A.N. WHITEHEAD'S METAPHYSICS AND THE STRUCTURE OF SOCIAL ACTION

A Commentary on Parsons' Plenum, Analytic Realism and The Action Frame of Reference

R. J. Anderson
Horizon Digital Economy
University of Nottingham

W.W. Sharrock
Department of Sociology
University of Manchester

1. INTRODUCTION

Surprising though it might seem to us today, when it was first published in 1937 Talcott Parsons' *The Structure of Social Action (SoSA)* was regarded as really quite daring. Indeed, in kicking over the traces of the empiricist and positivist behaviourism which dominated American sociology at the time, it *was quite* daring. To see why, we have to look beyond the convergence in views concerning the nature of social action which Parsons gleaned from the writings of several leading European social scientists to the influence of the British mathematician and philosopher of science Alfred North Whitehead and in particular to the "organic" or "process" metaphysics which he was promulgating for post-relativist Physics. This metaphysics revived several strands of Greek philosophy, strands which are woven into the fabric on which Parsons paints his sociological synthesis.

In this commentary, we offer some background to Whitehead's thinking and its influence on Parsons. This allows us to offer an explication of what otherwise seems a somewhat mystifying allegation Garfinkel makes in *Ethnomethodology's Program* (2002) and elsewhere about there being "no order in Parsons' Plenum". We will suggest that Garfinkel's point is more subtle than it is usually taken to be and indicates the popular account of a complete severance between Parsons and Garfinkel may be more than a little overdrawn. If there is more Parsons in Garfinkel's formulation of Ethnomethodology (EMCA) than meets the eye, there is likely to be more Whitehead as well. But exploring that possibility is left for another occasion.

2. FATEFUL GREEK GIFTS

INTRODUCTION

Our starting point is a footnote in one of the papers published after *The Studies* (Garfinkel 1967) where Garfinkel is trying to explain what EMCA was. In this exposition, as in others, Garfinkel marks the difference between EMCA and more conventional sociology, this time by declaring "There is no order in Parsons' plenum!". The footnote offers the following comment on this assertion.

> Obviously, much turns on what plenum is taken to mean. Having rejected the first two questions—"What does plenum mean?" and "How is plenum to be defined?" and insisting on this one: "Who has had what need of a plenum?", I must risk the charge of wilfully having my way with it, no matter what way it is, by having left specifically unspecified what plenum is to mean. Temporarily, and just here, that is just what I want to do. To define and explain plenum would introduce a distracting excursion. I don't want to take up those questions, but insofar as we can, without taking up those questions, I want to ask, "Who has used the notion of a plenum and for what?" The sense of what plenum means will emerge as I document that. (Garfinkel, 1988, p 105 note 6)

Garfinkel says "the sense of what plenum means will emerge" in the arguments he gives. That is (probably) true providing one already understands and is convinced by a whole array of Garfinkel's other arguments presented in earlier (but only recently published) discussions such as *Seeing Sociologically* (2006) and *Parsons Primer*(2019). In addition to a thorough understanding of the background to the concepts Garfinkel uses to engineer his re-orientation of Parsons' endeavour, though, an equally thorough understanding of the background to Parsons' strategy of Analytic Realism as a mode of (social) science theorising will be needed. We are by no means convinced possession of the latter is a safe assumption to make about many in contemporary social science and allied disciplines coming new to EMCA even if it might have been the case for the professional sociologists of 1988 whom Garfinkel was addressing. In providing such background, it is important to stress our purpose is not to promote some new interpretation of the history of and current practise of science and social science (nor, indeed, of EMCA) but to gather enough generally agreed material to allow those who are not *au fait* with those distant debates, sufficient basis to see just what was at issue, why it was pertinent and just what order of change it entailed for any sociology built on it. In one sense, you could say our objective is to show what to look for in the lists provided in the second part of the 1988 paper and in the large corpus of work developed thereafter as evidence indicating the possibility of a rigorous re-specification of Parsons' plenum Garfinkel intended EMCA to be.

Constituting the Plenum[1]

Parmenides and the Eleatics broke with their predecessors by insisting the only route to full understanding was through reflective reasoning. This Parmenides himself called *The Way of Truth*, an approach he contrasted with *The Way of Seeming* based not on reason but opinion.[2] In so doing, Eleatic philosophy institutionalised a distinction between truth as knowledge of the real and opinion as knowledge of appearances which in one form or another has rattled around philosophy ever since.[3]

At the same time, the Eleatics broke with their contemporaries, the Ionians, by insisting the essential quality of all that is (everything which exists, the universe) is continuity and not, as it appears, development and change. The property associated with continuity they called *Being*—thereby bequeathing us another endlessly disputed term. Being is revealed by reason; change, development and growth are simply appearances. For Parmenides, if Being defines all that is, consideration of objects without Being, non-Being, was impossible—literally unthinkable. Nothing could exist and not have Being. The point is not that you can't invent something like the unicorn, an object which doesn't actually exist, because in naming and describing the mythical animal, you have given the term properties and so some measure of existence. What is not possible is thinking about a thing which has no properties, the negation

1 A reasonably accessible general account of the philosophies of science covered in this and the next two sections can be found in Mary Hesse (1962).

2 For this alone, some have suggested the Eleatics must be considered the first philosophers proper.

3 As many other have, in this presentation we face the problem of how to distinguish the proper name for an activity, say a science, from the activity of doing that science. We will capitalise the proper name. However, we will not treat 'science' and 'social science' as proper names though Philosophy, Sociology and Physics are. Hopefully this practice will help avoid some confusions which would arise otherwise.

of Being. The Eleatics concluded since an entity with non-Being is impossible, a void in existence is also impossible. As the universe (cosmos) is infinite continuity in time and space, it must be an (infinite) *plenum* completely filled with Being (existent realisations of substance of multitudinous kinds) and not, as the Ionians argued, with 'atoms' of matter separated by 'space'. This thesis became enshrined in the epithet "Nature abhors a vacuum" in subsequent Greek and Medieval philosophical discussions.[4]

The ideas of the role of reason, the necessity of a material plenum and the distinction between appearance and reality (though not necessarily as Parmenides conceived them) were Aristotle's philosophical inheritance and central to his own philosophy. In turn, this was the philosophy which dominated the whole of the Medieval period. Because the distinction between appearance and reality was taken for granted, the pursuit of true understanding had to find a way to close the gap. Aristotle insisted this could only be by reasoned (i.e. deductive) argument. The premises for such argument were axiomatic certainties distilled from accumulated experience given by systematic observation of the world around us. For example, from the study of the daily, lunar and solar cycles, Aristotle argued the Cosmos must comprise a series of encompassing 'containers' holding the earthly, the sub-lunar and outer spheres. Given his acceptance of the impossibility of a void, these spheres were filled with substance composed by the four natural elements— earth, water, air and fire for the sub-lunar spheres together with aether, the fifth or 'quint' essence, for the outer Cosmos. For him, earth, water, air, fire and aether were 'universals'; the ultimate constituents of the material Universe. The importance of reason here is that the sequences of inferences leading from our concrete experience of matter to the material reality of the plenum of the spheres and the essences by which it is constituted provides a rigorous narrative which "saves the appearances"; a *theoria* which explains how the gap can be closed.

After the collapse of the Roman Empire, knowledge of Greek philosophy virtually disappeared from Western Europe and extensive scholarly access to the texts was possible only after the rise of Islam. Numerous scholars celebrated the 're-discovery' of Plato and especially Aristotle's thinking, none more so and more effectively than Thomas Aquinas. With Aquinas' imprimatur, Aristotelianism became the dominant philosophy of the 'schools' of Western Europe. There is an important element of the context to this neo-Aristotelianism to be borne in mind. The scholastics were clerics and their attitude to Aristotle and Plato was formed by Aquinas' theological re-interpretation of them. The theological view was the departure point for philosophising which, in turn, rested on acceptance of the authority of the classic texts. The scholastic philosophers did not offer an hermeneutic reading of what, given their context, Plato and Aristotle must have meant by their philosophy but a contemporary interpretive reading of what, given its truth and the context they themselves were in, that philosophy must now be taken to mean. Inherent in this stance was the challenge of how to interpret their current empirical knowledge of the nature of the world and the place of mankind in it within the confines of Christian Theology and the Aristotelian frame of reference.

[4] Experimental demonstrations by Boyle and others of (almost) perfect vacuums was its eventual death knell, though interestingly, as we will see, 19th century Physics toyed with the idea again. What fills the universe, this later reincarnation of the idea suggested , is energy-bearing aether.

A key question in this interpretation was ontological: how should the individuation of objects be conceived given their constitution as essences in the plenum? John Duns Scotus tried to resolve this question by arguing the essential or natural properties of objects were not individually identifying. They named what was shared among them and defined their *quiddity*—the form or type they were. What defined their individual identity as 'these particular individual' objects was their *haeccity*, that which made them individually distinctive and unique. Remember, this is an argument *a priori* concerning what *must* be the case given in our ordinary lives we are able to distinguish concrete individual objects from the types they belong to and not, say, a rationalising over lists of inductively identified instances of species and genera in the physical and natural worlds. Underpinning the distinction between the universal and the particular is another distinction which has made Scotus something of an icon in modern Philosophy, namely that between necessity and contingency, the given and possible worlds. Quiddities are the properties (given the theory of essences) necessary for objects in the plenum to be the kinds of objects they are. Haeccities are the properties which make them individually unique *per accidens.* They might have been different and on another occasion (or in another possible world) would be. Not surprisingly. Scotus' distinction was much debated in his time and thereafter. However, together with the related notions of a plenum, objects, their essences and appearances continued to have a place, though with gradually reducing prominence, right through to the 17th century.[5]

The Cartesian bridge to Science And Its Kantian Reconstruction

Although it would be perfectly fair to say that while many who worked in the domains we now call 'Alchemy' and 'Medieval Philosophy' operated in a way which has some correspondence to the practise of science in the modern era, their ideas about what they were doing remained resolutely Aristotelian. The philosophic bridge between Aristotelianism and what was eventually to become the *modern* scientific method is Descartes.[6] This bridge was not a piece of precision conceptual engineering but a somewhat cobbled together *bricolage* which eventually created as many problems as it solved.

Luckily we don't have to choose among the many shades of Descartes on offer today (the dogmatic dualist or the pragmatic empiricist and almost everything in between) because we are not trying to defend some idea of a 'Cartesian system' underlying all his work.[7] We are only interested in what he did with the appearance/reality distinction and the notion of a plenum he inherited from the Scholastics as well as how he connected them to the procedural logic of the experiment. In this, it is important to recognise Descartes did not force the famous Enlightenment bifurcation between demonstrative Aristotelian Philosophy and modern empiricist science. No-one did. It was happening willy-nilly, but largely unremarked, in the investigations being undertaken by his immediate predecessors and contemporaries. Of the other early Titans of the classical scientific age, Galileo didn't

5 The notion of the 'haeccities' of action will become important for our discussion of Garfinkel. Garfinkel moved from discussing the uniquely particularising characteristics of a phenomenon as "quiddities" to "haecceties" as a result of learning of Quine's use of that term (Quine 1957).

6 The methodological bridge is Galileo.

7 A detailed account of Descartes' scientific thinking can be found in Clarke (1982)

have the philosophical wherewithal to address the conceptual issues which were arising and Newton wasn't interested. Descartes was interested and according to his sympathisers sought to shore up the rocky marriage of Aristotelian Philosophy and empirical science by adapting the one and systematising the other. His detractors mostly allege he simply tried to ride both horses simultaneously. Given they were heading in different directions, calamity could only ensue.

Descartes begins by presupposing the distinction between appearance and reality and the necessity of a plenum of the "outer" objective world. As with other mechanical philosophies of the time, rather than essences, Descartes plenum was constituted by contiguous atoms of 'matter'. The inner subjective world was a plenum of 'mind', constituted by thought. The task of philosophy (and for him that meant any kind of logically systematic reflection on the physical and natural worlds) was to attain certainty. However, thus far the only certain science was Mathematics. The task he set himself was to provide a methodology for the investigation of the natural world which could emulate but not, as we shall see, replicate mathematics.[8] The major obstacle to be overcome was how to treat the continuously developing complexity of matter being revealed by the 'scientific' investigation of material appearances. Somehow a methodology designed to foster certainty had to encompass the need for uncertainty.

He works his way towards this objective by setting out an account of sensory experience which distinguishes different orders or types:

1. Unconscious interactions with an object. These are reactions such the familiar 'instinctive' blinking when someone bangs a door or thoughtless reaching for a pen as it falls from the table.
2. Awareness of an object. This is sensory perception; the feeling of heat, solidity, weight we have when engaging with a material object.
3. Inferences over awareness. These are our logical reflections on our current sensations together with prior experiences of this kind of object or event and those which are similar.

Categories 1 and 2 we can think of as observations pure and simple. Type 3 though involves observational 'judgement'. For Descartes, to bridge the appearance/reality gap observational judgement must be based on the use of reason (in the Aristotelian sense). However, since such reasoning has to be based on premises which are not themselves certain (casual observation and recalled prior experience), its conclusions may be (logically) true but they cannot be logically certain. What is at play here is the distinction between truth-as-validity and truth-as-certainty. In Logic, a conclusion will be valid if it is logically deducible from a set of premises even if the truth status of the premises are unknown. However, if the premises are not known to be certain, then that deduction cannot be certain. The distinction

[8] One thing worth remarking on is that Descartes saw himself first and foremost as a scientist in a sense we would readily recognise. The work for which Philosophy celebrates him (the *Rules* and the *Meditations*), he viewed as rather lightweight pamphlets.

between truth and certainty is the foundation of Descartes' method of doubt as the principle of all scientific (as opposed to, for example, theological) reasoning.

The key point here is that Descartes thinks experiments are members of type 2 sensory experience and yield observations which have to be reasoned over. However, they are different in kind to the casual observations made in the course of ordinary life (under what Husserl called "the natural attitude"[9]) in a number of important ways. Experiments are:

1. Truth detecting (but not certainty providing). In other words, they have a focused purpose.
2. Designed 'interrogations' in terms of some conjecture or hypothesis derived from other forms of observation. This design specifies which phenomena are being investigated and which questions are being put to them.
3. Controlled to ensure events occur where and when the phenomena under investigation might be observable.

The obvious implications of 1,2 and 3 are:

4. An experiment may not be replicable.
5. An experiment may be poorly executed.
6. The results of the experiment may be incorrectly or inappropriately interpreted.

All three of 4, 5 and 6 imply, unlike demonstrative reasoning, experimental reasoning is not certain and so must always be subject to doubt. Indeed, Descartes once said that he doubted every experiment except the ones he undertook himself.

Let's gather things together here. Descartes is juggling a number of critical distinctions. First, there is that between the inner and the outer worlds, mind and matter. As a scientist, his interest is primarily in the latter. The objective world is conceived as the appearances of a wide variety of objects with innumerably different properties. However, these are the epiphenomena of a plenum of motions of contiguous material atoms. Objects as they are 'really' (atoms in motion) constitute the plenum. Unlike Newton, Descartes thought the movements of these atoms were in vortices, a view which Stephen Gaukroger (2018) attributes to his hydrostatic as opposed to Newton's kinematic view of matter. Our best understanding of the epiphenomenal relationships connecting appearances and reality was through systematic empirical experiment whose results were reasoned over. These results, if treated appropriately, yielded inferential truth but not certainty. Apart from the view of matter, the insistence on the material plenum and the impossibility of a void, this looks an awful lot like the *modus operandi* of classical physics in the 16th to 19th centuries. The one thing missing is the use of mathematics and the place given to measurement. This might be surprising given Descartes was a mathematician. It becomes

[9] This is not to say Husserl agreed with Descartes' view either of experiments or their relationship to observations made in the course of ordinary life. See Husserl (1960).

less so when we remember that for him mathematics relies on indubitable premises to derive certain conclusions. Its whole logic was unsuited to experimental science as Descartes conceived it.

Kant was deeply unhappy about the position in which Descartes left science and famously found the failure of subsequent philosophers to rectify it a "scandal". The philosophies he held to be at fault were post-Cartesian rationalism and the empiricism of Locke and Hume in particular. The key error of both responses was to conceive what in modern parlance we might call the 'driver' of knowledge to be activation of human reaction by stimulations from outside the organism and its mind either in absolutely indubitable "ideas" or in sense impressions. The 'Copernican Revolution' Kant sought (as he grandly designated his objective) was the inversion of this relationship. The driver of knowledge was to be located in the mind. Knowledge of the world is created in the mind. It is for this reason Peter Strawson (1975*)* insists on calling Kant's philosophy "psychological".

The easiest way to see how Kant framed his task is to locate it in terms of his famous typology of propositions (or 'arguments' in the mathematical sense), even though this typology plays a minor role in his deductions. Propositions are claims comprising a subject and a predicate and make up sentences like 'Michael is tall' or 'Herring are fish'. Kant distinguishes those propositions where the truth of the predicate is logically contained or entailed by the subject, as in 'Aunts are female' or 'Trees have shape'. What we mean by the concept of "aunt" is a female relative; what we mean by the concept "tree" is a body extended in space and all such bodies have shape. This type of proposition he calls "analytic". In contrast he defines "synthetic" propositions to be where the truth of the proposition is given by a conjunction of different ideas. 'Ash trees are deciduous' and 'Jane's aunt is called "Jemima" are examples of synthetic propositions. The meaning of "deciduous" is not contained in the meaning of "Ash tree" and the idea of being called "Jemima" is not contained in being Jane's aunt. Both could have been different. However (to use a really cumbersome locution), a female relative could not have been a 'not a female relative'. Alongside the analytic/synthetic distinction, Kant places the a priori/a posteriori one. Here the source of the knowledge is either our intuitions or our experience. Thus we get the infamous fourfold typology:

	A Priori	A Posteriori
Analytic		
Synthetic		

An analytic a priori system consists of necessarily true propositions. Synthetic a posteriori propositions are contingently true. They may be true, but they need not have been. What about the synthetic a priori? Here their truth is necessary but our knowledge of their truth is contingent. Science, Kant proposed, was synthetic a priori. Its knowledge was necessarily true but derived from experience. *The Critique of Pure Reason (*Kant 1929*)* is dedicated to showing this to be the case. Kant used three triangulation points in *The Critique*: the completeness of Euclidean Geometry as a body of

truths about the nature of space; the indubitability of Newtonian physics as a narrative of the cosmos; and the security of Aristotelian logic as a truth preserving calculus. Within the constraints set by these three, he derived Transcendental Idealism as the demonstration of the possibility of synthetic a priori knowledge.

The structure, argument, coherence and even intelligibility of *The Critique* have been continuously debated and endlessly tinkered with during the 240 years since its first publications. It is certainly dense and often opaque. In addition, despite Kant's use of presentational schemata, the dependencies and other relations across the arguments are mightily jumbled and tangled. For our purposes, it is not necessary to track all the by-ways Kant takes nor do we have to weigh the force of every argument he makes. Since the terminus of his argument was taken as given by those who followed, we just need to know where he ended up and why,. What he ends up with (in reverse order to how we will discuss them) are: a metaphysics of noumena and phenomena re-working the appearance/reality distinction; a set of claims concerning the fundamental conceptual properties which condition our experience of the world; and a criterion or test of the meaningfulness or 'sense' of philosophical propositions.

The criterion of sense is what Strawson (op.cit) calls the "Principle of Significance". This principle derives from the paragon roles Geometry and Newtonian Physics play in Kant's thought. The principle insists if we cannot define an actual empirical or experiential instantiation of a concept then the concept is meaningless. Since the whole of Cartesian Rationalism rested on such concepts, Kant was able to dismiss what he called its Transcendental Materialism out of hand. This dismissal ran through the weft and warp of analytic philosophy during the 19th century and in many ways still does.

The principles governing experience are derived by analytic reflection (i.e. deductive argument) on the nature of that which is experienced. There are six central elements.

1. We cannot conceive experience outside a temporal frame. Experience occurs at a moment (perhaps a series of moments) in lapsed time. In fact, time is denoted by the succession of experiences.
2. For any individual, the succession of punctuated experiences is a unity marking it as their experience and identifying them as its subject.
3. The origins of our experience must exist outside ourselves. These sources of experience must have an objectivity which is independent of how we experience them.
4. Objects which exist outside ourselves must exist in space.
5. There is a single framework encompassing all experience and the objects so experienced have space and time as their dimensions (as we would now say). This, of course, is the Newtonian frame of reference.
6. For objects to exist in space and time, we must ascribe certain properties of continuity and causality to them.

On the basis of these claims, Kant proceeds to list the formal properties of thought—the bounds of our sense making—which fix how we must conceive our experience of the world. There are four broad categories (Quantity, Quality, Relation and Modality) derived, unsurprisingly, from Aristotelian logic, each of which exhibits a number of types.

Quantity	Quality	Relation	Modality
Unity	Reality	Inherence & Subsistence	Possibility & Impossibility
Plurality	Negation	Causality & Dependence	Existence & Non-Existence
Totality	Limitation	Community	Necessity & Contingency

The point Kant arrives at here is vital. It is important to state it as clearly as possible. However, the world is as a universe of objects independent of our experience, the only way we can experience it is as provided by the identified categories. Whatever way the world is, these categories delimit the terms with which we can understand the world. They exhaust what it is possible for us to think. In other words, we construct the world of our experience through the use of these categories. They define the limits of our experience and determine what reality is for sentient beings with the mental faculties we have.

We have already glimpsed the metaphysics in the development of the categories. There is an outer world independent of our experience. Our experience of this world can only be appearances shaped or conditioned by the fundamental categories of thought. We cannot get beyond the limitations they set to know how that world is 'in itself'. The metaphysics of appearance and reality has been re-made as the opposition of a noumenal mind-independent reality and a phenomenal mind-dependent reality. It is the phenomenal which, so to speak, 'constitute' the world *for us*. Kant provides us with a world of concrete objects experienced as our categories give them to us together with a world of how they are in themselves which, because we cannot think beyond the limits of our thought, is ultimately unreachable. The external stimuli of our mind's responses are real. They exist independently of our awareness of them. However, what such stimuli might be like 'in themselves', independently of the way we think about them cannot be known. This is because we cannot be asked to think about features or properties a thing might have if those features of properties can only be expressed in ways which are outside the limits of our categories of thought. It follows, there must be a limit to thought; a boundary between those things our minds can grasp and those things for which we do not have categories and hence out mind cannot grasp. But given his commitment to Newton's physics, the phenomenal world was not a plenum. As we will shortly see, for Newton matter consisted of particles in motion separated by (empty) space.

All we have left to do is see how Kant argues science can close the gap between the subjective experience of the world and its objective character. This is an argument from the sociality of judgements. As individuals, we know objects as they appear to us. But the categories of our thought are

fundamental to any rational thought and so they must be possessed by all rational beings. It is possible, therefore, for such beings (for example ourselves) to share and pool their agreements on judgements to construct a body of knowledge of commonly experienced and available objects. For Kant, objective knowledge of the natural world is possible without accessing the noumenal— that which is 'outside' or 'behind' appearances and beyond the limit of (our) thought. In fact, as we mentioned at the start, he believes Euclid and Newton have already shown the way.

3. THE INERTIAL FRAME OF REFERENCE

Thus far we have been tracking the early philosophical treatment of a concept and a distinction. We now need to change course and head towards their conjunction in Parsons' sociology. This will involve a little backtracking to pick up the path which science took during the period prior to and after Kant. Over this period two important things happened. First, under the leadership of Galileo, Newton, Leibnitz and Euler, mathematics became the *de facto* representational language of Physics and other major sciences. Physics itself had turned into Applied Mathematics. Second, Newton dispensed with the Aristotelean notion of a plenum and for a while the conception itself was side lined as a consequence of the experimental demonstration of vacuums. This did not mean the metaphysical distinction between appearances and reality (between phenomena and noumena) which necessitated the concept had been set aside. As we have just suggested it was transformed. The objects and processes observable in ordinary life were now conceived as the appearances of what Descartes called 'primary' and 'secondary' qualities described in terms of mathematically formulated regularities. Under this transformation, the diversity and apparent contingency of observable forms in the experience of our daily lives were to be explicated by the underlying mathematical regularities of particles in motion in absolute space being acted upon by forces. One thing which was not resolved was Descartes' dualism of matter and mind. As it has to the present time, debate over that continued. Thankfully that is not a necessary port of call for us.

Just as important as these changes was the shift in the relative authority of the bifurcated disciplines. The successes of the natural sciences led to their voice dominating the public determination of the character of the natural order. To use a term of Charles Taylor's (2004), part of the *imaginary* of the Enlightenment was the assumption that the rational discipline of science was revealing the secrets of the universe. The heart of this revelation was Newton's paradigm. As a result, where previously Philosophy had a regulatory role with regard to the constitution of reality (as what might be called 'speculative metaphysics') that aspect now became a separate and largely minor stream. The kind of analysis Kant had provided (which we called 'analytic philosophy') took centre stage. Essentially, its task was clarification of the implications of scientific findings for accepted philosophical accounts of the constitution of reality. Its challenge was to tidy up the logical structures of concepts and methods used in science (i.e. until recently almost entirely Physics). In seeking to lay straight its paths, the aim became not to set the targets for science but to facilitate its proper methodological ordering. This is not a contribution to science but commentary on science. Of course, not all could accept what has been termed an 'under-labourer' role. Schemes of speculative metaphysics continued to be forged but their relevance to science was much

diminished. The result was that disciplines emerging after the end of 18th century looked to science and Physics in particular for the model of their practise and to analytic philosophy for the rationalisation of that methodology. One such discipline was, of course, Sociology.

Background

Bacon, Kepler, Copernicus and Brahe may have wrenched the characterisation of the natural order out of the hands of the Medieval metaphysicians but it was Galileo who gave it its descriptive language as arithmetical formulae couched in the natural and rational numbers. These were the giants on whose shoulders Newton stood.[10] Of course, what we call Newtonian science wasn't solely developed by him. Much was contributed by Galileo, Huygens, Leibniz and Euler among others. But Newton's formulations became the foundation on which the new science was built. In this part of our discussion, we trace the major themes of the 'Inertial Frame of Reference' as a programme for science. With this as the backdrop, we will turn to A. N. Whitehead's attempt to resurrect speculative metaphysics and to re-think the programme, a project which had great importance for the shaping of Parsons' thought.

The objective here is to present the logical structure (that is, the metaphysics) of the Newtonian paradigm of Classical Mechanics (CM) contained in the 'Inertial Frame of Reference'. We do so for one simple reason. By his own admission, two figures were central to the shaping of Parsons' mode of thinking. While *SoSA* is built from the 'sociologies' of Marshall, Durkheim, Pareto and Weber. it was A.N. Whitehead and L.J. Henderson who provided the blueprint for how to 'proceed scientifically' in putting these sociologies together. Parsons was insistent his study of four prominent thinkers was an empirical investigation and not a philosophical review. For him, it was a move within science. Whitehead provided a metaphysics of organicism where the basic unit is the unitary event (act) and Henderson provided the idea of a systemic relationship between these units. The frame of reference which Parson's adopted constitutes the social world as a system of (social) action. While Henderson's proposed analogy of the systemic functionalism of the biological and the social was the mechanism by which Parsons integrated the action system, it was Whitehead's rejection of what he called the "simple minded" metaphysics of classical (i.e. pre-Quantum physics) as an account of the material universe which provided the layout of Parsons' conceptual structure. To understand what Parsons took from Whitehead, we need to understand Newton's Frame of Reference and why Whitehead rejected it. That understanding will hopefully guide us to an understanding of Garfinkel's declarations about Parsons' plenum.

In their introductory text *The Theoretical Minimum*, Susskind and Habrovsky describe CM as....

[10] The extent to which Newton divested himself of metaphysical notions is still the subject of discussion. For many, the concepts of gravity and action at a distance remain thoroughly metaphysical.

> ....a set of principles and rules—an underlying logic—that governs all phenomena for which quantum uncertainty is unimportant. (Susskind & Hrabrovsky 2013 p. 1)

This is important. It is not the 'discoveries', the 'theorems' or even the 'laws' which make CM what it is, after all these have always been subject to revision, but what these things are about and how they are arrived at. The heart of this process is abstract mathematical deduction; the building up of a set of mathematical formalisms by which to describe 'matter and motion' together with the setting out of inferences based on their conjunction. CM is, then, an exercise in applying mathematics to a disciplinary metaphysics (what 'matter in motion through space' can be taken to mean in Physics); one where relationships and predictions arrived at through mathematical deduction are tested or demonstrated.

Although there is an awareness the progress of CM is littered with rejected hypothesis, theorems found to be inconsistently framed, putative laws that weren't and so on, conventional wisdom holds the classical pillars on which the whole edifice stands have remained relatively secure, at least as far as the description of the macro-sized reality of our common sense world is concerned. In a layman's introduction to the place of Mathematics in contemporary culture, Morris Kline summarised the viewpoint thus.

> Galileo and Descartes had proposed a programme and a philosophy, namely that nature consisted of matter in motion and that science had but to discover the mathematical laws of these motions. One hundred years later this programme had been converted into a solid and most impressive reality.....(culminating in) Lagrange's Mécanique Analytique and Laplace' Mécanique Céleste (which) 'proved' nature is governed by precise and eternal mathematical laws.....(T)he scientific classics reduced mechanics to pure equations. The science of mechanics proved to be a paradise wherein mathematicians could roam freely and happily...natures phenomena were but fruit to be had for the picking (Kline 1972, 277)

What Kline is summarising is the core of the paradigm which remained at the heart of physics until the very beginning of 20th century.

THE FRAME AND ITS ELEMENTS

Standing behind the apparent crystalline structures of adamantine deductions which form the core of the CM is a set of pre-suppositions which are rarely if ever discussed in introductions to the courses of reasoning themselves. They provide CM's ultimate or foundational frame of reference (what Foucault called a discipline's "gaze"). Sociologically speaking, we would say these presuppositions constitute CM's world, its disciplinary metaphysics. It is this constitution which defines one of the core elements of the paradigm. It comprises a number of pre-suppositions or stipulations consisting of idealisations and refinements of common sense intuitions about the material world.

1. The collection of objects (things and processes) described by CM is closed. Nothing affects what happens in that world other than what is defined for that world. Notoriously (or famously) one of the things excluded is consideration of first causes and hence any reference to the role of a Deity.[11] The objects in the defined world are, therefore, foundational.
2. The defining dimensions of any world, space and time, are absolutes. As the quip goes, space is the container in which God created matter and time is the period since He did so! Both have 1:1 correspondence to the natural and rational number systems and so can be 'directly' represented by a precise measurement system; space being defined by three-dimensional co-ordinate geometry and time by a linear infinite progression. In the CM world there is no beginning and there is no end.[12] At the limit, space and time are infinitely divisible and infinitely extensible. These defining 'parameters' of the world are all that is necessary to characterise (that is, completely describe) the distinctiveness of objects and their relationships. In CM, the four parameters of the co-ordinates of space together with temporality define what Jessica Wilson (2010) calls the "degrees of freedom" of the idealisation. The most important requirement for descriptions built within this frame of reference is that the degrees of freedom are minimised. The analytical drive is to reduce descriptions of the interactions of objects to just these four terms.
3. The constituents of any CM world are:
    i. Particles with mass and charge but no dimensions (i.e. they are points in space) and particle regions with dimensions. By taking the latter to be represented by their centres of mass, these two object types are taken to be isomorphic and so regions can be analogised as particles.
    ii. Action is motion effected by contact (push/pull) forces at some defined point. The fact both gravity and electromagnetism are action-at-a-distance forces and so pose problems for the standard view action is underplayed in the paradigm, though it was the object of much debate.

The material universe is, therefore, composed of particles or matter in motion in space.

4. The configurations of objects and relationships in a world constitute the 'state' of that world. The totality of a world's possible states is its 'state space'. States are mathematically defined and a state space is a mathematical set (that is, a set of mathematical descriptions of objects in the world).
5. The given state of a world may be 'dynamic', that is where disequilibrium among forces produces changes in motion, or 'static' where the forces are balanced and there is no

[11] Given the doubts which have been expressed about Newton's complete break with metaphysics, some have found the line being drawn here to be somewhat permeable.

[12] Bracketing first and last causes was the way Newton famously claimed he had sealed off "hypotheses" and with them metaphysics.

change motion. The latter is the base case from which analysis begins, thus giving the paradigm the label "inertial". Changes in state are continuous incremental transformations not major stroboscopic discontinuities. If a system is in state s_1 at t_1 then a later state will be realised through incremental transformations to s_{n-2} at t_{n-2}. Because change is continuous through states s_n, in theory the number of states associated with any system may be an infinite succession of infinitesimally differentiated instantaneously fixed states, hence the term for such transformations is *Kinematics*,

6. Well formulated laws and associated predictions are determinate. In Laplace's image, if some souped-up Marvin was given the space state of a world (a list of everything in that world and all the equations relating to the states the world could attain), it could predict the future. Importantly, projection also operates in reverse. From where we are now, Marvin could also 'retrodict' back through any intermediate steps to some point in the world's past. In this sense, Newton's paradigm is time symmetric. However, this principle does not hold for those (many) phenomena which are time asymmetric, for example entropy.[13] This anomaly is well understood in CM. Its philosophical explanation remains a puzzle (see North 2011).

SPECIFYING THE WORLD

Let's go back to the Susskind and Hrabrovsky quotation. CM consists of principles and a set of procedures or logic by which they are applied. The logic is mathematical deduction utilising argument by analogy. The principles are a set of 'laws' which are extended through this mode of argument. The base formulation is given in Newton's Laws of Motion which are so named even though in addition to Newton's own investigations, they encompass work carried out by others and their standard formalisms were actually developed by Euler. As we have just seen, this base case concerns particles and linear motion. This case is extended to oscillations, pendula, rotational motion and so on by analogising the phenomena to linear motion and then deriving analogues of the base formulation (F = ma). As the portfolio of analogised formulations grows so more and more phenomena (e.g. light, electro-magnetism and heat) can be accommodated as the epiphenomena of particles undergoing various forms of motion. Eventually, the mathematical modelling outran the capacity of analytic philosophy to reconcile the metaphysics with the models and the paradigm broke down in the face of a failure to "save the appearances" as experimental work on light, electromagnetism and so on moved away from concepts such as 'beams' of particles to notions of 'waves' of energy.[14]

[13] We are laying a line of markers with references to things like magnetism and entropy. Things may not be as adamantine as they look.

[14] This move necessitated a medium for the waves to travel in, hence Physics returned to the notion of the 'aether' as a distinct (immaterial?) substance forming the plenum through which energy is distributed. Eventually (after the period we are interested in), the models adopted a principle of complementarity where either the mathematics of waves or the mathematics of particles was to be used depending on which was more instrumentally useful. As Mary Hesse (1962) comments several times in her historical review, it was not unusual after the end of the 17th century for the

To see what is involved in analogical analysis in this way, consider the following. We might define a circle as the locus of all points equidistant from a fixed point but characterise it with the property its circumference is 2πr. The characterisation provides a simpler and mathematically more useful description. It should also serve to identify what makes a circle distinctively a circle and not a disk, an ellipse, a sphere or any other manifold. The aim of characterisation is to find a mathematical formalisation which uniquely specifies a class of objects—circles in our case. If we extend this notion into CM, we can ask what is the minimum number of properties which allows a robust characterisation for some phenomenon?[15] For example, characterising a particle at rest requires 3 independent spatial parameters (x, y, z). If the particle is in motion we have the above parameters plus the velocity along the coordinates, i.e. 6 degrees of freedom. Within CM, constraining the number of degrees of freedom is achieved by specifying the analogy to ensure isomorphism (for example a particle may be limited to move only in a plane, or particles may be said to compose a rigid body and therefore are fixed in their relative positions) or by mathematical techniques such as renormalisation applied to clouds of particles making up a body of gas and by summarising their masses and movements in a Hamiltonian. At successive renormalisations, the scale of the groups of particles increases as they are gathered into blocks represented by a new Hamiltonian and ultimately into a single macroscopic system. At this level the law-like properties of the gas can be used to explain its behaviour without reducing the level of analysis to that of the individual particles. What results from this process are accounts of the scope and scale of objects which appear to gather 'descriptive' mass and momentum as they aggregate. This combination of mass and momentum serves to sustain the frame of reference's air of certainty. As we said, though, when pushed to extremes, the paradigm and its metaphysics break down.[16]

Summary

Hopefully the brief discussion here has been sufficient to demonstrate our claim concerning the compositional logic of CM. From a set of natural intuitions about the appearances of material objects and their actions, a foundational set of definitional formalisms was created. The operation of these formalisms depends upon a set of basic suppositions. Together the formalisms and suppositions allow us to state a series of postulates (Newton's Laws) from which analytic (formal and quantified) descriptions can be painstakingly deduced and the system's ontology extended. The robustness of the resulting body of descriptions encouraged their use as templates for the description of phenomena outside the original scope of the Laws. In making these extensions, investigators confronted the challenge of emergent

mathematical models in play to assume or imply wholly new forces, entities and relationships simply because they were needed to secure the mathematics involved. Most of the time, though, the circumspection of philosophers in not rushing to endorse these new species was rewarded when, for their own good scientific reasons, the physicists (sometimes quietly, sometimes noisily) dropped them.

[15] Wilson (2010) examines the setting of the cut-off point in any reduction strategy for a particular 'special science' which maintains the capacity to explain the law like properties of that sciences phenomena; that is, a science whose phenomena are not reducible to CM or even more fundamental physics.

[16] Luckily, sociology hasn't woken up to this yet in any serious way. Even though it was one of the discontents behind Whitehead's break with the classical model, possible consequences of the Einsteinian revolution for his sociology seem not to have occurred to Parsons (see his comment on Quantum phenomena in the introduction to the paperback version of SoSA).

properties (or the obverse, reductive decomposition) and the determination of an appropriate level of analysis; should all accounts be driven down to the properties of elementary material particles? They also encountered the problem of reconciling descriptions in terms of theories in Physics and descriptions in common sense terms (i.e. the problem of saving appearances). Their efforts face down these challenges placed the whole structure of CM under philosophical strain.

So what do we derive from all this? The reasoning structure operated by CM consists in the following:

1. A delimited and simplified domain of phenomena (matter and motion).
2. A specified set of analytic (i.e. abstract) properties (mass, force and their relationships)
3. A simplified set of initial boundary conditions (linear motion)
4. A universally applicable quantified measurement system based on foundational categories (space and time) which provide the minimal degrees of freedom needed to characterise objects and relationships in the world
5. A set of postulates formalising common sense intuitions regarding the basic phenomena (the Laws)
6. A vocabulary (notation) for framing atomic formulae and related grammar (simultaneous and differential equations) for constructing formal descriptions of the relevant phenomenological properties of the objects under investigation
7. A logic (mathematics) and protocol (argument by analogy) for concatenating descriptions and deducing extensions to the set of phenomena described

The very last thing to notice is the correlation between the properties of the ontology used in the Newtonian paradigm (particles in space and time and the forces which work on them) with the properties of the basic number systems. This is hardly surprising since the same (Kantian) categories are used to underpin both. As the ontology increased in complexity with the paradigm's analogical extensions, so extensions to the number systems were required leading to the 'invention' of the infinitesimals, imaginary numbers etc. In other words, the ontology of CM and its descriptive language were symbiotic and mutually elaborating.

4. THE VERY MODEL OF A MODERN METAPHYSICIST

> Speculative Philosophy is the endeavour to frame a coherent, logical, necessary system of general ideas in terms of which every element of our experience can be interpreted. By this notion of 'interpretation' I mean that everything of which we are conscious, as enjoyed, perceived, willed, or thought, shall have the character of a particular instance of the general scheme. *Whitehead (1929 p. 3)*

Lord Russell once confessed to a friend that completing *Principia Mathematica* had given him 'brain strain'. One wonders what one of the progenitors of logical atomism would have made of his co-author's

final body of work.[17] Diagnosed a chronic case of the same affliction probably. Talking of Berties, there is something Wodehousian about Whitehead's own *Summa, Process and Reality*, with its effortless *bon mots* and its brusque imperatives reminiscent of the dismissive dicta of Wooster's aged aunts. There is one feature of organic theory which would certainly have caused more than a little eyebrow raising on Russell's part, the theodicy at its heart.[18] Of course, this is not the somewshat distant, possibly indulgent and hopefully beneficent senior relative of the Tory Party at prayer. Whitehead's God is a mathematician's God; a kind of Cantorian transfinite Being at once beyond the limits of infinite space and time and responsible for the primordial categories of experience but also actively engaged in the creative contingencies of the concrete. But then it is the inscrutability of this Godhead which has made process theory so attractive to the purveyors of Gaia, Transcendentalism and religious eclecticism. One thing that is not Wodehousian, though, is Whitehead's discursive style. This is opaque and glutinous. Trying to make sense of paragraphs and longer passages is like being trapped in Lewis Carroll's treacle well but with the treacle congealing around you.

Whitehead's early career at Cambridge was largely taken up with problems in algebra and geometry. However, having taught and then formed a friendship with Russell, the two of them worked on *Principia Mathematica.* In 1910, Whitehead left Cambridge to join University College, London. In 1914 he went to Imperial College. In 1924, he moved to Harvard—where Parsons arrived in 1927. From 1910 onwards, Whitehead was pre-occupied with mathematical physics and the implications of recent developments for the standard tenets through which its philosophy was explicated. Key here were three different thrusts: the development of Field Theory about which he had learned first-hand from J.J. Thompson while he was at Cambridge, Relativity Theory which was of course all the rage at this time and the far more arcane developments in Quantum Theory. Added to these was Darwinian evolutionary theory. His encounter with this mix of ideas caused not a shift in the centre of gravity of his mode of thinking but its dissolution. Rather than the metaphysics of dualism and substantive individuals, he became convinced a new frame of reference was required, one which jettisoned the Eleatic foundations of Aristotle. It was the Ionians Heraclitus and Cratylus (both as interpreted by Plato) who provided the core ideas for process philosophy—flux and change are the fundamental characteristics of Whitehead's reality not the continuity of Parmenides.

[17] In this discussion, we concentrate on *Process and Reality* and *Science and the Modern World) (*Whitehead 1929 & 1925*)*.

[18] Just in case anyone was wondering why Whitehead thought he needed a theodicy, here is a comment from the chapter on social progress at the end of *Science and the Modern World* where he is discussing the 'privatisation' of morals consequent on the privatisation of psychology.

> A striking example of this state of mind.....is to be seen in London, where the marvellous beauty of the estuary of the Thames, as it curves through the city, is wantonly defaced by Charing Cross railway bridge.....The two evils are: one, the ignoration of the true relation of each organism to its environment; and the other, the habit of ignoring the intrinsic worth of the environment which must be allowed its weight in any consideration of final ends.(1925 p.184-5)

Philosophy and especially the philosophy of science had been of interest to him since his early days at Cambridge. But not having been formally trained in philosophy, he read the standard texts "without criteria" (to quote Stengers 2011). He was far less interested in comprehending the philosophical systems which the philosophers he examined were constructing than he was in unearthing lines of thinking which lent credence to his own ideas or against which he could argue forcefully in favour of his own theses. This dialectic predisposition is one of the prominent stylistic features of Whitehead's philosophising in *Process and Reality* and elsewhere. Another is that he often writes about the conclusions of his reading with the air of a matter of fact dogmatist even though a core principle of his conception of philosophy is its congenital fallibility. Any system of thinking reaches for ultimate certainty and always fails, something he knew was just as true of his own work as it had been of the systems of Plato, Descartes, Locke, Hume and Spinoza which he interrogates so closely. Third, there is his insistence on what we would these days call the historicisation of Philosophy. Every epoch had a philosophy which defined its *zeitgeist.* It provided not just a body of proofs and refutations but a context for the ideas which are being proved or refuted. Philosophies are cultural forms and as such are just as subject to flux and change as any other "entity". One of the tasks of philosophising as a practise is to ferret out those components of the current and necessarily "perishing" cultural form which are, to use a modern colloquialism, beyond their sell-by date and need to be jettisoned. In his view, organic theory was an exercise in just such ferreting and sorting. Its purpose was not just to replace one ephemeral schema with another but to demonstrate one way in which the endless pursuit of truth could be carried on by confronting the pretensions of and myths about science in the modern world—which is, of course, why he has been taken up by a legion of 'post-modern' thinkers such as Deleuze, Latour and Harroway (though how these authors reconcile themselves to his theodicy remains a mystery). Even so, despite the passing interest of some modern philosophers, Whitehead has become something of a marginal figure, these days remembered only for his work with Russell. In the 1920s and 30s, this was definitely not the case. He was a prominent intellectual especially with regard to the place of science in society, as can be gauged by the numerous and prestigious lecture series he gave culminating in the Gifford Lectures of 1927 which are the basis for *Process and Reality* (P&R) and the Lowell Lectures he gave in 1925 which form the book which most influenced Parsons, *Science and the Modern World* (S&W).[19]

The Order of Nature

Whitehead had a straightforward view of the relationship between philosophy and science. Science proceeds piecemeal, attending to particular problems and phenomena motivated by "a widespread conviction of an Order of Things or an Order of Nature" (S&W p.3). Philosophy's task is to organise the conceptual products of this piecemeal approach into an overall, evolving system of ideas. That is, philosophy is engaged in speculative metaphysics. Naturally, this system of ideas feeds back into the institution of science, though often in a lagged and unacknowledged way. Science is the manufacturer of

[19] One measure of this prominence is the fact that G.H. Mead (who is not really known for haunting these fields) devoted his last work to a commentary on Whitehead. See Mead(1959).

knowledge revealing how the patterns of everyday occurrences can be exemplified in general principles. Philosophy organises these general principles. His reflection on the developments we mentioned just now led him to the conclusion it was no longer possible to make sense of science (render it "intelligible") in terms of its own metaphysical foundations because the materialistic substantivism which had evolved within the Inertial Frame of Reference was rapidly losing its coherence. A wholly new metaphysics was required, one based on a new version of an old principle, creative organicism.

The approach which Whitehead takes is summed up in the quotation we have placed at the head of this section. In both science and philosophy, it is necessary to frame a scheme of ideas by abstracting over scientific findings or common sense experience. That scheme is then submitted to empirical and logical test. Ideally, the scheme would be couched in the most abstract forms (i.e. mathematical or logical symbolism) but this may not always be possible. Where it is not, a classification scheme is "the middle ground" between descriptions of "concrete" experience and the complete abstraction of formal analysis. Whitehead's epistemology is akin to that advocated by Popper in as much as it stresses the indeterminate nature of truth and a process of conjectural propositions being subjected to attempted refutation. A key difference, though, is that Whitehead gives up on the objective of an epistemological teleology.[20] As we will see, for him creativity as the driving force of natural processes. Since creativity is intrinsic to all natural processes, creativity will necessarily continue to be exhibited in ways of thinking about those processes. Developments in our understanding are 'pushed' by the creativity of natural processes rather than being drawn towards an ultimate description about how things are.

Because Process Theory is essentially metaphysical, Whitehead sees its implications throughout the whole of the standard philosophical curriculum and beyond. Fortunately, we don't have to follow him in these peregrinations. Our concern is only with whether he constitutes a plenum as the antithesis of the inertial frame of reference so we can then review if it played any part in Parsons' own scheme. We will start with what was, as Whitehead saw it, the immanent disintegration of the apotheosis of the modern thought system, 19th century CM, and then work through the major concepts he felt would be required in any emerging scheme which would displace it. As we say, that such a scheme is required is an axiom of his method.

> The explanatory purpose of philosophy is often misunderstood. Its business is to explain the emergence of the more abstract things from the more concrete things. It is a complete mistake to ask how concrete particular fact can be built up out of universals. The answer is, 'In no way.' The true philosophic question is, How can concrete fact exhibit entities abstract from itself and yet participated in by its own nature? (P&R p. 20)

[20] We return to Whitehead's epistemology below.

MATTER AND MIND

The primeordial error whose consequences were being realised in the revolutions of contemporary Physics and Biology was the absolute demarcation of matter from mind (or 'spirit') as substantive forms. Whitehead attributes this error to Descartes though he admits its actual origin lay in Aristotle. The error had been sedimented in the formation of the predicate calculus and then interpreted in Medieval Aristotelian logic. In the distinction between matter and mind, a rigid and unquestioned segregation had been achieved between the constituents of the outer, objective world and the inner, subjective world and hence a regimenting of the disciplinary practises which would take them as their topics; on the one hand theoretical physics and the special sciences, on the other the arts, behavioural psychology, the social sciences, jurisprudence et al.. This segregation enshrined another important distinction, that between nature as the *cause* of awareness and nature as *apprehended* in awareness. In the former, nature is passive. A tree exists as a defined and fixed object composed of molecules, atoms and other particles. In the latter, nature is creative or active. We are astonished by the varying patterns displayed by the leaves or entranced by the manifold shapes branches can take.

Since our faculties constrain our mode of observation to be one of marking differences, we are predisposed to discriminate the contents of our experience into substantive objects and project such discriminations as the characteristics which constitute reality. We assume we see, feel, hear, sense 1,2,3 or more 'damn things' after another as a stream of sense impressions. Similarly, the world of inner and outer 'atomic', indivisible individual objects (particles of matter or segments of experience) is conceived as contained in space and time. Objects exist at points in space and time and the world exhibits their relationships as definitively coordinated by these dimensions of our frame of reference. Finally, the logic of the predicate calculus, what has been taken to be the grammar of thought, expresses this duality of segmented distinctiveness and definitive relationships.

What this metaphysics was increasingly unable to capture and the grammar of its thought increasing unable to express was an emerging convergence in our understanding of nature, an understanding which since the cultural form of established thought saw matter and mind as distinct but symmetrical, would challenge our conceptions of both. The traditional distinction was blurring. For Whitehead, matter was increasingly being conceptualised in ways that formerly were associated with mind. In Physics, two lines were of importance. One was a line of thinking in Field Theory which transmogrified particles of matter into wave forms of energy together with the subsequent unification by Maxwell of the equations which articulate these forms; a mathematical path which led to Quantum Theory. The second was, of course, the relativising of space and time and their consequent unification as the space-time Relativistic Frame of Reference. Within this, the distinction between substance and its containers as well as the idea of absolute motion were being dissolved. Rather than being postulated as fixed frames for other phenomena, space and time were themselves becoming problematic. Alongside these transformations, the Darwinian revolution had shifted the conception of the organic world away from a given, static speciation toward an evolutionary developmental unfolding. The implication

Whitehead took from all these currents in science was that a whole new categorial system was required, one which was adequate to act as the cultural form for articulating an emerging understanding of the unifying creativity of mind and matter. Instead of the distinction between matter and mind, this system was to be built around the notion of action as a creative process. This looked for abstracted classification would capture the converging metaphysical ideas in Physics and Biology and would become the cultural form of a new era until such time as it too was overtaken by the creative process of new ideas.

The central idea throughout the rest of this discussion is that Whitehead reversed the trajectory of explication which underpinned the Enlightenment and its imaginary. Instead of seeking to translate human activities and relationships into categories and modes of analysis developed for the physical world, he sought to translate physical activities and relationships into categories used for social and psychological worlds (the worlds of 'the subjective', if you will). Moreover, the physical activities and relationships he is discussing are those which featured most prominently in the debates in Physics at the time he was writing—those of post-relativity Physics and Quantum Mechanics. Newton's frame of reference had provided a simple but codified set of mathematisable concepts which expressed our intuitions about the material world. As the mathematics become more and more turbocharged and the scope of the framework extended, its central features leaked out into the Enlightenment imaginary. Eventually, the mathematics outran the concepts leading to all sorts of disjunctions between what the physics was saying and what our intuitions provided for. As we say, Whitehead sought to rectify the situation and reconcile intuition and physics by codifying a subjectivist speculative metaphysics.

THE CATEGORIES

> Philosophy will not regain its proper status until the gradual elaboration of categoreal schemes, definitely stated at each stage of progress, is recognized as its proper objective. There may be rival schemes, inconsistent among themselves; each with its own merits and its own failures. It will then be the purpose of research to conciliate the differences. Metaphysical categories are not dogmatic statements of the obvious; they are tentative formulations of the ultimate generalities. (P&R, p.8)

When approaching Whitehead's philosophy (that is, his enunciation of his own theses rather than his critiques of others) for the first time, it is important to remember four things. First, he was convinced that the 'substantivism' (what he called "Scientific Materialism") of the classical era had penetrated modern culture and permeated our language. Our expressions were not just redolent of substantivism, they traded in it. To make his break with the Inertial Frame of Reference he would have to innovate linguistically. This would lead him to invent, re-define, abuse and misuse terms. Second, he was also convinced that philosophical and scientific thinking shared a common method, the analysis of generalised categories. In both, analysis consisted in the decomposition or deconstruction of such categories to their basic concepts, the basic constituents of the world, and their recombination as the various domains or 'sub-disciplines' of knowledge. Third, he was a mathematician through and through and so preferred the

definition of terms (i.e. statement of concepts and categories) to be undertaken first and their deployment presented once the definitions were in place. He recognises this will often make an initial reading of some or all of his terms practically unintelligible since their sense can only being given by their use. But that is the way he proceeds. Finally, most of the time when setting out his core ideas he is working a contrast case with CM. In other words, he is trying to re-think the philosophy of what was becoming the new standard physics. Only when he has laid out this new mode of thinking for that domain does he pick up its implications for the arts, Theology and other disciplines (which doesn't mean he doesn't borrow terms from them during his initial explication).

Whitehead's presentation of the categories is a listing of headings and derivative terms for types under them. The main headings are: Category of the Ultimate; Categories of Existence; Categories of Explanation and Categoreal Obligations. Every 'entity' (and what they are we will come to in a moment) should be conceived as a specific instance of the categories. The last two are standard philosophical fare in as much as they are lists of the types of explanations feasible under the metaphysics given in the first two and of the orientations to the properties of subjective experience (what he calls "feelings") which those explanations have to respect and explicate. Given our immediate interests, we can set them to one side (though the issue of 'feelings' will be touched on).

Category of the Ultimate

The easiest way to understand this is look at how Whitehead interpreted Darwin's theory of evolution and Quantum Mechanics. The 'old' biological scheme of a fixed or static world of populations of flora and fauna had been replaced by a process in which 'concrete' instances (individual giraffes, pansies, slow worms etc.) were to be regarded as cases of the playing out of the contingent effects of mechanisms of natural selection. Our experience of a diversity of animals and plants is the instantiation of the underlying flow of a process (genetic adaptation). Darwinian Biology took genetic mutation and adaptation to be central not the individual case or its species. Since this process was contingent, it was indeterminate and hence 'creative'. You could predict natural selection would occur, but you could not predict which adaptations would take place nor which would prove successful, a viewpoint which is the inverse of the Laplacean principle of determinism.

At the point at which Whitehead was discussing it, Quantum Theory was just developing. Two ideas were fundamental. Forms of energy (such as light) were travelling wave-like deformations in the aether brought about by the "excitation" of molecules consequent upon their random collisions. The energy generated from these collisions is dissipated away as waves. The "excitation" is vibratory and the frequency of the vibrations determines the experiential properties of the energy form or mode (for instance, colour of light). Second, modes of energy have a lower bound for the value of energy being dissipated which is a fixed proportion of the wave frequency (Planck's constant). However, scientific materialism attributed the effects of energy to the motion (Whitehead calls it "locomotion") of molecules or their sub-component particle constituents. Since these motions are 'chaotic' in the mathematical sense, they can have no fixed or predictable bounds. To accommodate the findings of Quantum Mechanics, we

would have to resort to a 'model' of science in which the internal constituents of molecules move in fixed paths. Such a view flies in the face of the standard theory. Whitehead's response to this apparent contradiction is to propose we require a new process conception of material substance.[21]

Instead of 'objective substance', Whitehead places 'subjective creative process' at the centre of his metaphysics. Since it is central, he is happy to extend the scope of 'the subjective' to sthe material world—thereby unifying mind and matter. Not only are animals (including ourselves) and flora the emanations of subjective, creative processes but so too are stones, clouds, and protons. Although every line of such subjective experience seems to be about different things happening in different ways (i.e. is 'disjunctive'), when the emerging theories and conceptualisations are surveyed, they demonstrate convergence on a central idea, the creative conjunction of emerging novel forms.

Categories of Experience

Here we turn to the core elements of the metaphysics and their relationships.

Actual Entities

These are the basic events, actions, occasions of which the world of experience is constituted.

> '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. God is an actual entity, and so is the most trivial puff of existence in far-off empty space. But, though there are gradations of importance, and diversities of function, yet in the principles which actuality exemplifies all are on the same level. The final facts are, all alike, actual entities; and these actual entities are drops of experience, complex and interdependent. (P&R p.18)

Actual entities are the 'what' of 'What happened?' not the 'what' of 'What did it happen to?' They are constituted by "eternal objects" which is Whitehead's term for what previously been thought of as 'universals' (Scotus' *quiddities*). Each actual entity is a moment of creativity; a constant dynamic configuring of the universals drawing on the streams of what has gone before to generate a novel future. It is through this dynamic action, entities or occasions are as individually identifiable realisations of constituent universals (Scotus' *haeccities*). Central to this organic process conception is the acceptance of a relativised definition of space time. In place of segmented dimensions of space and time, Whitehead assumes space time to be an endless creative flow of action constituted by 'instantaneous' occasions. This flow fills and defines our experience.

This formulation raises an obvious question. Given Whitehead has replaced substance or matter as the ultimate constituent of experience, does his metaphysics require the concept of a plenum? If we take the term to be defined in the terms recognisable to Duns Scotus, the answer would be 'Not really!' since he has moved away from a materialistic conception of reality. If, however, we follow

[21] In some superficial respects, the actual hypothesis Whitehead floats looks a lot like an Ur-version of String Theory.

Whitehead's own line of thinking, the sense of what 'plenum' might mean has been transformed. It is now a conceptualisation of the make-up of the world of concrete events not as discriminable substantive objects but as flows of lines of active experience.

Prehensions

This is possibly the most opaque of Whitehead's terminological inventions. The term "prehension" itself means "grasping" (as in 'New World monkeys have prehensile tails'). Whitehead uses it to describe the nature of relations among entities. As ever, doing physics is where he starts from. He is searching for a term to describe the push-pull forces of Newton, the hydrostatic wave fronts of Maxwell as well as the even stranger (indeed 'spookey' to quote Einstein) relationships of Quantum Dynamics. All these are forms of "feelings" which entities have in regard to all other entities in their worlds. The capacity for prehension is present in all entities and is what allows them to 'grasp' and therefore respond to the flow of their creative concrete experience. The complex ever reconfiguring cat's cradle of prehensions linking entities is what provides the unity of occasions.

> Each actual entity is analysable in an indefinite number of ways. In some modes of analysis the component elements are more abstract than in other modes of analysis. The analysis of an actual entity into 'prehensions' is that mode of analysis which exhibits the most concrete elements in the nature of actual entities. This mode of analysis will be termed the 'division' of the actual entity in question. Each actual entity is 'divisible' in an indefinite number of ways, and each way of 'division' yields its definite quota of prehensions. (P&R p. 19).

Every conceptual scheme is a selection of prehensions used to describe how entities grasp the creative processes which realise their existence. The point is that each 'division' of prehensions draws on the infinite range of possibilities for 'prehending' what is unfolding in an actual occasion. Comparing sets of prehensions allows for: (a) the analytic correlation of our (unfolding) ways of understanding the universe and (b) the creative possibilities inherent in the constantly emerging creation of the entity itself. Notice, just as subjectivity is generalised to everything which we can experience, so too are prehensions. In Whitehead's metaphysics, boulders and atoms, flora and fauna as well as humans have prehensions in terms of which they act. The woodpecker senses the hollowness of the branch will serve as a drum; the moon senses the gravitational attraction of the mass of earth in order to stay in its orbit, entangled but distanced particles sense changes in each other's state and adjust accordingly.

Nexus

Actual events are the conceptual units of experience analysed via the processes of prehension. However, any given experience is a conjunction or binding (what Whitehead calls a "togetherness") of flows of events and their unique association of prehensions. Each conjunction is a nexus. The a Autumn crocus in the garden marks a complex nexus of multiply different emergent actual entities and associated prehensions whose subjectivity is not just from the point of view of the observer but from that of all the other actual entities concerned. It follows that actual entities experience the totality as a nexus of the interrelatedness of their sets of prehensions. Any particular experience is a nexus of events whose

interrelated prehensions are to be analysed by adopting different combinations of component categorial systems taken from the emergent general scheme.

Society

A nexus is an instant in the flow. A society is a multiple set of nex*ūs* (plural of nexus) which extends through time. Here the sociologist will feel on familiar ground. What defines the two possible types of society are forms of organisation to the pattern of 'feelings' (prehensions).

> A 'society,' in the sense in which that term is here used, is a nexus with social order, and an 'enduring object,' or 'enduring creature,' is a society whose social order has taken the special form of 'personal order.'
>
> A nexus enjoys 'social order' where (i) there is a common element of form illustrated in the definiteness of each of its included actual entities, and (ii) this common element of form arises in each member of the nexus by reason of the conditions imposed upon it by its prehensions of some other members of the nexus, and (iii) these prehensions impose that condition of reproduction by reason of their inclusion of positive *feelings* of that common form. Such a nexus is called a 'society,' and the common form is the 'defining characteristic' of the society..... the social order of the nexus is not the mere fact of this common form exhibited by all its members. The reproduction of the common form throughout the nexus is due to the genetic relations of the members of the nexus among each other, and to the additional fact that genetic relations include feelings of the common form. Thus the defining characteristic is inherited throughout the nexus, each member deriving it from those other members of the nexus which are antecedent to its own concrescence. (P&R, p 34, italics added.)

The term 'concrescence' refers to the form the actual entity takes in the annealing of prehensions at any nexus. Notice "feelings" are modes of orientation among the members of the nexus. These are orientations which make up the context against which they act. This is an idea Parsons will pick up in *SoSA*. Whitehead distinguishes two forms of order, personal and social. A society with personal order consists simply of the diachronic ordering of inherited relationships of prehensions within a single stream of experience. Each nexus is an instance of a line of inheritance up to that point in their existence. A personal society is the synchronic evolving organisation along that line. A social order is one where a common element of form of prehension exists across the members of the nexus. This common element arises in the flow of activity as a result of the convergent adjustments in prehensions each member makes as a result of sensing the responses of others. What ties the members together in the nexus are their shared positive feelings towards the emerging common form. Whitehead calls this process "reproduction". This is important and we will come back to it in our discussion of Parsons. In the contrast of societal orders we have a prefiguring of the 'problem of order' as Parsons' conceives it; namely how to constitute an interpersonal order for social life from a personal order of autonomous individual existences.

> ...the true method of philosophical construction is to frame a scheme of ideas, the best that one can, and unflinchingly to explore the interpretation of experience in terms of that scheme. (Whitehead, Alfred North. *Process and Reality* (Gifford Lectures) . Free Press. Kindle Edition, loc. .194)

Two things are important to bear in mind here. First, we are attempting to summarise Whitehead's views at one point in his life (in the 1925-1927 period) when the Lowell and Gifford Lectures were given. This is the period when Parsons' encountered them. We are leaving out developments in his thought which occurred after this point. Second, Whitehead applies the historicisation of philosophy to himself. The metaphysics which he is attempting to tear untimely from the womb of the most advanced sciences of his day is a metaphysics for its time only. In its turn, it will be supplanted. This is because the 'reality' of the world will necessarily change as science proceeds. This attitude has important implications for Whitehead's epistemology.

Inevitably, even ln the highly simplified account we have given of his metaphysics, we have gestured here and there towards how Whitehead conceived the nature of knowledge, its acquisition and status. A final and very necessary task for us now is to summarise those views since they feature very heavily in Parsons' account of his own system. As before, we will restrict ourselves to laying out the ideas so they can be understood and appreciated. We will not attempt to reconstruct or assess the evolutionary trajectory of Whitehead's own epistemological reflections which, as he always knew it would be, was left uncompleted.

Truth

Although he was a relativist in his physics, Whitehead denied being a relativist with regard to knowledge. At this point in philosophy's history and the development of his own metaphysics, he finds an absolute conception of truth to be "unintelligible". As a consequence, he rejects any epistemology in which such a conception wears the trousers (as John Austin might have said) and which, given our inability to provide a set of propositions which stands in a 1:1 isomorphism with "how things are", would force us to reject of the idea that *any* scientific propositions might be true. In other words, he rejects the contrast between absolute and relative knowledge (wishing a plague on both houses). In *P&R* and *S&W*, he sometimes toys with the possibility of coherence or pragmatism as the leading epistemic virtue. However, in the end he turns away from both and instead opts for his own interpretation of correspondence, a view which treats truth as something like 'conformity to evolving common sense experience metaphysically conceived'. We will discuss his hierarchy of knowledge in a moment, but if we accept his argument that the hierarchy of knowledge maps on to a hierarchy of modes of prehension as we move from 'primal' pre-reflective

awareness as a flow of distinguishable perceptions to the integrated and systematic high theory of science, then his view of correspondence as convergence across that space seems to follow.[22]

> Science begins as a deliberate effort to refine commonsense thinking. It seeks more permanent perceptual objects by a renewed application of the principle of convergence..... We see a bell and hear a sound, but the sound does not seem located precisely at the bell "from which it comes." Science attributes the sound to newly discovered perceptual objects (the air, the inner ear) affected by the bell. Thus, the original *conatus* of science is to harmonize our extant thoughts, the primary (sense-objects) and secondary (perceptual objects). (Kultgen 2005, p.50).

This is brought out even more strongly in an early discussion.

> The physical world is, in some general sense of the term, a deduced concept. Our problem is, in fact, to fit the world to our perceptions, not our perceptions to the world. (Whitehead 1915-1916, p. 128).

The Hierarchy of Knowledge

Whitehead suggests several steps or stages in the development of knowledge. Each is limited and error prone with relationships being discovered between and across the stages as we move through them. The first is pre-reflective "primal" or "immediate" experience. We have access to this only by adopting an attitude akin to Husserl's 'bracketing' of the Natural Attitude. Here experience is the multiple streams or flows of distinguishable types (sounds, sights etc.) which are then aggregated as 'my' experience in the constructed collections of common sense at the second stage. In the third stage, space-time properties are attributed to objects of experience to provide for continuity of existence whilst they not being perceived. This is 'the same' fox saw before. I saw the same object you saw. We both saw that fox here and so on. Again, to use a vocabulary we are familiar with, what Whitehead is describing is the phenomenological conception of a typification of common sense knowledge.[23] It is from common sense knowledge and its pre-reflective suppositions about "lived" experience that science proceeds (a very Husserlian thought). Its mode of operating is to test common sense against its own constructs of primal experience, developing new concepts via imaginative reconstructions which change over time and so transform common sense structures.

The Process of Imaginative Reconstruction

By now, we ought to be able to pretty much guess how this will go. Philosophy's task is to take the converging products of scientific thinking and recast them in terms of higher order abstractions which retain a "grasp" on the immediate common sense and experimental experiences which science takes as its

[22] The noun from primal which Whitehead uses is 'primate'. Whitehead talks of instances of pre-reflective experience as "primates" which, on occasion, has some rather disconcerting effects.

[23] This is not a comparison too far. Whitehead regularly references Bergson's thinking and was in close contact with him. We know Bergson and Husserl had great admiration for each other. Of course, Whitehead is working in precisely the opposite direction to Husserl. Any extended discussion of Parsons and Schutz ought to work through this possible connection.

inputs. For its part, science builds its abstractions from the convergence of our common sense conceptions. Thus, there is a line of convergent abstraction from common sense all the way through to Philosophy.

Scientific development is a process of testing the initial abstracted categories as framings for the converging common sense conceptualisations of "lived" experience. The aim is to build logically coherent structures of categories which, while abstracting from common sense, nonetheless save the appearances common sense rests on. Whitehead himself gives a really good example of what this means in *Science and the Modern World*.

> One of the most hopeful lines of explanation (in Quantum Theory—authors) is to assume an electron does not continually traverse its path in space. The alternative notion as to its mode of existence is that it appears at a series of discrete positions in space which it occupies for successive durations of time. It is (as) though an automobile, moving at the average rate of thirty miles an hour along a road, did not traverse the road continuously; but appeared successively at successive milestones, remaining for two minutes at each milestone....
>
> If the notion survives (at that point mathematical but ultimately empirical—authors) test, undoubtedly physics will adopt it. (S&W p.33)

Which, of course, it did, But philosophical dilemmas arise as a consequence of that adoption. How does this discontinuity in existence get reconciled with our usual conception of Being? The debates over quantum phenomena and their implications for our concepts continue to this day with those pursuing the science being wholly unfazed by the discomfort their work gives philosophers.

The tethering of science to experience acts as a constraint on scientific theorising and in particular on the predisposition to mistake the object as conceived within the abstracted scientific scheme for the infinitely divisible concrete "primate" of lived experience. This is the fallacy of misplaced concreteness which holds that the totality of world of experience is "nothing but" that which constitutes science's theorising of it. Its complement is the fallacy of the pursuit of certainty which insists on the completion of the Sysphusean determination of a system's ultimate and indubitable first principles rather than continuously expanding the scale and scope of the applications to which the categoreal system applies.

Recurrence to experience as the test of abstract categoreal systems derives from convergent conceptualisations which avoid the fallacies of misplaced concreteness and the pursuit of certainty. Whitehead's approach offers the method by which analytically real explanations of the phenomena of lived experience are to be provided.

SUMMARY

Whitehead's metaphysics and his philosophy of science are cast from the melting pot of revolutionary ideas in Physics and Biology at the beginning of the 20th century. His metaphysics has creative process rather than substance at its core and his philosophy of science is one of a punctuated evolution of abstract categorial systems seeking to provide as best a grasp as possible on the multiplicity of lived experience as can be attained at any point. Each science works within its own regime seeking common concepts to apply to the convergence of broader and broader fields of phenomena. As the quotation at the head of this section makes clear, Whitehead's ambition was to lead the development of a wholly new 'imaginary' or cultural form appropriate to the emerging character of science. With all this in place, we can now turn to one of the questions with which we started. How much of it underpins Parsons' *Structure of Social Action*?

5. THE ACTION FRAME OF REFERENCE

> We have long believed that the theory of human social behavior, what technically we call the theory of action, has been a process converging toward a general theoretical scheme which was applicable in at least certain essentials all the way from the smallest samples of experimentally controlled animal behavior to the analysis of large-scale social processes. (*Parsons and Bales, 1953, p.63*)

We can probably get through this at a clip. Really, there is no need to ask if Parsons' was significantly influenced by Whitehead's philosophy of science. He tells us himself he was. *Science and the Modern World* is positively referenced a number of times. Our question, though, is about how far that influence went. In particular, in taking up his philosophy of science, how much of Whitehead's metaphysics did Parsons adopt and was it enough to render the theory set out in *SoSA* a process theory with all the implications for methodology that follow? Getting to a view on this will enable us to offer a response to our other question: What did Garfinkel mean by his comment about Parsons' plenum? The texts for this discussion are Chapters I, II, XVIII and XIX of *SoSA* together with the Introductions to the book. The main claims Parsons makes and the robustness of his conclusions are not at issue here. Neither is his claim that the work is an example of empirical sociology—a suggestion which is probably only sensible if *SoSA* is taken to be a Parsonsian exercise in the Sociology of Sociology.[24]

The Philosophy of Science

> (Science) is present only when....bits of knowledge have become integrated with reference to fairly clear-cut theoretical systems. In so far as this has happened,..... (i)t is at least unlikely that such a system should play an important part in canalising the thought of a considerable number of highly intelligent men over a period of time, if it were not that the propositions of the system involved

[24] We note *en passant* it is a common criticism of Parsons that the eventual general scheme consists of "mere" subordinate categoreal schemes rather than genuine empirical theories.

> empirical references to phenomena that were real and, within the framework of the conceptual scheme, on the whole correctly observed. (SoSA p.17)

We can take this under three key headings.

Theory of Knowledge

The principles adopted under this rubric should be very familiar to us by now. First there is an "asymptotic" conception of the possibilities of understanding. This derives from the stipulation of a contradiction between the infinite possibilities of modes of description and the limitations of human cognitive capabilities. Try as we might, we cannot overcome what, when speaking of Whitehead's view, we called the "Sysiphusean" challenge of compiling a literal description of all the ways some empirical fact might be described. When undertaking their investigations, key sciences restrict the aspects of phenomena being identified in order to provide a system of integrated descriptions. The purpose is not to elaborate an endless list of factual statements but to characterise just those features which are relevant to the investigative task in hand. All we can attain are better and better syntheses across the evolving descriptions available. Second, when operated under scientific principles each of these modes of description constitutes a distinct domain pitched at some level of abstraction and generality. The challenge of science-led rational thinking is both to detail the character of concrete empirical facts under each domain and to seek to synthesise them under broader and broader organic systems of classification. The term 'organic' means the resulting synthesis is not a mechanical contrivance of independently operating parts but a functionally interacting and interdependent whole. Third, the primordial data for every science are the common sense understandings of a sphere of concrete experience held by ordinary members of society. Science looks for patterns in these understandings, abstracts and generalises over those patterns and tests the robustness of its derivations by objective and controlled interventions in concrete cases.

Necessity of Categoreal Systems

The whole thrust of *SoSA* is the rejection of radically empiricist positivism founded on the notion "pure" pre-theorised sense data. For Parsons, thinking requires conceptual systems using categories which are embedded in our languages. He identifies three orders or types of categorial system.

1. Descriptions of facts: these are based on selective orderings from among the discernible features of concrete actions and provide domain specific accounts of what that feature might be but not why it occurred. The fallacy of misplaced concreteness is attributed to those who mistake these abstracted categorised selections for concrete reality itself.
2. Explanations of facts: these rest on the deployment of distinct frames of reference (Parsons uses Economics and Sociology as his examples) whose descriptions are to be synthesised in the explanation of some concrete circumstance. Sets of explanations for complexes of actions are deconstructed either singly or comparatively into their analytic parts. This might, for example, be into such types as 'rational' and non-rational' or 'religious' and 'non-religious' action. The point is

to identify 'pure' and 'mixed' types; that is, types of concrete actions which can only exist independently of others and those which can only exist in integrated clusters. This is a translation of Whitehead's distinction between the 'personal' and 'social' types of nexus.

3. Sets of Laws, generalisations or tendency statements. What is important here is these explanations are propositions about actual (empirical) actions conceived as "values" of categories of the frame of reference. These values may be quantitative and non-quantitative. Interestingly, in *SoSA* Parsons sketches only one putative sociological law: the process of action can proceed only in the direction of an increase in rationality. This he compares directly to the Second Law of Thermodynamics.[25]

There will be instances of action which cannot be accommodated within the chosen categoreal scheme. These are of importance as opportunities for further elaboration, revision or a drive to higher order abstraction.

Analytic realism

This is pure Whitehead.

> .....it is maintained that at least some of the general concepts of science are not fictional but adequately "grasp" aspects of the objective, external world. This is true of the concepts here called analytical elements. Hence the position here taken is, in an epistemological sense, realistic. (SoSA p.731).

When trying to bring out how abstractions from the "concrete" can be "realistic", Parsons often turns to Biology. For example: biological descriptions of some organism detail the organism's features and those elements of its environment of which it can take advantage or which are not available as resources to it. These are re-described in terms of inheritance, adaptation and structural zonation in the environment allowing derivation of principles which lead to distinctive populations of sub-types of species (e.g. Galapagus tortoises and shapes of shell). What we are dealing with are analytically real explanations.

THE DISCIPLINARY METAPHYSICS

For Parsons, the Theory of Action is a domain or disciplinary frame of reference akin to the Inertial Frame of Reference. Just like Newton's frame, the Theory of Action comprises an ontology of conceptual objects and a set of relationships which hold between them. However, following Whitehead, Parsons' objects were not conceived as direct analogies to the particles and forces of the Newtonian scheme.

[25] The comparison is more than a little limited of course. The 2nd Law is a law of conservation. The sum of energy in a system cannot be reduced onlyy re-distributed. In this re-distribution some energy is "lost" to the residual category of entropy but that "loss" is measurable. Under the 2nd Law, the reduction in energy available is path dependent. It cannot be reversed. Parsons' "Law" is hardly a conservation law (what would it mean to say means-end rationalising became unavailable?) but an incremental one and also, presumably, reversible with the possibility (*in extremis*) of wholly non-rational features of action being predominant.

Ontology

The basic unit of the system is "the unit act". This can be described solely in terms of its elements and their properties. Acts do not exist independent of these elements. Once again, the formulation for this existence is drawn from Whitehead.

> It should be noted that the sense in which the unit act is here spoken of as an existent entity is not that of concrete spatiality or otherwise separate existence, but as conceivability as a unit in terms of a frame of reference. (SoSA p.43-4)

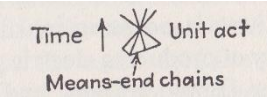
This basic unit is a theoretical set of concepts in terms of which a concrete set of actions may be described. As we will discuss below, missing from the possible list of elements is one of the key functions which tie Newton's frame to the concrete world, spatial dimensionality. Any talk of 'social space' in Parsonsian (and other) sociologies is metaphoric at best.

1. The elements of the unit act are the well-known components.
2. An "actor" or "agent": this is a sociological type not an actual person. Where actual persons actions are considered, it is as concrete instantiations of such types.
3. "Ends": a future state of affairs towards which the act is oriented and for which it is a mechanism through which that state may (eventually) be realised. This implies acts may be chained as serially ordered means to ends.
4. "Situation": the context of the flows of action in which the actor is currently immersed which is *different* to that which the actor wishes to bring about. The situation is partitioned into:
    a. Elements which are not under the actor's control and which may or may not *condition* his action by acting as barriers or enablers.
    b. Elements which are under the actor's control (either immediately or within restorable reach) which can act as the *means* by which the action is performed and its outcome or ends realised
5. "Norms": this is a translation of Whitehead's notion of "feelings" as the mode of orientation for the elements of action. Parsons uses Pareto's term "collective sentiments" to describe its social character. A norm is a (verbal) description of an end which is desirable and an injunction to conform to it.

The degree of 'fit' between means and ends is open because of the range of possible choices and situational conditions may not always be aligned perfectly (or at all). Indeed, actions can completely misfire. Parsons terms this outcome "error". Error is, naturally, a resource for the shaping of future action—i.e. a driver of adaptation. Finally, and this is key, the frame of reference is subjective. That is, the act is conceived and analysed *from the actor's point of view*. This is in stark contrast to the Newtonian scheme where an external universal and fixed frame of reference is stipulated. Although Parsons hints elsewhere about the possible relativity of the scheme, it is with this pre-supposition that Whitehead's

requirement for the relativity of action is inserted into the system. Inevitably, this has all sorts of consequences which Parsons' critics have seized on..

As we saw, the term Whitehead uses for the set of "prehensions" and entities in action is "nexus". This is a 17th century Latinate term for a binding together of threads or filaments. Parsons talks about the unit act as a "knot" and on p.741 offers an illustration of what he means.



To all intents and purposes, his and Whitehead's concepts are identical. Means-end chains are clearly an instantiation of Whitehead's clustered flows of prehensions.

Relationships

The essence of action is its future orientation, hence it must be conceived as a process in time. Parsons does not deal explicitly with the 'problem' of defining social time, rather he skirts round it by insisting that time in the Action Frame of Reference is not the absolute conception it is in CM but does so without specifying how exactly we are to conceive it. Certainly using anything approaching the linear temporal ordering of the Newtonian scheme of forces, impacts and motions will not do if only because the master relationship among the units is "logical" not causal (see *SoSA* p.732). The structure is controlled by the relationship of means and ends where the "ends" are subjectively apprehended and so antecedent to the "means" used in the sense that the actor must know and desire the ends in order to select the means.

The whole purpose of *SoSA* is to extract a synthesised account of action from the work of Marshall, Pareto, Durkheim and Weber. This account stipulates social actors are proactive and adaptive rather than passive and responsive. Parsons does this by grounding action in both instrumental and affective rationality. This distinction marks orders of "motive" for action which can be attributed to actors on the basis of their membership of types. For most of *SoSA*, this feature of action is called "voluntarism" and is used to demarcate the emerging synthesis he delineates from that offered by positivism. However in his discussion of Durkheim and Weber, Parsons reduces this cluster concept to the pairing of collective norms and valued ends. Rather than voluntarism being the system's distinctive feature, it is the subjective commitments of actors to shared norms and ultimate values which define the actor's point of view and demarcate the conceptual structure. Subjectivity is not an additional property of the system of action but its essence. The guiding conception is in line with the prevailing philosophical 'means-end' conception of rationality at the time. However, determining the rational character of action is not achieved by some external standard but the sense of fit of the action to the subjectively weighed pattern of dispositions and ends attributed to the actor. As with Einstein, it is not that there is an absence of a guiding frame of reference but that each individual (particle or actor) has its own configuration. However, Parsons offers no analogue of the *process* of reproduction operating at this level which Whitehead proposes achieves a

binding of the elements of a nexus together. Instead he assumes shared structures of meaning providing common understanding are in place.

Two things fall out of this. First, this assumption renders the coordination of action among actors inexplicable in the Action Frame of Reference's own terms. There is no mechanism for aligning frames of reference (that is 'definitions of the situation'). As a consequence, the frame of reference cannot be fundamental. This is, of course, where Garfinkel sought to insert the first wedge for his re-specification. Second, there is relativity in schemes of reference within and between scientific domains and particularly between the domain of the Natural Attitude and Sociology. The value states (metrics, orders of magnitude, preferences, etc.) attributed to elements of the context and used to weigh ends and means could (at least in principle) vary between these domains not just in scale but in form. As a result, the conceptual structure underpinning $\mathbf{R}^n$ as the common language in which to analyse these relationships within "the sciences of social action" may well be at odds with the subjective frame of reference of the actor in its context. As a result descriptive adequacy must become a matter of concern.

Summary

There seems little doubt *SoSA* does not simply use Whitehead for inspiration. It works through Whitehead's philosophy of science and disciplinary metaphysics to construct a synthetic (syncretic?) theoretical system for Sociology. This is clear in the presumption of an emerging consensus regarding the character of social action across contiguous disciplines as well as in the character of the conceptual structure (basic units and their subjectivity) and the epistemological basis for the analyses offered (analytic realism). Although it does have the same narrative structure as Whitehead's philosophy, namely the identification of convergent trends in prominent fields of thought, *SoSA* is not simply derivative. It is an imaginative reading of Marshall, Pareto, Durkheim and Weber in the context of Whitehead. It takes considerable effort and not a little ingenuity to chisel out the Action Frame of Reference from the marble of their writings.

6. Order in the Plenum

We are now in a position to take up Garfinkel's assertion "There is no order in Parsons' plenum!". First, though, let's just remind ourselves of what a plenum is supposed to be and what happened to the notion. For the Eleatics, Aristotle, the Scholastics and Descartes, the plenum did not designate the ordinary world of experience. That was a world of 'appearances'. The plenum was a conceptualisation of the 'reality' of the world of appearances—a piece of speculative metaphysics; how it *must be* for the world to be as we experience it. In Descartes' view, the plenum consisted of corpuscular, contiguous particles of matter moving in vortices. Over the next 300 years, the idea of a plenum in the Cartesian sense almost disappeared from Physics. First the Inertial Frame of Reference 'modelled' (to use our contemporary term) matter as particles in motion through empty space. This paradigm was extended by a process of mathematical analogising to all CM including electro-magnetism, optics and thermodynamics. From the

early 19th century onwards, the corpuscular theory of CM gradually came under strain fromy the introduction of the mathematics of Wave Theory as the descriptive language for more and more physical phenomena. Waves were deformations in the flows of energy between objects, though what energy actually was remained something of a mystery. What we might call the disciplinary metaphysics of CM creaked and eventually fractured with the development of Relativity Theory (which dropped the concept of absolute motion on which the Inertial Frame of Reference relied) and Quantum Mechanics (which put constraints on the randomness of particle motion and required all sorts of arcane relationships to be posited). The idea of a plenum makes no sense in the Wave Theory model unless, of course, energy is taken to be corpuscular.

This is the context in which Whitehead introduced his process theory as a new disciplinary metaphysics for Physics. Process theory was based on a return to the organic conception of the Ionians and Plato and a re-interpretation of how matter is to be conceptualised; namely as a continuous flow of general forms of prehension taking a unique configuration at each nexus or point of experience. Rather than the vocabulary of appearances and reality, Whitehead uses the terms "concrescence" and "analysis". Any form of understanding involved analytical abstraction over experience-in-the-concrete. So, while it is not a plenum in the sense that Duns Scotus and Descartes would have recognised, Whitehead does have a plenum. It is experience in the concrete analysed in terms of the metaphysics of the flow of 'felt' prehensions.

Parsons translates Whitehead's metaphysics into a disciplinary metaphysics for doing sociology with the unit act standing for Whitehead's nexus. In so doing, Whitehead's analogy of the plenum is carried over as well. The relationship between actual 'concrete' acts and the unit act mirrors that between concrete events and the nexus; one of necessary analytical abstraction. The 'analytical' and the 'concrete' are a pair, but they are not two distinct and unrelated items—one containing order, the other lacking it. Neither Whitehead nor Parsons' intend this. Rather the analytic depicts an order, *an order of the concrete.* The scheme portraying 'the order of the concrete' is a contrivance, devised to manage the cognitive limitation of the theorising mind relative to a reality. The inevitably inexhaustible detail of 'the concrete' logically precludes the possibility of exhaustive inclusion within the bounds of any given 'scientific' frame of reference. The contents of the 'analytical scheme' are not and cannot be full, exhaustive representations (literal descriptions or effective reproductions) of phenomenal experience comprising the 'concrete' but must be selective, picking out only a (relatively) small range of features from the concrete, sufficient to service our intellectual need to discern order either as regularity in our affairs or order in nature. 'Order' thus must be resident at the level of generality since, effectively, 'order' turns out to mean 'pattern' and patterns are nothing other than recurrences of a fixed arrangement of elements across a range of 'concrete' instances.

The consequences of this approach are:

1. The potentiation of the idea that the analytic scheme and, therefore, the producers and users of the scheme and its categories impose order on the phenomenon;

2. The analytical scheme effectively becomes an instrumental device (a device for prediction and control) regarding concrete practical affairs.

It would seem Garfinkel is right. Parsons has a plenum in the revised sense we attributed to Whitehead. That plenum denies there is order in the concrete. However, while probably not wanting to describe his account this way, from what we have said we can infer Parsons would be likely to concur. The Action Frame of Reference does not locate order in the concrete but locates it in the relationships among the categories of the abstracted scheme. But why? Why not deconstruct the conceptual frame yet further and seek order in the concrete? Parsons doesn't offer an answer, not surprisingly since from the discussion in *SoSA*, it seems not to have occurred to him to do take this step. His was a translation of Whitehead's approach into a sociology not an critical examination of it. Moreover, from what we know of his exchanges with later commentators such as Schutz and Garfinkel himself, although when apprised of the question he seems not averse to examining such a move, he was not anxious to do so being pre-occupied with developing the scheme in other directions.[26]

There is, however, a rationale for drawing the line on analytic reduction where it is. This is to be found in Whitehead's response to Relativity Theory. Einstein's model abandoned the idea of absolute velocity and with it the assumption of a fixed frame of reference for space time. As a result, every point in space had to be conceived as being its own unique frame of reference, that is having its own configuration of space time. Whitehead adopted this wholeheartedly as his "subjectivity" principle. In his plenum of flows of prehensions, each nexus is unique and subjective, providing its own frame of reference (definition of the situation) for the 'experience' at that point. Given the incommensurability of reference points, there can be no overall order in the concrete. With Parsons' translation of nexus into the unit act, the incommensurability of reference points was carried over as well. Now, though, we are not talking about co-ordination in space time but co-ordination in 'feelings' and meaning structures. There can be no co-ordination in the concrete flows of action precisely because it is precluded by the relativity (subjectivity) of the unit act. As we said, within the Action Frame of Reference order has to be imposed through abstracted analysis within the scheme. In the concrete all we have are the torrents, rapids, turbulences, eddies, pools and meanders of individual experience.

It is against this conception, Garfinkel makes his move. If this is where it gives us, Garfinkel wonders, "Who needs a plenum?" As an abstraction from the concrete, the plenum is required simply to provide content for the presumed necessary analytic scheme to process. In other words, Garfinkel intimates you do not have to reject a conception of the unit act and the Action Frame of Reference but their framing as an analytic scheme in the Whitehead-Parsons sense. Giving up the requirement for abstracting away from the concrete to a generalised scheme of explanatory concepts means Garfinkel is free to look for a (social) order of unit acts in the concrete and (if you will) to treat the concrete as the plenum. He can then ask how to make the social order in the concrete possible and visible. What does

[26] See for example Grathoff (1978) and comments in the Introduction to *Parsons Primer* (Garfinkel 2019) by Anne Rawls and Jason Turowetz.

seeing the concrete sociologically look like as an investigative enterprise? His answer is to re-specify the actor as a common sense sociological reasoner and call on the phenomenology of Husserl as interpreted by Schutz and Gurswitch to provide the required sociological psychology; the sociologically theorised typical structures of motives, interests and relevances required to construct social order as flows of coordinated action conceives as displays of co-produced definitions of the situation. These flows are EMCA's phenomena.

Parsons did not have to adopt Whitehead's epistemology and metaphysics. However, having done so, and done so in the thorough way he did, he was committed (advertently or inadvertently) to the presuppositions therein. Key among these were the concrete-analytic distinction and the necessity for analytic conceptual schemes together with thes relativity of points of reference and the hydrostatic conception of subjective experience defining the nexus. These presuppositions required Whitehead to locate an organising principle for the sociality of the nexus in the concrete flow of experience, namely his concept of locally organised reproduction. Parsons did not follow suit. For him, the organising principle was to be located elsewhere in the analytic scheme. As a consequence, as Garfinkel rightly claimed, for Parsons there is no order in the plenum. By dropping the concrete-analytic distinction, Garfinkel was able to dispense with the need for an analytic scheme and thus to locate order in the concrete phenomena of everyday social life.

7. BIBLIOGRAPHY

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