this book is expressly to ‘rescue their type of thought from the charge of anti-intellectualism, which rightly or wrongly has been associated with it’ (*PR*: xii).

Consciousness and becoming aware

For Isabella Stengers, in her masterful work on *Thinking with Whitehead*, this means that ‘the contrast between Whitehead and Bergson is thus rather obvious’ (Stengers 2011: 329). For Whitehead, consciousness - an activity at the ‘interstices’ - is far broader than it is for Bergson, for whom, in Stengers’ interpretation, consciousness is all about ‘becoming aware.’ Yet - as Whitehead acknowledges when suggesting his ‘rescue’ is a project even if the charge of anti-intellectualism is wrong - one can interpret Bergson’s own understanding of consciousness as also being far broader than just ‘becoming aware.’ For example, when discussing, as he does in *Creative Evolution*, the ‘consciousness’ of animals, Bergson’s understanding of consciousness is implicit in mobility, and thus present in the most rudimentary form of animal life. Although such consciousness comes in two forms – instinct and intellect – and animal life has access only to instinct, it nonetheless coheres around the notion of choice (*CE*: 122). Thus, for Bergson, too, consciousness, or ‘the interstices make themselves felt just as well without any “becoming aware”’ (Stengers 2011: 328).

Bergson’s understanding of consciousness is in fact, one might argue, equally as broad as that of Whitehead. A nervous system, for Bergson, is not an absolute requirement for consciousness. The most rudimentary animal forms lack much in the way of nerve centres just as they do of other more advanced and complex characteristics, yet, Bergson suggests, ‘it would be as absurd to refuse consciousness to an animal because it has no brain as to declare it incapable of nourishing itself because it has no stomach’ (*CE*: 122). It is not, therefore, for Bergson, the biological mechanisms of nerves and ganglia wherein consciousness resides, let alone, as Stengers’ seems to suggest, solely in ‘becoming aware’. For Bergson, ‘the humblest organism is conscious in proportion to its power to move freely,’ (*CE*: 123) and present, albeit asleep, even in the vegetable kingdom. For Bergson, in fact, life itself is

consciousness; and in 'life,' by the end of *Creative Evolution*, it is clear he means all of existence, including not only animal and vegetable, but mineral too. Bergson uses the word consciousness not only to refer to the human experience with which this word is most readily associated, then, and to which Stengers seems to limit him, but also to infer a much broader definition of mind. The French term, *la conscience*, comes from the Latin, *conscientia*, meaning 'with science,' i.e. to act, experience, reflect, etc whilst simultaneously possessing a knowledge of those acts, sensations, and reflections. This is not, therefore, to say that a 'rock is conscious' in the manner that a human being, or even a cat, is. It is to say that as an object, a rock possesses a singular inner experience of the world around it, in a manner consistent with it being a rock, rather than a cat, or a human being. All three are manifestations of the universal quality of mentality in the physical world, as it is envisioned by Bergson, just as, in Whitehead's terms, the rock in being 'subject' to the 'objects' around it, displays its own sentience of its context. Here, again, we see the panpsychism in both *oeuvres*, which we will come to in the next chapter.

Bergson and Whitehead on Time and Space

In the following passage from *Concept of Nature* we can see Whitehead acknowledging and underscoring the similarity of views between the two philosophers concerning the area upon which they most obviously concur - that of the importance of a consideration of *duration* as something distinct from a scientific measurement of time:

It is an exhibition of the process of nature that each duration happens and passes. The process of nature can also be termed the passage of nature. I definitely refrain at this stage from using the word 'time,' since the measurable time of science and of civilized life generally merely exhibits some aspects of the more fundamental fact of the passage of nature. I believe that in this doctrine I am in full accord with Bergson, though he uses 'time' for the fundamental fact which I call the 'passage of nature' (CN: 54).

In *Science and the Modern World* the flavour of this overlap - or consonance - of views, as being one which nonetheless includes more particular divergences - or dissonances - is then succinctly put by Whitehead himself, in the following passage about the notion of the 'instant':

this simple location of instantaneous material configurations is what Bergson has protested against, so far as it concerns time and so far as it is taken to be the fundamental fact of concrete nature. He calls it a distortion of nature due to the intellectual 'spatialisation' of things. I agree with Bergson in his protest: but I do not agree that such distortion is a vice necessary to the intellectual apprehension of nature. ... this spatialisation is the expression of more concrete facts under the guise of very abstract logical constructions. There is an error; but it is merely the accidental error of mistaking the abstract for the concrete. It is an example of what I will call the 'Fallacy of Misplaced Concreteness' (*SMW*: 50-51).

Here Bergson's understanding of intellection - that it is necessary, as a means by which we are able to render our experience of reality useful, and yet at the same time inherently distorting, because it looks backward at a dead past, and thus misses the creative unfolding of the uncertain present - is challenged by Whitehead. Whitehead himself adopts 'Bergson's admirable phraseology' when discussing the distinction between "sense-reception" [which] is "unspatialized" and sense-perception [which] is "spatialised" (*PR*: 114). But for Whitehead the spatialisation of time is part of the more general problem whereby we mistake the abstract for the concrete: it is not, in other words, necessary for our intellect to deceive itself in order to understand nature, it is, rather, a certain lack of intellectual humility concerning our own ideas of what reality is that obscures our better understanding of it. Thus, for Whitehead, the Bergsonian distinction between duration and space is not a duality with which he would concur: as he says, immediately after the earlier passage above from *Concept of Nature*: 'Also the passage of nature is exhibited equally in spatial transition as well as in temporal transition' (*CN*: 54).

Here we come to the nub, then, of what one might describe as the principal difference between Bergson and Whitehead: that for the former the universe understood on the model of consciousness is fundamentally qualitative and durational before it manifests itself as physicality, albeit that without physicality it does not exist. Bergson's universe is utterly infused with consciousness – because the universe endures - and consciousness, once admitted, perforce becomes the primary aspect of a universe that would otherwise simply run down the stairway of entropy - instantaneously. Consciousness acts to generate life, which runs up in the opposite direction, a gathering, ordering principle running counter to the determined collapse of the inert. Life, driven by the *élan vital*, the principle of ordering, is that universal consciousness, acting upon inert matter, becoming, at the last, through us (and whatever other such end-point beings there may be), self-aware. We are not nature's perfection, nor indeed the best possible outcome, let alone inevitable. But we are, for Bergson, that which the universe is ultimately for.

Yet for Whitehead time and space, life and matter, the inert and the conscious, all exist on an equal footing: there is no before and after, nor even, as such, a distinction between the two: time-space/space-time unfold as a oneness in the passage of nature, which is both at once. Bergson's classic positing of opposites, which he believes do not occur in reality, but which he describes to us so that we can understand how reality is made up of their mixture, become, in Whitehead's view, yet more abstractions upon which concreteness is misplaced. To suggest, as Bergson does, that 'life' is pre-eminent, somehow 'before' or 'ante' matter, driving it in the opposite direction, is a pretty description, and no more, for Whitehead. The reality is both-at-once, indivisible, co-terminous, co-existent, one.

Free will

Thus, for Hartshorne, 'Whitehead matches and surpasses the introspective subtlety of Bergson' (Hartshorne 1978: 11) in his combination of the substance-based and process-based

theories of time into one ongoing conception. On the ‘micro level’ of concrescence, there are processes, constant change, interrelation; on the ‘macro level’ of Objective Data, there are enduring objective entities describable and measurable in everyday and in scientific terms. Yet all of this is, in varying measure, both physical, and sentient. Nowhere are there abstract divisions. For Whitehead, significantly, ‘the order of dawning, clearly and distinctly, in consciousness, is not the order of metaphysical priority’ (*PR*: 162).

Urban, the philosopher in Schilpp’s book from 1941, who we quoted earlier, has, however, an interesting point. He says:

we can well understand why he should constantly want to say ‘both and,’ that the self is both subject and superject, that reality is both permanence and flux, that God is both the ground and the outcome of process. We can understand all this; and we can understand also why such a philosopher should seek to maintain a dual ideal of intelligibility, one derived from his first love, mathematical logic, and one derived from his later loves, to which, being human, nothing human is alien. But what it is difficult for me at least to understand is how they can be held together without giving the one or the other the primary position in metaphysical interpretation (Urban 1951: 327).

This, in the end, is what Bergson does, and what Whitehead refuses to do. The thesis of this dissertation, as we saw in the introduction, is that, whilst trying to bridge them, Bergson errs somewhat on the side of the subjective, and Whitehead somewhat on the side of the objective. There is probably nowhere more clearly than on this point where this thesis holds true: for Bergson the primary position is with consciousness - broadly interpreted. Whitehead, by contrast, seems to sit on the fence, preferring an abstract logical order almost Platonic in its perfection, which temporal process ‘interprets’ as it unfolds. Whitehead’s ‘realm of eternal objects,’ indeed, as Mays tells us, ‘makes his philosophy particularly tempting to a Platonist’ (Mays 1959: 74). Bergson’s approach, by contrast, lends itself far more closely to Deleuzian multiplicities, and the post-structuralist, Nietzschean inversion of Platonism that sees such a ‘realm of eternal objects’ as a means by which to satisfy a more

primary motivation to sort out – to *faire la difference* – between true and false images (Plato 1892; Deleuze 1983; Smith 2006). In plain terms, ‘the aim of Platonism is to deprive nature of the being that is immanent to it, to reduce nature to a pure appearance, and to judge it in relation to a moral Idea that transcends it’ (Smith 2006: 99). Is Whitehead’s ‘realm of eternal objects’ guilty of the same? Certainly, as Mays argues, it refers more to ‘an abstract logical structure’ (Mays 1959: 74) to manifest reality, than any kind of remodelled Platonic realism, but this structure bears more than passing resemblance ‘to the ramified theory of types, read in the direction of the highest to the zero type,’ (Mays 1959: 92) that appears in the *Principia Mathematica* Whitehead penned with Bertrand Russell. In short, the mathematician remains so strong, even in the later metaphysician, that one wonders if Whitehead is guilty of his own Fallacy of Misplaced Concreteness, when he deems the manifest world to be modelled upon his mathematical logical structure, ascribing metaphysical primacy neither to conscious perspective, nor to physical causalism, but to the inherent logical forms of these complex systemic structures.

Because of this, in the end, as Mays suggests, ‘Whitehead’s attempt to bridge the gap between matter and mind seems to have failed’ (Mays 1959: 234). While Bergson certainly believes there is a connection between brain and mental states, he denies that this implies either one can be reduced to the other. Free will, so key to Bergson’s *oeuvre*, has no place within the laws of classical physics that govern brain states, and even within the statistical indeterminacy of modern physics it remains controversial to suggest that free will has impact. Yet such a coherent logical structure as Whitehead seems to believe in relies upon the closed causality that renders classical physics intelligible. For Bergson, that there are such laws of nature that govern all ‘things,’ and in particular all action and reaction, would imply that the future is in fact contained in the present and implicit in the past: this would rob us of choice, in a universe determined from beginning to end. In the final analysis, then, perhaps the single

greatest disparity between the positions of Bergson and Whitehead is this: that for the former free will exists, and thus the universe must be modelled upon consciousness; and for the latter - despite his criticisms of 18th and 19th century mechanism - general physical laws nonetheless do determine everything, albeit according to the complex and supervenient logical structures of events.

5. A UNIFIED APPROACH

Attempting a combination of the ideas of Bergson and Whitehead is fraught with problems. I must begin this chapter, therefore, by stating what I am not trying to do. Firstly, as may have already become apparent to the reader over the course of the previous chapters, my own sympathies lie more with Bergson's approach, than with Whitehead's. I am not, therefore, going to be treating the two on an equal footing, in this chapter.

Secondly, as Bergson himself said on a number of occasions, he welcomed the idea that others would follow him and improve on his work. Bergson viewed his work as a collaborative research project between science and philosophy, with the common aim of understanding life. His evolutionism, and his philosophy in general, he said, 'will only be built up by the collective and progressive effort of many thinkers, of many observers also, completing, correcting and improving one another' (*CE*: xxiv). Arguably, this is indeed what Whitehead did, although his project was quite different in many respects and not - like, say, Jankélévitch (2015) - a deliberate attempt to move forward with Bergson's *oeuvre*. Whitehead, too, as we have seen, approached his philosophy in a way that hoped for further elaboration from others in the future - the mathematical and scientific methods by which he approached his metaphysics required that new evidence be reflected in new theory.

So, my own contribution is closer to that of Jankélévitch than of Whitehead: I am not trying to put forward a new and complete philosophical system, as Whitehead did. Nor, however, as Jankélévitch did, am I focussing on a particular aspect of Bergson's *oeuvre* - irreversibility - and making this the key idea of a new, and appreciative, approach. My own approach is to make suggestions for broadening, deepening, and improving Bergsonism, by making additions, comparisons, and minor corrections, to his *oeuvre*, drawn from other sources - in this case, from the *oeuvre* of Alfred North Whitehead. Again, this does not mean

that I will be offering a new philosophical system, based upon Bergson's. As one of the earliest commentators on his work, H. Wildon Carr, pronounced, in 1919, 'the philosophy of Bergson is not a system. It is not an account of the ultimate nature of the universe, claiming to be a complete representation in knowledge of all reality.' Ultimately, as Carr asserted, one of Bergson's 'most important conclusions is that the universe is not a completed system of reality, of which it is only our knowledge that is imperfect, but that the universe is itself becoming' (Carr 1919: 14). Indeed, as Whitehead himself later said, 'There is very little large-scale understanding, even among mathematicians. There are snippets of understanding, and there are snippets of connections between these snippets' (*MT*: 46) - words echoed by contemporary philosophers of science (Cartwright 2005).

My 'unified approach,' then, in this spirit, offers new snippets of connections between snippets of understanding. There are, then, ten points which I would like to make, in this spirit, where I think Bergson's *oeuvre* can be 'improved' as a result of reading Whitehead.

Time

Both philosophers are well known for their views on time, as we have seen, but there are important distinctions between them. Bergson's understanding of time, the *durée réelle*, can be strengthened by Whitehead's view that there are no 'things' but only 'events'. There is plenty of support for this in Bergson's own work, as well as in Whitehead. Bergson's universe, when he describes perception in *Matter and Memory*, is infinitely joined up and connected whereby each point of the universe implies every other in its connectedness. To perceive an object in its entirety is to perceive the entire universe! The 'things,' he argues, when dispensing with the arguments of Realism, that the realist clings to, are but snapshots of mobility: fixity is an intellectual concept, and is only ever relative in the real. His arguments for the reality of motion - beyond the simple steps of trajectory - all suggest that a universe

understood as ‘events’ rather than as ‘things’ would make sense. My first point, then, would be to assert that:

1. *The building blocks of reality are not ‘things’ but ‘events’*

Oppositions and Abstractions

Accepting this, however, has implications for the quantity/quality duality - and many others of Bergson’s deconstructive opposites. What it does is show them for what they are: useful abstractions upon which we should not fallaciously place too much concreteness:

2. *We must keep in mind that Bergson’s dualisms and oppositions are merely explanatory devices*

Accepting this, moreover, we should also acknowledge that Whitehead’s four-dimensional geometry for time, while a useful structure for understanding the ‘passage of nature’ as both personal experience *and* material reality, is itself nonetheless an abstraction which we should not place too much concreteness upon. The mathematician got a little carried away with this logical structure of the universe:

3. *We must keep in mind that Whitehead’s four-dimensional geometry is merely an explanatory device*

Intellect

Bergson’s quantitative, spatially focussed intellect and Whitehead’s ‘fallacy of misplaced concreteness’ are not really that far apart; the latter is in a sense a formulation of the former designed to save it from the accusation of anti-rationalism. Unfortunately, at the same time, it then (mistakenly) renders the universe rather too rational, after all. But Whitehead, in spite of this, embraces the personal in his overview. Rationalism - the view that regards our faculty of reason as of the highest order, over and above any emotive or sensory or other faculties,

and that through reason – and reason alone – we can come to know all truth, without necessarily, indeed, recourse to any evidence, is the opposite of Empiricism. Embracing the personal - and the experience of the observer at the root of all empiricism - requires that we acknowledge these other faculties as true sources of real knowledge, not as degraded irrelevant noise. Both philosophers recognised, then, in their own ways, and we should embrace the fact that:

4. *Our intellect is but one faculty of consciousness.*

The Dappled Universe

Bergson - Professor of Greek and Latin Philosophy before becoming Professor of Modern Philosophy - refused to lay out a complete philosophical system. This is perhaps reminiscent of the approach of the ‘father’ of philosophy, Socrates, who - according to his pupil, Plato - claimed he had no doctrine to teach, but only ever asked questions, happy if the outcome were merely to discover that one did not, after all, in fact know what one thought one did. This humility was arguably related to his assertion that the intellect - with which such philosophic systems are erected - is but one of many faculties of consciousness, and thus by definition cannot be relied upon for total knowledge. Thus, although we ‘cannot think without abstractions’ (*SMW*: 58-59), the abstractions that enable us to ‘arrive at a variety of important truths relating to our experience of nature....’ (*SMW*: 59) should continually be subject to scrutiny. Bergson’s faith in science, so long as it keeps its pronouncements to those parts of knowledge for which it is the proper means for gaining understanding, should perhaps be tempered somewhat, therefore, in keeping with Whitehead’s assertions concerning abstractions. As Nancy Cartwright has put it more recently, ‘The laws that describe this world are a patchwork, not a pyramid’ (Cartwright 2005: 1); some things line up; others don’t. So, we should be mindful that:

5. Science offers us snippets of understanding and snippets of connection between understandings

Significantly, however, we must go further. A universe that is founded upon events is one that is by nature on the move, and - as Bergson stressed, and Carr reminded us - not a finished article, but still in the process of being made. It's not just our understanding that is 'dappled', with some Laplacian demon able to see the true coherent structure our poor human faculties are insufficient to embrace: there isn't such a true coherent structure. It is not only that our intellect will only ever grasp 'snippets'; snippets is all there is. *Intuition philosophique* is required to grasp the wisdom humility may grant us, wherein we see that 'closure' must, by definition, only come at the end. The key thing to understand here, as Mesle put it, is that:

6. The future does not exist: the universe is unfinished and continually creating itself.

Space philosophy

It is perhaps in a way as an aside, here, but important for my next point, to acknowledge that both Bergson and Whitehead, in their own ways, were the first philosophers to embrace the new physics of the 20th century, not just relativity and quantum theory, but also the astrophysics of Hubble, which showed us, for the first time, how truly vast - and growing - the universe is.

Louis de Broglie, the quantum physicist who pushed Max Planks' insight into the wave/particle duality of photons further, to show how *all* sub-atomic particles exhibit the same duality, believed Bergson had valid arguments to make, and could be regarded as having intuited many of the discoveries of the later quantum physics. For de Broglie, it was no exaggeration to hold that in Bergson we find Heisenberg before Heisenberg, Bohr before Bohr. Speaking of Bergson's *Time and Free Will*, de Broglie says: 'this essay, its author's

doctor's thesis, dates from 1889 and consequently antedates by forty years the ideas of Niels Bohr and Werner Heisenberg on the physical interpretation of wave mechanics' (de Broglie 1969: 47).

Michael Epperson, in his recent book, *Quantum Mechanics and the Philosophy of Alfred North Whitehead* (2004), suggests that Whitehead's four dimensional geometry constitutes a fourth - and better - description of reality than the three competing views in quantum mechanics: (i) that reality is basically particulate, with wave-like properties, (ii) that reality is basically wave-like, with particulate properties, and (iii) that nature is not 'capable of fundamental characterisation at all' (Epperson 2004: ix). The fourth approach is to focus, of course, on *becoming*, rather than being, as Whitehead does in his philosophy of events, created at the same time that Einstein (i), Schrödinger (ii) and Bohr (iii) were creating their own views.

This embrace of an astrophysically vast universe interpreted through relativity and quantum mechanics, however, constitutes, of course, a profound challenge to any philosophy in which humanity is a centrepiece. Bergson's human exceptionalism, as laid out in *Creative Evolution*, however, is in keeping with this challenge. It is both anti-teleological - we are not an Aristotelian 'final cause' - and generalised. He says, it is 'probable that life goes on in other planets, in other solar systems also, under forms of which we have no idea, in physical conditions to which it seems to us, from the point of view of our own physiology, to be absolutely opposed....it probably chooses, in each solar system and on each planet... the fittest means' (CE: 269) by which to thrive. Self-aware life, for Bergson, then, may indeed exist at the end of some tendril of the diverging *élan originel* somewhere else - perhaps many elsewheres - in the universe, but we should be prepared for it to be VERY different from us -

perhaps so different that communication is nearly impossible.⁴ So, we should, as a point of philosophical principle, acknowledge that:

7. *We may not be alone*

Panpsychism

The key distinction, with which the last chapter concluded, between the two *oeuvres* - Bergson's and Whitehead's - is on the question of free will. For Bergson it exists, and choice helps to determine existence. For Whitehead, in the end, the formal logical structures must prevail, and offer little room for manoeuvre.

It is into this space, then, that I must introduce a theme that has been lurking in the background on a number of occasions, in this dissertation: panpsychism.

In the third and fourth chapters of *Creative Evolution* Bergson outlines the features of the universe he sees our consciousness inhabiting, and paints our individualities as but windows upon a universal consciousness through which matter is conjured and experienced. Although Bergson himself never uses the term, and leaves much unsaid in respect of it, it is my reading of his work (and I am not alone in this) that the universe he paints for us in this part of *Creative Evolution* is a panpsychic one – a universe on the model of consciousness.

Panpsychism has a far greater history in Western philosophy than might at first appear. The commonplace notions that mind is limited to humans (and perhaps 'higher animals'), and reducible to the physical substrate of the brain, are both contemporary assumptions that Bergson contested. These notions in fact imply something extraordinarily unique about the

⁴ Though it may be, as the Fermi paradox would suggest, that this planet is indeed the only one where a breakthrough into self-awareness, and what we might understand as 'civilization,' has taken place: the high probability that it should exist elsewhere in the universe would seem to imply - for Fermi - that we ought already to have had contact - so why haven't we? Where is everybody? It is equally possible that - as one group of researchers recently suggested (<http://www.fhi.ox.ac.uk>), the most likely solution of the Fermi paradox is that intelligent species never survive long enough to spread beyond their own planet.

nature of brains, amongst all the physical structures of the universe: why is it that brains, alone, of all things in the universe, are capable of supporting mental processes? Many thinkers over the centuries have insisted instead, that mind is not only and exclusively a property of brains, but can be ‘conceived as a general phenomenon of nature’ (Skrbina 2007: 2). Bergson, in putting forward his own version of this contention, stands upon the shoulders of many others. Panpsychism, for Skrbina, in his excellent review of the concept, ‘has been an accepted and respected view of the world’ for most of history (Skrbina 2007: 3).

For Skrbina, panpsychism as a concept, it may be proposed, has three essential characteristics: (i) Objects have experiences for themselves; that is, the mind-like quality is something internal to or inherent in the object. (ii) There is a sense in which this experience is singular; to the extent that a structure of matter and energy that we call an object is one thing, this oneness is reflected in a kind of unitary mental experience. (iii) An object is a particular configuration of mass/energy, and therefore any configuration or system of mass/energy should qualify in the same sense. Thus, a functional definition of panpsychism might be ‘All objects, or systems of objects, possess a singular inner experience of the world around them’ (Skrbina 2007: 16). This is certainly in keeping with both Bergson’s and Whitehead’s positions.

Bergson, as we saw in the last chapter, uses the word consciousness not only to refer to the human experience with which this word is most readily associated, but also to infer the above much broader definition of mind. Whitehead spoke of Objective Data being the ‘subject’ of those Objective Data around them, sentience being indistinguishable from matter.

But it is useful, here – with thanks to Skrbina - to point out also what panpsychism is *not*. Panpsychism is *not* animism: it is not a belief that everything in the universe has a soul or spirit. It is *not* hylozoism/panbiotism/panzoism: panpsychists do not suggest that everything is intrinsically alive; there is clearly a distinction between the animate and the

inanimate, between a cat and a rock. It is *not* pansensism: an object need not possess ‘senses’ in order to partake of the universal quality of mentality. It is *not* pantheism: panpsychists are not necessarily believers in God, let alone that God is identical with everything that exists. It is *not* panentheism, either: the universal quality of mentality is not described as God being present in everything. Finally, it is *perhaps close to* panexperientialism: as Skrbina says, ‘Whitehead and Hartshorne’ have suggested that ‘everything experiences,’ and this is perhaps a form of panpsychism ‘now very well articulated as process philosophy’ (Skrbina 2007: 19-21).

As these distinctions of panpsychism imply, there is a large body of philosophical work going back to the Greeks supporting aspects or variations of panpsychism. Skrbina argues, in fact, that in Plato, although his arguments never draw explicit panpsychic conclusions, they are nonetheless ‘consistent with a panpsychic worldview’ (Skrbina 2007: 36). He sees hylomorphism in Aristotlean pneuma, too. Skrbina in fact finds elements of panpsychism right through the history of Western philosophy, including Bruno, Spinoza, Locke and Newton, Leibniz and his monads, Kant, and so on, up to and including Bergson and beyond. ‘At times [Bergson] seemed to believe that mind or consciousness or life pervaded the universe and animated all matter, and yet he always stopped short of clearly articulating a full panpsychist or hylozoist position’ (Skrbina 2007: 159). That he did not explicitly use the term or argue directly for such a position, I would agree. However, I think it is clear, nonetheless, that Bergson’s thought is as ‘consistent with a panpsychic worldview’ as Skrbina suggests of Plato, and in some senses unintelligible without it. This, then, in light of how Whitehead and Hartshorne also depict a world in which ‘everything experiences,’ is perhaps one of the most important ‘modifications’ of Bergsonism I would like to suggest:

8. *Our universe is a panpsychic one, in which ‘everything experiences.’*

Even some contemporary analytical philosophical work is leaning in the direction of panpsychism, as evidenced, for example, by Strawson's reaction to dualism that thus, necessarily, entails some form of panpsychism (Strawson 2006). But Bergson's panpsychism is, indeed, unique; it is so, because his understanding of the universality of mind is so closely entwined with his appreciation of the mobility of that universe. Hence consciousness is closely bound up, in Bergson's thought, with time, and with the incessant motion of all existence: consciousness, in other words, is the 'motive principle of evolution' (*CE*: 200). The consciousness of animals is the same as ours, of course, with the same instinct as humans, just more of it, and with the same intelligence as humans, just less of it.

Indetermination

In a panpsychic universe, at levels of concentration of consciousness where action becomes possible, the core indetermination of the 'dappled' universe becomes apparent: it makes itself up as it goes along because there are so many elements of it making choices. There cannot be a 'logical structure' to which everything coheres when there is so much free will at play. So:

- 9. *Consciousness, particularly where it is found in higher concentrations, enables choice, which delegates the creation of the universe from supervenient laws or logical structures to its inhabitants.***

Apparent Order

The apparent order evident to our intellect (when we look back) and arising in the structures that Whitehead's mathematical mind devises, arises not just because our intellect finds in the undivided flow of energy in the universe the fixity by which it best understands reality - because such fixity is useful, and because we 'cannot think without abstractions' (*SMW*: 58-59) - but also because of the quantity of choices being made. Without, at this point in the dissertation, making a digression into network dynamics and complexity theory, I take the points of Prigogine and Stengers (1985), Goodwin (1994), and Kauffman (1995) that order

arises out of chaos when there are sufficiently vast numbers of independent actions and interactions taking place, albeit that this order is fragile and changeable. At the subatomic level, too, Heisenberg's uncertainty patterns emerge even where there is only one choice being made, as if there were many. The addition, from Bergson, is that it is not just due to the countless 'interactions' ongoing in the universe that order arises, but that a key reason for the 'chaos', and a key reason for the order that arises from it, is that countless independent *choices* are being made, guided by the tendencies of the *élan vital*. Thus, Whitehead's 'logical structures' may be seen as temporary order arising in the chaos, as a result of the number of choices being made.

10. The apparent order of the universe we find with our intellect is both a property of how the intellect observes, and of the order that arises from chaos as a result of the élan vital

Free will

By way of conclusion, then, having taken on board many of Whitehead's ideas to make modifications to those of Bergson's, stressed some points where they are in accord, and added a realisation arising from the combination of their ideas with complexity theory, I would like to suggest, as an outcome of this process of comparison and unification, that it is in the fundamental fact of *free will* in the very fabric of the universe that the core of existence and its unfolding is to be found. This is a universe not built upon (i) particles, (ii) waves, (iii) neither, or merely upon (iv) becoming. It is a universe - as Bergson asserted - built upon the model of consciousness, whereby choices are made and unfold.

This is in keeping with the notion that it is in 'events', in *becoming*, or in the *durée réelle*, that reality is truly to be found, rather than in things. As Bergson asserts, then, 'The role of life is to insert some indetermination into matter. Indeterminate, i.e. unforeseeable, are the forms it creates in the course of its evolution. More and more indeterminate also, more

and more free, is the activity to which these forms serve as the vehicle' (*CE*: 140). The fixed, independent things of classical physics blend thus - as Whitehead showed - into a web of multiple interrelationships that is constantly on the move, shifting, changing, becoming, at every moment poised to go in a range of potential directions. What we perceive, moreover, as objects, are not 'senseless, valueless, purposeless' (*SMW*: 17). The physical, and conceptual (mental) feelings always go together, forming two poles within every entity, and everything is related to everything, and partakes in the mentality of this panpsychic universe.

The *élan vital*, driving it, is like the effort of conscious freedom in the human self: always constrained by a myriad contingencies over which we have little if any control, the moments of true freedom, when we are able to make truly impactful choices, inevitably rare. Every kaleidoscopic pattern of the possible in this shifting and unfolding creation is a unique one. Whitehead managed to combine both the differentiation of individual concrete things in the world with a fundamental interrelatedness and connectivity of them all, in the way that they come to be, the way that the universe unfolds. But Whitehead's '(a) logical framework of order,' and the '(b) the temporal process which actualizes it' (Mays 1959: 31-32) requires Bergson's indetermination, or else there is only wriggle room for (b) within the constraints of (a). All that is needed, to avoid the trap of determinism, is the element of choice, which comes from Bergson.

Bergson thus is the braver and more radical philosopher, in respect of his support for *free will*, whereby the French philosopher's bridge between mind and matter is more successful than Whitehead's, and a picture of the universe that is ultimately more *intuitively* coherent, emerges. We are included in Whitehead's universe, but at its mercy. In Bergson's universe, something like us is in a sense the point of the universe, albeit we are far from a perfect outcome, and possibly not the only one. The future, moreover, does not exist, and we may - and do - take part in its creation.

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