TOUCHING THE MIND OF GOD: PATRISTIC CHRISTIAN THOUGHT ON THE NATURE OF MATTER

by Joshua Schooping

Abstract. This paper seeks to examine the nature of matter from an Orthodox Christian patristic perspective, specifically that of St. Gregory of Nyssa, and compare this with David Bohm's concept of wholeness and the implicate order. By examining the ramifications of the doctrine of creation *ex nihilo*, the basic nature of matter as being rooted in the mind of God reveals itself, and furthermore shows that certain conceptions of quantum physics can provide language with which to give voice to this ancient view.

Keywords: David Bohm; Christianity; cosmology; consciousness; God; Gregory of Nyssa; logos; metaphysics; mind; Orthodox Christianity; philosophic theology; quantum reality; theology and science

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In science classes it is more or less commonplace to hear it said that the theories of relativity and quantum mechanics have together changed the way science perceives and even conceives of the universe. Compared to classical Newtonian physics, they mark a watershed in the study of all levels of physical reality. An important question, then, is how a fourth-century Christian philosopher and theologian was able to, in some sense, presage these developments, in another sense even demand them, yet all the while working within the context of Christian philosophical and theological reflection. Despite there being lively contemporary debates over such things as intelligent design, there is a strong possibility that there is a yet more fundamental and pressing question: What is the *nature* of the universe itself? In answering this question, however, there seems to be some degree of convergence between the ancient view of at least one fourth-century church father, St. Gregory of Nyssa, and one contemporary twentieth century quantum physicist, the late David Bohm.

In his book, *The Philosophy of Early Christianity*, George Karamanolis claims that St. Gregory of Nyssa's cosmology reveals a radical implication concerning creation *ex nihilo* and the basic nature of matter: "He [Gregory] maintains that matter as such does not really exist; what does exist, he

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claims, are qualities such as cold and hot, dry and humid, light and heavy, colour and shape, and their convergence (*syndrome poioteton*) constitutes what we call matter (*Apology for Hexaemeron* 69C). These qualities are not themselves of material nature; rather, they are concepts (*ennoiai*) or thoughts (*noemata*) in God's intellect and have always existed in that form (*Apology for Hexaemeron* 69C). God did not actually create matter but rather, through an act of will, he created all beings out of the thoughts in his intellect" (Karamanolis 2013, 102). In short, Gregory is saying that what is experienced as matter is actually the combination of elemental thoughts which exist in the mind of God.

According to Karamanolis's reading of Gregory, matter is not really "matter" understood as solid bodies of independent, self-existent, self-substantial material, but is ever of the nature of noetic "qualities or *logoi*" in God's mind (Karamanolis 2013, 102).[1] This does not mean that matter does not have "objective existence" (Karamanolis 2013, 106), but that what we take to be the objective "stuff" of matter is actually *logoi*. What is more, their basic mode of encounter with human beings is in the form of mentally perceived experiential categories such as hot and cold, and so on. Karamanolis goes so far as to say that Gregory's physics indicates, with ramifications for anthropology, epistemology, and psychology, that eyes do not see, but that objects are "grasped by the intellect and not by sense perception" (Karamanolis 2013, 103).[2]

This study, then, in examining whether Karamanolis's exegesis of Gregory bears out, seeks to determine if this view can be held in a just tension with contemporary conceptions of physics and cosmology, referring to quantum physicist David Bohm's work *Wholeness and the Implicate Order* (Bohm 1983), to determine whether or not there is presently a model within contemporary physics which in some way corresponds or gives voice to the insights of Gregory. David Bohm, both by standing at the fountainhead of the study of the relationship between quantum mechanics and consciousness, and by virtue of his expertise as a quantum physicist (he even wrote a textbook on the subject which received approbation from Albert Einstein) is a touchstone for reflection in this area (Rosenblum and Kuttner 2011, 3).[3] In a field often rife with unsupported speculation, his experience lends to his argumentation the credibility and coherence necessary for the encounter between quantum physics and metaphysics.

For his part, Gregory of Nyssa was well trained in the best of Hellenistic philosophy, from Plato and Aristotle to stoicism, neoplatonism, and neo-Pythagoreanism, and so, in addition to his formative role in what became the Christian patristic tradition, it is also natural to view his thought as operating within and responding to a similar set of metaphysical questions and problems as those of the greater Hellenistic world and, thus, the greater Western philosophical tradition (Gregory of Nyssa 2012, xv). The primary works of Gregory's from which the present study will draw its data is

On the Making of Man (*De Hominis opificio*)[4] and *On the Soul and the Resurrection* (*De anima et resurrectione*).[5] After first exploring the relevant sections of these texts from Gregory, the paper will then turn to the question of contemporary physics, *à la* Bohm, to see in what ways they do or do not relate.

St. Gregory of Nyssa

Karamanolis's claim that Gregory denies a material substratum to matter is substantiated in an intriguing footnote to the following statement from *On the Soul and the Resurrection*: "The concurrence and union of these [qualities, such as shape, weight, dimension, etc.] with one another becomes a body" (Gregory of Nyssa 1993, 99).[6] As these qualities in and of themselves do not exist materially as bodies, it is the combinatorial coming together of these immaterial qualities that actually constitutes a "material" body. The footnote to this passage states: "*Macrina is denying the materiality of matter!* This is how Gregory (and Basil also) avoided positing a prime matter which would have existed before God's creation of the world" (Gregory of Nyssa 1993, 99). What this footnote indicates is that in exploring, examining, and extending the implications of creation *ex nihilo*, Gregory (and his brother Basil) came to the conclusion that in the act of creating all things out of nothing, what is actually created are combinations of immaterial thoughts in God's mind.

St. Gregory gives the context for the statement in question thus: "Because the corporeal creation appears with properties which are not shared with the Divine, our discussion encounters a particularly great difficulty if we are not able to see how the visible arises from the invisible, the solid and hard from the intangible, the limited from the unlimited, from the unquantifiable and immeasurable that which is entirely bounded by some measures related to quantity, as well as each property which we understand in connection with the incorporeal nature" (1993, 98–99). In other words, Gregory finds it vital to understand and explain how the visible can arise from the invisible, the solid from the intangible, and the limited from the unlimited. Since everything comes from God, and God is invisible, intangible, and unlimited, the fact of visibility, tangibility, and limitation can pose a profound theological problem concerning the relationship between God, His creation, and, by extension, His creatures. The insight, the solution of Gregory, was to understand that all of the visible, tangible, and delimited qualities are in actuality noetically perceived combinations of that which is ever of the nature of the invisible, intangible, and unlimited mind of God.

One implication of this is that what interests Gregory is not merely the primordial origin of matter but the very nature of matter, therefore including matter's *present* nature. Since Gregory is talking about the very nature

of these visible, tangible, and limited qualities resulting from combinations of an immaterial nature, Gregory is therefore also explaining a present reality concerning present matter as it exists now. Creation *ex nihilo* is thus not merely a doctrine related to history, but to the fundamental nature of "things" in and of themselves. Gregory says: "Nothing of what appears in relation to the body is body in itself, not shape, nor color, nor weight, nor dimension, nor quantity, nor anything else of what is related to quality, but each of these is a principle" (1993, 99). In other words, everything we see having shape or color, any object having hardness, weight, or dimension, or even any number or quantity of these "things"—none of them are solid bodies in or of themselves, but are compositions of immateriality. Something like hardness, then, emerges from and is presently of the nature of immateriality. Without actual self-subsisting substance, to exist materiality must be an effect of immateriality. In short, matter has neither material substance nor material subsistence.

One philosopher in particular from the modern era, George Berkeley, invites comparison to Gregory's views and as such might provide useful philosophical contextualization via a point of comparison, as well as suggest areas for further fruitful research. Like Gregory, Berkeley is not arguing that reality is a psychological phantasm, but that reality is ultimately grounded in the infinite divine Mind.[7] As such, his claim for idealism is not that it is an escape from the real, but that the real is not essentially material. In short, according to Berkeley there is no such thing as nonmental material substance. Reality is ideational, and so his idealism is not antirealism but antiphysicalism and antimaterialism, for "there can be no unthinking substance or substratum of those ideas [i.e., color, shape, etc.]" (Berkeley *PHK*, 7). Berkeleyan idealism is thus misunderstood if it is approached without his larger theological apparatus in view, for at that point any real object will disappear as soon as it stops being perceived by a finite mind, whereas, understood according to the presuppositions of his philosophical theology, the infinite mind of God stabilizes objective reality. This is why his idealism is a type of realism and empiricism, an experience-inclusive epistemology, because it is real experience that Berkeley is concerned with, that is sensory experience of an objective world that is, however, essentially ideational and ontologically rooted in the infinite mind of God.

Few if any extensive studies, however, have directly held Berkeley in light of patristic thought, and as such much work would need to be done in order to assert any deep affinity or difference. For example, when Berkeley states famously that "to be is to be perceived" (*esse est percipi*), the ultimate ground of real existence then becomes the eternal act of perception by God. As such, since God is likened to an eternal Mind in both Nyssen and Berkeleyan thought, inquiry could be had into whether the *logoi* of Gregory function in some sense similarly to that of Berkeley's idea of God's eternal act of perception, if these are complementary notions, incompatible, or

perhaps speaking to altogether different theological issues. In short, is the eternal act of perception who, or perhaps what, God is? Or is God the Mind which creates via the willed act of perception and, if so, what is the relation between the creative and sustaining act of perception by God, on the one hand, and the mind of God, on the other?

The implication of the foregoing for the present study of Gregory is that the multitudinous "things" which populate human life are fundamentally immaterial. According to Gregory's argument, things like cars, desks, computers, keys, shoes, rocks, and even the earth itself, are fundamentally and presently immaterial, which is to say it is a composite of immaterial qualities existing within the Mind of God as ideas which, when combined according to various combinations, effect materiality, which is to say produce a combination of shape, color, weight, hardness, and so on. Concerning where all these *things* take their ultimate and present origin, Gregory says: "The impulse of divine choice, when it wishes, becomes a thing" (1993, 98). Existence, or "thinghood," then, takes its "shape" in and from God's will. There is thus a direct correspondence between what is sensibly encountered and the rational willing of God for the existence of the encountered object. Gregory continues: "Its plan is realized and immediately becomes a nature . . . the realization of the will is the essence" (1993, 98). In other words, to encounter a *thing*, which in its nature and essence is the willed product of immaterial ideas existing in the Mind of God, is to encounter the thoughts or *logoi* of God combined such that they can be encountered mentally and in terms of sight, sound, touch, quantity, and so on.

The things of sense find their very nature and essence in the will of God, not in themselves, nor from "nature." Moreover, according to Gregory it is not precisely the senses which perceive, not the eyes which see, but the mind which sees: the very cognition of things being thus centrally located in the mind. Seeing, hearing, and touching are not physical acts, but mental, cognitional, even metaphysical acts: "It is the *mind* which sees and the *mind* which hears" (Gregory of Nyssa 1993, 38).[8] The ephemerality of things is thus the perception of a mind which sees the impermanent combination of otherwise unchanging immaterial qualities which are themselves existing unchangingly in the mind of God. Concerning this, Gregory says: "The true and perfect soul is naturally one, [it is] the intellectual and immaterial, which mingles with our material nature by the agency of the senses" (1979, XIV.2). In other words, our own organic, composite, and ephemeral material nature is understood as distinct (though not divided) from the eternal soul, which, in the image of God, is intellectual and immaterial. The intellectual soul, the "animating power" (1979, XIV.2), mingles with the senses to make perception possible. Since perception of material things is necessarily perception of the combined immaterial qualities which effect materiality, Gregory then says: "Thus, neither is there perception without

material substance, nor does the act of perception take place without the intellectual faculty" (1979, XIV.3). The materiality of man thus serves as a type of vehicle by which the mind or soul perceives and interacts with materiality through its various senses.[9]

Gregory declares: "The soul is . . . a living and intellectual existence which by itself gives to the organic body the power of life and reception of sense-impressions as long as the nature which can receive these maintains its existence" (1993, 37–38). In context, the foregoing quote functions explicitly as a definition of the soul, and moreover naturally functions to shed light on what the image of God in man is. As such, there is threaded throughout the present topic a vital corollary with what one understands the nature of man to be. It is impossible in Gregory's system of thought to explain the nature of reality without also discussing in a holistic manner the nature of man perceiving said reality. To talk about nature is inexorably to talk about an act of perception, and thus an intellectual soul; and lest one mistakenly associate the soul with materiality, Gregory asserts: "Thus, as the soul finds its perfection in that which is intellectual and rational, everything that is not so may indeed share the name of 'soul,' but is not really soul, but a certain vital energy associated with the appellation of 'soul'" (1979, XV.2). In other words, things can be verbally associated with the term "soul" which are not actually germane to the soul's immaterial, noetic essence.

Concerning the nature of man, Gregory rhetorically asks: "In what then does the greatness of man consist, according to the doctrine of the Church? Not in his likeness to the created world, but in his being in the image of the nature of the Creator" (1979, XVI.2). Gregory has thus removed from materiality any capacity to speak not only to the nature of matter itself, but also as to the essential or original nature of man.[10] Though at present man is made of a "compound nature" (Gregory of Nyssa 1979, XV.9), it is clear to Gregory that "the intellectual element, however, precedes the other" (1979, XV.9), for materiality is simply an ephemeral effect of something existing simply, eternally, and unchangingly in the mind of God as *logoi*. Thus to look to brute materiality for either man's essential meaning or materiality's stand-alone meaning, as if it had one, is a false move in Gregory's mind.[11] In light of "this intelligent and dimensionless nature which we call 'soul'" (Gregory of Nyssa 1993, 47), Gregory moreover states that since "the soul finds its perfection in that which is intellectual and rational . . . let this teach carnal men not to bind their intellect closely to the phenomena of sense, but rather to busy themselves with their spiritual advantage, as the true soul is found in these, while sense has equal power also among the brute creation" (1979, XV.2). Materialism and scientism are thus out of the question, for mind is the irreducible factor of materiality. Mind is both the irreducible factor which, in God's case, produces and sustains through His eternal ideas all of the combinatorial effects known as matter, and in

man's case functions in the context of his senses for the sake of perceiving and interacting with these combinatorial effects known as matter.

An object's solidity, which is to say its hardness or softness, bigness or smallness, and so on, is, according to the above, a perceptual effect of the sense of touch communicated to a mind, a mind which is mingled with this sense. Solidity and size are therefore not qualities that are part and parcel of an otherwise substantial object, for the object itself is simply the effect of several of these divine ideas in combination. Likewise, the color of an object is a perceptual effect of the mind "seeing," and so on, with sound via the mind hearing, flavor via the mind tasting, and odor via the mind smelling. At each point of contact with the senses, it is a mind which constructs these into intelligible experience of touch, sight, sound, and so on. Without these intelligible qualities present, the material thing itself has no real existence.

As Gregory states: "we shall find all matter to be composed of certain qualities, of which if it is divested it can, in itself, be by no means grasped by idea" (1979, XXIV.1). Since there is no independently existing material substratum, the absence of these qualities actually implies an absence of the object itself: "If, then, colour is a thing intelligible, and resistance also is intelligible, and so with quantity and the rest of the like properties, while if each of these should be withdrawn from the substratum, the whole idea of the body is dissolved" (Gregory of Nyssa 1979, XXIV.2). Conversely, "it would seem to follow that we may suppose *the concurrence of those things*, the absence of which we found to be the cause of the dissolution of the body, *to produce the material nature*" (1979, XXIV.2). In other words, Gregory is showing how it is precisely the presence of these qualities, or properties, while each being distinct from the created object, when combined actually constitute the object. On the other hand, without their concurrence, there simply is no object to perceive.

The manner in which he argues his case continues: "for as that is not a body which has not colour, and figure, and resistance, and extension, and weight, and the other properties, while each of these in its proper existence is found to be *not* the body but something else besides the body, so, conversely, whenever the specified attributes concur they *produce* bodily existence" (Gregory of Nyssa 1979, XXIV.2). One thing to notice is how comprehensive the list is. Though it was mentioned above, it is worth reiterating that even such things which commonly appear as solid or weighty are themselves not intrinsically so but are composed of these added qualities which together produce the thing in question. In other words, measurement of a thing's weight does not say anything intrinsic about the thing weighed, for the thing does not have weight in and of itself.

An analogy could perhaps be that of a metal statue of Zeus, where it is common to think of the form or shape of Zeus as being accidental, mutable, or incidental to the metal, which is to say the form of Zeus is

in a certain sense added to the base metal itself. Concerning reality, then, Gregory is going yet a step further by arguing that the quality of solidity found in metal is itself an added property. In other words, just as a person adds the form of Zeus to metal, likewise God adds solidity to metal for, in the case of metal, just as there is no Zeus intrinsic to a piece of metal, there is likewise no intrinsic solidity to metal. Metal is an idea in God's mind to which the idea of solidity is added. All solidity is in this sense added to the various forms of matter found throughout the universe. Each quality, then, which exists eternally as *logoi*, is likewise being combined to effect materiality, solidity, weightiness, and so on.

Gregory continues his argument: "Yet if the perception of these properties is a matter of the intellect, and the Divinity is also intellectual in nature, there is no incongruity in supposing that these intellectual occasions for the genesis of bodies have their existence from incorporeal nature" (1979, XXIV.2). Again Gregory maintains that the actual substratum of all things is the intellectual nature of Divinity. No "thing" is not fundamentally of this intellect, and so even corporeal bodies are fundamentally derived from the intellectual nature of Divinity. It is from God's intellectual nature that bodies take their genesis and thus have their material existence, "the intellectual nature on the one hand giving being to the intellectual potentialities, and the mutual concurrence of these bringing to its genesis the material nature" (Gregory of Nyssa 1979, XXIV.2). In other words, the qualities or properties of materiality derive their real being from the intellectual nature of God, and furthermore, as these qualities are brought together, material nature is produced or effected, which is to say created, and are real to the extent to which they derive being from the reality of the ideas existing eternally in God's mind.[12] In other words, "All these are in themselves concepts [*ennoiai*] and bare thoughts [*psila noemata*]. None of them is matter on its own, but they become matter when they combine with each other" (Nyssa *Apology for Hexaemeron* 69C).[13]

From this vantage it ought to be clear that, created *ex nihilo*, there is no material substratum to matter when considered in itself. It takes its beginning, middle, and end, its very realism, from the mind of God. Karamanolis thus seems to have rightly read Gregory, and so before turning to Bohm and his view of contemporary physics, some qualifications Karamanolis provides will be useful to consider. For example, guarding against the potential charge that Gregory is engaging in philosophical idealism, which would make any actual comparison with physics impossible, Karamanolis maintains that Gregory's argument shows that the divine qualities, properties, or *logoi*, are precisely what "real" is (Karamanolis 2013, 106–07). It is these real distinctions in the mind of God which account for the realism of Gregory's view. Since God is the objective source of factual reality, it is only natural that the ideas in His mind are the substance of what constitutes real things. From *Logos* to *logoi*, there is no casting off of reality in the

"movement" from one to the other. Karamanolis states: "The epistemic distinctiveness of *logoi* is not an illusion, but rather the consequence of their being distinct in reality" (Karamanolis 2013, 104). Even though in perceiving a real object we are presented with its properties in a unified way, for example that of a red brick, we yet distinguish the logoi such that "we cannot confuse the quality of color with that of weight" (Karamanolis 2013, 104).

Of Gregory's position, Karamanolis states succinctly: "matter is an epiphenomenon of the combination of qualities or *logoi*. In his view, God created the world by instantiating his thoughts, the *logoi*, into the world, and in this sense God did not need to create anything different from himself" (Karamanolis 2013, 209). Thus the world is God's instantiated thought, and man's act of coming to knowledge therefore grounded in, and thereby expressive of, an holistic relationship not so much between himself and some inert matter, but between himself and God.[14] Knowledge is thus divinely communal in a very profound sense. Any study of the material universe is therefore incomplete if such a study is conceived as a collecting of data concerned with the assemblage of mere things, for there are no mere things. To be complete, the true study of material reality must be recognized as essentially rooted in the mind of God and of man. As Karamanolis puts it, "the intellect that cognizes through the senses does so by bringing into sense perception concepts that pertain to the perceived subject matter *but are not sense-perceived*" (Karamanolis 2013, 209). This is to say that no "mere thing" is ever truly seen because no mere thing as such exists; only in minds are instantiations of *logoi* perceived, and by this act real knowledge gained.

As shown above, according to Gregory the mere eye sees nothing. Dead eyes are still eyes, but they do not see. Concerning the context of sight, in connection with the eye it is only the intellectual soul or mind which sees. For example, if one sees a type of sphere, say a balloon stuck high up in a tree, one cannot sense-perceive the entire surface of the sphere in one act of sense-perception, its roundness. One's *concept* of a sphere, however, comprehends and "fills in" that which is not (ever) fully sense-perceived, and it is this *concept* which is what is actually perceived. Likewise, no one sees a forest with an act of sense-perception, one constructs the concept of a forest out of an act of sense-perception which is by nature limited to the mere surface of the several trees which are presently in view: "The intellect does this by translating the sense data in a conceptual form."[15] In other words, an uninterpreted, which is to say an unminded, sense-perception is not actually a sense perception at all. To be a sense perception it must be interpreted, and once it comes to be interpreted the interpretation is necessarily constituted of concepts. This is an act of coming to real knowledge because, in itself, the thing being perceived *is* this combined set of concepts, which is to say of qualities or *logoi*. Since these are grounded

eternally in God, the movement of knowledge is therefore communally from Mind to mind and from mind to Mind.[16]

David Bohm

It is with this notion, that of a type of continuum from Divine Mind to human mind, and from *Logos* to *logoi*, where Bohm's notion of "wholeness and the implicate order" comes into relevance. As Karamanolis states of Gregory's position, "Since man is an intellect like God, he is able to capture the qualities that make up sensible entities and thus get to know them" (Karamanolis 2013, 209). Bohm, though never quite ascending to Gregory's view, says this in his own way: "Both observer and observed are merging and interpenetrating aspects of one whole reality, which is indivisible and unanalyzable" (Bohm 1983, 9).[17] Bohm is not saying here that reality itself is unanalyzable *per se*, else there is nothing left for him as a physicist to do! Rather, he is saying that the division between observer and observed is unanalyzable because there is no *division*. That which man observes is part of him, united in the act of observation, and though a conceptual distinction can be made, there is an inescapable sense in which they are "merging and interpenetrating aspects of one whole reality."

One of the primary problems Bohm sought to address resulted from a perceived incommensurateness between classical Newtonian physics and the paradigm-shifting insights that were quantum mechanics and Einstein's theories of relativity, as well the problems and insights consequent to them. In short, what does quantum mechanics "mean"? Rather than seeing the world and the universe in purely mechanistic and deterministic terms, with its metaphysical proclivity for deism, Bohm rather intuited that quantum mechanics suggested an integral reality, where the source of reality was "implicate" and integral rather than distant and deistic, if not absent. Quantum mechanics itself, then, according to Bohm, opens up space for a new line of inquiry into the nature of reality, one which seems to transcend the merely physical universe by including, or at least strongly implying, something of metaphysical consequence. This strong physics-driven and physics-rooted opening onto the field of metaphysics, by framing physical reality in terms friendly to metaphysical categories, is precisely what can enable a dialogue between such seemingly disparate modes of discourse. It is into this space that Bohm speaks.

Within his own discipline, and independent of the "thought-collective" undergirding the so-called "Copenhagen interpretation" of quantum mechanics, Bohm's interpretation serves, if not as tradition, then at least as a major point in a continuous line of research into the ostensive relationship between reality perceived through the lens of quantum mechanics together with consciousness.[18] Unfortunately, reception of Bohm's interpretation within the mainstream of physics is somewhat mitigated by the

vicissitudes of historical contingency, as Cushing well observes (Cushing, 1994, xi). Though a reception history of his thought is not possible here, his work has, however, been picked up continuously to this day, and notably by physicists such as Rosenblum and Kuttner (2011, 213–15).[19]

Returning to the subject of wholeness, one of Bohm's central concerns is the notion of fragmentation, and the manner in which this fragmentation has been reflected in, if not produced by, earlier, atomistic conceptions of science. As he observes: "As the atomic theory developed, it ultimately became a major support for a fragmentary approach to reality" (Bohm 1983, 8). This atomistic dividing of reality, taken to extremes, was no longer helpful, "for it ceased to be regarded as an insight, a way of looking, and men regarded instead as an absolute truth the notion that the whole of reality is actually constituted of nothing but 'atomic building blocks', all working together more or less mechanically" (Bohm 1983, 8). In other words, the atomistic view had grown so rigid that it functioned as though it were no longer a description of reality, but equal to reality itself. This rigidity of view stemming from atomism is what lies at the root of fragmentation. The solution according to Bohm, then, is the insight, rooted as it is in quantum mechanics, "that wholeness is what is real, and that fragmentation is the response of this whole to man's action, guided by illusory perception, which is shaped by fragmentary thought" (Bohm 1983, 7).

One of Bohm's other consistent observations related to the above is this notion of "a way of looking." He is vitally concerned with maintaining a delicate balance between a commitment to truth and a hesitancy to absolutize any one way of describing this truth, as no one method of description can exhaust reality. Thus he advocates theories as ways of looking at things. As he says: "If we regard our theories as 'direct descriptions of reality as it is', then we will inevitably treat these differences and distinctions as divisions, implying separate existence of the various elementary terms appearing in the theory" (Bohm 1983, 7). It is this sober realization, then, that in truth and essence the inexhaustible reality under scrutiny defies total description, which motivates his view of theory as "a way of looking."

Showing marked concern for this subject, he exhorts: "Give careful attention and serious consideration to the fact that our theories are not 'descriptions of reality as it is' but, rather, ever-changing forms of insight, which can point to or indicate a reality that is implicit and not describable or specifiable in its totality" (Bohm 1983, 17). It is nearly apophatic, certainly holistic, but at the same time it is highly characterized by the mode in which he does science.[20] His work in quantum theory and relativity are precisely what in his mind enables him to say: "Rather, one has to view the world in terms of universal flux of events and processes" (Bohm 1983, 9). In fact, of modern physics he says explicitly: "Relativity calls for this sort of way of looking at things" (Bohm 1983, 10). Of even greater significance: "The quantum theory presents . . . a much more serious challenge

to this mechanistic order, going far beyond that provided by the theory of relativity" (Bohm 1983, 174).[21]

With the notion of a description's inherent and inescapable incompleteness in mind, Bohm yet sums up his thesis of "undivided wholeness in flowing movement" in these words: "The proposal for a new general form of insight is that all matter is of this nature: That is, there is a universal flux that cannot be defined explicitly but which can be known only implicitly, as indicated by the explicitly definable forms and shapes, some stable and some unstable, that can be abstracted from this universal flux. In this flow, mind and matter are not separate substances. Rather, they are different aspects of one whole and unbroken movement" (Bohm 1983, 11). Immediately one can detect a faint resonance with Gregory's views as argued above.

If one understands the "universal flux" as loosely corresponding with an "implicit" *Logos*, a whole which "cannot be defined explicitly" but can be known implicitly in the "explicitly definable forms and shapes," what Gregory calls the qualities or *logoi*, properties which Bohm maintains can be "abstracted from this [implicit] universal flux," then it seems as if there could be some justification for claiming a type of correspondence between their thought. Moreover, the notion of Gregory's grounding the mind of man in the mind of God, and the *logoi* as a point of contact and even mutual indwelling for the two, can also in a tentative sense be likened to Bohm's insight above, the notion that "mind and matter are not separate substances." In short, both Gregory and Bohm see reality as a unified whole. Both also see this whole as being in some primary sense mysterious in essence, with an implicate order discernable indirectly through the manifest formations emerging from the whole.

Though comparisons of this sort must ever be tentative, and likely never conclusive, it seems that the comparison is not in itself unjustified. There is overlap. Both views result in a unified vision of reality, where in Gregory's case every *logoi* is unified in the Logos, and in Bohm's case everything is unified in the undivided wholeness.[22] Likewise, both are concerned with resisting notions of fragmentation. In Gregory's case this is especially manifest in the context of his discussion of matter in an aside against the Manichaeans, which states: "And if any one under pressure of this argument should assume a material substratum for the Creator of all things, what a support will the Manichaean find for his special doctrine" (Gregory of Nyssa 1979, XXIII.4).[23] The Manichaeans, famous for their dualism, that is fragmentation, represent in a manner of speaking this notion of a fundamentally divided whole, and so Gregory refutes them within this context concerning the nature of reality; like Bohm he advocates the necessity of seeing reality in terms of wholeness.

Bohm is also very interested in approaching this notion of division from the perspective of consciousness. In discussing the "nature of reality," he emphasizes that "our notion of cosmology . . . must have room . . . to permit a consistent account of consciousness" (Bohm 1983, x). The notion of reality as a whole, then, "should then be such as to allow for an understanding of how reality and consciousness are related" (Bohm 1983, x). This dovetails well with Gregory's teaching on the image of God in man, and thus the relationship this implies connecting God's mind with the human mind, where Bohm for his part states: "Reality can be considered as in essence a set of forms in an underlying universal movement or process" (Bohm 1983, xii). This can be read in light of Gregory's theory of *logoi*, where the "set of forms" corresponds to Gregory's teaching on the various qualities discussed above such as color, weight, dimension, and so on.

It might be observed, however, that there is a limit to Bohm's conception of knowledge which does not seem to be encountered by Gregory. Bohm states: "In this theory there is no consistent notion at all of what the reality may be that underlies the universal constitution and structure of matter" (Bohm 1983, xiii). For Gregory, however, reliance on scripture as revelation provides a ground for the Christian claim to have quite "consistent" notions concerning the transcendent identity of the (Personal) Logos universally underlying all things. Bohm's physics cannot say along with Gregory's theology: "We must, then, take up once more Holy Scripture itself, if we may perhaps find some guidance in the question by means of what is written" (1979, XVI.5).[24] Thus it seems that any comparison between quantum physics and Christian theology will have a (not impermeable) barrier, yet from the perspective of theology it ought to be noted that one can gain even greater appreciation for some of physics' insights.[25]

Bohm's physics thus does not quite approach concepts such as revelation, or the Person of the Logos, but in what it has thus far affirmed it seems certainly to lend itself to a theological program. Considering the remarkable and porous role consciousness plays in his view concerning the implications of quantum mechanics it is, however, arguably possible for a theory of revelation to be framed in Bohmian terms. One place where this is especially striking is in Bohm's concept of the *implicate* or *enfolded* order: "In the enfolded order, space and time are no longer the dominant factors determining the relationships of dependence or independence of different elements" (Bohm 1983, xv). In other words, creation is not itself the dominant force steering reality. Even though "order in its totality is evidently ultimately undefinable," according to Bohm it also "pervades everything that we are and do," from language to thought to feeling to sensation and so on (Bohm 1983, xiv). From this perspective the notion of revelation can be given a stronger claim to a place in a scientific universe.

Bohm states of quantum theory that "it implies a much more radical change in notions of order and measure than even relativity did" (Bohm 1983, 128). In order to understand this concept, Bohm says there four new features emerging from quantum theory which bear significantly on it: (1) *indivisibility of the quantum of action*, which "implies that transitions between stationary states are in some sense discrete";[26] (2) *wave-particle duality of the properties of matter*, where a particle behaves both like a wave and a particle, even if in some circumstances it is more like one than the other (Bohm 1983, 128); (3) *properties of matter as statistically revealed potentialities*, where "every physical situation is now characterized by a wave function. . . . This wave function is not directly related to the *actual* properties of an individual object, event or process. Rather, it has to be thought of as a description of the *potentialities* within the physical situation" (Bohm 1983, 128–29); and (4) *noncausal correlations (the paradox of Einstein, Podolsky, and Rosen)*, where "it is an inference from the quantum theory that events that are separated in space and that are without possibility of connection through interaction are correlated" (Bohm 1983, 129).

From the foregoing Bohm states that the earlier, classical modes of reasoning about the nature of reality break down, and after following it up with a description of the "uncertainty" relations illustrated in Heisenberg's microscope experiment, that "in the 'quantum' context the situation is very different" (Bohm, 129–33). Rather than being able to reduce things, such as cells, to mathematical points, and so removing the relevance of the "shape" of said cells, in the "quantum" context "the 'shapes' of the cells remain relevant, as essential parts of the description of the observed particle" (Bohm 1983, 133). In other words, there is no discrete, isolated, or independent matter, no "essential cell" which is being studied. Rather, there is an inexcisable contact, a mutual dependence, a direct correlation between the study of the cell, the irreducible properties of the cell itself (such as its shape), and the context in which the cell exists, all in a continuum with the observer. In Bohm's words: "The latter [experiment with the cell] therefore cannot properly be described except in conjunction with a description of the experimental conditions; and if one goes in more detail into a mathematical treatment according to the laws of the quantum theory, the 'wave function' of the 'observed object' cannot be specified apart from a specification of the wave function of the 'link electron', which in turn requires a description of the overall experimental conditions (so that the relationship between the object and the observed result is actually an example of the correlations of the type . . . which cannot be explained in terms of the propagation of signals as chains of causal influence)" (Bohm 1983, 133). In short, quantum physics implies an unbroken whole.

Bohm's conclusion concerning the foregoing is that "this means that the description of the experimental conditions does not drop out as a mere intermediary link of inference, but remains inseparable from the description of what is called the observed object" (Bohm 1983, 133). In other words, and for the purpose of this study, Bohm has demonstrated via the language of physics that there is a continuum between an object and its environment, and by extension between the observer (by virtue of the fact of necessarily existing in the environment) and the observed such that there is an intrinsic relationship between things, environment, and the observing consciousness. This continuum can to a significant degree correspond with Gregory's teaching concerning the continuum of the Logos, the *logoi* which exist eternally, enfoldedly, and holistically in the noetic "environment" of the Logos, their combined emergence as an explicate "thing" existing in the similarly constructed creation, and the identity of this thing on the human plane with its noetically explicated properties. Thus through Bohm's notion of wholeness there can be heard an echo of Christian truth claims, where "analysis into autonomously existent elements is not relevant" (Bohm 1983, 133).

Articulating how wholeness relates to order, Bohm then uses the example of the hologram to show that "a total order is contained, in some implicit sense, in each region of time and space" (Bohm 1983, 149). As such, the whole being enfolded, the whole is thus "inwardly folded" in all and through all as a pervasive reality from which certain forms can become explicated (Bohm 1983, 149). The analogy Bohm uses to describe explication, on the other hand, is that of a radio wave which carries an enfolded visual image: "Thus, the radio wave carries the visual image in an implicate order. The function of the receiver is then to explicate this order, i.e., to 'unfold' it in the form of a new visual image" (Bohm 1983, 149). Of course, the radio wave pervades the environment invisibly, but in the action of the receiver this otherwise invisible and enfolded image is rendered visible and thus "real." Likewise, if this is applied to Gregory's teaching, in human consciousness not merely is a visual image constructed, but solidity, hardness, weight, color, and so on are themselves "unfolded" in the human mind via the senses and so made tangibly "real." According to this mode of thinking, the Logos Himself is the transcendent Transmitter, which is to say Creator.[27]

One further point that Bohm raises relative to the foregoing is that "points that are near each other in the visual image are not necessarily 'near' in the order of the radio wave" (Bohm 1983, 149). It is thus only in the context of the receiver that the image takes its "real" shape. If one were to attempt to draw another parallel here with Gregory, it might be suggested that in a similar way the Logos is entirely present in and through all things in this enfolded way, and likewise the *logoi*, but

depending on the "tuning" of the receiver, which is to say the perceiving mind, certain combinations of these eternally enfolded *logoi* correspondingly unfold in empirical terms their perceived qualities such as solidity, weight, color, and even space-time itself, thus constructing empirical reality *ex nihilo*.

One corollary of this would be that this present empirical reality, with all of its apparent substantiality, its gravity, its shining stars, and with all of its untold spans of light years, all of this is the unfoldment of implicate eternal *logoi*, which as *logoi* are pervasively present everywhere in an enfolded manner, and are yet not "anywhere," because location, matter, space, and time do not exist in and of themselves. Not existing merely in relation to man and "the world," either, it is man and the world who exist in relation to the eternal *logoi*, for ontologically the *logoi* are the true referent, themselves centered in the Logos who is the actual substance of reality.[28] In short, it implies a Christocentric universe.

Conclusion

Much more needs to be said to do justice to this subject.[29] Certainly, there are weaknesses in a too willing juxtaposition of Gregory and Bohm on this subject, and certainly many more issues would need to be answered prior to making any decisive claims. Nonetheless, there seems to be a certain affinity, if not coherence, between the two modes of thought. Only the barest surface has been scratched; what topography has been shown, however, justifies further exploration. One of the more pressing areas is a more thoroughly articulated distinction between the horizons of discourse between quantum physics and metaphysics, and how to move from one to the other in the context of discourse about mind and consciousness. Gregory's teaching on this is itself not widely known or distributed, though it provides a good foundation, and Bohm himself admits that few physicists take seriously the implications of their own physics, at least as regards their manner of viewing the world (Bohm 1983, 14).

To be clear, one thing the above argument is *not* invoking is the proverbial question of whether or not a tree falling in the woods, with no one around to hear it, yet "makes a sound." Neither is it suggesting that when humans are not around, or not perceiving, that there is no reality. Fundamentally, the creation is initiated and maintained by God. The question is thus more concerned with "where" one understands reality to be existing: either self-subsisting in itself or dependently subsisting in God. According to Gregory, as demonstrated above, God is the objectivity of the universe, at least the source of its objectivity, which is to say the ground of its realism, and without God there is no more a universe than there is a wave with no ocean. Since God is in Himself real, He bestows realism to creation in its past, present, and future. Thus it is not a question of whether or not an

unobserved tree exists, for it exists in God's mind independently of finite human perception. It is the human act of perception which implicates him in what is *revealed* to him as a tree, which is to say an instantiated composite of uncreated *logoi*.

In other words, digging into and examining a wall, one will not thereby find "wall substance." Holding bits of plaster under a microscope, one will not find "wall substance." When seeking to erect a wall, people do not scour the area for bits of wall, but rather convert one thing into another, say, clay into brick, and so construct a wall. In other words, a wall is built of many things, but it is not built out of "wall," for "wall" is a noetic category. Thus, if a person throws a brick, it is not said that they threw "wall substance"; conversely, if a wall is constructed out of brick, and one leans on a portion of the wall, one does not say they are leaning on bricks, but leaning against a wall. In other words, if Gregory's view is true, the wall exists essentially as a noetic reality, not a merely material one. Materiality is an effect, an epiphenomenon of combined *logoi*. Thus, when a wall, or any other object, is reduced to its elements, either it is said to be composed of some "other thing," as a wall out of bricks, as bricks out of clay, and so on down to the atomic level; or it is reduced so far that one has gone beyond even the atomic level to its quantum constituents, where all that is left is a strange probability cloud of quantum potentiality, if not purely "empty" space—which also is itself an epiphenomenon of *logoi*.

Substantiating this from another perspective, when taking the notion of "leaning against a wall," if one looks at this act at the atomic level, then one is still not actually touching "wall," or "wallness"; nor are the atoms of one's shoulder touching the atoms of the wall. What is actually happening is that forces of energy in the atoms of the shoulder are interacting with forces of energy in the atoms of the wall such that the *experience* of "leaning" is maintained *in effect*; neither set of atoms, however, actually touches the other set of atoms. Each set of atoms is held together, not physically as though through a material substratum, but by means of interactions of *immaterial* energy; each set of atoms is "forced" apart from the other set, likewise by means of interactions of immaterial energy.

All things can in principle be analyzed down to this quantum level such that it is demonstrable that no "things" exist at all in a material sense, only various combinations of quantum probabilities. And so the question Gregory seems to be able to answer to is: What, then, are "things"? As he indicates, and as physics via Bohm could be seen to corroborate, "things" which have no intrinsic existence are instantiations of Divine ideas, or *logoi*. God substantiates His ideas such that we interact with them at the mind-imbued sensory level. These combined ideas, which are in themselves eternally implicate or enfolded in the Divine mind, are

explicated or unfolded by human minds via the senses, senses in which the mind is mingled in the state of corporeal existence. This act of explicating or unfolding is coterminous with the act of perception, as in Bohm's example of the receiver, and as such is an act which does not "make" the thing real, for the reality of the thing is rooted in the Transmitter's transmission, which is to say God's own act of creation. In short, creation itself is the transmission of a combined set of eternal and enfolded *logoi* which are received, which is to say unfolded temporally in human minds via the act of noetic perception through senses.

Human perception (including the perception of hardness) is therefore a noetic encounter with some combination of instantiated qualities made real by God, for noetic perception is the mode by which it can be said, to borrow words from Luke, "in Him we live and move and have our being"(Acts 17:28). Thus, not skin *qua* skin, *minds* perceive shape, weight, solidity, hardness, temperature, and all other such qualities as the effect of a combination of a fundamentally immaterial set of nonlocal properties rooted in the very infinitude of God's Person. The instantiation, the bringing together, which is to say the localizing of these essentially nonlocal qualities, is what constitutes creation itself, where creation is both noetic and yet entirely real. As such, the unified encounter with creation is in this sense a unity of *logoi* manifested to the mind-mingled senses *as solidity*; the encounter with them manifests *as color*; the encounter with them manifests as weight, as dimension, as temporality, as wall, as sky, as sweet taste, as bird's call, as soft touch, and so on for the entirety of creation itself. In sum, the unified field of encounter known as creation is manifested to the human mind in acts of noetic perception, where perception is of combinations of *logoi* uniting in what are otherwise, in and of themselves, insubstantial "things," things such as walls, bricks, rivers, space, time, and so on.

Finally, if the above proves consistent, there is certainly a lot of fascinating work which can be done to explore its ramifications. The conversation with contemporary science, if anything, is fruitful in that in a manner of speaking it forces Christians to go back to the Church Fathers for possible frameworks in which to interpret and understand the questions at hand. Karamanolis seems to see keenly into an important and relevant dimension of Gregory's thought; and Gregory's thought, when examined in itself, seems to corroborate the notions of matter and materiality as discussed above and also as found in Bohm's way of looking at quantum physics as a description of reality. Further areas of exploration would begin with the above *as its presupposition*, and include not just cosmology and physics, but also metaphysics, epistemology, psychology, hermeneutics, anthropology, asceticism, and ecology. What is more, all of these various fields of inquiry can be brought together as a necessarily integrated unity.

Notes

1. For the purposes of the present paper, the terms *logoi*, qualities, properties, concepts, and ideas will be used more or less interchangeably. A whole study would need to be done to parse the subtleties of difference between *logoi*, *ennoiai*, and *noemata*, and their English equivalents, but for the present study they can all be seen as functioning similarly and within the same category, especially as distinct from that which is treated as if it were self-subsistent materiality not immediately derived from God.
2. Quoting Nyssa, *On the Soul and the Resurrection*, 124CD (Gregory of Nyssa 1993).
3. Following Bohm, these contemporary physics-trained authors are also continuing the exploration of the relationship between quantum physics and consciousness.
4. Gregory of Nyssa, *On the Making of Man*, Nicene Post-Nicene Fathers, 2nd Series, Vol. V (1979). The abbreviations for Gregory's works follow that of Karamanolis. *The Brill Dictionary of Gregory of Nyssa* (Mateo-Seco and Maspero 2010) gives them a little differently.
5. Page numbers *De an.* come from Gregory of Nyssa, *On the Soul and the Resurrection* (1993).
6. It is also helpful to remember that the setting of this text is a dialogue between Gregory and his sister Macrina, where Macrina stands in the role of Gregory's teacher.
7. As Berkeley argues in *Principles of Human Knowledge* (*PHK*), "so long as they are not perceived by me, or do not exist in my mind or that of any created spirit, they must either have no existence at all, *or else subsist in the mind of some eternal spirit*" (*PHK* 6) (Emphasis added.)
8. Emphasis added, and all subsequent emphases.
9. There is not space here to explore the ascetical dimensions of Gregory's thought on this concerning his warning against those with "slavish disposition, who bring the reason into bondage to the impulses of their nature and pay servile homage to the pleasures of sense by allowing them the alliance of their mind" (Nyssa 1979, XIV.1). It is enough to note Gregory does not find the issue to be merely a matter of intellectual hairsplitting.
10. One primary element of Gregory's argument concerning the Resurrection includes a discussion of how the soul will be raised in a body, what the qualities of this body will be, in what sense they will be impassible, how it will be "the restoration of our nature to its original condition"(1993, 113; cf. 118), which is not subject to old age or disease. In this sense, the Fall plays a role in cosmology itself. The resurrected body will not be composed of "irrational skin" (1993, 114).
11. The last statement of *On the Soul* seems to me ambiguous as to what the Resurrection will actually "look" like, if it will "look" like anything. In a sense it seems that materiality will be utterly dissolved, where even the original nature when restored will apparently not be "material" in any way. Concerning the restoration of original human nature *after* the resurrection it says, in place of all that which is mutable "each of the better qualities will enter in their place: incorruptibility, life, honor, grace, glory, power, and whatever else of this kind we recognize in God Himself and in His image, *which is our human nature*"(1993, 121). How any of that would, if at all, correspond to compositions of *logoi* still seems to need explanation, but suffice it to say that real human nature is not described in corporeal terms.
12. It ought not go without being said that the argument from Gregory has throughout been in the context of an argument in favor of the idea of Resurrection, and so motivated partly to answer the question of whether or not human bodies can be resurrected, and, if so, what the nature of these bodies will be. Sadly, there is not space enough to treat of this issue.
13. Quoted in Karamanolis (2013, 102).
14. Epistemology inexorably reveals itself a vital dimension to this subject, and though there is not space enough here to do it justice, it is worth mentioning that no study of this subject will be complete until it also touches on the role and nature of man's capacity to know, and how this knowledge implies a mode of communion with the known.
15. Karamanolis (2013). There is an old saying in scholasticism that "the eye sees particulars; the mind sees universals."
16. This could also be stated: from Logos to *logoi* and from *logoi* to Logos.
17. The book, *Wholeness and the Implicate Order* (1983), is a collection Bohm's essays. The focus in this paper will be especially on the first, "Fragmentation and Wholeness"; and the fifth together with the sixth, "Quantum Theory as an Indication of a New Order in Physics," parts A and B, respectively.

18. For discussions of these issues, see Christian Forstner, "Dialectical Materialism and the Construction of a New Quantum Theory: David Joseph Bohm, 1917–1992," Preprint, Max Planck Institute for the History of Science, 2005. Cf. Kristian Camilleri, "Constructing the Myth of the Copenhagen Interpretation," *Perspectives on Science* 17(1):26–57 (2009).

19. See also Kirk Wegter-McNelly, *The Entangled God: Divine Relationality and Quantum Physics* (New York: Routledge, 2011). For a look at Bohm in historical context, see Olival Freire, Jr., "Science and Exile: David Bohm, the Hot Times of the Cold War, and His Struggle for a New Interpretation of Quantum Mechanics," *Historical Studies on the Physical and Biological Sciences* 36(1):1–34 (2005). See also Christian Forstner, "The Early History of David Bohm's Quantum Mechanics Through the Perspective of Ludwik Fleck's Thought-Collectives," *Minerva* 46(2):215–229 (2008).

20. Negatively, the extremely provisional quality he ascribes to all knowledge could lead unhelpfully to skepticism.

21. The three reasons he gives for this are "1. Movement is in general *discontinuous* . . . 2. Entities, such as electrons, can show different properties . . . 3. Two entities, such as electrons . . . [can] show a non-local relationship."

22. As will be seen, Bohm also integrates this concept with another, that of the *implicate order*.

23. Cf. *De an*. (Gregory of Nyssa 1993, 98): "For we would have to imagine that divinity was among the properties of the created world, if what came into being was the same kind as God; or else we would posit some material nature outside the divine Essence which would be equal with God in unbegottenness because its being would also be eternal. In fact, the presumptuous Manichaeans . . . have made this fantasy their doctrine."

24. That this is not mere fideism; see also *De hom. opif.* XXIII.4-5 (Gregory of Nyssa 1979).

25. It could even be justifiable to claim that, without Gregory's theological framework, Bohm's idea will never find itself truly sustainable, likely surrendering physics to a metaphysics of monism.

26. Bohm adds: "Thus, it has no meaning to say that a system passes through a continuous series of intermediate states."

27. Extending the analogy of the radio wave, it is also true to observe that multiple radio signals all coexist in the same space; and yet with a special set of tuning devices, that is, the senses, human beings can explicate each one despite the presence of simultaneous signals. Thus the mind, as a receiver, combines the signals sent to the senses and explicates them noetically, and so perceives a truly immersive environment: creation.

28. This is why the manner of living "according to the senses" is such a problem in Gregory's mind, even associated with fallenness itself, for it functions as a living denial of the present truth of things. As Gregory says of those who make sensory life their *summum bonum*, theirs is a "slavish disposition, who bring the reason into bondage to the impulses of their nature and pay servile homage to the pleasures of sense by allowing them the allegiance of the their mind" (1979, XIV.1).

29. For example, a thorough examination of Gregory's core terms, an expansion of the study to include other major Church Fathers who speak to this issue, such as St Maximus the Confessor, and also a more critical mapping of the role revelation plays when encountering the limits to the "natural theology" represented by work such as Bohm's.

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