

Process Thought and the Spaciness of Mind

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Process thought clearly rejects Cartesian matter-mind dualism and thereby rejects the monistic alternatives of materialism and idealism which depend upon Cartesian concepts of matter and mind. There is neither any unknowable material or mental substances to which the experienceable properties of things belong and which give absolute self-identity through time, nor any enduring essences of mindless spatiality or spaceless mentality. In process thought, all actual occasions are active centers of experience and are spatially as well as temporally extended. Peirce first formulated the process concept of mental spatiality when he wrote that "feeling has a subjective, or substantial, spatial extension. . . . This is no doubt, a difficult idea to seize, for the reason that it is a subjective, not an objective, extension. It is not that we have a feeling of bigness; though Professor James, perhaps rightly, teaches that we have. It is that the feeling, as a subject of inhesion, is big" (PWP 345).

Of course, Descartes was on to something important. Though it has been done, it is philosophical stupidity to deny either that we experience spatially extended objects or that we experience ourselves as active conscious centers of feeling, experience, thought, intention, attention, volition, desire, emotion, satisfaction, etc. Descartes wanted to account for both of these prominent features of experience. He insisted that material substances are essentially spatially extended and that mental substances are essentially non-extended. We may doubt this metaphysics without denying the experiences themselves. Process thought shows us how to do this, but within the framework of a quite different metaphysics that does not suffer from the obvious defects of Cartesianism.

THE MENTALITY OF MAGNITUDE

In process thought the human body is spatially extended; but it is not composed of Cartesian/Newtonian matter. Whitehead realized by the time he wrote the later parts of *Science and the Modern World* (1925) that modern science has no use for matter in the traditional sense. On the traditional account, material particles are not only experienced externally as spatially extended; they are also internally inert and vacuous. Whitehead advanced the heresy that something might be going on inside atoms and electrons, that internally they are spatiotemporally active centers of creative energy and experience (though unconscious). Traditionally, material particles have absolute position in Newtonian absolute space and time, but Whitehead relocated them in the relativistic space/time of modern astrophysics. Traditionally, time is totally irrelevant to the nature of material objects, since a material particle is entirely itself at every infinitesimally thin instant of time. Whitehead insisted that there are no real temporal infinitesimals, that all spatially extended objects require some minimal temporal duration in order to be anything at all. Traditionally, material objects are internally unaltered through time and change only externally with respect to place. Whitehead and modern physics have found them to be composed of chains of fleeting discontinuous pulsations of energy.

Traditionally, every moment of a spatial object's existence is causally independent of every other moment, thus absolutizing Hume's insistence upon the intrinsic

causal disconnectedness of every material entity with its own past and with the past of the universe. Whitehead proposed that extended objects are in part what they are by virtue of their intrinsic causal connections with the antecedent world. Traditionally, and paradoxically, the behavior of matter is subject to rigid external mechanistic explanation even though it has no intrinsic causal connections with the antecedent world. Whitehead found that the antecedent world lays some causal constraints upon present actualities while leaving some room for freedom and self-creativity. Traditionally, matter has no significance for itself, and an infinite gulf exists between matter (fact) and value; but in process thought all spatially extended actualities are partly self-creative, and in at least that minimal sense have value significance. Matter traditionally has no organic relation with its environment, but in process thought the organic wholes (e.g. living bodies) within which spatially extended actualities exist can both influence them and be influenced by them.

Thus, human (and animal) bodies are spatially extended without being material in the traditional Cartesian/Newtonian sense. If we choose to call their mode of existence "materiality" on the grounds that "all bodies are (spatially) extended," it can only be with the large qualification that even "matter" isn't what it used to be anymore. The "material" components of human embodiment are indeed spatially extended, as Descartes insisted. There the resemblance ends, for these components are all internally active centers of creative experience existing in a relativistic universe. They are nothing apart from the minimal temporal durations required for their realization, so time is essential to their being. They consist of fleeting discontinuous pulsations of energy which are what they are in part because of real causal influence from the past, while also being organic wholes that are partly free and self-creative. They have at least some minimal experiential and valuational significance, and exist within more extended and complex organic wholes that can have even greater valuational significance. Descartes' material substances never had it so good.

The primary focus of our present concern is not upon the foregoing modification of "matter" in process thought. Rather, it is upon parallel modifications of "mind." Process thought agrees with Descartes that we are indeed active centers of thought in the broad Cartesian sense which involves activities and feelings of sensation and causal derivation, cognitions, volitions, emotions, etc. Yet, it gives a very different account of their metaphysical status. The existence of the human "stream of consciousness" to which these belong is not denied, as it is by those monistic behaviorisms and materialisms which attempt to avoid Cartesian dualism while still not questioning Cartesian metaphysical analyses of "matter" and "mind." In process thought, the human stream of consciousness is just as real as we ordinarily know it to be when we have not thrown metaphysical dust into our own eyes and then complained that we cannot see. The stream of conscious experience and synthetic activity is the dominant society of actual occasions in human (and animal) bodies, being influenced by subordinate organic processes in those bodies, then influencing them in turn in an ongoing dialectic of causality and creativity.

Whitehead was determined to give a plausible explanation of the unity of mind and body, an account of why "No one ever says, Here I am, and I have brought my body with me" (MT 114). The stream of human conscious experience and creative activity (the human mind or soul) has one vitally important property in process thought that it does not have in Cartesian metaphysics: *it is spatially (as well as temporally) extended*. This does not mean that process thought offers a materialistic theory of mind—for matter (in the traditional sense) does not even exist, as we have seen. Yet the process alternative resembles materialistic theories of mind, and repre-

sents what they might become if they abandoned the now-outmoded Cartesian/Newtonian concept of matter.

The spaciness of mind in process thought is not without its problems, however, and some of these need to be explored. In particular, how big is an occasion (or the society of occasions) of human consciousness? Could we ever perceive it in sensory experience, either directly or with the aid of instruments? How could we know that anything experienced externally is identical with the stream of consciousness as experienced internally?

THE MAGNITUDE OF MENTALITY

Whitehead held that *all* actual occasions have spatial as well as temporal volume or magnitude; and since all do, it follows that those comprising human experience do. He wrote that “every actual entity in the temporal world is to be credited with a spatial volume for its perspective standpoint,” (PR 68/105) and that “The actual entity is the enjoyment of a certain quantum of physical time.... There is a spatial element in the quantum as well as a temporal element” (PR 283/434). More specifically, with respect to mentality, he wrote that “though mentality is non-spatial, mentality is always a reaction from, and integration with, physical experience which is spatial” (PR 108/165). Thus he clearly held that there is no disembodied mentality, and that even the dominant society of occasions in the human body having the subjective form of consciousness is spatially as well as temporally extended.

If the occasions of the dominant society of human consciousness are spatially extended, we might wonder both where they are and how big they are. Whitehead had answers, though they have not met with universal approval. To say that they are in the brain is obvious enough but not very helpful, for we want to know *where* they are in the brain. Whitehead’s answer is that they are in the “interstices” of the brain, i.e., in the empty spaces between the brain cells. He wrote:

Life lurks in the interstices of each living cell, and in the interstices of the brain. In the history of a living society, its more vivid manifestations wander to whatever quarter is receiving from the animal body an enormous variety of physical experience. (PR 105-6/161)

The endurance of the mind is only one more example of the general principle on which the body is constructed. This route of presiding occasions probably wanders from part to part of the brain, dissociated from the physical material atoms. But central personal dominance is only partial, and in pathological cases is apt to vanish. (PR 109/167)

The final percipient route of occasions is perhaps some thread of happenings wandering in “empty” space amid the interstices of the brain. It toils not, neither does it spin. It receives from the past; it lives in the present. It is shaken by its intensities of private feeling, adversion or aversion. In its turn, this culmination of bodily life transmits itself as an element of novelty throughout the avenues of the body. Its sole use to the body is its vivid originality: it is the organ of novelty. (PR 339/516)

Needless to say, if the dominant society of human consciousness is small enough to flit through the empty spaces between the brain cells, it must be very small indeed—too small certainly to be seen by the naked eye. John Cobb has indicated that “Whitehead may have conceived of all actual occasions as microscopic in size”

(CNT 818), including those of the dominant occasion(s) (CNT 87). Cobb found Whitehead's own account of the spaciness of mind to be quite implausible for several reasons, the most convincing being that

Whitehead's view seems difficult to reconcile with the apparent joint immediacy of inheritance from many parts of the brain. Hearing, seeing, remembering, and calculation seem to occur concurrently in one dominant occasion. If these functions are most intimately related with diverse portions of the brain, then it seems necessary to suppose that the dominant occasion is present at the same time at all these diverse places. (CNT 84)

Cobb believed that this problem could best be solved by assigning to the dominant occasions of human awareness a much larger spatial volume that would put them in touch with all those diverse portions of the brain from which they seem to be receiving data at any given moment. His view also allows that occasions may include the spatiotemporal regions of subordinate occasions within themselves.

In opposition to Whitehead's view, I suggest that the soul may occupy a considerable region of the brain including both empty space and the regions occupied by many societies. This proposal assumes that it is possible for the region that constitutes the standpoint of one occasion to include the regions that constitute the standpoints of other occasions. (CNT 83)

Hartshorne also rejected Whitehead's account of the magnitude of the occasions of human experience for much the same reasons as Cobb. One of the best expressions of his views on the spaciness of mind is to be found in *Reality as Social Process*.

But what, you may wonder, is the social account of that bodily aspect of things which we call "matter"—that something which is spread out in space, which has shape and size and motion, in contrast to mind, which (it appears) has no size or shape, and cannot move or be located in space? This, however, has been pronounced a false dualism by many masters of scientific and philosophical reasoning. Some fragments only of the argument may be mentioned here. To science "a thing is where it immediately acts," and our minds do act immediately, by all the evidence, and at definite places—upon parts of our bodies. Hence the mind has place, and indeed is in many places at once; and from this, shape, size, and motion follow, for the shape and size of a thing are determined by the pattern of places which it occupies at a given moment, and its motion by the places which it occupies in successive moments. It can be inferred with some probability that the human mind, at any given moment, is not drastically different in size and shape from the pattern of activity in the nervous system with which at that moment it interacts, and as this activity moves about somewhat it follows that the mind literally moves in brain and nerves, though in ways unimaginably various and intricate. (RSP 36)

Of course, there are difficulties with such a view. If human awareness is of the magnitude of substantial portions of the brain, the question arises as to whether we could ever see it externally or otherwise detect it through scientific instruments. Some things, like atoms and molecules, cannot be seen because they are too small to be seen; but we can perceive them indirectly through electron microscopes and other such instruments. But an extended entity as large as much of the human brain

is also large enough to be seen by the naked eye. Could we ever look into a human brain and see the stream of human consciousness residing therein?

When I was a graduate student at Emory University about 29 years ago (Winter, 1961) studying metaphysics with Hartshorne, I put the foregoing question to Hartshorne himself. His answer was negative, much to my surprise. I then asked him if we could ever use any scientific instruments to detect the presence of the stream of human consciousness. Much to my surprise and disappointment, the answer again was negative. We will soon see that more recently he gave a negative answer to the first of these questions in *Creative Synthesis and Philosophic Method*. However, his answer seems implausible and evasive once the claim has been advanced that experiencing is macroscopically spacy. *Without exception*, all the other spatially extended entities in whose existence we are entitled to believe are either directly detectable in sense experience or through instrumental extensions of sense experience. Why should the dominant stream of conscious occasions be the only exception? We seem to be perilously close to Descartes once more! What is the difference between a spatially extended mind as large as a brain that cannot be detected externally and a mind that is not spatially extended at all?

To the foregoing challenge, Whiteheadians might try to reply (1) that in process thought there is another criterion for being perceptible that I have ignored (reiteration of a common characteristic); (2) that the occasions of the personally ordered society of human consciousness are only privately objectifiable solely for later members of that society; and (3) that there are exceptions in process thought to my claim that all the spatially extended entities in which we are entitled to believe are externally perceptible, either directly or indirectly through the use of instruments (more specifically, (a) occasions in "empty space," (b) living occasions, and (c) God).

(1) However, the reiteration of a common characteristic (combined with spaciness) will not successfully differentiate perceptible objects from the stream of human conscious occasions. Consciousness as well as carnality reiterates common characteristics. Both are enduring objects. Whitehead wrote that "We—as enduring objects with personal order—objectify the occasions of our own past with peculiar completeness in our immediate present" (PR 161/244). We have desires, thoughts, memories, intentions, emotions, subjective aims, subjective forms, etc. which persist through time and are reiterated in long streams of occasions of conscious selfhood. This is the very essence of the idea of our limited self-identity through time in process thought (see the final paragraph in MT 161). If reiteration of common traits makes spatially extended entities perceptible, then the stream of conscious human experience should be perceptible if it is spatially extended. The criterion of repetition of common characteristics does not imply that subjectivity should be objectified, but together with the claim that conscious occasions are spacy it implies that individual conscious occasions must be objectified so they can be prehended by successor occasions. After all, our conscious thoughts, desires, emotions, etc. do endure through many epochal occasions of experience.

(2) Some Whiteheadians may assume that earlier conscious personal occasions are privately objectified only for later occasions within the same personally ordered society, *and not for other* occasions in other societies. However, process thought seems to allow no place for such privileged objectification because if an occasion is objectified for one, it is objectified for all (see the Principle of Relativity, PR 22/33). Whitehead's tiny occasions of human consciousness would have been imperceptible, but not because they were not publicly objectifiable. Rather, they were simply too minute to register; but the brain-sized occasions postulated by Hartshorne, Cobl and Ford could not be imperceptible for this reason. Also, such macroscopic occa

sions could not be imperceptible because they are only privately objectified, or because they fail to exemplify common characteristics which are causally transmitted from one occasion to another.

(3) Nevertheless, it may seem that in process thought there are other types of extended but externally undetectable entities; and this may save the day for the spacy but imperceptible occasions of human consciousness.

(a) Whitehead seemed to believe that events in "empty space" were real but imperceptible. He defined such events as "devoid of electrons, or protons, or of any other form of electric charge" (SMW 214). They are too primitive to be waves, much less particles (SMW 214). Indeed, they seem to be mere possibilities, not actualities; for "In this replacement of possibility by actuality, we obtain the distinction between empty and occupied events" (SMW 214). Now, if events in empty space are mere possibilities, they are not only not perceptible; they are not spatially extended; they are not anything. Events in the stream of human consciousness which are actual and supposedly spacy find no support here by analogy for their imperceptibility.

If perchance there is a degree of actuality and spaciness about imperceptible events in empty space after all, then there is another more serious difficulty. The claim that such events exist is not a conceptually necessary truth, and it lacks all empirical status whatsoever. Empirically, it is vacuous, neither verifiable nor falsifiable, meaningless. Why would persons in their right mind want to believe in the existence of such quasi-existents, or non-existents? Surely we cannot believe that spacy but imperceptible events exist in empty space merely because Whitehead said so. If the argument is that events in empty space are required by the metaphysical doctrine of a plenum of events, the plenum doctrine itself is meaningless, neither a necessary truth, nor falsifiable, nor verifiable.

(b) What about living occasions, something closely related to the "empty space," and vulnerable to the foregoing objections to it, since "life is a characteristic of 'empty space' and not of space 'occupied' by any corpuscular society" (PR 105/161)? The crucial thing about living occasions is that they make possible "the origination of conceptual novelty—novelty of appetition" (PR 102/156). If Whitehead regarded living occasions as imperceptible because of their creativity, he should not have done so in light of his claim that creativity is a universal metaphysical category exemplified by every occasion, and his admission that "there is no absolute gap between 'living' and 'non-living' societies" (PR 102/156), that the difference is merely one of degree, not of kind.

Whiteheadians might think that living occasions are spacy but imperceptible because they are too novel, because they fail to exemplify a pattern which persists from moment to moment. However, this is not a satisfactory resolution to the problem. First, it is true that precious peak experiences of maximal creativity are sporadic and unpredictable; but we should remember that in process thought, creativity is a universal metaphysical category exemplified to some degree by all events. If the actualization of novelty accounts for the imperceptibility of mind, all events should be imperceptible.

Next, even peak experiences of maximal creativity have greater duration than this view would allow. Patterns of creativity do persist from moment to moment, else good books and articles would never get written. Working out the implications of a brilliant creative insight requires further creative insights. It takes time to write a good article, and the creativity involved in doing so cannot be so sporadic that it manifests itself for only a tenth of a second every hour or so. Creativity fuses with persisting pattern to get things done in the world. Most important of all, we must remember that our objective is to account metaphysically for the enduring stream of

human conscious occasions, not merely for peak periods of creativity. Patterns of consciousness *do* persist from moment to moment, even if relatively uncreative. I am awake for *many hours* each day. The sporadic nature of novelty will not explain this; nor will it explain why consciousness is spacy but not externally detectable.

(c) As for God, Whitehead himself probably regarded divinity as both non-spacy and imperceptible (IWM 394-96), an analogy which is immediately and obviously irrelevant for explaining why mind, which is purportedly spacy, is also imperceptible. Most other process theologians have regarded God as spacy, however. Hartshorne (MVG 175-185), Cobb (CNT 192-196) and others have accepted the ideas that the universe is the body of God, and that God's omnipresence is omnispatiality. If this is the case, then there is a sense in which God is both extended and perceptible. God is perceptible to the extent that the universe is perceptible. Yet, as Hartshorne indicated, the universe as a whole is not given to us "in any clear way" (MVG 175). We see only in part, and God is perceptible only in part if the world is the body of God.

Though incidental to the present topic, I cannot resist the temptation to comment that if the universe is the body of God, this is the best of reasons for believing that though God is spatially extended, he could not be literally (physically) either male or female. The universe, the body of God, though spatial, has no genitals. Enough said! One might still wonder, however, whether God might not be psychologically male, by some metaphorical extension of our cultural stereotype of mental masculinity. According to this stereotype, males are active (God as Actus Purus), females (the world) totally passive. Males are powerful (Omnipotence), females (the world) powerless. Males are rational, knowledgeable (Omniscience); females irrational, emotional. Males are stable, dependable (Divine Unchangeableness); females changeable, fickle. Males are unemotional, insensitive, and "big boys don't cry" (Divine Impassability); females are emotional, sensitive. Males are independent (Divine Total Self-sufficiency), females dependent. In fact, the God of classical theology is the ultimate male chauvinist beyond the sky! By contrast, the perfection of the androgynous God of process thought consists in an ideal balance of these contrasting traits, not in the total exclusion of the traits this culture traditionally views as feminine, thus luring both human males and females to strive to create themselves in the divine image.

To return to the topic of the spaciness of mind, I suggest that process thought must either give an account of the magnitude, locus, and external detectability of the stream of human consciousness, revert to Cartesianism, or cease believing in consciousness altogether. I hope that the last two alternatives can be avoided. The first cannot, but process thinkers constantly ignore problems about the spaciness of mind. For example, David Griffin has recently written: "And what if the enduring mind is not an unbroken *stream* of experience but a *series* of momentary experiential events, each of which occupies (or constitutes) a region that is spatial as well as temporal? Then the chasm between mind and molecules is partially closed" (RS 151). Obviously, Griffin does not tell us which regions mind occupies, how large the regions are, or whether they are externally identifiable. By contrast, Lewis Ford maintains that mind-occasions "pervade the entire region of the brain"; yet he insists that they are imperceptible (PIC 132). I will explore one proposal concerning the spatiality of mind that would address these issues.

If the human stream of occasions of dominating awareness is to be influenced by many regions of the brain at once, and is in turn to exercise control over many such regions, it must be directly in touch (both spatially and temporally) with large portions of the brain. Thus, its extension must be macroscopic and not microscopic.

It must be as large as those regions of the brain from which it receives data and over which it exerts an influence. Its size and locus might vary from moment to moment as these requirements are fulfilled. Furthermore, it would be externally detectable if its occasions are identical with the internal synthetic unity of the whole pattern of those externally identifiable patterns of brain wave activity that are known to be associated with consciousness. Such brain wave activity is not visible to the naked eye, but instrumentation can detect it. Some spatially extended things are only indirectly detectable through sophisticated instrumentation.

Of course, there is brain wave activity even when we are asleep, but wakeful (conscious) activity is demonstrably different, as electroencephalographs and scanning devices reveal. The stream of conscious human occasions could be identified only with the latter and not with the former, thus not with all brain wave activity whatsoever. Brain wave activity is both spatial and temporal in nature, and though not directly sensible it is externally detectable by instruments developed and used in physiological psychology. Unlike the brain cells themselves, which are there through thick and thin as supporting environment, those brain wave activities which can be correlated with consciousness are present only when the latter is present and absent when the latter is absent.

If the identification of the stream of conscious human occasions with the synthetic unity of those brain waves known to be correlated with human wakeful awareness is correct, there will be two ways to know it—a direct and immediate way, and an external way. Whitehead wrote of the direct and immediate way when he affirmed that “in the case of the higher animals there is central direction, which suggests that in their case each animal body harbours a living person, or living persons. Our own self-consciousness is direct awareness of ourselves as such persons” (PR 107/164).

Indirectly, other persons could (literally) find us with electroencephalographs and scanning devices if the whole pattern of brain wave activity is the external manifestation of consciousness. On this view, direct self-consciousness is what consciousness-indicative brain wave activity looks like from the inside. The latter is what the former looks like from an external perspective.

Objections to the foregoing proposal may take many forms. I will take note of three of the most serious difficulties. (1) First, it may be objected that brain wave activity is constituted by a vast plurality of electromagnetic events, whereas consciousness is an organic unity. (2) Next, since Whitehead denied that the spatiotemporal region of one occasion could include that of another, this would seem to exclude the possibility that the total pattern of brain waves is itself a unified series of events that includes the subordinate electromagnetic occurrences in the waves themselves. (3) Finally, even if there is a one-to-one correlation between the presence of consciousness and the presence of certain brain wave patterns, this establishes at most a one-to-one correlation, not an identity.

(1) The unity/plurality problem doubtless underlies Hartshorne’s refusal to equate consciousness with external detectability. All perceptual objects are divisible into pluralities of cellular and/or atomic and sub-atomic structures, but the occasions of consciousness have synthetic unity. Hartshorne insists repeatedly that the stream of consciousness cannot be identical with brain cells (or their multifarious firings, presumably), because there are billions of these, whereas consciousness is one. For example, he argues that

a man cannot reasonably, and by himself he cannot possibly, be regarded as merely a system of cells acting upon one another, for he is directly aware of “himself” as, at the given moment, a single unit of action, a single mind or will,

exerting force upon his bodily parts and thence upon the world. When he thinks or wills, it is not any one or any number of his cells that thinks his thoughts or wills his purposes, but himself as an irreducible unit, as much as a unit as any cell or any atom or any electron. (RSP 57)

Thus, the objection is that a conscious occasion could not be identical with brain cells since it is one and they are many. It also could not be identical with brain waves for the same reason.

There may be no good reply to this objection. It is possible, however, that things which appear externally as pluralities could appear internally to themselves as unities, or that a whole region that includes lesser pluralities is itself a unity. The two modes of spatial extension discussed by Hartshorne as follows may be nothing more than two (external and internal) perspectives on one mode.

There are, in fact, two meanings of "extension" in its spatial aspect. Given many entities, perceived *en masse* rather than individually, each entity of course in a slightly different place, the mass of entities will appear as extended, and indeed will be extended. This is the only way in which we can physically perceive singular entities. (An animal body, it is true, *discloses* a singular entity, but it *is* a collective one, a society of cells.) This is one meaning of "extended." The other meaning cannot be exhibited to physical perception, but only to self-awareness, analogically applied to other creatures. Even a true singular, e.g., my present self or experience, is extended. It is not confined to a point, it is not ubiquitous, nor is it nowhere. There only remains that it is in a region, that is extended, but as one, not as many. Since no such unity is a datum of sight, hearing, or touch, we can have no sensory image of this mode of extension. But we are aware of our experiences as by no means punctiform, but rather with internal heres and theres and elsewhere, with between and next to's, and so forth. How could it be otherwise, since we directly respond to bodily processes whose parts are in different places, and since our experience directly controls or influences these bodily processes? A thing is where it acts and is acted upon! (CSPM 113f)

Hartshorne thus maintains that all objects given to us in sensation are pluralities that are composed of spacy but imperceptible unities. Some such unities, our present selves, may be directly experienced; and these experiences include a sense of our own spaciness. However, Hartshorne's view that no spatially extended mental unities as such could appear externally to others in any way, much less as a unity, is highly implausible because it looks suspiciously like either Cartesianism or privileged objectification in disguise. If, contrary to Hartshorne, a spatially extended entity which appears externally as including a plurality can both be and appear to itself as a unity, this does not commit us to the view that all pluralities are really unities. Hartshorne's distinction between aggregates which lack coordinated function and individuals which exemplify it is valid, but not because the former are externally perceptible and the latter are not. Rather, individuals directly experience their unity and manifest it to others in a variety of ways, whereas aggregates (trees, rocks) do not do either. Both might occupy spatially divisible and thus plural volumes.

(2) Our second difficulty is that Whitehead's denial of the regional inclusion of small events by large events seems to exclude the possibility that the pattern of brain waves as a whole identifies mind-events that include the subordinate electromagnetic occurrences in the waves themselves. We have seen that Cobb found it necessary to reject Whitehead's view in favor of a theory of regional inclusion if mind

events are to interact with broad areas of the brain. Lewis Ford, taking account of the doctrine that contemporaries cannot interact, further develops the view that "there might be a succession of temporally diverse occasions within a single inclusive occasion" (PIC 130), with lesser occasions "prehending their immediate predecessors within the inclusive occasion," while being included within the becoming of the more inclusive occasion (PIC 131). Now, my problem is whether the pattern of brain waves as a whole could consist of more inclusive occasions including lesser occasions. It seems to me that it could, and if so it would be both spacy and in principle perceptible indirectly through instruments.

(3) Establishing metaphysical identity, rather than mere correlation, is a problem for any position which attempts to analyze experience from both an internal and an external perspective. Perhaps there is no final solution to this problem other than fiat, but one is entitled to hypothesize identity if problems may thereby be solved which otherwise have no solution. A plausible theory of the identity of the stream of conscious human occasions with something having spatial extension must satisfy the following conditions, which are satisfied by the postulate of the identity of the stream of consciousness with certain brain wave processes.

1. When one is present, so is the other.
2. When one is absent, so is the other.
3. The Cartesian problem of how a non-spatial mind could ever interact with a spatially extended body is solved. Since brain wave processes are spatially extended, body-mind interaction is possible.
4. Brain wave processes may be influenced by, and may influence, large regions of the brain since they range over many such regions.
5. Spatially extended mind is externally locatable, unlike Hartshorne's pseudo-Cartesian mind that is extended in name only.
6. Since they are directly experienced to be novel unifying syntheses of multiplex data, conscious events are free and creative, not merely mechanistically determined.

Even if brain waves do not adequately fulfill these six conditions, process thinkers are hereby challenged to do better if they can, for *something* should fulfill these conditions. No philosopher not thoroughly imbued in process thought will ever believe the process claim that a prolonged series of conscious brain-sized occasions exists but that it could never be detected by perception or instruments. I have tried to show that such a belief is indefensible even on process grounds. Process philosophers must either become Cartesians and reject the doctrine of the spaciness of mind, or find an effective way of reinterpreting the epochal theory to permit longer-lasting conscious occasions, or they must reject the doctrine of the external imperceptibility of mind. I hope they will do the latter.

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