Nagel's Challenge and the Mind-Body Problem

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Part One

Nagel's Challenge

Introduction

Though the modern form of the problem of the relation between material and mental aspects of human beings appeared in the seventeenth century, especially in the writings of Descartes, I do not think that any philosopher would contest Nagel's judgement[1] that there is no generally accepted solution to the metaphysical impasse occasioned by the seeming impossibility of wedding material and mentalistic concepts into a single coherent system. Though the problem was famously formulated as a dualism by Descartes[2] in terms of a metaphysics of substances and properties this metaphysical framework can and has sustained a variety of ways of dealing with the seeming incompatibility of the material and the mental.

Nagel's strategy is to examine representative versions of materialism and mentalism, and to display their shortcomings as accounts of the possibility of subjectivity in the context of human embodiment. The impasse seems to have its origin in the limitations of possible ontologies to versions of materialism and mentalism. There is no accepted resolution to the problem of explaining or eliminating the seeming dualism of First Person experience, consisting of bodily sensations, qualia and so on, and Third Person experience, consisting of perceived things and processes in physical space and time.

This provides the grounding for the first 'leg' of Nagel's challenge to the philosophical community: to come up with a metaphysical scheme that incorporates materialist concepts in our ways of describing First Person experience, and mentalist concepts in

[1] Nagel, T. 'Conceiving the impossible and the mind-body problem' *Philosophy* **73** 1998, 337–52.

[2] Descartes gives more than one version of 'Cartesian dualism'. I shall take the phrase to refer to the position set out in Meditation Six. In *Descartes: Selected Philosophical Writings*. Trans. J. Cottingham, R. Stoothoff & D. Murdoch, (Cambridge University Press, 1988), p. 114.

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our ways of describing Third Person experience, while accommodating both kinds of fact into a single conceptual scheme, a common ontology.

The second 'leg' of the challenge is to show that the internal relations among the concepts so employed and constitutive of the new common ontology be necessary.

That Nagel's challenge makes sense depends on the correctness of his claim that we, the philosophical community, do not at present possess the conceptual equipment to understand how subjective and physical features of human beings and other sentient creatures could both be essential aspects of a single entity or process.

> If we could arrive at it [a unifying theory] it would render transparent the reaction between the mental and physical, not directly, but through the transparency of their common relation to something that is not merely either of them. The mental will not do because it simply leaves out the physiology, and has no room for it. The physical will not do because while it includes the behavioural and functional manifestation of the mental, it doesn't, in view of the falsity of conceptual reductionism, enable it reach the mental concepts themselves[3].

While the problem it poses seems to be clear enough Nagel's formulation in the above and other passages leaves much to be desired.

In his first formulation of the challenge[4] Nagel asks for an explanation of 'how something that is an aspect or element of an individual's subjective point of view could also be a physiologically describable event in the brain'. One would expect a diagnosis of the continuing impasse to include at least some doubts about the assumption of a substance-property metaphysics within which to develop a response. But Nagel takes that away from us by summing up the conditions of his challenge in these words: 'We do not at present possess the conceptual equipment to understand how subjective and physical features could both be essential aspects of *a single entity or process*' (my italics). But, as I shall argue, in adopting so conservative an ontological condition, Nagel makes any response impossible. If we are confined to thinking in terms of entities or processes there can be no resolution, for just the reasons Nagel himself gives, that is there are only two kinds of entities and processes which could serve as sources of meanings for any concepts relevant to the issue: namely, those that are given in experience. Finally, in the way Nagel poses the challenge there is the persistent influence

[3] Nagel, op. cit., p. 351.
[4] Nagel, op. cit., p. 342

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of Indo-European grammar with its preferred subject-predicate form, a form which though it does not determine one's metaphysical predilections, nevertheless favours a substance-property metaphysics.

The second way in which Nagel's formulation of his challenge ties one of any respondent's hands behind his/her back, appears in what seems at first sight to be a clarification[5]. We need, he says, 'a conception that will permit subjective points of view to have an objective physical character *in themselves*.' But unless this demand is further qualified it looks as if the physical character of one of the sets of clashing concepts that generated the impasse in the first place will not be transcended. It is subtly given priority. In looking for 'an expanded concept of the mental' which is so enlarged as to include the physical, he gives away the game, since he suggests that a more adequate account of subjective experience 'should see it as the phenomenological "inside" of certain physical processes'. The ontological substratum would then be material. This impression of a loading in favour of the material is strengthened by Nagel's assumption that the physiological account of perception and action could yield behavioural and functional classifications of material processes without using mentalistic concepts. This is, at the very least, a highly contested position. For example, Anscombe's[6] account of intention seems to show, convincingly, that at least some attention to the extra-personal context of action is ineliminable from the determination of the category to which a bodily movement, as an intentional action, should be assigned.

As Nagel remarks, if there were a necessary relation it would not be evident *a priori* simply by inspecting the concepts we already have in place for describing First Person experience and Third Person perceptions of material aspects of the world, including ourselves. The concepts of 'being in pain', 'tasting Tin Roof Fudge Pie' can be fully in place without any awareness of goings on in the brain. Even if having a brain in a certain definite state were a necessary condition it would be outside my First Person experience, though not, with the aid of suitable monitors, outside my Third Person perception. But once again Nagel's analysis drifts off the point by following a conservative ontology, the substance-attribute scheme which is, I contend, at the root of the impasse. In specifying what the new ontology should be like, he says 'the phenomenological concept and the physiological concept ... pick out a single

[5] Nagel, op. cit., p. 343.
[6] Anscombe, G. E. M. *Intention* (Oxford: Blackwell, 1957).

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referent...'[7]. But, without further qualifications, this sounds very much like a common *individual*, with two kinds of properties.

Nagel requires that the new ontology must make it transparent that the relations between the new concepts that will permit mentalistic predicates in the otherwise physicalist descriptions of brain-processes and physicalist predicates in the otherwise mentalistic description of sensory experience that constitute the two faces of the impasse, should be necessary. This requirement too, is somewhat hazily presented, since it is not entirely clear whether the required necessity is to obtain between the concepts needed to describe fully tokens of each category or between type-concepts. The asymmetry between token correlations has often been remarked on, in that while not all brain-state tokens are accompanied by mind-state tokens, instances of the latter are always accompanied by instances of the former. Type relations, as revealed by empirical psychology, are much more 'ragged'. Yet it is these that Nagel wants to be necessarily related since he hopes that will be between physical and mental *concepts* that some transparently necessary connection will be revealed, and presumably these will be taxonomic rather than individuating. If the tie to being of a certain neurophysiological type and being conscious is necessary, as Nagel thinks it really is, then the physical description of the brain states associated with consciousness is an incomplete account of their essence.[8] Again we are confronted with a conservative ontological constraint. Just as it was mind-states whose essences were incomplete, lacking a physiological component, so now it is brain-states whose essences are incomplete, lacking a phenomenological component. But in both cases the problem and the hint of a path towards a solution is posed in terms of *occurrent states*. This is just the ontological framework that most strongly favours the strong contingency thesis Nagel wishes to circumvent.

Drawing on a somewhat superficial analogy with the physical sciences, Nagel suggests that a step on the way to the solution would to start 'thinking of the mind, contrary to Cartesian intuition, as only partially available, even in principle, to introspection'.[9] Thus he imports the distinction between nominal and real essences into his specification for a response to his challenge. While this makes

[7] But to talk of rigidly designating single referents is once again to tacitly conform to the substance-attribute ontology and to tacitly assume that such referents are occurrent, since surely the phenomenological state and the physiological state picked out by the relevant concepts are themselves occurrent.

[8] Nagel, op. cit., p. 347.

[9] Nagel, op. cit., p. 344.

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perfect sense in chemistry, 'sodium' can be specified by its unique reactions, and by its subatomic structure, so that the latter serves, in part, to explain the former, this move in psychology is highly contested. Freud's version of it and the current enthusiasm for unconscious mental processes evident in some 'cognitive science', for instance the use of the concept 'implicit memory', both seem to be interpretable as metaphors for neurophysiological states and processes.

What has to be unified to meet Nagel's Challenge?

Where one should look for a unifying, Third Way ontology depends on the scale of the entities or phenomena that fall under the mental and the material types by reference to which the challenge is posed. Nagel is concerned only with the case in which neural states and private experiences are the terms of the inexplicable relation. But it seems to me that there are *two* cases, very different in scale, that are germane to the foundations of psychology: one is the case of the proper way of dealing with the relation between brains and Persons, while the other is the case Nagel concentrates on, the relation between material states of the body and the experiences of the person whose body it is, that is between what is revealed from the Third and First Person standpoints in psychology.

What is the relation between brains and Persons? One version of this relationship has figured prominently in discussions of the limiting conditions for personal identity. Brains are imagined to be transplanted between human bodies, and the effect on personhood examined in all sorts of thought experiments. However, these modern fairy tales are very different from Locke's version of the fantasy, since it is the centre of consciousness that is relocated, not the brain when Prince and Cobbler exchange minds (centres of consciousness) and/or bodies. But the underlying relationship assumed to hold between brains and *Persons* is either taken to be more or less like that between brains and bodies or not addressed at all. However, it is far from obvious that the brain/person relation is to be taken for granted. Both are 'individuals' in the metaphysical sense, that is substances capable of reidentification. However, persons have a location in interpersonal networks consisting of such moral relationships as obligations, rights, duties and so on, networks in which brains as cognitive organs do not, any more than pocket calculators do.

What is the relationship between brain-states and conscious phenomena? This is the 'qualia' and neural states problem, a problem which presumes the ontological status of bodies and Persons as individuals.

Nagel's Challenge, as originally published, is addressed to the

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second problem, but there are Nagel-like Challenges easily mounted with respect to the first problem, the brains and Persons problem. For example, if the sciences appropriate to the workings of brains are neurophysiology and neurochemistry, and those appropriate to the way Persons think and act are, say, anthropology and linguistics, how could we devise a metaphysical scheme in which both had a place, but which was neither a reductionist generalisation of neurophysiology nor a post-modernist revamping of everything as text?

Remembering that the Nagel Challenge has two components, for what we should recognise as two problems to be solved:

1. We are required to find an ontology in which physiological states and conscious experiences (phenomenological phenomena) have a common nature, such that the sets of predicates for each include predicates from the set of the other.
2. We are required to show that within the new ontology the two kinds of phenomena are related by some kind of necessity, that the instance of the one kind could not exist without a corresponding instance of the other. This should be reflected in the internal relations of the overlapping sets of predicates required by the first leg of the challenge.

In what follows I hope to show that both legs of the challenge can be satisfied for the two brains and Persons problems, sketched above. However, while the first leg can be met for the brain-states and conscious states problem, the second cannot, at least in the strong sense that I think Nagel is looking for, for a deep reason. The weakness of the relevant necessity reflects something very deep about what it is to be a conscious being in a world of material stuff.

Part Two

The Third Way for Brains and Persons

Introduction

Persons and brains seem to be ontologically incommensurable, even though both are individuated spatio-temporally, and active brains are essential parts of persons. A brain-dead body is not a Person, nor is a body, sustained by life-support, that is topped by an empty skull. Bodies and Persons are individuated by criteria of identity that share some requirements, for example spatio-temporal locatability, but not sharing others, such as the capacity to experience

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pain[10]. There are morally related criteria in the identity conditions of Persons. Persons are morally protected, whereas brains, as detached parts of the bodies of former Persons, are not. The fact that a detached brain is usually referred to as 'So and so's brain', for example in an autopsy report, is not essential to its material identity, which could have been established (and sometimes, say in a body fished from the river), is established by material properties only. Einstein's brain has been pickled and microtomed. It could only have been subjected to such treatment by being firmly ensconced within the system of moral concepts appropriate to material things.

Taking up Nagel's Challenge at this level, the task must be to devise an ontology in which morally protected Persons and neurologically described brains are fitted, without strain, into a metaphysical scheme, an ontology, which is such that the repertoire of predicates required for the Person discourse necessarily includes some expressions for material properties, while the complementary requirement is met by the repertoire for brain-centred discourse.

A candidate ontology: Tasks and tools.

Unlike the molecular state-quale problem, for which I will propose a radically different ontology from that in which Nagel presents his challenge, dissociating myself from both First and Third Person descriptive vocabularies in devising a common ontology, I will try to show that the unification of the status of brains and Persons can be achieved by adopting a framework in which brains, under a certain kind of description, are drawn up into the Person ontology. In that ontology they can and do serve as *tools* for certain kinds of *tasks* formulated and undertaken by Persons. The Person 'grammar' includes norms and standards that have no place in material descriptions of anything. Not any outcome of exploiting the causal powers of a tool, as a material thing, is acceptable as a proper outcome for a task procedure. The normative concepts of correct or successful outcome / incorrect or unsuccessful outcome and so on are necessary aspects of any task discourse. The movement of the racquet causes the ball to hit certain spots on the court, but it is the touch judge and the umpire who ruled the shots in or out in accordance, not with the laws of Newtonian mechanics, but the rules of tennis.

[10] At least one hopes so—readers who enjoy Patricia Cornwell's stories will be well acquainted with the details of autopsy procedures which would be unthinkable unless the property of experiencing pain belonged only to Persons and not to bodies as such.

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We can and do make tools of other stuff than white and grey matter which will do some of the same jobs that people use their brains to perform. For example there are calculators to do arithmetic, dictionaries to record a lexicon, pocket diaries as *aides mémoires.* These devices too must function correctly, not exist as the material sites for processes that happen to occur there. A causal account of how input is related to output can be found equally convincing for the description of the processes occurring in the innards of a calculator that is working incorrectly as for one that is giving the right answers. And, of course, the same goes for a brain. The 'proper' comings and goings of dopamine are not defined causally, but in relation to correct or proper cognitive achievements of People.

A material thing is a tool only in so far as it is given a use by people. Which type of tool a material thing realises depends on the use to which it is proposed to put it. For example a flat piece of metal with a wooden handle is a spade with respect to digging, but could be used as a frying pan with respect to the camp cooking (if the custom built metal object had been left at home). To understand how a material thing works *as a tool* we expect to be offered a material account of the processes and properties that allow it to meet our standards as set by the requirements of completing the task. But there will be many other processes and properties of which it could be the site.[11]

Does it make any deep difference to their relative status that a brain is materially necessary to the existence of a Person, while a spade is not? Spades are not organs and so their existence is independent of particular people, though not from the human form of life, since that requires agricultural implements In extreme conditions one could use one's hands in the gardens and fields as surrogate spades and hoes. Unlike brains, though hands are also tools, they can be lost from a Person's body without that Person ceasing to exist. I can see no ground for supposing that these differences between the relative detachability of spades, hands and brains from their users affects their status as tools.

The grammar of Person talk can provide both qualitative and numerical conditions for 'same tool'. Tool are classified by the tasks they are designed to perform, not by their material features. The same arithmetical task can be done by the use of a pocket calculator, or an abacus or the brain of a suitably trained Person.

[11] There are a huge variety of human tools, including symbolic tools. The human brain is not only a tool for cognitive tasks but also a tool for creating cognitive tools such as diagrams, maps, words, and so on. There are also material tools for making material tools. Tool making is an important branch of engineering.

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Now for the first leg of Nagel's Challenge: For something considered *as a tool* we *can understand* how something can have *both intentional and physical features*. But this understanding is not like understanding how (why) hydrochloric acid dissolves zinc. There is a place for this kind of explanation in the whole story. For example, we might ask an expert in soil mechanics, how, that is by what physical process, does a flat piece of metal, acting at a certain angle, displace soil. But that question is subsidiary to and its relevance depends upon the internal conceptual relation between 'spade' and 'digging'. We can ask an expert in computer science how, by what physical process, does a calculator come to show a shape <4> as the result of the striking keys with the shapes <2>, <+> and <=> on them in a certain order. But that this realises an arithmetical calculation depends on the internal relation between the numerical *signs* as defined by the laws of arithmetic. We have already noted that there is a causal story both for correct and incorrect calculations, so the concept of 'right answer' cannot be defined in causal terms alone. The laws of nature that are involved in describing the physical working of the tool, do not determine the rules of correctness of the task.

What about the second leg of Nagel's Challenge: Can a version of the kind of necessity that would meet the second requirement be found a place in the task-tool ontology? One way to seek it, for at least some tasks the tool for which is the brain or part of the brain, would be to analyse a task, such as performing an arithmetical operation in terms of a formal procedure that would be implemented on a Turing Machine. We would need to find a part of the brain which, on examination, could only be a realisation of a Turing Machine. The concept of addition, say, includes its Turing implementation, while the concept of such a brain structure, one that could be used by a Person to do sums, must include the concept of a Turing Machine. While we know that there are all sorts of material systems that will realise the general form of a Turing Machine, including two bowls and a bag of cherries, the necessity that this part of the brain is the part that can be used for arithmetic would be secure, if its structure fell within the range of material systems that could realise a Turing Machine. Of course such a demonstration would not show that the favoured brain sub-system could only perform arithmetical tasks.

The ontology of tasks and tools does seem to satisfy Nagel's demands on any satisfactory response to his challenge.

1. The concept of a specific tool has intentional, cognitive components since tools are defined with respect to tasks, and it also has material components too. The latter are necessary in that whatever

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it is that is identified as a tool for such and such a task, should actually function in the way required, namely to implement the steps necessary to accomplish the task in some material process.

2. The necessity that obtains between the intentional components of the concept of, say, a calculator, and the concepts necessary to describe the material components, is weaker than logical necessity, since other material things can do the job of calculating as well, for instance an abacus, or the differential of a rear-drive car. But there is some measure of necessity, in that certain very general structural requirements must be met, relative to the task that defines the material entity as that tool. Not any material thing will do for a well-specified task. A slice of Tin Roof Fudge Pie will not serve as a spade, nor a sheet of newsprint as a barbecue grill.

Part Three

The Third Way for Brain States and Qualia

Introduction

Many of the discussions of the relations between these categories of beings presume that the problem field is built upon a certain metaphysical foundation: namely, that of substance and property, with the subject-predicate form as its grammatical counterpart. Since the substance-property metaphysics seems to be intimately bound up with the treatment of the mind-brain correlation as a metaphysical impasse, the challenge, as I see it, will be to develop a metaphysical scheme in which both brain states and phenomenal experiences can find a place, but which does not perpetuate the substance—property metaphysics.[12]

What exactly is the issue? Following Nagel's example I will try to restate this in as elementary terms as possible. More and more people have come to believe that every conscious phenomenon, such as the experience of a bodily feeling or sensation (*quale*), is correlated with some state of the brain and nervous system of the person having the experience, a state which any suitably equipped observer could perceive. These ranges of phenomena are sometimes distinguished as what is given to a First Person and what is given from a

[12] For a very thorough account of the 'events, states and processes' metaphysics in the context of the philosophy of mind, see Steward, H. *The Ontology of Mind* (Oxford: Clarendon Press, 1997). The author's remit is clearly summed up on pp. 3–4, having no truck with affordances or causal powers.

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Third Person point of view. The current situation is harder than the speculative neuropsychology of the seventeenth century, such as that sketched by Thomas Hobbes,[13] since neuropsychologists have demonstrated correlations in detail in many experiments: e.g. Penfield and temporal lobe stimulation,[14] and now PET scans and thought. But we also now know that the same type of conscious phenomenon is not always accompanied by the same type of neural condition, e.g. the brain mechanisms used in reading by men and women are different while the skill is indistinguishable.

Why is there an issue for philosophical discussion? It is surely because correlation is a very weak relation, since it can be exhibited by pairs of entities and properties related by a great variety of different links. For instance correlations may reflect causation, semantic rules, underlying identities and there are other possibilities. In the natural sciences discovering a correlation falls short of a demonstration of causation unless an intervening mechanism can be found, or a plausible model of one can be constructed.

If we persist with a dualistic ontology, forged from some version of the substance—property metaphysics, we quickly run into an impasse when trying to spell out the details of an actual relation between correlated pairs one drawn from one face of the mind/brain and one from the other. For example if we try for an explanation, as it is conceived in the natural sciences, that is by discovering or modelling a generative mechanism, we can make no advance on our original impasse. For a putative explanation to make a correlation across the divide of a dualistic metaphysics intelligible we seem to have the following dilemma:

If we propose a material mechanism to explain the correlation we displace the original question of how the mental and the material are related to the point at which the outcome of the running of that mechanism results in a conscious experience.

If we propose a mental mechanism for the same task we displace the problem back to the point at which some material event or state stimulates the proposed mental mechanism.

In either case the original inexplicable correlations between material and mental states, be it as particulars or as types are not eliminated.

[13] For example in Hobbes T. *Leviathan* (London: Andrew Crooke, 1651), Part I, Chapter 1: 'the external body ... presseth the organ ... which pressure by the mediation of the nerves and other strings and membranes of the body, continued inwards to the brain and heart, causeth there a resistance or counter-pressure .. which ... seemeth to be some matter without.'

[14] Penfield, W. *The Excitable Cortex in Conscious Man* (Liverpool University Press, 1958).

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It seems as if, confined to the traditional ontology of the material and mental, whether an irreducible dualism of substances or a monism with an irreducible dualism of properties, we cannot overcome the contingency of the correlation, since we lack the wherewithal to demonstrate that it is naturally necessary, that is susceptible of a natural science style explanation.

I shall call this type of correlation the *Great Contingency*.

John Locke and the Great Contingency

Locke's *Essay* explores the correlation between material states and processes and conscious experience in several places but the most important for my argument are Book II Chapters 8 and 21. Here are two quotations:

> ... nor can reason show how bodies by their bulk, figure and motion should produce in the mind the *ideas* of blue or yellow etc.[15]

> For by these [primary qualities] I imagine, might be explained the nature of colours, sounds, smells and all other *ideas* we have, if we had faculties acute enough to perceive the severally modified extensions and motions of these minute bodies, which produce these several sensations in us[16].

These look contradictory. In the first quotation he seems to be saying that we not only cannot as a matter of fact, but could not, as a matter of conceptual necessity, find the material basis for an explanation of the relation between material properties and qualia, and in the second that we could, if only our senses were acute enough. But when we look more closely at Locke's philosophy we will see that there is no contradiction. Seeing why will bring us closer to a response to Nagel's Challenge.

Underlining the Great Contingency Locke writes:

> These mechanical affections having no affinity at all with those *ideas* they produce in us (there being no conceivable connexion between any impulse of any sort of body and any perception of colour or smell which we find in our minds)...[17].

The key to understanding Locke's view is to be very clear about his usage of 'idea' and 'quality'. That which a person experiences pri-

[15] Locke, J. *An Essay Concerning Human Understanding* (London, 1690, Bk II, viii, 25).

[16] Locke, op. cit., Bk II, xxi, p. 73.

[17] Locke, op. cit. Book IV, iii, p. 28.

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vately, qualia, the experienced red hue, the painful sensation, are *ideas*. That which is ascribed to some material thing perceived by a person or not perceived is a *quality*. Human beings do not experience qualities, but they do have ideas of qualities. The red colour of an apple is a quality of the apple, experienced by a human being as a red hue, which, in Locke's terminology, is an idea. Qualities of things cause ideas in people. But it would be wrong to interpret Locke's view as an example of the distinction between what is public, perceivable by anyone, and what is private, perceived by only one person, and to match the former to qualities and the latter to ideas. This assimilation would suggest that there are two realms of the perceptible, the public realm in which there are beings perceivable by anyone, and many private realms, one for each person, in which there are beings perceivable only by the person whose private realm they inhabit.

What is the metaphysical status of the quality 'red', correlative to the idea of red, in the thing? It is not an occurrent property but a power. A red *thing* has the power to induce a red *idea* in a person. Locke is famous for his use of the then current distinction between primary and secondary qualities, but the concepts explained so far do yet allow for that distinction to be introduced, nor need it be to sustain the analysis so far. The criteria of identity for powers that induce experiences must include the inducing of this or that type of qualia. The power to induce a sharp taste is identified as that power by the identification of the qualia it regularly induces. Of course this relation is always *ceteris paribus*, since the power can exist unexercised. The lemon juice that was never extracted from the fruit nevertheless had the power.[18]

The metaphysics of perception requires a further category of beings: namely, whatever it is that grounds the powers of things to induce ideas in a person. According to Locke such groundings are groups of mechanical qualities, the famous 'bulk, figure, texture and motion of the insensible parts'. What is the relation between the mechanical grounding and the power that is so grounded? It is here that we find the exact location of the Great Contingency. It is not contingent that the power to induce a red quale induces a red quale, but it is contingent that such and such a molecular structure grounds the power to induce a red quale. 'Grounding' is a general feature of all dispositional properties. It is required by the identity conditions for dispositions that persist unperceived or unactivated.

[18] Locke and others noted that qualia of a certain type were not always produced by the same causal power, for example things looked yellow to someone suffering from jaundice.

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The persistence of the grounding, usually specified by some set of occurrent properties of that which possesses the disposition or power in question, supports the claim that the disposition exists even when it is not being manifested.

When Locke suggests that the mechanical qualities could be used to explain the nature of colours, sounds and so on, he does not mean a colour as a quale, but red considered as a secondary quality of a ripe apple: namely, as the power to induce the colour experience, the idea of red. This is not an explanation of why this cluster of primary qualities, the grounding of the relevant secondary property or power, induce just this shade of red or indeed a colour sensation at all. Having *that* structure does not necessitate that *this* is the character of the experience. It is an explanation of the power, individuated by its effect as just that hue.

Just where is the fundamental interface between the action of the materially based power and the mental product? Since every psychologist of perception, including Locke, thought the train of material effects did not terminate at the surface of the human body, but continued deep into the brain and nervous system, that interface must lie at the point where the mechanical impulse ceases. Here, or somewhere near it, is the site of Locke's Great Contingency, between the material grounding and power, and it is this relation which he declares to be utterly incomprehensible: 'as effects produced by the appointment of an infinitely wise agent, which perfectly surpasses our understanding'.[19] The relation between materially grounded *powers* and experientially identified *qualia* is both necessary and intelligible, since the latter are used to individuate the former.

Locke also thought that though it was not logically impossible that 'matter could think' as a matter of fact it did not. This is another version of the contingency that obtains between groundings and powers. Linking the two steps together, it must therefore be contingent that matter is associated with private experience, Lockean ideas.

Chalmers and the 'zombie'[20] argument

It seems to me that Chalmer's 'zombie' argument works in a very similar way to the overall thrust of Locke's analysis. According to Chalmers it just is logically conceivable that there should be two qualitatively identical material entities, each of which fulfilled the

[19] Locke, op. cit., VI, iii, p. 28.

[20] Chalmers, D. J. *Consciousness and Experience* (Exeter: Schöningh, 1995). A 'zombie', in West Indian folk-lore, is a corpse reanimated by a magician, behaving like a real human being but having no mind.

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biological requirements for being the body of a living human being, but only one of which had an 'inner life', private experiences, 'Lockean ideas'. This is as much as to say that there is no necessity that ties together the material grounding of, say, the human perceptual system, and the power it might have to induce ideas.

This argument would not do for material dispositions and powers as they appear in the natural sciences in such concepts as 'acidity', 'charge' and so on. I do not see how it could be that there are two groups of molecules, identical in structure, say H_2SO_4, (sulphuric acid) one of which has the power to dissolve zinc but the other does not, given that the circumstances of the coming to react with chemically identical samples of zinc are the same. The relation between grounding in the material constitution or nature of any substance studied in the natural sciences and its material powers seems stronger than the raw contingency that is required for the Chalmers argument.

Refining the ontological issue

Much of the debate about how to conceive the relation between material and mental aspects of human life seems to have been built around a deep metaphysical presumption, that it is the members of two classes of *entities*, that we are trying to link in some non-contingent way. The Lockean analysis seems to suggest that the problem that Nagel has challenged us to solve might be misdescribed. The structure is three-fold: material groundings support powers which are just those powers that induce ideas or qualia in people. The first pairing is contingent, the second necessary.

As a first step along the way to a response to Nagel's Challenge I shall draw on the second phase of Wittgenstein's Private Language Argument, as a source of a deep insight into the ontology of individual, private experience.

In the first phase of the argument Wittgenstein, in continuing his campaign against denotational accounts of meaning, is concerned to show that no one could teach or learn words for private feelings if the only method of teaching and learning was by pointing to an exemplar to which both teacher and pupil could attend. Wittgenstein's solution[21] is to suggest that there are natural expressions[22] of certain private experiences, particularly sensations of pain

[21] Wittgenstein, L. *Philosophical Investigations.* Trans. G. E. M. Anscmbe and G. H, von Wright, (Oxford: Blackwell, 1953), §242.

[22] The extensions of this line of argument to grammatical expressions of the sense of personal singularity as a conscious, spatio-temporally located being are important in other branches of psychology.

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and the like, for which verbal substitutes are taught. This insight has its importance for the philosophy of psychology, but it is the second phase of the argument that bears directly on Nagel's Challenge. Wittgenstein argues that the very idea of a word-to-thing way of establishing meaning could not be applied in the case of feelings, sensations or qualia, since these are not thing-like. The argument addresses the question of whether there are criteria for numerical and qualitative identity of feelings parallel to those for things. How are we to understand such claims as 'I had the same feeling yesterday' and 'I felt the same as you did when our cat died'.

Since we can date the onset and disappearance of feelings and often locate them at fairly precise places in our bodies we are tempted to treat them as mental entities. But 'same feeling' in the case of a person's own mental history, cannot mean numerically the same, since the temporal continuity between yesterday's feeling and today's is broken. The very idea of a feeling lingering unfelt seems highly implausible. How would we establish the qualitative identity of our past feelings with those of today, since we can not juxtapose one to the other and compare them? For material things, one can compare how a thing looks now with how it looked yesterday, since it is not unreasonable, given no suspicion of untoward interferences, to assume that whatever looks the same is the same. Memory could be supplemented in all sorts of ways by record keeping of various kinds. But in the case of feelings, all one has to compare today's feeling with is the memory of yesterday's feeling. A record is no good, since how do we know today what the record referred to yesterday when it was made? So if we are trying to go by a comparison between the feelings, we seem to be on unsure ground. A glance at our actual practices shows we go by such matters as the public practices of our culture and the reactions of others. It is these that must provide enough support for qualitative identity claims since there seems to be no other possible source of grounds for comparative judgements of any kind between past and present feelings.

In applying this move to the feelings of other people the conditions for arriving at a 'same feeling' judgement are more complex. When your cat died you wept buckets, but when mine died I went around looking a little glum. But that does not show that your feelings were different from mine. When I hear that you threw pussy's body in the garbage while I gave him a ritual burial, I might alter my assessment of our relative feelings. This brings out Wittgenstein's second intuition, that only in the long run can we make reasoned comparative assessments of the feelings of others, which extends the tight 'kind' relation between feelings and displays onto a larger temporal stage.

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Wittgenstein's analysis seems to rule out, one, seemingly natural, way of presenting the Great Contingency and hence of posing Nagel's Challenge: namely, as a pattern of correlation between the members of pairs of entities, one of which is material and the other mental. This suggests that rather than asking ourselves how to create a version of the substance-property metaphysics that would open up a Third Way, we should be looking for a metaphysical scheme which would enable us to incorporate material things and mental non-things in one scheme, but a scheme which is not based on the substance-property distinction.

Here is the situation

The ontology of the neural substrate involves thing-like individuals, with occurrent and dispositional properties and powers, both active and passive. The ontology of phenomena (qualia) involves individuals that are not thing-like, which do not have properties, nor are they the properties of anything else. A red quale is not a something that has the property of being red. It is the being red. So now it looks as if the Great Contingency lies across a dichotomy the two faces of which are ontologically incommensurable in a more radical way, since it is hard to see how one could correlate within one scheme, a cluster of things with a cluster of non-things.

However, if we turn back once again to the physical sciences there is an innovation in metaphysics, which has been much misunderstood and misrepresented, but which was invented to cope with a somewhat similar situation to the one we have encountered in exploring Nagel's Challenge to theoretical psychologists. It is the ontology proposed by Niels Bohr, though admittedly in a notoriously cloudy way which, drawing on the interpretative work of John Honner[23], I propose as a model for an ontology for a response to Nagel's Challenge.

Our interactions with the material world result in determinate entities, states and processes. When we use a cloud chamber we get tracks, and the world displays itself as particles. But when we use beams and slits we get interference patterns and the world displays itself as waves. The mistake against which Bohr warned was the projection back through the apparatus which is our means of interaction, to the world of the properties, kinds and so on manifested in that apparatus. With respect to such concepts as 'particle' and 'wave' the material world is indeterminate, that is it can be made to

[23] Honner, J. *The Description of Nature* (Oxford: Clarendon Press, 1987). Honner's work has lately been supported by the extensive but so far unpublished studies by Steen Brock of Aarhus University.

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display either the one or the other, depending on the means by which people interact with it. The world is not, at once a system of particles and a flux of waves. It is not either. But it does concurrently possess the propensity to appear as particles in this class of apparatus and as waves in that. It may be, however, that those propensities are realised only in these classes of apparatus. But what are these propensities? They are not simple dispositions or powers, ascribable without reference to what calls them forth, since they are manifested as occurrent properties only of the chosen apparatus. Bohr had great difficulty making his position clear to his contemporaries who were uneasy about admitting dispositional properties to their world view, and only too ready to recruit Bohr's ontology to the reductionist positivism made popular by the Vienna Circle and the philosophers influenced by it.

This difficulty is now much less pressing, since there is just the right concept that has come to hand from the psychology of perception developed by J. J. Gibson. This is the concept of an 'affordance', introduced to make sense of how we perceive the material world.

It can hardly be said that Gibson's own account of the concept of an affordance'[24] is transparent, but in hindsight and in the light of commentaries, it seems tolerably clear. To say that ice affords walking is to say that this substance has the power to sustain a human being's locomotion. The power is defined relative to the human project. The same ice will not afford walking for an elephant. Affordances are what it is possible to manifest in an active engagement between a human being and an energy flux. The psychology of perception becomes a study of the varieties of affordances and the nature of the perceptual and other interactive systems people use in everyday life in exploring the ambient energy flux, seeking and exploiting what it affords to them.

The concept can be extended to include not only what is afforded to a person by an environment that that person is exploring with their integrally embodied perceptual systems, such as sight and hearing, but also what is afforded to them by the apparatus that they can construct to explore other affordances of that environment. This is how Bohr's philosophy of physics and Gibson's psychology of perception can be welded into a powerful *new* metaphysics. With different apparatus the world, whatever-it-is, affords different manifestations to the experimenter. There are no particles in the world,

[24] The notion of an affordance appears first in Gibson, J. J. *The Senses Considered as Perceptual Systems* (London: Allen and Unwin, 1964), and was further elaborated in Gibson, J. J. *The Ecological Approach to Visual Perception* (Boston: Houghton Miflin, 1979).

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but the world as whatever-it-is affords particles in a cloud chamber. There are no waves in the world, but the world as whatever-it-is affords waves to a double slit experiment. The world has powers, though at this basic level, physicists can give no account of their grounding.

The Bohr-Gibson ontology could be applied to the Nagel Challenge as follows: there are two means by which people perceive material states of the world. One is the embodied perceptual system with 'dedicated' sense organs and a complex neural mechanism by which the electro-chemical effects of exposure to the material environment outside the surface of the body are integrated. The other is the proprioceptual system, with 'dedicated' sense organs and a complex neural system associated with them, that registers the state of the material environment within the envelope of the body. The former taps into a public world, and the latter into a private one. Both are Gibsonian in that they reveal affordances.

It is possible, even for the same person given appropriate cameras and monitors, to *perceive* a molecular state of the brain as a public object, perceivable by others, and describable in the common terminology of neurophysiology and anatomy. It is also possible for the very same person to propriocieve whatever-it-is that afforded a molecular state to the perceptual system, as an affordance which would not be perceivable by others. Whatever it afforded to the proprioceptive system will be describable in the common terminology of personal feelings, sensations and qualia. The same 'whatever-it-is' affords molecular structures to one observational system and qualia to another. The puzzle that we have to solve to meet Nagel's Challenge is no longer how molecular structures cause people to experience qualia, but the observation that, just as the material world has more than one affordance for physicists, depending on the equipment that is used to explore its affordances, so the material world as whatever-it-is has more than one affordance for people depending on the equipment that they use to explore it. Thus we ground our psychological science in no worse a basic principle than we ground our physical science.

One must resist the post-renaissance assumption that only microstructural explanations are acceptable in science. This assumption was enshrined in Locke's picture of the primary qualities as the 'bulk, figure, texture and motion of the insensible parts'. But physics is full of another kind of explanation, in terms of causal powers and their exercise or manifestation. Charges and their fields form a basic explanatory category. Physicists may differ as to the catalogue of basic charges, but, whatever kinds there are, they define a level beyond which no further steps into microstructural

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explanations are possible. In the psychological case it seems as if, on this scheme, all properties are secondary in Locke's sense. We could take the Lockean account of perception in terms of secondary qualities, interpreted as affordances, as a model case.

The Bohrian multiplicity, that he called 'complementarity', looks something like this for a possible way of terminating the treatment of mind-body correlations as the roots of a problem:

Whatever-it-is has (is) the potentiality for a range of First person affordances, mediated by the proprioceptive system, and these are the qualia or private sensations of private experience. But whatever-it-is also has (is) the potentiality for a range of Third person affordances, mediated by the perceptual system, and these are the material things of public experience.

The Nagel Challenge has been met, not by solving his problem: find a metaphysical scheme within the resources of which we can find ways of accommodating the strange fact that things of one kind cause things of another kind, but each is of such a kind which precludes their being caused by the things of the first kind. The basis of the Bohr-Gibson response is to terminate the regress that prompted the question in another metaphysical foundation than the traditional categories of thing and property. Of course affordances are properties of things, or property-like, but they are not the fundamental level of the explanatory regress. That is reached only in the relativised powers of the world as whatever-it-is.

Commentary

Does this proposal solve the mind-body problem? Certainly not. It does not explain how mental-states and body-states interact. But, as a response to Nagel's challenge it does purport to show how and why the alleged problem is ill-formed. There is no place for either an identity theory or a causal theory within the Gibson-Bohr ontology, since there is no place for either mental-states or body-states as other than affordances.

In the two proposals, the adoption of a task-tool metaphor to explicate the person-brain relation and an affordance ontology to resolve the other range of problem, do we have an adequate response to Nagel's Challenge? The challenge was to devise a conceptual framework or grammar in which the problem: how could a material, molecular set-up give rise to a conscious subjective state? be dealt with. The task was not to answer the question but to set it aside, while retaining the distinction between First and Third Person aspects of experience. My claim is that the Bohrian account

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of experiments coupled with Gibson's concept of an affordance does indeed set the original question aside. States of the human body afford, *to the same person*, by virtue of the existence of two sensory systems, both a First Person and a Third Person view of the same 'what-ever-it-is'. Neither makes visible a candidate for a common grounding for the two affordances coupled respectively to the two perceptual systems, one for the external and the other for the internal sensors.

Gibson/Bohr affordances as a response to Nagel's Challenge do provide a unified metaphysical scheme. If this scheme is adopted there is no longer a problem to be solved: namely, how do molecular states produce sensations, since both molecular states and sensations are affordances to different means of access to 'whatever-it-is'. Chalmers' contingency (Zombie) argument is a consequence since there is no necessity that any particular mode of access to 'whatever-it-is' should either exist or be exercised. Nor does the scheme proposed here set any limit to how many modes of access to 'whatever-it-is' there could be.

Materialism and subjectivism both privilege a mode of access as exclusive and project its deliverances on to 'whatever-it-is'. But 'whatever-it-is' is neither material nor subjective, and certainly not both material and subjective. Materiality and subjectivity are features of what two different modes of access, in this case perceptual systems, afford. They are not features of the world as 'whatever-it-is'. The world can be ascribed certain causal powers, but only in material conjunction with modes of access. So this metaphysics allows us to sideline any form of the identity thesis, that a molecular state is the same state as the correlated phenomenological state, and to sideline any form of the causal thesis, that molecular states cause phenomenal states. Both types of states are affordances of 'whatever-it-is' to different and distinctive modes of access.

Can we find any support for the claim that, within the new ontology of affordances and means of access, there is necessity between the physiological state and the phenomenal state, that is respond to the second aspect of Nagel's Challenge? In the analogue from physics we can say that given *this* kind of apparatus, say a cloud chamber, 'whatever-it-it' must display itself as a particle, and given *this* kind of apparatus, say a collimator and screen, 'whatever-it-is' must display itself as a wave. But there is no necessity that what is displayed as a wave will ever be displayed as a particle. The cloud chamber and sensitive emulsion and so on might never have been invented. In the parallel case, while it might be necessary that 'whatever-it-is' is perceived as a molecular structure or process, say an auditory system sensitive to vibrations in material media, given

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that such a Gibsonian perceptual system exists, there is no necessity that the same organism should possess a proprioceptive system, by means of which 'whatever-it-is' is experienced as a quale such as a pure tone. There is no necessity that a creature with a visual perceptual system should posses an auditory one.

This is not to say that there are no problems with this proposal! But they are not the same problems that Nagel catalogues in his original paper as infecting the way the powers of embodied thinking have been presented. Amongst the new problems are that of giving an adequate alternative grammar, not subject (substance)/ predicate (property) for describing agent causality or powerful particulars, and that of giving an adequate account of the Gibsonian concept of an affordance. Since both the perceptual and prioprioceptive neural apparatuses are material, that is themselves afforded to the perceptual (public) sensory systems of neuropsychologists by 'what-ever-it-is', in one way the Nagel Challenge has not been met at all. It could be said that the mystery of experience re-emerges in the question of why the perceptual and proprioceptive systems afford experiences of molecular structures and processes and not nothing at all, or something quite other than what they do afford. This point seems to me to be of more importance than just an objection to my proposal. It suggests that the second leg of Nagel's Challenge cannot be met for the case in which he set it up. There is no necessity that both means of access to 'whatever-it-is' should exist, nor, at the second level, is there any necessity that the being endowed with them should experience just these qualia and no others or any at all.

Objections

Isn't this a kind of idealism? Isn't the ontology of what this offers as the Third Person scheme, if interpreted in terms of affordances, really another First Person metaphysics? We seem to be bringing into concordance the experiential deliverances to a Person of two ways of perceiving whatever-it-is, rather than an impersonal state of the world with a subjective, personal one. But the theory of affordances tells us that there is no such thing as an 'impersonal state of the world'. The world, as whatever-it-is, that is explored by human beings, can be characterised in no other way than as a system of powers manifested in the reactions of the personal and impersonal *equipment* with which we explore it. The Bohr-Gibson ontology is neither idealism nor materialism.

The Gibsonian term 'affordance' is appropriate in cases in which a mode of access is either chosen or constructed by human beings.

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Locke himself makes almost the same distinction in noting that there are two sorts of secondary qualities, those that are manifested as ideas in human minds, and those that are manifested in changes in the qualities of other things, whether or not someone is aware of them. The former are affordances, the latter unqualified causal powers. But in the absence of any causal power in the 'whatever-it-is' a mode of access is impotent to manifest an affordance.

That is all very well, but doesn't this beg the question in another way? It does not answer the question 'Why does the human brain afford two radically different manifestations of "whatever-it-is"?' All that this elaborate by way has done is to shift the location of the traditional philosophical conundrum without solving it. It recurs in the new scheme. This is the final resting place for the Great Contingency. We can no more hope to answer this question than the question of why experimental apparatus affords two radically different manifestations of whatever-it-is that is probed by cloud chambers and double slit apparatus. Paradoxes and problems emerge in both cases only when we are tempted to project the character of manifestations back onto the world, forgetting that in both cases these are manifestations to/in a particular kind of apparatus.

Summary

The response to Nagel's Challenge must be radical. Thinking within the constraints set by the substance-property metaphysics seems to offer us the following alternatives for an ontology of psychology, if we think of it as embracing both sides of the Great Contingency, and assuming that the ontological categories of the two faces that are correlated are uniform:

An event ontology: The basic particulars on each face of the Great Contingency are events. An event occurs when a substance comes to have an occurrent property.

An entity ontology: The basic particulars on each face of the Great Contingency are entities, identifiable and individuatable particulars.

The arguments summarised by Nagel tend to show that there are fatal flaws in both alternatives. What do they have in common? Overtly they both assume that whatever the ontology that is to be deployed might be in detail, it will generally be a version of the substance-property metaphysics. And they also assume, tacitly, that the Great Contingency must characterise a dichotomy between pairs of events or pairs of entities, or pairs of types of events or pairs of types of entities.

The proposal sketched in this paper breaks with both the overt

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and the tacit assumption of all the positions discussed by Nagel. The ontology borrowed from physics is not a species of the generic substance-property metaphysics. It is an ontology of distributed dispositions. And the dichotomy that matters, that between the faces of the Great Contingency, is not between events or entities, either individuals or types, but between modes of access to the affordances of 'what-ever-it-is', the substratum of the world. There is a contingency at the heart of neuropsychology. The job of the philosopher is to locate it exactly. It is not where Chalmers and others think it is. It lies rather in the catalogue of modes of access to 'whatever-it-is' that appears now this way and now that. With the modes of access we have, there are molecular manifestations and phenomenological manifestations and they are contingently correlated. This is because, like waves and particles, the modes of access we have to them are contingently correlated.

In another way the proposal I have been sketching does not answer Nagel's Challenge, as he formulated it in the quotations set out in Part One. It is not an account in terms of a single type of entity or process, since it does not depend on an entity or process metaphysics at all. It has no place for any reactions between the mental and the physical. Just as there is no 'reaction' between the wave character and the particle character of material nature, since both are affordances of different and incompatible world/apparatus set-ups. In a similar way there is no 'reaction' between mental and physical states of a Person, since these too are affordance of different world/apparatus (as perceptual system) set-ups. Neuropsychology is a kind of analogue of De Broglie's rules in physics, giving us a consistent and coherent of set of rules for transforming descriptions of human experience in terms of the one into descriptions in terms of the other. 'I am in pain' and 'My c-fibres are firing' are both descriptions of what can be afforded to Third and First Person perceptual systems, but they are not related as descriptions of cause and effect, nor as two aspects of the one reality.

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