

TWO

Whitehead and Process

Whereas physiological psychology assumes that experiences are the outcome of physiological events (physiology comes first), psychological physiology assumes that physiological events are the outcomes of experiences (psychology comes first).

George Wolf, 1981, p. 274

The question of experience is central to psychology, and yet hardly ever is it raised as such. The fact that we are organic, embodied beings seems to accord a primacy to the biological. It is simply commonsense to reason that experience must be derived from the very particular neurological, physiological and biochemical composition of our bodies. George Wolf's (1981) counter argument is striking because it seems so counter-intuitive. How can it be possible for psychology, for experience to come first? The very idea seems vaguely spiritual, mystical even, suggesting an immaterial consciousness which somehow governs the body. Wolf's argument makes no such claims. It proposes, drawing on the philosophy of Alfred North Whitehead, to see experience as neither divorced from reality nor considered as an epiphenomenal 'projection', but quite literally as the *becoming* of objective reality.

A.N. Whitehead was born in the UK in 1861 and died in the USA in 1947. He was a mathematician and physicist by training, and worked in these fields at the Universities of Cambridge and London. His early work included an alternative version of relativity theory and, with Bertrand Russell, the three volume *Principia Mathematica* (which appeared in the years 1910–1913), which built on the *Grundgesetze I* of Frege and revolutionized the foundations of mathematics (and provoked Gödel's famous theorem). His work has also influenced some prominent natural scientists (including the physicist David Bohm, the biologist Conrad Waddington, and the chemist Ilya Prigogine). His move to Harvard in 1924 was also a formal move into philosophy, and from this date until his death at the age of 86, he wrote a number of important works including *Science and the modern world* (1926), *Process and reality*

(1927–1928), *Adventures in ideas* (1933) and *Modes of thought* (1938). This corpus of philosophical work, after long neglect, has in recent years received serious attention from radical social theorists such as Donna Haraway (1991) and Isabelle Stengers (2002), and was a key influence on Giles Deleuze (cf. Deleuze and Parnet, 1987). In the ‘what is an event?’ chapter of the book on Leibniz, Deleuze describes Whitehead as ‘the successor’ or *diadoche*, and as the ‘last great Anglo-American philosopher before Wittgenstein’s disciples spread their misty confusion’ (1993, p. 76). In the preface to *Process and reality* Whitehead announces a large debt to Henri Bergson and to William James and John Dewey and describes one of his preoccupations as being to ‘rescue their type of thought from the charge of anti-intellectualism’ (1927, 28).

Whitehead has also long exerted a slow but steady influence within psychology, particularly, but not exclusively, at the theoretical and biological ends of the discipline. Perhaps the earliest example is Charles Hartshorne’s (1934) *The philosophy and psychology of sensation*, which develops the broadly Whiteheadian notion of an *affective continuum* which underlies and unifies otherwise distinct types of sensation (visual, auditory, etc.). A.H. Johnson’s (1945) *The psychology of Alfred North Whitehead* usefully summarises Whitehead’s discussions of psychological issues, and Susanne Langer’s work, beginning in the early 1960s, systematically develops a broadly Whiteheadian account of feeling which largely pre-empts the currently popular work of figures such as Damasio (e.g. Langer, 1988). Some of the implications of Whitehead’s thought for psychology are developed in the 2003 volume edited by Franz Riffert and Michel Weber.

We have chosen to encounter Whitehead in this chapter because he offers a far-reaching cosmology that, if critically adopted, has radical implications for how we might conceive the problem of foundations in psychology. His work has acquired renewed significance in recent years in a context where psychologists and social scientists concerned with the psychological dimension are once again coming to recognise the need to reflect deeply on their epistemological and ontological commitments. There is, for example, a perceived need for modes of thought that do not bifurcate nature into irreconcilable subjective and objective aspects. More generally, there is a need for modes of thought which embrace process, affirm creativity, foreground value, incorporate the affective dimension, and work with multiplicity and difference. Whitehead provides some rigorous insights of relevance to each of these issues.

In short, Whiteheadian philosophy offers a relational process ontology that promises a profound version of constructivism which does not reduce the universe to ‘discourse’ or ‘subjective meaning’, and a deepened empiricism which does not reduce nature to meaningless materiality (for further discussion of ‘deep empiricism’ see Stenner, 2008). There are two core principles of this ontology which correspond to the radicalisation of space and time that coalesced in mathematics and physics in the early twentieth century. First, things (whether physical, biological, psychological or cultural) are *definable* as their

relevance to other things and in terms of the way other things are relevant to them. Things, in other words, have *relational essences*. Secondly, things do not exist independently of time but are *constituted* by the history of their specific and situated encounters (their *process*). Every actual thing is ‘something by reason of its activity’ (Whitehead, 1978/1985, p. 26). For this reason we write of a *relational process* approach.

The Bifurcation of Nature

When we ask whether experience or physiology comes first we are already dividing nature up along distinctly modern lines. Whitehead characterises this division in the following way:

The two great preoccupations of modern philosophy now lie clearly before us. The study of mind divides into psychology, or the study of mental functionings as considered in themselves and in their mutual relations, and into epistemology, or the theory of the knowledge of a common objective world. In other words, there is the study of the cogitations, *quâ* passions of the mind, and their study *quâ* leading to an inspection (*intuition*) of an objective world. This is a very uneasy division, giving rise to a host of perplexities whose consideration has occupied the intervening centuries. (Whitehead, 1926/1985, p. 182)

The two great preoccupations of modern philosophy are highly *subjective* in nature. This means that they concern the *subject* as recipient and organiser of experience. This tinge of subjectivism in fact characterises many aspects of ‘modernity’. In the sphere of art, for instance, one sees from the Renaissance onwards a decisive trend towards concern with the subjectivity of the subject matter, artist and audience alike. In the sphere of law, to give a second example, the concept of legal right was connected during antiquity and the middle ages to the objectivity of a given social order. Rights followed from objective membership of specific social groups and were not attached to individuals as such. They concerned the extensive coordination of the groups that made up the entire social structure. The transition from the middle ages to modernity, however, brought with it a concept of *subjective rights* ‘that have legal quality, because they are due to a subject and therefore need no further foundation’ (Luhmann, 1981, p. 45, see also Verschraegen, 2002; Stenner, 2004). In the sphere of politics, one sees the gradual growth of forms of political legitimation based upon the subjective happiness or wellbeing of citizens (or at least a rhetoric to this effect) rather than a divinely inspired objective order. Descartes begins modern philosophy with the gesture of a *subject receiving experience*. With respect to religion, to give a final example, the protestant reformation emphasised the individual experiences of believers and made legitimacy dependent upon such experience. As Whitehead puts it: ‘Luther asked, “How am I justified”; modern philosophers have asked, “How do I have knowledge?”’ (1926/1985, p. 174).

In sum, whether in law, art, politics, religion or philosophy, one sees a modern preoccupation with the individual subject of experience gradually taking over from a prior concern with 'the total drama of all reality' (Whitehead, [1926] 1985, p. 174). The modern period cannot be adequately comprehended without recognition of the seemingly infinite value it accords, in such instances, to the individual human psyche. The *psychological*, we might say, acquires an increasingly profound *social life* in the law, politics, art, religion and philosophy of the modern period: it acquires decisive importance in the practical realities of social organisation and communication. But 'the psychological' is not yet 'Psychology', understood as a specific scientific discipline. The emergence of that discipline was, however, intimately and inevitably related to its newly extensive and intensive 'social life' (Danziger, 1990; Richards, 1996; Rose, 1996; Stenner, 2003).

But there is, of course, another side to this story. The same geniuses who secured the bases of modern philosophy also established the principles of modern science. The 'flip-side' to the growing modern subjectivism was the stark objectivism of the forms of scientific materialism that came to dominate as the true understanding of the foundational nature of the universe. Figures such as Descartes and Newton lent an authoritative seal of approval to a commonsense doctrine which 'even today is the common doctrine of ordinary life because in some sense it is true' (Whitehead, 1934: 17). The basic assumptions of this doctrine are rarely explicitly posed. Rather, they are unconsciously presupposed or 'taken-for-granted'. 'Such assumptions appear so obvious that people do not know what they are assuming because no other way of putting things has ever occurred to them' (1926/1985, p. 61). Whitehead summarises the doctrine as follows:

There are bits of matter, enduring self-identically in space which is otherwise empty. Each bit of matter occupies a definite limited region. Each such particle of matter has its own private qualifications – such as its shape, its motion, its mass, its colour, its scent. Some of these qualifications change, others are persistent. The essential relationship between bits of matter is purely spatial. Space itself is eternally unchanging, always including in itself this capacity for the relationship of bits of matter. Geometry is the science which investigates this spatial capacity for imposing relationship upon matter. Locomotion of matter involves change in spatial relationship ... Matter involves nothing more than spatiality, and the passive support of qualifications. (Whitehead, 1934, p. 18)

According to the doctrine of scientific materialism the ultimate and fundamental reality is a 'succession of instantaneous configurations of matter' (Whitehead, 1926/1985, p. 63). The foundational assumption is that nature is ultimately composed of brute stuff, matter or material, and the laws that govern that material. That is to say, it is composed of that which has the property of *simple location*: it belongs to a specifiable point in time and a specifiable point in space.

This doctrine, of course, was (and still is) in a process of continual evolution and refinement. Already in the seventeenth century, the transmission theories for light and sound dealt a significant blow to the fine detail of the taken-for-granted foundational doctrine outlined by Whitehead in the quotation above. That is to say, these theories challenged the idea that each bit of matter has its 'own private qualifications – such as its shape, its motion, its mass, its colour, its scent'. This challenge directly prompted the famous seventeenth-century distinction between primary and secondary qualities. This distinction served to separate off so-called 'secondary' qualities such as colour, tone and scent from the 'primary' qualities of mass and spatial relation. Secondary qualifications, it was argued, are not in fact part of nature itself but are instead merely mental reactions on the part of the observer. Sensations such as the redness and scent of a rose came to be conceived through this distinction as projections of the subjective mind which cloth external bodies which in nature have no such qualities. Secondary qualities were thus conceived as the offspring of mind and have nothing to do with real, fundamental reality. Nature itself is confined to mere bits of matter qualified only by mass and spatial relations.

This notable modification to the commonsense notion of fundamental reality described above thus did not resolve the distinction between observing subject and observed object but rather served to intensify and re-entrench it. It deepened what Whitehead calls the 'bifurcation of nature' into mind and matter in which the latter is cast as the real, underlying foundation. Questions of value, of creativity, of purpose and of feeling were quickly assigned to the 'mind' side of the dichotomy, leaving the matter of nature to appear as 'a dull affair, soundless, scentless, colourless; merely the hurrying of material, endlessly, meaninglessly.' (*op cit*, p. 69).

To briefly recap: on the one hand we have in the modern period a new social and practical importance conferred upon the *subject* of experience (and hence a valorisation of the perceiving, suffering and reasoning mind); on the other hand we have a profoundly influential account of the true nature of reality as *matter*: simple and meaningless location in time and space. This, as Whitehead points out, is a very uneasy division. Issues of aim, value, motive and purpose which are fundamental to social organisation and coordination (and are hence unlikely to disappear from the practical realities of projects such as law, politics, art and religion) are excluded from the category of nature and granted an ethereal existence as disconnected ghostly projections. In this context, it becomes the height of anthropomorphism to imagine that animals might have feelings, aims or intentions. The unease that this bifurcation generates can be thought of as a kind of affective motive force underlying subsequent intellectual activity. That is to say, the debates that it has given rise to ever since can be thought of as efforts at temporary *settlements* (or *unsettlements*) of this unease. There were bold attempts either to put mind into matter (as with materialist monism) or to put matter into mind (as in Bishop Berkeley's famous idealist monism), for

instance. Dualism, by contrast, is a settlement that accords equal value to the subject and the object as distinctive realms. This is not merely an 'intellectual' issue, however, but also a practical social matter of the coordination of efforts. Hence, in specifying the statutes of the Royal Society in 1663, Thomas Hooke presented its mission as 'to improve the knowledge of naturall things, and all useful Arts, Manufactures, Mechanick practises, Engynes and Inventions by Experiments'. In so doing, however, he added that this will not involve 'medling with Divinity, Metaphysics, Moralls, Politicks, Grammar, Rhotoricks or Logick' (Lyons, 1968).

The dualistic 'management' of the 'unease' thus became inscribed within influential institutions. The intellectual settlement thus found its way into more stable and enduring forms of practical social reality. Whitehead, for example, notes the 'astounding efficiency' of scientific materialism 'as a system of concepts for the organisation of scientific research. In this respect, it is fully worthy of the genius of the century which produced it. It has held its own as the guiding principle of scientific studies ever since. It is still reigning. Every university in the world organises itself in accordance with it. No alternative system of organising the pursuit of scientific truth has been suggested. It is not only reigning, but it is without a rival' (*op cit*, p. 69).

When Whitehead writes of the organisation of scientific research within the institutional form of the university he is talking of the revitalisation of the university from the late eighteenth century onwards. For about two centuries prior to this point, universities had become rather moribund institutions (Wallerstein et al. 1996, p. 6). Their intimate association with the business of theology during a long period of vicious religious strife had ensured their declining relevance to the power brokers of the new nation states as locations for the creation of knowledge. Meanwhile, what would come to be called the 'natural sciences' had set up their own institutional forms (such as the Royal Society and the various Academies) outside of the university, and could make plausible claims of socially potent results. In the nineteenth century, the universities – particularly those in the UK, France, Germany and the USA – were revitalised and transformed. This transformation included institutional specialisation into the pattern of modern disciplines and increased levels of professionalisation of knowledge production.

In the early stages of this process, according to Wallerstein et al. (1996, p. 8) it was historians, classicists, scholars of national literatures and others from the arts and humanities who put the main effort into gaining state support for this revitalisation. In so doing, however, they 'pulled the natural scientists into the burgeoning university structures, thereby profiting from the positive profile of the natural scientists'. In this sense, Whitehead's bifurcated nature found institutional expression in what C.P. Snow (1959/2003) would later call the 'two cultures' (arts/humanities and natural science) of the education system. This, however, was only the beginning. The end of the eighteenth century was

not just the beginning of a new phase for the university, it was the age of the political revolution (notably the American and the French revolutions) and the industrial revolution, and their combination entailed social transformation on a vast scale. Such social, political, economic and technological change, many argued, called out for systematic study, organisation, planning and rationalisation. There was a perceived requirement for an understanding of the general laws of the social world that would permit active intervention in the shaping and steering of social systems. Indeed, this very perception was widely seen to be part of what distinguished the modern period from its unenlightened past and from its unenlightened global contemporaries.

The birth of the social sciences as institutionalised scientific disciplines in the nineteenth-century university was very much viewed as part of the triumph of science over the 'speculations' of philosophy, not to mention theology. These new social sciences thus constituted a 'third' culture distinct from the natural sciences (insofar as they took social processes as their subject matter) and from the arts and humanities (insofar as they modelled themselves on natural scientific practice). Early influential arguments for modelling such new sciences upon the successes of Newtonian astronomy were made by Auguste Comte in France and John Stuart Mill in the UK. Arguably, it was the adoption of a 'positivistic' doctrine of science that enabled a 'fudging' of the material status of social scientific objects. For positivists, a scientific law is nothing more than a *description*: it is an observed persistence of pattern throughout a series of comparative observations. This effectively eliminated the need for metaphysical statements, and hence a materialist ontology could still be vaguely presupposed, but did not need to enter directly into the process of legitimating scientific practice. So long as there are distinct 'observables' whose regularities can be described, one need not concern oneself with broader questions about where these observables come from, why they exist or where they are going. Newton's law of gravitation proved exemplary in this respect, since the statement that any two particles of matter attract each other in direct proportion to the product of their mass and in inverse proportion to the square of their distance merely expresses observed correlations between the observed facts of mass and mutual spatial relations (this is why Newton insisted that he was neither speculating nor explaining, but observing and describing). Although the social sciences have never even approximated the precision of this law, they have been perfectly able to accumulate observations (e.g. population statistics) and to correlate them. The perceived social requirement for such knowledge, its symbolic association with the progress of 'the modern', and its promissory claim to youthful status were more than sufficient ingredients to distract from ontological quibbles and to persuade most people to turn a blind eye to any lack of precision. In addition, much as the quantitative/qualitative distinction functions today, since there was an 'ideographic' alternative waiting where 'nomothetic' approaches failed, social scientists had the option of converting

the failures of one scientific mode into the successes of another. According to Wallerstein et al., between 1850 and 1914 multiple social science disciplines were proposed and tested (notably in France, Germany, the UK and the USA), resulting in the consensual organisation of at least five social sciences: history, economics, sociology, political science and anthropology.

Scientific materialism and the foundational paradox of psychological science

The discipline of psychology acquired its institutional niche as an experimental science in the modern university late in the nineteenth century. Like its siblings in the social sciences, it emerged for the most part from out of faculties of philosophy. Compared to the social sciences, however, it was more difficult for psychology to avoid the 'unease' of the inherited settlement of a mind/nature bifurcation. In fact, psychology was caught in something of a paradoxical double-bind with respect to this bifurcation. As we discussed above, scientific reasoning since the seventeenth century had been 'completely dominated by the presupposition that mental functionings are not properly part of nature' (Whitehead, 1938/1966, p. 156). The experience of colour or of the scent of a rose were considered as subjective *additions* to nature: they have no objective existence since they lack the materiality that had come to define the objective reality of nature. Thanks to the successes of natural science, the 'psychological' had become identified with an illusory 'projective' content whose removal is precisely the condition of possibility for genuine scientific knowledge.

Psychology could thus be perceived not just as lacking a real scientific subject matter, but as *being* the 'lack' whose exclusion constitutes the unity of scientific truth (Stenner, 2007). We will refer to this as the *foundational paradox* of psychology. If what was decisive about science was its ability to go 'outside' the mind, then a science *of* the mind is, if we accept the materialistic definition, an *anti-science*. That is to say, in a gesture of *foundation by exclusion*, modern natural science had founded itself upon the exclusion of 'first causes', 'final' or 'teleological causes', 'ends', 'aims', 'purposes', 'subjectivity' and so forth as a matter of methodological course. It was this exclusion that had enabled natural processes to be approached as a realm of purely public, external, objective facts. Auguste Comte (1903, p. 21) called for a mimicking of this gesture on the part of the social sciences when he stated that 'our researches ... in every branch of knowledge, if they are to be positive, must be confined to the study of real facts without seeking to know their first causes or final purpose'. But even Comte hesitated at the prospect of a scientific psychology since, as he himself had put it, 'the eye cannot look at itself'.

Psychology hence came to be associated less with the social sciences than with medicine and biology, and, since then, one has been more likely to find psychology departments in faculties of natural science than social science. Since its inception, the discipline of psychology has struggled in various ways

with its foundational paradox. Indeed, this paradox might be viewed as the motivating force for the history of perpetual revolutions and transformations that psychology has gone through in its career as a science. Often, for example, efforts were made to *identify* its subject matter with material biological processes. Earlier in the nineteenth century, for example, forerunners of modern experimental psychology had offered new physiological definitions of 'the emotions' (Dixon, 2004). This trajectory was greatly enabled by growing knowledge of the central nervous system and by the increasing interest in Darwinian evolutionary theory, which was a great influence on Galton and the subsequent British psychometric tradition, and on North American pragmatism. Others, by contrast, founded psychology in an attempt to correlate objective stimuli with subjective experiences (as with the tradition of psychophysics that influenced German psychology). Others still carved out a space for psychology as a branch of medicine (as in the French tradition of clinical experimentation with 'hysterics' and 'somnambulists' inaugurated by figures such as Binet). Despite important forays into the social sciences (especially by founding fathers such as Wilhelm Wundt), psychologists increasingly sought their legitimacy in moves 'beyond' social science and into natural science and medicine. Its history since then has been a story of constant unease prompted by its grounding paradox as an anti-science, which it has never squarely faced up to. The paradox, when it is confronted, results in paralysis – or an inability to 'go on'. The ability of the discipline to go on is then proportional to its ability to evade its paradox, or to find ways around it that keep it (however temporarily) 'out of sight'.

This 'unease', as we have suggested, is borne witness to by the multiplicity at the very origin of scientific psychology. Some, like Wundt in Germany, attempted to base a science upon the subjective stone that the builders of objective science had discarded, and strove to use systematic introspection to discover the laws of *psychic causality* which might complement the physical causality of the physical sciences. As Danziger (1990) discusses, this resulted in a research scenario in which the research participant or 'subject' was granted considerably more power and status than the researcher. The paradox was grappled with on another plane by the French clinical tradition (with which Freud was in contact), since here one was dealing for the most part with conditions excluded by the medical system due precisely to the absence of a specifiable organic and hence material cause. Others, like Galton in the UK, attempted to base psychological science on the statistical analysis of aggregate data sets of various measures of *performance*. In this way, the problem of gaining access to 'objective' data was thus 'got around' via the generation of notions of comparative performance on standardised scales (which were typically then attributed to biological functioning). As Danziger (1990) discusses in some detail, there were thus at least three different versions of scientific psychology at the end of the nineteenth century, each with a rather distinct idea of what the psychological might be, and how

it might be squared with the natural scientific requirement for a materially 'real' subject matter. All of these influences fed into North American psychology, which – due to a clearly perceived social need for the assessment and social engineering of human behaviour – quickly became the most powerful force (particularly after the devastation of Europe during the second world war).

It should be no surprise, therefore, that the history of psychology has been pervaded by almost perpetual internal and external criticism of its foundations. That is to say, it has been pervaded by criticism of the very basis upon which it projects itself as a scientific project. North American founding father William James (James, 1926, p. 393–394), for example, referred retrospectively to his own *Principles of Psychology* as a 'loathsome, distended, tumefied, bloated, dropsical mass, testifying ... that there is no such thing as a *science* of psychology'. Likewise, reflecting on the development of the discipline, John Dewey wrote to a friend that 'Psychology got so frightfully off in trying to be scientific (Thorndike et al) I quit – it was a mistake'. Whilst James and Dewey appear to express despair and resignation, most of the formal critique has been what might be called 're-foundational' critique, since the critique is undertaken in the name of the effort to establish more adequate scientific foundations (Stenner, 2007a).

The Thorndike mentioned by Dewey, for example, was a key figure in the 'revolution' through which a new foundation for psychology was articulated around the themes of learning and behaviour. This entailed a critique of 'introspection' (associated with the Wundtian school and its offshoots) and the suggestion of a new basic category for scientific observation ('behaviour' and its contingencies). This shift enabled psychologists to temporarily 'get around' their foundational paradox, since behaviour has the virtue of appearing to be publicly observable. A science of behaviour, however, is clearly a very different science than a science of psychical causation (made observable via the intermediary of introspection), or, for that matter, a science of the distribution of 'traits' in a population (made observable via the outcomes of various tests). Indeed, for some the label 'behavioural science' was preferred over 'psychology'. Another example of re-foundationalist critique is provided by the so-called 'cognitive revolution' which, emboldened by the metaphor of the digital computer as a foundational construct, critiqued the anti-mentalistic tendencies of behaviourism and set about studying the operations hypothesised to mediate perceptual input and behavioural output. Here again, there was a tendency to ditch the title 'psychology', this time for the more prestigious sounding 'cognitive science'. More recently still, thanks to technological developments that permit real-time access to brain functioning, neuroscientists have begun to critique the ontological basis of cognitive approaches and have offered re-foundational arguments for the primacy of their own key terms and metaphors.

Rethinking Foundations

'Re-foundationalist' calls for new and more solid foundations for psychology thus appear to have been a permanent feature of the discipline. It has suffered, it could be argued, from a 'metaphysical compulsion' to seek out stable foundations that might restore a long-lost sense of certitude to the discipline. But what does it mean to talk about the foundations of something like psychology? According to the Shorter Oxford English Dictionary (1978), a foundation is 'the solid ground, basis or principle, on which anything ... is founded'. It is 'that upon which any structure is built up'. Or, once again, the 'establishing of an institution, together with provision for its perpetual maintenance.' In talking of the foundations of psychology, then, we are talking about the grounds and principles upon which the discipline, as an institution of sorts, is based, and we are talking about the grounds and principles which provide for its perpetual maintenance. This emphasis on perpetual maintenance is important. Good foundations are important since they permit whatever is founded upon them to continue its existence in time: to *endure*. Perpetual in this context does not need to imply existence for eternity. It means, to use an English word that became extinct in the nineteenth century, that the entity or being is *perpetuable*. Namely, that it can perpetuate itself in time and therefore, unlike the word 'perpetuable', preserve itself from oblivion and extinction. A foundation is thus a beginning or inauguration which permits the endurance of whatever form is begun.

The metaphor of foundations, however, lures us towards the fallacy of misplaced concreteness. It lures us into adopting highly spatial and material metaphors: a solid platform of concrete that can support a large structure over many years. For sure, such solid matters are not irrelevant to the foundation of the discipline of psychology. Wundt is credited with establishing scientific psychology in large part because he was able to acquire physical laboratory space in the built environment of Leipzig University. Nevertheless, it is clear that the discipline of psychology is more than a set of buildings on a set of university campuses. It is, one might argue, the specific and distinct set of thoughts, acts and communications that haunt', as it were, that material architecture. It is a distinct yet evolving set of thoughts, acts and communications that circulate in an enduringly recognisable manner. Not only does psychology haunt architecture, we might also say that it haunts the physical bodies, the brains, for example, of those psychologists who carry it on through time, passing it from one year to the next and from one generation to another. These 'material' bodies are not the foundation of psychology, however. They are conditions of its possibility – it could not exist without them – but they do not establish it or provide for its perpetual maintenance. The same buildings and the same human bodies could just as well form a department of chemistry, for instance. They are essential aspects of its environment, we might say, but they are not *it*.

We need ways of thinking about foundations that shift us away from the commonsense metaphor of a truly-real-because-independently-substantial material base and a psychic or discursive superstructure located spatially above this base. This metaphor lures us into thinking of endurance as if it were some kind of fight that concrete spatiality might win against time. The 'perpetuability' of a concrete slab (i.e. its ability to endure in time) appears to most of us to be thanks to its static and robust material qualities. Time does not seem to be 'internally' relevant to its material character. The slab endures because it resists movement and time. If, however, we were to take a simple spinning top as our image of endurance we get a rather different and perhaps more interesting picture. A spinning top in motion achieves a degree of temporary stability precisely through the constant spinning motion of rotation. It stays the same only insofar as it keeps moving. Time appears to us to be internally relevant to this mode of endurance. A spinning top, however, clearly requires some occasional input from a child to keep it spinning. This does not apply to a third image of endurance that is supplied by a living organism. Human-made artefacts and machines are allopoietic in that they are produced and maintained by something else – i.e. people, and not by themselves. *Autopoiesis*, on the other hand, literally means 'self-production'. It is a term that was coined by the Chilean biologists Maturana and Varela (1975). It names the way in which self-referential systems reproduce themselves from out of their own elements. A cell, for instance, can be seen as a complex production system. As Zeleny (1981) discusses, the macromolecular population of a cell is renewed about 10^4 times during its lifetime. Through this staggering turnover of matter the cell maintains its unity as a cell. That is to say, although it produces lots of components, more fundamentally, *it produces itself*. We will return to the idea of self-production throughout this book.

In a way that can be at least compared to an organism, a discipline of psychology must continuously maintain its unity as a form of discourse and practice. It is a network of communications – teachings, research practices, journal articles, and so on – that recursively produces itself. To understand its mode of endurance we must move away from spatial metaphors of stacked substances and towards metaphors of ongoing processes of self-creation. We need to understand that the foundations of psychology are not anything material. Rather, there is a sense in which the discipline of psychology grounds itself in the abstract conceptions of the psychological that its practices make available. Its foundations – like those of a living cell – are thoroughly self-referential. Thanks to its foundational paradox, these conceptions have been far from stable and it has been forced to continually revise and question its foundations, shifting from psychic causality to behaviour to information processing, and so forth. Through such shifts in paradigm the discipline undergoes mutations through which it *becomes* something new and different. Psychology thus grounds itself in the 'psychological', but only in so far as the 'psychological' is grasped and managed through the concepts and techniques of psychology

(e.g. the psychological *as* behaviour; the psychological *as* aggregate test results; the psychological *as* observable brain activity, etc.).

In this last respect there is nothing exceptional about psychology. Physics, chemistry and biology must also ground themselves as disciplines by way of their evolving conceptions of the physical, the chemical and the biological. Physics grounds itself not in the physical world 'as such' but in the abstract conceptions of the physical world that its practices make available. We have seen that for about 200 years physics operated with an extraordinarily powerful conception based on the notion of matter, with its simple location in space and time. To this notion of brute materialism was superadded a perceiving, experiencing subject. But this notion of ultimate reality as material (which has served as such a powerful foundation for all the sciences) is in fact a conceptual abstraction, albeit a highly efficacious one in certain contexts. It is not 'reality'.

In fact, this notion of enduring bits of matter with simple location in otherwise empty space has been completely abandoned by physics for a long while now. In the nineteenth century the commonsense foundational notion of empty space was eliminated and replaced with an idea of the spatial universe as a field of force or incessant *activity*. Early twentieth-century developments associated with the concepts of relativity and the quantum theory accelerated this process of the denial of commonsense foundationalism. The notion of a passive substratum of self-contained enduring bits of matter has been replaced with the identification of matter with sheer activity or *energy*. The idea of simple location presupposed by the old notion of localised substance has given way to the concept that the 'group of agitations' we call matter is 'fused into its environment' (Whitehead, 1934, p. 31) such that there 'is no possibility of a detached, self contained local existence. The environment enters into the nature of each thing' (1934, p. 31). In short, by the early twentieth century the entire commonsense doctrine expressing the fundamental features in terms of which the universe should be interpreted lay in tatters. It was replaced by a radically different view which emphasised 'activity' and 'process' as fundamental concepts.

Anti-foundationalism

We mentioned earlier that psychology as a discipline parted company early on from the social sciences (sociology, history, economics, anthropology, political science) and founded itself, for the most part, as a natural and experimental science, albeit a deeply troubled one thanks to its foundational paradox. A notable exception to this was the 'interdiscipline' of social psychology, which tended to be located either within departments of psychology, or within sociology, and as a result tended to have more contact with developments within the social sciences. As twentieth-century social science (particularly sociology and anthropology) began to shed its positivistic self-conception and adopt more interpretivist and interactionist approaches, so social psychologists began to challenge the

experimental paradigms that had come to dominate its theory and practice (the famous ‘crisis’ in social psychology discussed in our introductory chapter). These developments were associated with the tendency to draw clear boundaries between the natural and the social in a way which strongly reinforced, rather than challenged, what Whitehead called the ‘bifurcation of nature’. The social sciences, it was argued, dealt with ‘meaning’ whilst the natural sciences dealt with brute matter. The social sciences were thus required to ‘understand’ and ‘interpret’ whilst the natural sciences must ‘explain’ and ‘predict’. In this way, the expectation of contact and dialogue between the social and the natural sciences was minimised. This social scientific distancing from natural science brought them more into contact with the arts and humanities, which also dealt with the products of human construction via concepts like ‘narrative’ and ‘discourse’. These developments created some of the conditions in which some psychologists called, not for new scientific foundations (re-foundationalism) but for the absence of natural scientific foundations altogether (anti-foundationalism).

Anti-foundationalism in psychology can thus be construed as an attempt to ground psychology within the collective of *social* sciences and humanities that has its own issues with foundations (Silverman, 1993). Associated with the ‘textual turn’, this anti-foundationalism has been central to some of the most thoroughgoing critiques of psychology (Gergen, 1982/1994; Edwards & Potter, 1992). It draws, for instance, on a fundamental distinction between the natural and the social sciences which in turn draws, amongst other things, upon Wilhem Dilthey’s (1883/1989) observations concerning the distinct *Verfahrungsweisen* of the *Geisteswissenschaften* and the *Naturwissenschaften*. The critical question of the appropriateness or not of a ‘scientific methodology’ is, and always has been, a principle problem of the social sciences, and their own issues with foundations are not unrelated to this question (Curt, 1994). This troubled relationship has been particularly acute for psychology, since, as Dilthey was well aware, our discipline straddles his distinction. Subsequent reformulations of the distinction, such as that between the ideographic and the nomothetic (Windelband, 1894/1998) were also formulated with the peculiarities of psychology very much in mind.

This long historical predicament informs the recent tendency amongst psychologists critical of the foundational assumptions of the mainstream to adopt an anti-scientific stance. For example, this tendency manifests itself as a series of polemics that focus on phenomena that have been taken as natural, only to reveal them as social, cultural, historical and political in nature (cf. Hacking, 2000). This procedure, however necessary it may be, entails the reiteration of a staged polarisation of natural and social scientific issues in which the former is associated with negative images (all that is static, mechanistic and essentialist). Although this approach to deconstruction has some obvious virtues, it can lead to a paradoxically formulaic criticality: arguments for nature are bad, for culture are good. Deconstruction comes to appear simply as an assertion of ‘the discursive construction of’ whatever phenomenon is under scrutiny.

Whitehead's Alternative to Materialistic Foundationalism: Groupings of Actual Occasions

In sum, previous 're-foundational' efforts share with 'anti-foundationalism' a problematic acceptance of the old spatially oriented notions of substantial foundation that have long been discarded by physicists. They thus respond to the foundational paradox of psychology by inventing and recycling foundational concepts that re-duplicate and reinforce the bifurcation of nature that followed from the now abandoned abstractions of seventeenth-century cosmology. The often heard rhetoric about the need to abandon 'Cartesian dualism' typically reduces either to the effort to reduce all the discursive (as with the 'nature is a discourse and scientific knowledge a social construct' school of thought), or to the familiar totalitarian monism of materialism ('when it comes down to it, we are all materialists, are we not?').

It is one thing to diagnose a problem, quite another to propose a viable solution. We have suggested that it is not enough to continue with a notion of scientific psychology based upon the residual tatters of a defective foundationalist ontology, and neither is it enough to argue for a fundamental distinction between explanation and understanding, fact and meaning, constructionism and realism, that tacitly assumes that social and psychological phenomena belong to the 'secondary' side of a bifurcated nature. It is not enough to blindly pursue an empirical agenda in the name of promissory pragmatic outcomes, and neither is it enough simply to cynically pile criticism upon criticism. The solution is as simple as it is daunting. A positive agenda is required based upon a cosmology adequate to our knowledge of the universe. The fact that this is an impossible task is no reason to abandon it. Throughout his career Whitehead was engaged in a radical rethinking of scientific cosmology. He was aware that if materialism is to be succeeded as a foundational doctrine, then an alternative account of fundamentals is required. This alternative account, if subjectivity is not to be excluded from nature, must be consistent both with what we know about the natural world and what we know about the psychological and social worlds. In a work published in 1920 entitled *The concept of nature*, he put the matter in the following terms: 'If we are to look for substance anywhere, I should find it in events which are in some sense the ultimate substance of nature.' (Whitehead, 1920/2004, p. 19).

We wish to dwell on this astonishing statement. An event is not a substance but an *activity of realisation*. Through the course of his writings, Whitehead uses many terms that are more or less synonymous with the concept of event, including 'occasions of experience' (*Adventures in ideas, Modes of thought*), 'actual occurrences' (*Science and the modern world*), 'immediate occasions' (*Nature and life*), 'epochal occasions' (*Religion in the making*) and 'actual events' (*Science and the modern world*). It is important not to get misled by arbitrary terminology. It is the *concept* that is decisive, not whether it goes under the label of actual 'event', 'occasion', 'experience' or whatever else. In *Science and the modern*

world (1926) and then *Process and reality* (1927–8) he develops a cosmology grounded in the notion of the *actual occasion* or, as he sometimes says, *actual entity*. He states that ‘a theory of science which discards materialism must answer the question as to the character of ... primary entities. There can be only one answer on this basis. We must start with the event as the ultimate unit of natural occurrence ... accordingly, a non-materialistic philosophy of nature will identify a primary organism as being the emergence of some particular pattern as grasped in the unity of an event’ (1926/1985, p. 129–130). By 1929 his terminology had more or less shifted from the notion of an actual event to that of actual occasion/entities. The positive doctrine of *Process and reality*, for instance, ‘is concerned with the becoming, the being, and the relatedness of ‘actual entities.’ ‘Actual entities’ – also termed ‘actual occasions’ – are the final real things of which the world is made up. There is no going behind actual entities to find anything more real.’ (1927–8/1985, p. 18).

The final real things out of which the world is made up are thus *occasions* – ‘drops of experience, complex and interdependent’ – and not the inert bits of stuff typical of atomic cosmologies. The actual world is conceived as, at bottom, a process rather than a realm of extended materiality or a timeless substratum of mentality. Process does not simply mean ‘change’ or ‘flow’ but the ‘expansion of the universe in respect to actual things’ (1927–8/1985, p. 215). Process is defined as the *becoming of actual occasions*. Whitehead devotes *Process and reality* to the task of elucidating the nature and relations of actual occasions. However, it must be stressed that, as a metaphysician, he was aiming at a generic description that would be applicable to *all* actual occasions at *all* times. That is to say, he aims for a general level of description that will be as applicable to the occasions constituting an electron as to those constituting the personal being of the reader of this text. The result is a form of argument pitched at an extremely high level of abstraction. However, the general abstractions should be applicable to *any* more specific particulars. The historical emergence of the social form of the discipline of psychology should be analysable in terms of its constitutive actual occasions no less than the subject matter that it takes as its object, for example. This level of abstraction permits the avoidance of the bifurcation of nature, and this has enormous implications for the discipline of psychology. The following list (taken from Stenner, 2008), gives a provisional sketch of 14 of the features that all such Whiteheadian actual occasions might share in common. Some of these will be further developed at the end of this chapter.

- 1 Consistent with the fundamental concepts of physics, an actual occasion is not a substance or material but an *activity of realisation*.
- 2 The concepts of realisation and activity require the concept of process. Process is defined as *the becoming of actual occasions*. An ontology of *process* thus replaces an ontology of state or substance (Stengers, 1997, p. 67): ‘At an instant there is nothing. Each instant is only a way of grouping matters of fact. Thus there are no instants, conceived as simple primary entities ... Thus all the interrelations of matters of fact must involve transition in their essence’ (Whitehead, 1934, p. 48).

- 3 The word 'actual' in actual occasions requires a distinction between the actual and the potential. Actuality is the realisation of potential in a particular concrete form. An actual occasion – in which a subject concerns its objects – is this process of actualisation.
- 4 The realisation of potential into actual form is called the process of concrescence in the sense of becoming concrete. Potential, when actualised in a given occasion, concretises in a radically specific concrete form (*this* actuality and not *that* one).
- 5 Through concrescence many things (objects, data) are grasped or *prehended* through a process (i.e. through the becoming of an actual occasion) into a new unity. The many become one.
- 6 This process of unification effects a reduction in the complexity of the prior potential. Actuality is thus a *decision* (in the sense of a 'cutting off') amid potentiality. The exclusion of aspects of potentiality that are not selected for actualisation in a given occasion is called 'negative prehension'.
- 7 The inclusion of aspects of potential that are actualised is called positive prehension or *feeling*. A feeling is the operation of passing from the objectivity of an object to the subjectivity of an actual occasion. The concrescence of an actual occasion is thus effected by feelings through which objects enter into the real internal constitution of a subject.
- 8 An actual occasion is thus a *pattern* grasped into the unity of an event or a selective *patterning* of the many into one. In other words, an actual occasion is a passage from a state of *disjunctive diversity* to a state of *conjunctive unity*.
- 9 Creativity is central to this process of *conjunctive synthesis*. Something new is added to the universe by the actual occasion (e.g. the pattern itself is added). '[T]he many become one and are increased by one' (Whitehead, 1927–8/1985, p. 21).
- 10 This principle of creativity stresses the potential novelty of any particular instance of actualisation. Potentialities, by definition, can be actualised in various different ways. The way an actual occasion does in fact actualise its potentials into concrete form is a matter of that occasion's perspective on the many and its 'subjective aim'. Its specific manner of feeling the many is its 'subjective form'.
- 11 The subject with its perspective does not pre-exist its feelings but creates itself through them. Ultimately an actual occasion is a creature that creates itself. What modern biologists would call *autopoiesis*, Whitehead identifies as the *category of subjective unity* (Whitehead, 1927–8/1985, p. 222).
- 12 One must thus distinguish the process of self-realisation from its product. To do this, Whitehead distinguishes the subject from the superject. The subject is the process of self-realisation considered in terms of its own novel internal constitution or in terms of the immediacy of its self-enjoyment. It is the internal self-becoming of the actual occasion. The superject, by contrast, is the objective *product* of these experiences – the creature of its creative process. An actual occasion is thus always di-polar, involving the subjective process of feeling and its objective product (Whitehead, 1927–8/1985, p. 29).
- 13 As subject, the actual occasion is the becoming unity of conjunctive synthesis. As superject it takes its place as one more amongst the many in disjunctive diversity. In short, the experience of the subject is expressed by way of the superject as an object.
- 14 Finally, we return to process by way of the principle of relativity which holds that 'it belongs to the nature of every "being" that it is a potential for every "becoming"' (Whitehead, 1927–8/1985, p. 45). Once an actual occasion becomes a determinate superject, then it can play the role of one of the many objects that are the concern of another actual occasion with its process of creative conjunctive synthesis. The subject becomes the superject which in turn becomes the object for a new subject.

The concept of the actual occasion requires a supplementary concept. This is because a Whiteheadian actual occasion is not something that can endure over time and, as we have discussed, foundations are all about 'perpetuability'. An occasion is something which *occurs* rather than something which *endures*. As a pure occurrence – a pure actuality – an occasion has no history and is not something that changes. It is something which becomes and then perishes. Your experience of having just read this line of text becomes and then perishes. It will never happen again in exactly that way. To re-read it is to have another unique experience which becomes and then perishes. This is a paradoxical 'ultimate foundation' indeed: the 'completely real things' do not endure in time and space. How then to account for our routine experiences of continuity and endurance on the basis of this 'atomic' theory?

Whitehead states that the enduring things that we routinely encounter (mountains, chairs, trees, animals, conversations, institutions, etc.) are not actual occasions. The things that endure, change and have histories (including ourselves) are in fact groupings of actual occasions, arranged spatially (as contemporaries) and temporally (in an unfolding sequence). Whitehead thus talks of a *nexus* of occasions which can spread itself both spatially and temporally. A nexus, by definition, is divisible into the actual occasions out of which it is composed, but these occasions themselves are 'atomic' in that they are not further divisible. When a nexus has a specific type of self-sustaining order, it may be referred to as a *society*. A society is thus a specialised nexus which is self-organising and self-referential. A biological system, for example, is a society of spatially and temporally coordinated actual occasions. The occasions that compose the society share a common character which they mutually impose on the other occasions of that society. Each 'microcosmic' actual occasion repeats 'what the universe is in macrocosm'. In this way the 'environment enters into the nature of each thing' (1934, p. 31).

The actual occasion thus functions to explain atomicity whilst the concepts of nexus and society function to explain continuity. Combining the atomic and continuity aspects suggests how we might entertain the idea of the relevance of actual occasions to all kinds of entities whilst still grasping that there might be vast differences in the quality and detail of such occasions, and hence the quality and detail of the things we find in the universe. In other words, it enables us to recognise continuities between, say, human, animal, vegetable and mineral forms of existence (all are groupings of actual occasions) but without denying important qualitative differences between them. A rock is not more real than a conversation or a fleeting feeling. Likewise, a tree, no less than a philosopher, is composed of multiple occasions in which potentialities are actualised into concrete 'experiences' (although it is important to recognise that experience does not necessarily entail consciousness – which is a component only in high grade occasions).

More specifically, Whiteheadian cosmology suggests that, instead of bifurcating nature into subject and object, we think in terms of different types or grades of actual occasion operating at a variety of levels of complexity expressed through differing forms of assemblage or composition. Psychology might then acquire a genuine subject matter, but not one divorced from 'reality' and not one reduced to brute materiality: 'An occasion of experience which includes a human mentality is an extreme instance, at one end of the scale, of those happenings which constitute nature. ... any doctrine which refuses to place human experience outside nature, must find in descriptions of human experience factors which also enter into the descriptions of less specialized natural occurrences' (Whitehead, 1933/1935, p. 237).

Whitehead offers six such grades of actual occasion, stressing that the boundaries between them are always fuzzy. These are:

- 1 human existence, body and mind
- 2 all other animal life
- 3 all vegetable life
- 4 single living cells
- 5 all large-scale inorganic aggregates
- 6 all happenings on the infinitesimal scale disclosed by modern physics.

These diverse kinds of occasions are produced within diverse modes of organisation or forms of assemblage. The more complex and specialised the grade of occasion, the more enhanced is its 'subjective' aspect, and, as a result, it is capable of higher degrees of novelty and creativity. Thus although there is continuity between the modes, there are also important differences. The occasions that compose living cells, for example, are considerably more specialised than those that occur in large-scale inorganic aggregates (a mountain range, for example). Such inorganic aggregates are characterised by the forms of repetition and conformity that give rise to the laws of physical nature (although at the infinitesimal scale of level six the infra-molecular activity has 'lost all trace' of this passivity [Whitehead, 1938/1966, p. 157]). They are dominated by the average and the subjective and self-determining aspect of each occasion is negligible. The actual occasions involved are thus 'conformal' in nature. In the temporal dimension one gives rise to another very much like it, and in the spatial dimension, one contemporary is largely indistinguishable from its neighbours. A unicellular organism, by contrast, can be thought of as an isolated pocket of nature within which comparatively idiosyncratic coordination takes place. The specialised events that occur in a cell do not and could not occur in a rock. For Whitehead, something is alive if it is a region of nature 'which is itself the primary field of the expressions issuing from each of its parts' (Whitehead, 1938/1966, p. 22).

This self-referential internal coordination of a region of nature is even more specialised when it comes to vegetable life and animal life. Both vegetables and

animals are 'composed of various centres of experience imposing the expression of themselves on each other' (Whitehead, 1938/1966, p. 23). The actual occasions are thus grouped into complex societies and each occasion derives its characteristics by virtue of its involvement in that society. When we compare animal to vegetable life, however, we find that animal life is comparatively more centralised. Of the numerous centres of experience, one or more tends to dominate and to receive as its data expressions from numerous other more specialist centres. If this dominant 'central' activity is lost, the animal dies because the whole coordination collapses. This higher order coordination affords an extension of the difference between the actual and the possible and hence a deepening of the repertoire of possible occasions (as experiences and expressions). A vegetable, by contrast, is more like a democracy (Whitehead, 1938/1966, p. 24). Its bodily organisation lacks a centre of experience operating at a higher level of complexity. This makes it more robust (a piece can often survive independently of the whole, for example), but less innovative. Compared to an animal, a vegetable lacks the capacity to respond in novel ways to novel situations. All is relative, however, since compared to large-scale inorganic aggregates, a vegetable displays considerable novelty at the cost of a robust ability to endure.

The human body, like all societies, has recognisable boundaries, but – as the coordinated functioning of billions of molecules – it is also part and parcel of the larger field of nature. It is thus both continuous with wider nature, and distinct from other natural forms. It is forever gaining molecules and losing molecules, and a clear cut distinction between it and its wider environment is never strictly possible. The human body, then, is a *region* of the wider world and universe. It is that region of nature which is the 'primary field of human expression' (Whitehead, 1938/1966, p. 22). But compared to other life forms it is an even more highly coordinated region that is therefore capable of actual occasions that are considerably more idiosyncratic, specialised, novel and organised. Its occasions of experience are thus qualitatively distinct, not just from those that occur at purely physical levels, but also from those that occur in other life forms, since they are the product of this extensive and intensive coordination. As with other animals, numerous parts of the body are coordinated into the unity of a definite system, and that system both coordinates its own responses and responds to itself. However, with our species the specialised centralisation of bodily control into a high-grade brain appears to have crossed a threshold which distinguishes us from other organisms. As Whitehead (1933/1935, p. 243) puts it, the human body is a 'set of occasions miraculously co-ordinated so as to pour its inheritance into various regions within the brain'.

At each level in the nested hierarchy the actual occasions that occur at a higher grade of coordination can presuppose, abstract from and build upon those that are occurring at a more basic level. As Whitehead puts it in drawing an analogy with Spinoza, 'his one substance is for me the one underlying

activity of realization, individualizing itself in an interlocked plurality of modes' (1926/1985, p. 87). Instead of a materialistic cosmology bent on reducing complexity down to more and more basic elements that are more and more real (irreducibly material), emphasis is placed on a process of 'bottom up' creative evolution. Fortunately, the form that is our planet, thanks to its particular relation to our sun (not too near, not too far) could afford the creation of oceans and of an atmosphere that could afford the emergence of basic life forms that could afford the creation of a biosphere hospitable to the slow and gradual development of the flora and fauna that eventually afforded the evolution of human societies that developed technics that would spread across the face of the earth and become visible from cameras installed on satellites. Each nexus of systems grows out of an environment that was previously a nexus of systems growing out of its environment. The fate of each nexus of systems is to become an environment that can be presupposed by a new nexus of systems. The events that occur in human consciousness include features that do not occur in less specialised environments such as the body of a jellyfish. These events cannot be explained by way of laws that may nevertheless apply perfectly well to jellyfish. The events that occur in the body of a jellyfish include features that do not occur in the trunk of a tree, and these latter events in turn include features that do not occur in a chunk of granite. But granite, too, is a complex and structured nexus of occasions. Different laws apply in each case because different emergent realities are at play: something new comes into being under the sun.

In this way the actual occasions of that living assemblage we call the brain generate an inheritance that is poured into a yet more abstracted grade of actual occasion that historically has gone by the name of the 'soul' to distinguish it from the 'body'. The occasions that compose what Whitehead calls a 'personal' society are obviously dependent upon the neural occasions of the brain, just as these are in turn dependent upon the occasions of the body more generally and the various nexuses and societies that make up its wider environment. Nevertheless, the actual occasions of the brain are, for Whitehead, not to be identified with the 'presiding occasions' of personal experience that occur in a personal society. "There is no necessary connection between "life" and "personality". A "personal" society need not be "living", in the general sense of the term; and a "living" society need not be "personal" (Whitehead, 1933/1935, p. 264). A human being is thus always more than its particular personal society of actual occasions of experience, since any 'stream of consciousness' presides over, as it were, a broader matrix of living occasions from which it abstracts itself. The consequence of a cosmology of 'one underlying activity of realization, individualizing itself in an interlocked plurality of modes' is that the psyche – as a specific individualised mode – is never disembodied, and the body – as another such mode – is never de-worlded.

In short, Whiteheadian cosmology suggests that psychic existence is both distinct from and continuous with wider nature. As a distinct mode, it entails

the composition of a specialised grade of actual occasion, but as one mode amongst others, it is indistinguishable from an underlying activity of realisation. The everyday sense of a coordinated stream of personal experience associated with concepts such as 'the psyche' and 'subjectivity' is thus, for Whitehead, yet another instance of a society of actual occasions. Each occasion of experience is a self-realising event that becomes and then perishes. Each occasion has its direct 'inheritance' from its immediate past and its anticipation of what it will become in the future. Each occasion is a concrescence of many data into the unity of subjective form.

There is, however, something that is very distinctive about the manner in which the occasions of a 'personal' society are grouped. Namely, the assemblage that makes up the society is purely temporal with no spatial dimension in evidence. There are, in other words, no contemporaries, but purely a matter of one occasion of experience following another and giving rise to yet another, and so forth in a temporal chain. The occasions have become maximally abstract and, lacking a spatial dimension, they have no visible or sensible aspect. Whitehead calls the occasions of a purely temporal personal society 'presiding occasions'. The subjective and creative element of presiding occasions is at a maximum, and the difference between potential and actual is skewed heavily towards the former. Thus the human being is capable of what Whitehead calls 'outrageous novelty'. Not only are such high grade occasions capable of novelty, they also thrive on novelty, and would be reduced without it.

Foundations Revisited: Key Concepts for a Reflexively Critical Creative Foundationalism

In the course of this chapter we have introduced the notions of 're-foundationalism' and 'anti-foundationalism'. We wish to suggest that a relational process ontology provides us with a 'reflexively critical foundationalism' (a *creative* foundationalism) which responds directly to the foundational paradox of psychology and works with the fact that we have a *troubled relationship to the question of what grounds us*. We must relinquish the false certainty of objective access to timeless facts (which yields continual 'revolutions' in search of this certainty) but without flipping over to a position that holds that scientific knowledge has no access to what is external to it (and hence that knowledge speaks only of its authors and their cultural and political predicaments). The latter denies any possibility of a relationship to what grounds us, whilst the former operates with a delusory relation of dominance-based ownership. Both overlook the fact that we need foundations precisely because we lack them. In other words, foundations are the product of *creative effort*. Whether we are talking about the nature of our souls or the nature of

the discipline which studies them, the question concerning foundations should always be an issue for us. It cannot be finally settled but must be a cause for ongoing concern. The principle of creativity ('by which the many, which are the universe disjunctively, become the one actual occasion, which is the universe conjunctively') is thus central to this radical shift in perspective. Creativity, for Whitehead, is 'the universal of universals characterizing ultimate matter of fact' (1927–8, p. 20).

This chapter also suggested some different metaphors for thinking about endurance and its relationship to occurrence or change (notably the concrete slab, the spinning top and the cell). Once again, the bifurcation of nature was based upon a prioritising of permanence over transition and of stasis over process. This reflects a longstanding philosophical preoccupation with an 'unchanging subject of change' which might serve as an absolute foundation, and hence a prioritising of endurance over occurrence. For some 'objectivity' supplied that unchanging subject of change, and a materialist doctrine resulted. For others 'subjectivity' played that role (leading to idealism). For Whitehead, process rather than stasis is the key term. In effect, this reverses the relationship between things that occur (happenings, events, occasions) and things that endure (substance, continuity). The things that occur (actual occasions) are the atomic 'foundation' of the things that endure, and not the other way around. This simple formulation betrays a rather radical change of perspective and of guiding metaphor. As Stenner (2007a, p. 51) puts it:

Thus the spatial 'stack' foundation metaphor of a static substance with its predicated qualities must be replaced with a notion that affirms the rootedness of being in time. Not an image of one brick placed on top of another, but an intuition of an immediate present conforming to the actualities of its immediate past and thus supplying potential for the immediate future in process of becoming. In jettisoning the spatial notion of foundation we do not thereby announce a libertarian scenario in which 'anything goes', since the future can only arise from its creative engagement with the stubborn facts of past actualities. The 'self-creation' of autopoiesis – to the extent that it occurs in a non-negligible manner – is always already conditioned and occasioned by what is inherited as stubborn fact.

From a process perspective, the inherited concrete actualities of the past are no simple foundation. On the one hand, looking backwards, they are themselves the outcome of a creative process of concrescence that has resulted in one specific actualisation of potential. On the other hand, looking forwards, they are no 'finished product' but rather one of the many 'potential' ingredients that will play a role in the actualisations of the future. A realist might be forgiven for dwelling on the brute fact of concrete actuality, whilst a relativist has their eye on future possibilities (the pessimist takes a dim view of these possibilities whilst the optimist looks to an improved future). The actualities of the present, states Whitehead, 'are deriving their characters from the process, and are bestowing their characters upon the future. Immediacy is

the realization of the potentialities of the past, and is the storehouse of the potentialities of the future' (1938/1966, p. 99). This is why Whitehead is difficult to place on the realism/relativism binary. On the one hand, he is the first to insist on brute facts, since a given actual occasion concretises its potential in only *this* way, and then it is no more. On the other hand, his *principle of relativity* states quite emphatically that 'it belongs to the nature of every "being" that it is a potential for every "becoming"' (1927–8, p. 45). For Whitehead, in other words, process is the reality. The fallacy of misplaced concreteness that we inherited from seventeenth-century physics lured us into thinking of process as some irrelevant epiphenomena to be explained away, and staked its claim on a cosmology grounded in the idea of a brute material reality existing with its 'simple location' in the immediate present and enduring through time. For Whitehead, this fallacy is a mere abstraction of thought. In actual fact, there is *nothing* that exists in-and-of-itself in a given instant of time, since each instant is only a way of assembling the ingredients of the world (1934, p. 48).

Rethinking the relationship between occurrence and endurance thus links directly to the principle of creativity. The things that occur – the 'ultimate realities' are self-creating and self-realising. For Whitehead, the transformation of potentiality into actuality in an actual occasion is nothing less than the self-creation of that actual occasion. The many potentialities of the concrete past are integrated into a unified moment of actuality. Through concrescence the 'many' are leant a novel quality of 'unity' that the actual world may previously have lacked. This process of creative unification is the process of self-realisation. That self-creative activity (the transformation of the potential into the actual), as we have seen, is, of course, highly *conditioned*. It must 'conform' to the actualities of the past. The past is not the foundation for the present and future, but it does supply the 'given' to be worked with: 'Thus the immediate present has to conform to what the past is for it ... whatever is settled and actual must in due measure be conformed to by the self-creative activity' (Whitehead, 1927, p. 36).

Conclusion: Subject/Object Revisited

With respect to the principle of creativity and self-realisation, it should be noted that the concept of subjectivity acquires a key position in relational process ontology. Indeed, Whitehead refers to the process of self-creative creativity in terms of the *category of subjective unity*. Subjective unity 'has to do with self-realization. Self-realization is the ultimate fact of facts. An actuality is self-realizing, and whatever is self-realizing is an actuality. An actual entity is at once the subject of self-realization, and the superject which is self-realized'. (1927–8, p. 222). Whitehead thus does not do away with the subject/object

distinction. Rather, he refuses to bifurcate the world into a realm of essentially meaningless matter (from which subjectivity has been expelled) and a realm of subjectivity that is effectively restricted to the highgrade experiences of a human 'knower'. He refuses, in short, to evacuate subjectivity from nature and to concentrate it in the human domain of knowledge and culture. It is thus the *splitting* of the subject/object distinction into 'knower' from 'known' that concerns Whitehead. What he offers is a form of *deep empiricism* that radically extends and refines the domain of subjectivity, but refuses to 'detach' it from objects. In this manner, neither 'subject' nor 'object' play the role of first term or primary substance. The 'first term' is always, as we have seen, an actual occasion, and an actual occasion is always a fusion of subject and object in the unified event of an experience. In an actual occasion, the subject *concerns* its objects and comes into being through this concern. Each actual occasion is thus a di-polar fusion of subject and object. Subjectivity (which, we have stressed, may or not involve consciousness and other cognition) is that which belongs to the subject of self-realisation: it is a concept that is used when an actual occasion is considered in terms of its novel internal constitution, i.e. in terms of its own real process of concrescent creativity (or the immediacy of its self-enjoyment). The subject of self-realisation is the *experience* of concrescence, and that is why Whitehead defines actual occasions as 'drops of experience'. In this sense, the actual occasion is a subject 'presiding over its own immediacy of becoming' (1927–8, p. 45). Whitehead puts this succinctly in *Nature and life* (1934, p. 60) when he says that the 'process of self-creation is the transformation of the potential into the actual, and the fact of such transformation includes the immediacy of self-enjoyment'. This immediacy is a moment of 'sheer individuality, bounded on either side by essential relativity'.

But an actual occasion can also be considered as the *product* of its experiences, i.e. as the creature of its creative process. To express the latter Whitehead coined the term *superject*. A superject is thus an 'atomic creature' that has become a being. An actual entity 'is subject-superject, and neither half of this description can for a moment be lost sight of' (1927–8, p. 29). In the first place the actual occasion is the becoming unity of conjunctive synthesis, in the second it takes its place as one more amongst the many in disjunctive diversity. In the first place one is dealing with the conversion of the merely real into determinate actuality, in the second with the transition from attained actuality to actuality in attainment. In short, the 'subject' is the actual process of becoming (the creative and self-creating concrescence) considered from its own unique ('private') perspective. Once this process is satisfied and it has become a determinate 'public' being it is 'superject' – the self-created product of its own process. The superject is thus the creature of its own creative process, and that process considered from its own perspective, is the subject. The subject actualises the potentials of the past, and the superject takes its place as one of many matters of public fact that will become an ingredient in

future subjects. In this sense, an actual occasion, as superject, achieves a state of objective immortality: in becoming objective and determinate it becomes available as part (datum) of a process that continues in a new concrescence after its own subjective moment of concrescence has passed. In the relay race of process, the baton of potentiality is passed on and on via quantum events of actuality. Subjectivity gives rise to objectivity which is absorbed once more into novel subjectivity, and hence, to return to our opening theme, experience is the *becoming* of objective reality.