

Causation, Dispositions, and Divine Action

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(5.22.15; 10319)

I. Introduction

This paper provides a conceptualization of *causation* and *dispositions* on the grounds of a new view of divine action. (We use ‘disposition’ generically to refer to what many are calling “active and passive causal powers.” While the latter terms are of medieval origin, the concept is from Aristotle (δυνάμεις, potentiality).¹ Dispositional explanations were commonplace in the eighteenth century and after the decline of positivism, the notions were revived in the twentieth-century by theists and non-theists alike.²) Even though theistic philosophers and metaphysically-interested theistic scientists agree that God created, sustains, and providentially governs the world, they disagree over how to understand divine *sustaining* action in relation to causation. By extension, they disagree regarding other concepts representing dynamic phenomena such as *disposition* and *law of nature*. At least since the 13th century the major competing theories among Christian theologians and philosophers have been (and remain) *concurrentism* and *occasionalism*. *Concurrentism* adopts Aristotle’s distinction between *primary* and *secondary causation*, holding that God (the primary cause) somehow co-operates with secondary causes. *Occasionalism* holds that the only real causes are God’s immediate, existence-conferring volitions, holding that apparent causes are really ‘occasions’ for God to bring about effects.³ The secondary aim of this paper is to advance the debate by providing an alternative.

¹ See Anna Marmodoro, *Aristotle on Perceiving Objects* (Oxford University Press, 2014), 3-30.

² For just a sampling, see C.D. Broad in *An Examination of McTaggart’s Philosophy*, vol. 1 (Cambridge University Press, 1933), 264–278, A.P. Ushenko, *Power and Event: An Essay on Dynamics in Philosophy* (Princeton, NJ: Princeton University Press, 1946), 155–218, and R. Harre and E. H. Madden, *Causal Powers* (Totowa, NJ: Rowman & Littlefield, 1975). The interest has not abated in the twenty-first century either. See, for example, *Dispositions and Causal Powers*, Max Kistler and Bruno Gnassounou (eds.), (Aldershot: Ashgate, 2005), *Dispositions and Causes*, Toby Handfield (ed.) (Oxford University Press, 2009), *The Metaphysics of Powers: Their Grounding and Their Manifestations*, Anna Marmodoro (ed.), (Routledge, 2010), Stephen Mumford and Rani Lill Anjum, *Getting Causes from Powers* (Oxford University Press, 2011), *Properties, Powers and Structures: Issues in the Metaphysics of Realism*, Alexander Bird, Brian Ellis, and Howard Sankey (eds.) (Routledge, 2012), and *Powers and Capacities in Philosophy: The New Aristotelianism*, Ruth Groff and John Greco (eds.), (Routledge, 2013).

³ William Vallicella (1996), arguing in favor of occasionalism with regard to physical causation, observes that “the nature of causation lies at the heart of the debate between the concurrentist and the occasionalist” and that existing concurrentist formulations are “incoherent.” More than ten years later Jonathan Kvanvig (2008) observes that, in order to avoid occasionalism, further work is required on *the nature of causation* itself [...], [but that] the work remains to be done.” See William F. Vallicella, “Concurrentism or Occasionalism?,” *American Catholic Philosophical Quarterly*, 70.3 (1996), 349-350. Jonathan Kvanvig, “Creation and Conservation,” *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition), Edward N. Zalta (ed.), <http://plato.stanford.edu/archives/fall2008/entries/creation-conservation/>.

The plan of the paper

In **section II** of this paper an alternative view of divine action is presented, which we call *Divine Compositionism*.⁴ We briefly describe the five-category ontology it presupposes. Taking cues from recent work asserting the dispositional nature of phenomena at the quantum level, we then describe in **section III** a concept of an *event* and a necessitarian view of *causation* consistent with scientific practice and with *Divine Compositionism*. In **section IV** we show how a dispositional property can be analyzed in terms of God's compositional, existence-conferring action according to his will or plan. Our view of divine action is a version of occasionalism regarding physical causation only. In **section V** we then show how *occasional causation* can be understood as the relation constituting a dispositional property. Finally, in **section VI** we summarize how *Divine Compositionism* satisfies other widely-recognized demands upon a theory of divine action and respond to two objections.

We may perhaps best introduce *Divine Compositionism* by saying something about "compositionism" and our ontological commitments.

II. Divine Compositionism

compositionism

Physical theories indicate that the universe is compositional and dynamic. As Burian and Trout summarize it, "the world picture of contemporary science as best we understand it. . . is intensely hierarchical and *compositional* without being easily treated by any of the old familiar accounts of reduction (*emphasis added*)."⁵ Robert Disalle writes "Almost from the beginning of general relativity, mathematicians and physicists [saw it as representing] the geometry of space-time as a function of the mass-energy distribution. [Space time is] a *dynamical* structure whose states depend on the states of the matter and energy within it (*emphasis added*)."⁶ But what accounts for these changing states of mass/energy? Mauro Dorato suggests, "it is reasonable to follow [J. S.] Bell and assume that *physical spacetime*, [is to be] regarded as the set of all "flashes," or localizations, occurring at a precise location at a certain time."⁷ On our view, such

⁴ See Walter J. Schultz and Lisanne D'Andrea-Winslow, "Divine Compositionism: A Form of Occasionalism or a Preferable Alternative View of Divine Action?," *Theology and Science* 12.3 (2014): 216-235.

⁵ Richard M. Burian and J. D. Trout, "Ontological Progress in Science," *Canadian Journal of Philosophy* 25.2 (1995), 185.

⁶ Robert DiSalle, *Understanding Space-time: The Philosophical Development of Physics from Newton to Einstein*, (Cambridge: Cambridge University Press, 2008), 15, 16.

⁷ Mauro Dorato, "Properties and Dispositions: Some Metaphysical Remarks of Quantum Ontology," eds. A. Bassi, D. Dürr, T. Weber & N. Zanghi, *Quantum mechanics: Are there quantum jumps? On the present state of quantum mechanics*. (New York: American Institute of Physics, 2006), 139-157. See J. S. Bell, "Are there Quantum Jumps?," *Speakable and Unsayable in Quantum Mechanics* (Cambridge: Cambridge University Press, 1987), 201-212. "However, Bell later revised it in favor of a wave function ontology. . ." Mauro Dorato and Michael Esfeld, "GRW as an ontology of dispositions," *Studies in History and Philosophy of Modern Physics* 41: 41. Even so, Bell's wave function collapse ontology is consistent with his flash ontology.

“localizations” are the elementary micro-creations of God, which—when combined in increasingly and exceedingly complex ways—constitute the entire universe over time. In other words, this mass-energy distribution—every state of every system in particular and in totality—at every moment is nothing other than God’s co-ordinated acting according to plan. Hence, the name, “Divine Compositionism.” Let us consider this claim more closely from the “bottom up” so to speak.

Given the Ghirardi-Rimini-Weber (GRW) realist approaches to quantum mechanics (QM), every macroscopic physical system exists at and only at every spontaneous collapse of its wave function ψ , which occurs approximately 10^7 discrete times per second.⁸ In Bell’s terms, a wave function *collapse* is a possible state of a physical system being realized or “localized” at some time t . The system ceases to behave like a wave at that moment.⁹ Alvin Plantinga brings God into this picture of wave function realism, saying that

It’s wholly in accord with these (spontaneous collapse) theories that, for any collapse and the eigenstate that results, it is God who causes *that* state to result. Perhaps, then, all collapse-outcomes (as we might call them) are caused by God. If so, then between collapses, a system evolves according to the Schrödinger equation, but when a collapse occurs, it is divine agency that causes the specific collapse-outcome that ensues.¹⁰

But now one may ask: “Who or what causes or governs the evolution of the wave function in between collapses? So, again, we come to the wave function itself. Is it objective or subjective? Does it represent the physical state of the system or merely our information about the system?”¹¹ We hypothesize that the wave function is objective, but it represents neither the physical state *of* the system nor information about it. Rather, it is a representation *for* a physical state of the system. We conjecture that, since the particle/wave duality is compatible on a dispositional construal (discussed in the next section), then wave functions themselves may be conceptualized as the range of options God has “in mind” *for* the localizations of a

⁸ See G. C. Ghirardi, A. Rimini, and T. Weber, “Unified dynamics for microscopic and macroscopic systems”. *Physical Review D* 34 (1986), 470, and 470 and J. S. Bell, “Are there Quantum Jumps?,” 202.

⁹ If a *wave function* for some physical system S is viewed as an objectively existing entity, then it is either a *field* on $3N$ -dimensional space, a *law*, a *property* of an ensemble of particles, or a *region* of space-time, depending on which view of *wave function realism* you prefer. It either *is* or *associates* a probability to the many possible configurations that *that* physical system can be in for any future time t . Alyssa Ney, “Introduction,” *The Wave Function: Essays on the Metaphysics of Quantum Mechanics*, Alyssa Ney and David Z. Albert (eds.) (Oxford University Press, 2013), 43.

¹⁰ Of course, this leaves open to question of who causes the evolution of the wave function in between collapses—a question not addressed by Plantinga. See Alvin Plantinga, “What Is ‘Intervention’?,” *Theology and Science* 6.4 (2008), 380-81; 392-93.

¹¹ Alyssa Ney, “Ontological Reduction and the Wave Function Ontology,” *The Wave Function: Essays on the Metaphysics of Quantum Mechanics*, eds. Alyssa Ney and David Z. Albert, (Oxford University Press, 2013), 169. Sheldon Goldstein and Nino Zanghì, *Reality and the Role of the Wavefunction in Quantum Theory* (2011), <http://arxiv.org/abs/1101.4575v1>

physical system over time.¹² Assuming Planck-scale physics, we postulate that when God acts in sustaining and providentially guiding the world—whether *minimally* (in-principle) *at* a Planck volume *for* a Planck moment, or *macroscopically* (which we perceive in terms of objects, properties and relations), or *comprehensively*—rendering the entire universe over some duration—God *confers existence compositionally*. Therefore, when viewed (ultimately) as a dynamic, changing distribution of mass/energy or (from the “bottom up”) as discrete, regular collapses of wave functions, the physical world *is* God’s acting.¹³ We *observe* regularities or patterns of events and then we *conceptualize* these regularities as laws of nature, dispositions, propensities, or physical mechanisms (e.g., non-random and random chemical and biological processes). We also *individuate* objects (i.e., ‘substances’ if you are a neo-Aristotelian or ‘bits of matter’ if you are a physicalist) having properties and standing in relations. However, on our proposal, all of these *in reality* are nothing but the complex existence-conferring actions of God.¹⁴ This conjecture is developed further as the paper proceeds, but first a little more should be said about the ontology of *Divine Compositionism*.

ontology

This view of divine action reflects our five-category (non-Aristotelian, non-Platonic) ontology.¹⁵ Underlying all physical reality and interaction is only *God, an ordered domain of possibilities, dispositions, forces, and structures*. The domain of *possibilities* is the content and extent of God’s awareness of the range of God’s ability *ad extra*.¹⁶ One sequence of such possibilities is God’s composite *plan* for the universe, which we may

¹² If this is right, then the “superposition” of one physical system (‘particle’ or ‘object’) and the “entanglement” of complex systems are all “in God’s mind” so to speak. No physical system exists simultaneously across all of its possible states, but only when its wave function collapses. (On GRW interpretations of QM, such a collapse is spontaneous and therefore does not require a ‘measurement.’) Hence, this expresses the *res-idealism* of Divine Compositionism. That is, the *superposition, entanglement, and wave function collapse* are all—in reality—nothing but matters of God’s freedom in sustaining and guiding the universe in existence.

¹³ This is addressed further below. But for now please let it suffice to say that the universe is an unanalyzable duality or complementarity of both God’s *acting* and the *result* of God’s acting. For a similar view see, David Bradshaw, “Existing is the Action of God: The Philosophical Theology of David Braine,” *The Thomist* 60.3 (1996), 379-416.

¹⁴ See Richard Campbell, *The Metaphysics of Emergence* (London: Palgrave Macmillan, 2015). There are two broad paradigms of physical explanation grounded in two distinct types of ontology. The one explains the dynamic (i.e., apparent change) on the grounds of the static, according priority to entities (i.e. Forms, substances, particles or “bits of matter”). The other paradigm explains the apparently static on the grounds of the dynamic (i.e., processes, events). The latter is associated with G. W. F. Hegel and A. N. Whitehead.

¹⁵ Our ontology is “non-Aristotelian” by its affirming that physical existence is creation *ex nihilo* and denying that ‘causal powers’ are *a se* or brute realities. It is “non-Platonic” by its denying that any so-called “abstract object” exists independently of God and affirming that all of them can be accounted for in terms of God’s awareness of His omni-competence *ad extra* and ways He enacts His plans.

¹⁶ These may be called ‘possible worlds,’ but our view differs from the platonic view advocated by most Christian philosophers. See Walter J. Schultz, “The Actual World From Platonism to Plans,” *Philosophia*

refer to as, 'the actual world.'¹⁷ The actual world is God's representation *for* the universe, not *of* the universe. It is one history out of a range of alternatives. Since our idea of 'the actual world' differs from standard usage and is central to *Divine Compositionism*, we should elaborate on it just a bit.

The component plans or representations constituting the actual world are 'world states.' Let an *atomic* world state represent the content of a *Planck cell* (a 3-dimensional irregular hodon) at a *Planck moment* (a chronon). A representation of the content of the entire universe at a Planck moment is a *total* world state. It *represents* a discrete, irregular "cube" of simultaneity.¹⁸ A *composite* world state is any combination of atomic world states without a regional or temporal gap. These are all representation *for* a physical state of the universe.¹⁹

The *ways* God enacts his plan (i.e., confers existence) are mirrored in the latter three categories of our ontology, which are *dispositions*, *forces*, *structures*. *Dispositions* (ontologically considered) may be construed as God's commitments to act on condition. The four *forces* (i.e., gravity, electromagnetism, the strong and the weak nuclear forces) – are God's 'constant' actings. A *structure* is God's unifying, coordinated acting which we perceive as a *pattern* of co-existence, as a simultaneous aspect of a physical system, or as the co-occurrence of separate events.²⁰ We postulate that every created thing and every fundamental concept of physical, chemical, and biological science can be accounted for in terms of some combination of this five-category ontology.²¹ If this conceptualization is on the right track, then we may say that what physical science studies are the *ways* God's confers existence according to plan. But we are not the first to say such things. As Jonathan Edwards said in the 18th century, ". . . to find out the reasons of things in natural philosophy is only

Christi 16.1: 81-100.

¹⁷ The apostle Paul in his letter to the Ephesian believers writes that in the end all things will be united in Christ (Eph. 1:9,10). In his letter to the Colossian believers he explains that all things were created through and for Christ (Col. 1:16). Thus, to speak properly, God's plan for the universe is *God's plan in Christ*.

¹⁸ Noting that both Poincaré and Lorentz acknowledge the logical possibility of absolute simultaneity, Craig notes that mathematical models of the universe and its causal structure, such as Minkowski space-time, lack the concepts or resources for a notion of absolute simultaneity by virtue of their epistemological commitment to logical empiricism. See William Lane Craig, "The Metaphysics of Relativity: Three Views," eds. William Lane Craig and Quentin Smith, *Einstein, Relativity and Absolute Simultaneity*, (Routledge, 2008), 11-49.

¹⁹ In order for the actual world to *function* as a plan, it must have a *temporal* structure, a *representational* structure, and a *proto-causal* structure. These are given mathematically in Walter Schultz and Lisanne Winslow, "The Structures of the Actual World," *Proceedings of the Association of Christians in the Mathematical Sciences*, 2013, 168-186.
godandmath.files.wordpress.com/2013/07/acms-2013-proceedings.pdf

²⁰ The inclusion of *structures* in our ontology reflects our commitment to a version of ontic structural realism (OSR) in the philosophy of science. See Steven French, "The Structure of the World: Metaphysics and Representation," (Oxford: Oxford University Press, 2014) and Alexander Bird, Brian Ellis, and Howard Sankey, *Properties, Powers and Structures*, (New York: Routledge, 2012).

²¹ See Walter J. Schultz, "Dispositions, Capacities, and Powers: A Christian Analysis," *Philosophia Christi* 11.2 (2009), 321-338.

to find out the proportion of God's acting."²² As Isaac Newton said in the 17th century, "All that diversity of natural things which we find suited to different times and places could arise from nothing but the ideas and will of a Being, necessarily existing."²³ And as Herman Bavinck declared in the 20th century, "The whole world is thus the realization of an idea of God."²⁴ We are merely attempting to rigorously develop these inchoate intuitions.

III. A Metaphysics of Causation.

Cues from quantum theory

Recent work asserting the dispositional nature of phenomena at the quantum level suggests a concept of an *event* and a necessitarian view of *causation* consistent with *Divine Compositionism*. We will briefly state the pertinent ideas. The first is that

(1) *Dispositions (and propensities) are real; some are complex and some are irreducible.*²⁵

Dorato (2007) writes that "... dispositions in [Quantum Mechanics] are irreducible simply because there are no categorical, non-dispositional properties to which they can be reduced."²⁶ The second idea is that

(2) *Particle/wave phenomena are alternative manifestations of dispositions.*

As Dorato (2011) says "from a *dispositional* point of view, if we refer to a *quantum* entity, this duality is

²² Jonathan Edwards, "The Mind," ed. Wallace E. Anderson (ed.) *Scientific and Philosophical Writings, The Works of Jonathan Edwards* 6 (New Haven: Yale University Press, 1980), 353.

²³ Isaac Newton, *Philosophiæ Naturalis Principia Mathematica* (The Principia: Mathematical Principles of Natural Philosophy), 1687.

²⁴ Herman Bavinck, *Reformed Dogmatics: God and Creation V2*, (Grand Rapids, Michigan: Baker Academic, 2004 [1928]): 425.

²⁵ The issue of *apparently* ungrounded dispositional properties has attracted an increasing amount of attention in recent years not only from the standpoint of theoretical physics, but more so from contemporary analytic metaphysics and philosophy of science. See Stephen Mumford, "The Ungrounded Argument," *Synthese* 149.3 (2006), 471-489, Jennifer McKittrick, "The Bare Metaphysical Possibility of Bare Dispositions," *Philosophy and Phenomenological Research* 66 (2003), 349-369. For an argument from physics see Bigaj (2012), I. J. Thompson, "Real Dispositions in the Physical World," *British Journal for the Philosophy of Science* 39 (1988), 67-79, and Mauro Dorato, "Do Dispositions and Propensities have a role in the Ontology of Quantum Mechanics? Some Critical Remarks," ed. M. Suárez *Probabilities, Causes, and Propensities in Physics*, (Synthese Library, Springer, 2011), 197-218 and Tomasz Bigaj, "Ungrounded Dispositions in Quantum Mechanics," *Foundations of Science* 17 (2012), 205-221.

²⁶ Mauro Dorato, "Dispositions, Relational Properties and the Quantum World," *Dispositions and Causal Powers*. M. Kistler and B. Gnassounou (eds), *Dispositions and Causal Powers*. (Aldershot: Ashgate, 2007), 249-270.

perfectly legitimate, because we can attribute the *same* particle at the *same* time (i.e., before measurement) a disposition for a particle-like behaviour and a disposition for a wave-like behaviour.”²⁷ This brings us to the third thesis,

(3) *A collapse of a wave function of a single particle system is therefore a manifestation of a real and irreducible disposition.*²⁸

In section IV we will *argue* for the view, which we merely stated earlier, that dispositions (and propensities) may be thought of as God’s commitments to act on condition according to plan.²⁹ We infer that physicists conceptualize as a collapse of a wave function may be thought of as God’s direct, existence-conferring action.³⁰ However, the expression “collapse of a wave function ” is ambiguous. Understood as a quantum event it can on the one hand be taken as the *process* of changing from a multivalued superposition to a single value, and on the other hand, as the *outcome* of such a process. We intend the expression “collapse of a wave function ” to convey both ideas, namely that *both* the process and the outcome *are* God’s actions.³¹ We will say more about this duality in just a moment.

Causation

With this brief description of *Divine Compositionism* and these inferences from what quantum physics suggests about irreducible dispositional properties as background, we are in a position to say

²⁷ Mauro Dorato, “Do Dispositions and Propensities have a role in the Ontology of Quantum Mechanics? Some Critical Remarks,” 23. We qualify this endorsement in footnote 11.

²⁸ *Ibid.*, 23.

²⁹ A more detailed argument is available in Walter J. Schultz, “Dispositions, Capacities, and Powers: A Christian Analysis,” 335.

³⁰ Plantinga, “What Is ‘Intervention’?,” 380-81; 392-93. The initiating conditions at this level are not other events, but it is conceivable that such collapses are guided by God’s always having his purposes in mind. If so, then here is where Aristotle’s notion of *final cause* remains relevant.

³¹ In discussing Robert Russell’s view, Kirk Wegter-McNelly points out this very ambiguity in Russell’s theory of divine action, judging that “Russell would have wanted to avoid claiming that God causes the process of quantum events.” Russell wanted to avoid ‘God-of-the-gaps’ explanations to insulate the theory from potential falsification by future developments in confirmed quantum theory. Plantinga wants to avoid occasionalism. However, this leaves unanswered the question of the *cause* of the process. Neither of these worries are justified regarding *Divine Compositionism*. First, God-of-the-gaps explanations aren’t applicable *Divine Compositionism* cannot compete with science over empirical explanations of phenomena. It is an account of the fundamental concepts of science and mathematics. It is a theological metaphysics of science. Second, as we shall argue later, the problematic entailments occasionalism, are absent under *Divine Compositionism*. Kirk Wegter-McNelly, “Atoms May Be Small, But They’re Everywhere: Robert Russell’s Theological Engagement with the Quantum Revolution,” in *God’s Action in Nature’s World: Essays in Honor of Robert John Russell*, eds. Ted Peters and Nathan Hallanger (Ashgate, 2006), 93-111.

something about our metaphysics of causation, in particular the so-called “causal” *relata* and the causal *connection*.³² We take the *relata* to be *events*.³³ In order to forestall mistaken inferences or unnecessary criticism, we should clarify what we mean by ‘event.’ Given *Divine Compositionism*, an *event* may be characterized in four complementary ways. First, a non-elementary *event* may be viewed as a finite sequence of discrete *states* of a physical system.³⁴ This is an event understood *physically* or *scientifically*.³⁵ *Perceptually* understood, an event just is a *change* in a physical system over a duration. The acorn becomes an oak tree. The boulder warms as the sun shines upon it. Third, an event may be understood *conceptually* as a *manifesting* disposition (fundamental or complex). The ionic bond of sodium chloride (NaCl) molecules is an event that may be conceptualized as the dispositions of sodium and chlorine ions being manifested. The complex biological process of protein synthesis is an event that may be conceptualized as a manifesting, complex structure of dispositions. Finally, on our view, what we *perceive* as a change and *conceive* as a manifesting disposition is really the *acting/result* of God’s compositionally-conferring existence to that physical system over a sequence of moments.³⁶ This is an event understood as it is in *reality*; as it is *ontologically*

³² What follows does not contradict Douglas Kutach’s ‘bottom’ and ‘middle’ conceptual layers of causation, if Kutach is taken as describing appearances, while what we describe is the reality. For Kutach, the fundamental level is a matter of probabilities, a counterfactual account of type causation at the macrolevel, and a reduction of ordinary causal talk to these two. *Causation and its Basis in Fundamental Physics*, (Oxford University Press, 2013): 22- 64. Compare this to Stathis Psillos (2002) *Causation and Explanation* (McGill Queens University Press, 2002), 133.

³³ The historical and standard concurrentist view is that the *relata* (i.e., the *cause* and the *effect*) are substances and states of affairs. As Alfred J. Freddoso writes, “Typically, substances (agents) act upon other substances (patients) to bring about or actualize or produce states of affairs (effects).” Alfred J. Freddoso, “Medieval Aristotelianism and the Case against Secondary Causation in Nature,” 79. However, Jonathan Schaffer (2007) observes that “The standard view of the causal *relata* [in contemporary metaphysics of science] is that they are of the category of event, and that their number is two, in the roles of cause and effect. [And], while the standard view casts the causal *relata* as events . . . , one also finds considerable support for [facts, features, tropes, states of affairs, situations, and aspects]. Jonathan, Schaffer, “The Metaphysics of Causation”, The Stanford Encyclopedia of Philosophy (Summer 2014 Edition), Edward N. Zalta (ed.) <http://plato.stanford.edu/archives/sum2014/entries/causation-metaphysics/>

³⁴ This find support from the *Causal Set Hypothesis* of Quantum Gravity, according to which space-time at the Planck scale is a locally-finite, partially-ordered set of discrete elementary events. These elementary events are the members of ‘causal sets.’ A *causal set* is a sequence of elementary events that stand in a ‘causal relation.’

³⁵ On this view an event may be mathematically modeled as a region of Minkowski spacetime. See Kutach *Causation and its Basis in Fundamental Physics*, (2013) 58-64.

³⁶ Note once more the duality or complementarity of *act* and *result* here. According to the definitions, an event is a sequence of states of a physical system and an event is God’s compositionally-conferring existence to that physical system over a sequence of moments. God’s existence-conferring action *is* the system. How can this be? The ‘is’ refers not to the *is* of identity, but indicates a complementarity or duality of identity and result. This is similar to a particle/wave duality or the matter/energy duality. This duality or complementarity is inescapable. So, while *causation* is God’s “REAL-izing” a plan (the acting), an *event* is God’s “REAL-ization”

understood. This is what we think underlies the phenomena and theoretical entities of fundamental science. To recapitulate, an event understood *scientifically* as a sequence of states of a physical system, understood *perceptually* as a change, *conceived* as a manifesting complex of dispositional properties, is *really* God's acting.³⁷

Now that we have declared our view of events as *causal relata*, we are in a position to explain our view of the *causal relation* or *connection*. There are two ideas at play here that are often conflated and are difficult to conceptually separate. As we consider our (non-scientific) ordinary concept and experience of *causation*, it seems to us to involve the *production* of some event by some earlier event.³⁸ The two intertwined ideas are, first, that there are apparently causal relations between events and, second, that *that* relation is the apparent causing of an event. Ordinarily, we all believe that the vase falling on the tile floor "causes" it to break, that smoking "causes" cancer, that the wind blowing against the trees "causes" them to bend. It looks to us as though events cause other events. Furthermore, we all learn early on that not every pair of sequential events stands in a causal relation. Our ability to discern and to discover these relations enable us to function in the world. It grounds our scientific understanding and, of course, makes modern medicine possible. So, we have come to expect and to look for the production *in* (or *as*) the causal relation. This standard *two relata-one relation* model of causation *seems* to suggest that the *apparent* causal relation is the *causing* of the effect.³⁹ This paper is a wholesale rejection of this model.

Our alternative view of causation can be expressed in four theses. *First*, we affirm that some events stand in an apparent 'causal' relation to others and some do not. Let the term 'causal' with quotes in the

of a plan (the plan being accomplished). This duality is addressed in the authors' paper *Representing Divine Action* and cannot be pursued further here. However, it should be noted that this issue is not new. It was advocated by William of Okham (1287 - 1347) and Gregory of Rimini (1300 - 1358) in the twelfth century. In the sixteenth century, Francisco Suarez devotes Section 4 of Disputation 20 to this issue, "Whether Creation is Something Within the Creature That is Distinct in Reality from the Creature Itself." Francisco Suarez, *On Creation, Conservation, and Concurrence: Metaphysical Disputations 20, 21, and 22*. trans. Alfred J. Freddoso (South Bend, Indiana: St. Augustine's Press, 2002), 65-92.

³⁷ This account is a simple approximation which serves the purpose of simply getting the ideas on the table. To refine the account, both *complex* (or *derivative*) events should be differentiated from *elementary* (or *fundamental*) events. Only derivative events—events that are individuated or abstracted through perceptual experience—play a role in biology and ordinary life. Due to in-principle impossibility, never could a particular derivative event be completely accounted for in terms of simple classical mechanics, much less quantum mechanics (assuming of course that these fundamental theories and their presupposed ontologies represent things the ways they actually are physically "at the bottom.") See Fay Dowker, Causal Sets as Discrete Spacetime, *Contemporary Physics*, Vol. 47, No. 1, January-February (2006), and Douglas Kutach's 'bottom' and 'middle' conceptual layers of causation. *Causation and its Basis in Fundamental Physics*, (Oxford University Press, 2013): 22- 64 Yet, the DC analysis applies "all the way down, and all the way out." This refinement is expressed in Walter Schultz, *Causal Structure: The proto-causal set structure of the actual world*. (Work in-progress)

³⁸ This grants, of course that the events might—on occasion—apparently overlap or occur simultaneously.

³⁹ This is what Hume claimed in his analysis of our ordinary concept. But since he argued that the causing [the necessary connection] cannot be observed, all we can see is a regularity.

previous sentence denote our ordinary, common understanding and usage of the word, 'causal.' It appears in quotes to preclude supposing that we treat this relation as the real causation. The apparently "causal" relation between events is not the productive causation; it is not the causing, the producing, the bringing about, or the making happen. The same point has been recently argued by Stephen Mumford and Rani Lill Anjum who claim that "Causation should not then be understood as a relation between two events, but rather as what makes an event occur."⁴⁰ We agree entirely, but what could it be that "makes an event occur"?

Bearing in mind that an event is the sequential existence of the states of a physical system, our *second* thesis is that the productive causation---the real causing---of the event is *simultaneous* with the occurring of the event.⁴¹ This may involve the completed transfer of energy or momentum, but it need not and when it does the transfer is not the causing. Transfer of energy or momentum distinguishes a 'causally' related sequence from a non-causally related sequence of states; it is indicative, but not explanatory. *Third*, the causing, the producing, the bringing about, or the making happen is God's existence-conferring action. Thus, causation is not *in* nature; it grounds nature.⁴² *Finally*, the "causal" relation between events is a real relation of necessity by virtue of the irresistibility of God's conditional commitment. The productive causation is, thus, not the necessitation. Events (as effects) are legitimately associated with events (as causes), because the "causal" relation is a real relation. This is what is observed in "causal" relations, but it is not the real productive causation.⁴³ Thus, *Divine Compositionism* accounts for both the necessity and regularity aspects of our *concept* of causation: nothing can hinder God's fulfilling his commitments (necessity) and God (almost) always acts according to his commitments (regularity).⁴⁴ Even though it seems *to us* that events cause events (or states of systems cause other states), in reality---as both occasionalism and *Divine Compositionism* hold---causing is not really a brute, fundamental feature of nature. *Causation* is God's compositionally conferring existence according to his commitments---all of this is according to the *actual world*, which is God's plan.⁴⁵ This explains why physical causation seems primitive or basic. Causation resists reductive analyses

⁴⁰ Stephen Mumford and Rani Lill Anjum, *Getting Causes from Powers*, 23.

⁴¹ *Ibid.*, 106-129.

⁴² This is an eliminativist view regarding causation; yet it is not strictly Humean.

⁴³ For a discussion regarding causation as the unobservable "secret connexion" in accounts of scientific mechanisms, see Stathis Psillos, "A Glimpse of the Secret Connexion: Harmonizing Mechanisms with Counterfactuals," *Perspectives on Science* 12.3 (2004), 288-319.

⁴⁴ This is consistent with both the 'conditional analysis' of laws and the 'summary of regularities' analysis of laws in early modern philosophy as discussed by Walter Ott. He adds that, "The real question is not which analysis of the logical form of lawlike statements is right, but rather what it is in virtue of which these statements hold." Walter Ott, *Causation and Laws of Nature in Modern Philosophy* (Oxford University Press, 2009), 8-10.

⁴⁵ Walter Schultz, "The Actual World From Platonism to Plans: An Emendation of Alvin Plantinga's Modal Realism," *Philosophia Christi* 16.1 (2014), 81-100.

because it is not a productive relation by and of purely physical things.⁴⁶

This account satisfies a condition that any adequate metaphysical account of causation must address. As William Vallicella writes, "The idea is that a total causal explanation of an event cannot merely specify the relations in which the *explanandum-event* [i.e., the effect] stands to other (typically prior) events [i.e., the 'cause'], but must also explain the very existence or occurrence of the *explanandum-event*."⁴⁷

We are now in a position to put our proposal more technically. Some ontology has to be assumed which would inform a metaphysics of causation in the first place. *Divine Compositionism* does this and entails that,

DEF cause (*v.*): A (discrete) event e^1 "causes" event e^2 just in case God's co-ordinated, existence-conferring act¹ *is* event e^1 , which satisfies the set of initiating conditions attached to God's commitment to act² on condition, and where such a divine, existence-conferring act² *is* each sequential state of the relevant physical system picked out as e^2 .

There are several things to take note of here. First, these divine commitments—experienced, perceived, or discovered by us as dispositions or laws of succession have ranges of manifestations and also thresholds and degrees of initiating conditions. These commitments serve God's larger purposes. Second, there usually are several such commitments which together are relevant to the effect. Third, many (perhaps most, if not all) of the regularities in God's existence-conferring action (that is, those we refer to as laws, dispositions, and mechanisms) involve a range of types of outcomes given a condition-satisfying event, so that (sometimes) it cannot be predicted what particular outcome will obtain. This is consistent with Jason Colwell's account of apparent randomness: "God makes active decisions about each fundamentally random event in the universe."⁴⁸ Fourth, note again the duality or complementarity of the divine act and its result here. If an event is a sequence of states of a physical system, and causing is simultaneous with effect, then there is a *complementarity* or *duality* of identity and result of God's existence-conferring action. A close examination of the issues involved in representing divine action will inexorably end here at this conclusion.

The Contiguity Objection against event-causation

This view of events renders our view immune to an important standard objection to event-causation.

⁴⁶ Our view (at least in one respect) is contrary to Michael Rota's scholastic anti-reductionism (SAR): "... the relation of causation is a basic or primitive relation; it cannot be reduced to any other relation, or set of relations, or any other ontological items whatsoever." "... any instances of the relation of direct productive causation are ontologically primitive, which is to say that instances of the direct production relation are a fundamental feature of reality; they cannot be reduced to some set of more basic entities." "SAR denies that [causal] facts can be reduced to anything." Michael Rota, "An Anti-reductionist Account of Singular Causation," *The Monist* 92.1 (2009), 138, 141.

⁴⁷ William F. Vallicella, "Concurrentism or Occasionalism?," 356.

⁴⁸ See Jason Colwell, "Chaos and Providence," *International Journal for Philosophy of Religion* 48 (2000), 137.

Anjum Chakravarty writes that, for any two events A and B, “for A to bring about B causally, not mediated by other events, but directly, A and B must be contiguous in time. But A and B cannot be contiguous, because time is dense. That is, between any two instants, say that at which A terminates and that at which B begins, we can always find further instants. Therefore, it is impossible for successive events to be temporally contiguous. Thus, A cannot cause B.”⁴⁹ Note that this *Contiguity Objection* invokes two explicit premises. The first is the premise that causally related events must be contiguous, and the second is time is dense.” *Divine Compositionism* holds that time and space are discrete and that events standing in a ‘causal’ relation need not be temporally or spatially contiguous. Their usually being so is incidental. The real, productive causation is God’s existence-conferring action and the apparent causal connection is really God’s commitment. The temporal and spatial contiguity of events are not conditions of causation on our view.

The Light-Cone Objection against simultaneity of cause and effect

Our view holds that the *causing* is simultaneous with the *being caused*. It might seem obvious by definition alone, but this means that God’s creative action *is* the causation and it *is* the result. But someone might object saying that “since no causal influence can travel faster than the speed of light, the set of point-instant (or physically minimal) events that lie on or inside the *past light cone* of event e^1 are the only ones which stand in a possible causal relation to e^1 as cause to effect. Likewise, the set of events that lie on or inside the *future light cone* of e^1 are the only ones which stand in a possible causal relation to e^1 as effect to cause, since productive causation *really* involves a ‘signal’ of some sort. Causal simultaneity is impossible for physically minimal events.”

Here is our response. What the objector is referring to has to do with the ‘causal’ relation, not the causing. On our view we must always ask: are the *relata* in question aspects of God’s commitment (i.e., realized world states observed as states of a physical system) or are they the *causing* and the *being caused*? The lightcone has to do with the former, the ‘causal’ relation; the *causing* and the *being caused* is the collapse of a photon’s wave function. The appearance of an intrinsic productive *relation* between events is really *God’s conditional commitment* and the event caused (i.e. the ‘effect’) is *God’s existence-conferring action*.⁵⁰ Thus, even though it seems *to us* that event causation is brute, primitive, and unanalyzable, in reality—as both occasionalism and *Divine Compositionism* hold—physical causation is not really primitive. We perceive a thing’s existence, but we cannot perceive *God’s conferring* its existence. This is *why* we cannot perceive the causation. We infer it. Our position on events and causation is basic to our view of dispositions, which we turn to next.

⁴⁹ See Anjan Chakravartty, “Causal Realism: Events and Processes,” *Erkenntnis* 63 (2005), 7–31, and Hugh McCann and Jonathan L. Kvanvig, “The Occasionalist Proselytizer: a Modified Catechism,” *Philosophical Perspectives*, 5 (1991), 599.

⁵⁰ Tad Schmaltz graciously called out attention to how close our view is to what Malebranche called ‘general volitions.’

IV. Dispositional properties

There are four features of dispositions are crucial for a general understanding. First, we may characterize a disposition, in general, as a *state of being poised to do or be something* (i.e., *to effect a change* (active) or *to be changed* (passive)). Some examples are the *elasticity* of a rubber band, the *fragility* of a vase, the *solubility* of sugar, and the *mass* and *charge* of an electron. Second, the characteristic way a disposition is expressed is called its *manifestation*. *Shattering* is a manifestation of fragility; *dissolving* is the manifestation of solubility. These examples by themselves fail to differentiate between two alternative readings. So, the idea of a *disposition's manifestation* should be disambiguated before we can move on. In the burgeoning literature regarding dispositions over the last decade or so, dispositions are often called 'causal powers'. We think this expression is tendentious and misleading. We deny what it suggests, namely that *causal power* lies *in* objects, substances, or physical systems. Nevertheless, the persistent use of the term, 'causal power' accounts for the debate about whether the *manifestation of a disposition* is an *event* – as we take it here – or whether it is the *productive causality* (i.e., the exercise of a causal power for an effect). We side with the majority, treating the *manifestation of a disposition* as an *event*. The third general feature of dispositions is that they have *activating conditions*. Striking a vase is an activating condition of fragility; seeing a person in pain or in need is an activating condition for compassion. Fourth, whatever accounts for an object's *having* a disposition (i.e., being in that particular state-of-being-poised) and the causal relation that holds between its activating conditions and its manifestations is said to be its *grounds* or '*causal base*.' For example, the so-called 'causal base' for the fragility of the vase is the molecular nature of its material.⁵¹ Now consider a theistic analysis.

An actual world analysis of dispositions

On our view, a disposition (or "causal power") is a divine commitment to confer existence on condition. Whether or not a physical system *has* a dispositional property is matter of what the actual world includes. But since the actual world is God's plan according to which God confers existence, we are in a position to relate a conception of dispositions to a conception of God's creative acting according to plan. Every event is unique and each is connected by a causal process (which we claim is grounded in a divine commitment). With this in mind, the analysis may be stated as follows:

- (1) Let x represent a physical system (object or substance).
- (2) Let σ_x represent a situation involving x (where σ includes the pertinent '*internal*' state of x and all relevant '*external*' factors). Alternatively, call this a *state of physical system x* .
- (3) Let D represent a dispositional property.
- (4) Let both C_x and $[\sigma_x = \{i\}]^{\delta} \Rightarrow [\sigma_x' \in \{m\}]^{\delta' \cdot \delta}$ represent types of causal processes (C_x is just an abbreviated form of the latter), where
 - (i) \Rightarrow_x represents the grounds of D , and
 - (ii) $[\sigma_x = \{i\}]^{\delta}$ means *situation σ_x satisfies a set $\{i\}$ of D 's initiating conditions within duration δ* , and

⁵¹ However, even the relative strength molecular bonding is itself a dispositional property.

(iii) $[\alpha_x' \in \{m\}]^{\delta' > \delta}$ means, situation α_x' is a token of one of D 's manifestation types occurring over duration δ' later than δ .

(5) Let α represent the actual world.

(6) Let $C_x^* > C_x$ indicate that C_x^* is causally stronger than C_x .

Formally, the analysis is this:

(AW) $\forall x, \forall \alpha_x, \forall D, \forall \delta, \quad D \times \delta \leftrightarrow$

1. $\alpha \supset [[\alpha_x = \{i\}]^{\delta'} \xrightarrow{x} [\alpha_x' \in \{m\}]^{\delta'' > \delta'}]^{\delta} = C_x$, and

exactly one of the following:

2. $\alpha \not\supset [\alpha_x = \{i\}]^{\delta'}$ or

3. $\alpha \supset [\alpha_x = \{i\}]^{\delta'}$ and $\alpha \supset [\alpha_x' \in \{m\}]^{\delta'' > \delta'}$ and $\forall C_x^* > C_x \alpha \not\supset C_x^{*\delta}$ or

4. $\alpha \supset [\alpha_x = \{i\}]^{\delta'}$ and $\alpha \not\supset [\alpha_x' \in \{m\}]^{\delta'' > \delta'}$ because $\exists C_x^* > C_x \alpha \supset C_x^{*\delta}$.

Informally, the analysis is this:

For any *physical system* (object or substance) x , any *state of physical system* α_x , any *disposition* D , and any *duration* δ , **physical system x has a disposition D over duration δ** ⁵² if and only if

(1) the actual world includes a representation for a type of causal process associated with D and holding for some duration δ within which α_x satisfies a set $\{i\}$ of D 's initiating conditions over some duration δ' and α_x' is a token of one of D 's manifestation types occurring over duration δ'' later than δ'

and exactly one of the following holds: either

(2) the actual world **does not** include a representation for which α_x satisfies a set $\{i\}$ of D 's initiating conditions at δ' or

(3) (i) the actual world **does** include a representation for which α_x satisfies a set $\{i\}$ of D 's initiating conditions over some duration and (ii) the actual world **does** include a representation for which α_x' is a token of one of D 's manifestation types occurring over duration δ'' later than δ' , and (iii) the actual world **does not** include any representation for a type of causal process C_x^* that is stronger than C_x over duration δ or

(4) the actual world **does** include a representation for a type of causal process C_x , but a different causal process C_x^* interferes over duration δ .

Therefore, *physical system x has a dispositional property D* just in case

(1) and (2) hold, so that D is **not** manifested at δ'' , or

⁵² A physical system's manifesting dispositional property over a duration is for the dispositions of its components to co-ordinate or co-effect at times as 'mutual manifestation partners.' John Heil, *Dispositions. Synthese* 144 (2005), 343-356.

(1) and (3) hold, so that D is manifested at δ''^{53} , or

(1) and (4) hold, so that D is **not** manifested because of some interference.⁵⁴

In other words, whether or not a physical system *has* a dispositional property is matter of what the actual world includes. But since the actual world is God's plan according to which God confers existence, we now have related a conception of dispositions to a conception of God's creative acting according to plan. To avoid misunderstanding and perhaps to preclude objections, let us address a couple of key issues regarding this analysis.

'God acts on condition'

We said that a *disposition* (ontologically considered) may be construed as God's commitment to act on condition. What do we mean by the phrase, "on condition"? Let a "situation" be a state of a physical system. Since the actual world is God's plan, to say "the actual world includes *situation A*" is to say "God plans to create *A*." Likewise, to say "the actual world includes a type of *causal process*" is to say "God plans to create a *situation A* (of some range of types) whenever a previous situation *B* is created that satisfies a certain set of conditions." Or to put it another way, it is to say "God is committed to confer existence to situation *B*, on the condition that situation *A* is realized." These ideas may be distinguished more easily be reference to the following, where

$$\alpha \supset [[\sigma_x = \{i\}]^{\delta'} \xrightarrow{x} [\sigma_x' \in \{m\}]^{\delta'' > \delta'}]^{\delta} \quad \text{is} \quad \text{God's commitment}$$

$$[[\sigma_x = \{i\}]^{\delta'} \xrightarrow{x} [\sigma_x' \in \{m\}]^{\delta'' > \delta'}] \quad \text{is} \quad \text{a representation *for* a causal process}$$

$$[\sigma_x = \{i\}]^{\delta'} \xrightarrow{x} [\sigma_x' \in \{m\}]^{\delta'' > \delta'} \quad \text{is} \quad \text{a representation *of* a causal process.}$$

In sum, God's *commitments* govern transitions to successive states of the universe – and this applies "all the way down" to collapses of wave functions. (The initiating conditions at this level are not other events, but it is conceivable that such collapses are God's existence-conferring actions guided by God's always having his purposes in mind.) The dynamic universe *is orderly* because of these commitments to *act on condition*. Second, the composite macroscopic *objects and systems of our perceptual experience* are thereby created and

⁵³ For the sake of simplicity, I omit mention of *thresholds* of initiation and cases of *degrees* of manifestation. See fn 47.

⁵⁴ With this feature in place, this analysis accounts for "finkish" dispositions, antidotes, and mimickers. See C. B. Martin, "Dispositions and Conditionals," *The Philosophical Quarterly* 44(1994),1-8 , Alexander Bird, "Dispositions and Antidotes," *Philosophical Quarterly*, 48 (1998), 227-34, and David Lewis, "Finkish Dispositions," *The Philosophical Quarterly* 47 (1997), 143-158.

sustained by God.⁵⁵ Finally, the *causal structure* of the universe results from the various commitments God has made to *act on condition* in successively sustaining the universe.

Pandispositionalism

We hold *pandispositionalism*, the view that all natural properties (as opposed to mathematical or logical properties) are dispositional and that there are no categorical or (purely) qualitative properties.⁵⁶ We also hold that every disposition is a way God confers existence on condition. Taken together these positions differentiate our view from (secular) neo-Aristotelian pandispositionalists, who treat such dispositions as independently existing ‘causal powers,’ and from Christian Aristotelians, who hold that God conserves functionally-independent substances with their active and passive causal powers.⁵⁷

V. Occasional causation

Divine Compositionism is a limited occasionalism, applying only to physical causation. Steven Nadler defines the core thesis of occasionalism as follows: “God is the only true efficient causal agent. He is immediately, proximately, and solely responsible for all natural events. And God acts causally in the world only when occasioned to do so by determinate events or states of affairs.”⁵⁸ *Divine Compositionism* fits this definition as far as it goes, but we have developed it and refined it so that it answers a problem that comes with traditional occasionalism. As Nadler puts it, “Occasionalism represents one species or variety of occasional causation, namely, that species in which the proximate and efficient cause whose operation (through efficient causation) is elicited by the occasional cause is God.”⁵⁹ *Occasional causation* is a relation such that “A substance (event or state of affairs) A induces or elicits – but not efficiently causes – substance (event

⁵⁵ See Marmodoro, *Aristotle on Perceiving Objects* (Oxford University Press, 2014), for a dispositional view of perception. We would “translate” her account of Aristotle in to divine action terms.

⁵⁶ For a recent anthology dedicated to the explication and defense pandispositionalism, see Anna Marmodoro, *The Metaphysics of Powers: Their Grounding and Their Manifestations*, ed. Anna Marmodoro (Routledge, 2010). and Michael Esfeld, “Humean Metaphysics Versus a Metaphysics of Powers,” eds. Gerhard Ernst and Andreas Hüttemann, *Time, Chance and Reduction: Philosophical Aspects of Statistical Mechanics* (Cambridge: Cambridge University Press, 2010), 119-135.

⁵⁷ Alfred J. Freddoso expresses this most succinctly, noting that, while God’s “conserving material substances and their causal powers” is assumed by the Christian Aristotelians (i.e., Thomas Aquinas, Francisco Suarez, and Luis de Molina), “in stark opposition to the occasionalists, they hold that each material or corporeal substance possesses and exercises its own proper causal powers. Such powers are not, they insist, supplanted or rendered otiose by God’s causal activity in nature. Instead, God contribute to the ordinary course of nature only as a *universal* or *general* cause who *cooperates with* or *concurs with* secondary causes (*emphases given*).” See Alfred J. Freddoso, “Medieval Aristotelianism and the Case against Secondary Causation in Nature,” 77-78.

⁵⁸ Steven Nadler, *Occasionalism: Causation Among the Cartesians* (Oxford University Press, 2011): 30-37.

⁵⁹ All quotes in this paragraph are from Nadler “*Occasionalism: Causation Among the Cartesians*,” 30-37.

or state of affairs) *B* to efficiently cause *e*.” Nadler then asks, “What, then, *is* this occasioning relation?” He reports that “There is no clear answer to this question.” We claim that the occasioning relation described and schematized by Nadler is the relation constituting a disposition and that a disposition is best analyzed in terms of God’s compositional, existence-conferring action according to his will or plan.⁶⁰

We provide not only an account of (*efficient*) *causation*, but also an account of *occasional causation*. Putting together what we have presented thus far, we now have a more fine-grained view of the relation of occasional causation in relation to dispositions. (Efficient) causation – as was argued earlier – turns out *not* to be a fundamental feature of nature, i.e., it is not (ontologically) primitive in a naturalistic sense. What seems to be a causal relation between situations (events or states of systems) therefore just *is* God’s *REAL-izing* both according to a commitment. Thus, a ‘cause’ is a situation or event that satisfies a condition of one of God’s commitments to act on that condition. A divine commitment links two situations, giving us a causal relation and, when generalized, give us *laws of succession*. So it is mistaken to conceptualize two causally related situations (or events) as $\sigma^1 \rightarrow \sigma^2$, where the right arrow \rightarrow represents the productive causality. Rather, it is better conceptualized as in this graphic representation:



The down arrows \downarrow represent God’s causally-productive, existence-conferring acting.⁶¹ Given our analysis of dispositions, what really *connects* the situations is God’s *commitment* to act on condition, and is represented by the right arrow \rightarrow .

Recall that there are three *relata* involved in generic occasional causation: substance (event or state of affairs) *A* induces or elicits – but does not efficiently cause – substance (event or state of affairs) *B* to efficiently cause *e*. We can graphically represent this by the symbols: $A \rightarrow B \rightarrow e$. So, for example, consider the events: *A vase shatters when struck by a hammer*. The vase manifests its disposition, *fragility*. When analyzed in terms of occasional causation, *the shattering of the vase* (i.e., an event; *relatum e*; the effect) **is occasioned by its being struck by the hammer** (i.e., an event; *relatum A*; the occasional cause), *but is efficiently caused* (i.e., a divine act) *by God* (i.e., *relatum B*). God is a causal *relatum* in one sense, but God’s *act* is the productive cause. Again, what we *perceive* to be the causally necessary *connection* is, in reality, God’s *commitment* to act on condition. The *occasioning relation* (i.e., the relation between *A* and *B*) is a relation between an event and God. That is, it is a relation between an event (*relatum A* or $[\sigma_x]^{\delta}$ above) which satisfies the set of initiating

⁶⁰ See Schultz, “Dispositions, Capacities, and Powers: A Christian Analysis,”.

⁶¹ This is the vertical factor in causation. As William Vallicella puts this: “Occasionalism as here defended maintains that each caused event is a product of two factors, one ‘horizontal,’ the other ‘vertical.’ The horizontal factor is made up of the relations (for example, constant conjunction, counterfactual dependency, what-have-you) between caused events and what we naturally take to be their causing events, whether these relations be diachronic or synchronic; the vertical factor is the cause of the existence of the caused events.” See William F. Vallicella, “Concurrentism or Occasionalism?,” 356.

conditions of one of God's commitments *D* to act on condition and God (*relatum* B or God), who causes an event (*relatum e*, which is [α_x'] ^{δ^{\prime} - δ^{\prime}} above) which is one of a range of manifestations associated with a *D*. In other words, whereas *occasional causation* says, "event A is an occasional cause of God's bringing about event *e*," *Divine Compositionism* says, "event A satisfies the set of initiating conditions of one of God commitments to act on condition, where such acting is event *e*." Hence, an *event* (or a state of a physical system) can be conceptualized as God's compositionally-conferring existence over a sequence of Planck moments, creating a region of the universe. Here we see how our ontological understanding of an event underlies and legitimizes the physical understanding. In other words, while *causation* is God's "REAL-izing" a plan (the acting), an *event* is God's "REAL-ization" of a plan (the result). Here we see a refinement of occasionalism and one that accounts for causation and dispositions.

VI. A Concluding Summary

The challenge addressed by this paper is to providing a fine-grained account of God's planned, intentional divine action in relation to causation (i.e., the causal *relata* and the causal *relation* (*connection*) and to dispositional properties. We have done this. This is accounted for in terms of God's existence-conferring action according to plan and is consistent with the Ghirardi-Rimini-Weber (GRW) realist approaches to quantum mechanics and the causal set hypothesis of quantum gravity. Thus, underlying all physical reality and interaction is only *God, an ordered domain of possibilities, dispositions, forces, and structures*. The domain of *possibilities* is the content and extent of God's awareness of God's omni-competence. One sequence of such possibilities is God's composite *plan* for the universe, which we refer to as, 'the *actual world*.' *Dispositions, forces, and structures* are ways God acts or confers existence. A *disposition* is one of God's commitments to act on condition. Both the actual world and God's commitments to act on condition are governed by and subordinated to God's original ultimate end in creation.⁶²

Causation is a matter of God's speaking, thinking, imagining, creating, or conferring existence. The causing, the producing, the bringing about of an event is God's acting or God's "REAL-izing" a composite world state. An *event* understood *scientifically* as a sequence of states of a physical system, understood *perceptually* as a change, *conceived* as a manifesting complex of dispositional properties, is *really* a matter of a "REAL-ized" composite world state. Ontologically considered, *laws of nature* – as *laws of succession* – are regularities in God's acting according to plan; as *laws of co-existence*, laws of nature are the co-ordination of God's acting according to plan. '*Laws of nature*' – as law statements – are descriptions of the regularities and co-ordinations of God actions as perceived and conceived. Such regularities described by laws of succession

⁶² As Jonathan Edwards puts it, "[T]he original ultimate end or ends of the creation of the world is *alone*, that which induces God to give the occasion for consequential ends, by the first creation of the world, and the original disposal of it. And the more original the end is, the more extensive and universal it is. That which God had primarily in view in creating, and the original ordination of the world, must be constantly kept in view, and have a governing influence in all God's works, or with respect to every thing he does towards his creatures." See Jonathan Edwards, "Two Dissertations I. Concerning the End for Which God Created the World," *The Works of Jonathan Edwards* 8, *Ethical Writings*, ed. Paul Ramsey (New Haven: Yale University Press, 1989), 413.

(e.g. Newton's Law of Inertia) are the manifestations of dispositions. Laws of co-existence (e.g., Newton's Law of Universal Gravitation and Boyle's Law) reflect the co-ordination of God's acting according to his commitments in carrying out his plans. Laws as distilled from observed phenomena depend on dispositions instead of dispositions being determined by laws. Moreover, since every physical system's wave function simply is the range of options God has in mind for its localizations over time, that is, for its discrete continuing existence, then here in God's existence-conferring acting we have the ontologically fundamental level grounding the *existence* and *constitution* of the physical world—especially what we perceive as material objects, some of which are the so-called “substances.”

The *problem of intervention/non-intervention*

Notice that the problem of intervention/non-intervention does not arise under *Divine Compositionism* as it does under concurrentism, because the *laws of nature* (both of succession and of co-existence) are not *intermediaries* in divine action, but rather *are the regularities* of God's acting, the *necessity* of which lies in his commitment to act on condition. The decision to treat the universe as a *closed system* or an *open system* of secondary causes also does not arise, for the causal structure of the universe *is* a structure of God's actings. This notion gives rise to at least two more objections which should be briefly stated and answered.

The *unreality of material objects* objection.

Divine Compositionism entails *continuous creation*, which is the traditional view that the divine action required to *conserve* things in existence is identical to what is required to *create* in the first place. In each case—God's initial creation of an object and God's sustaining it—God's confers existence. It has been asserted that *continuous creation* is incompatible with the reality of material objects. In response, *Divine Compositionism* holds that no created thing is ever, in any aspect, self-existent. Only God is *a se*. The universe at any moment just *is* God's acting or willing it to be. It exists entirely “within God's consciousness” (so to speak). A person's imagining a scenario is a helpful analogy. Thus, *Divine Compositionism* may be thought as a kind of *idealism*.⁶³ However, the objection fails to distinguish between two kinds of idealism.⁶⁴ *Mens-idealism*, rejecting the notion that material objects are real to humans, holds that material objects are merely phenomenal constructs within the mind. However, there is another kind of idealism, which is called *res-idealism*. As H. Darren Hibbs writes, “extramental material objects exist, but they are ontologically dependent upon a nonmaterial source.”⁶⁵ Biblical *res-idealism* holds that material objects are real, but they

⁶³ Since things willed, thought, or imagined are items of consciousness, known as intentional objects, *Divine Compositionism* is *intentional object panentheism*.

⁶⁴ Darren Hibbs, “Who's an 'Idealist?'," *The Review of Metaphysics* 58 (2005), 567.

⁶⁵ See Darren Hibbs, “Who's an 'Idealist?," 569. For extensive discussions see Charis Anastopoulos, *Particle or Wave: The Evolution of Matter in Modern Physics*, (Princeton, New Jersey: Princeton University Press, 2008) and Paul Davies and Niels H. Gregersen, *Information and the Nature of Reality: from Physics to Metaphysics*, (Cambridge: Cambridge University Press, 2010).

depend entirely on God's willing them to be. *Divine Compositionism* is a version *res-idealism*.

The *author of sin* objection.

It may be objected that since *Divine Compositionism* holds that the causal structure of the universe is a structure of God's actings, then it entails that God is the author of sin. *Divine Compositionism* differs from standard occasionalism in that it applies *only* to physical causation not to the intentions or choices of free agents.⁶⁶ Though it cannot give an ontological analysis, it does provide for a view of human freedom that preserves the functional independence of the capacity to choose while maintaining its complete ontological dependence.⁶⁷ Libertarian-free *actions* depend on the completion of libertarian-free *choices* which arise from the (contingently) causally-immune and (contingently) causally-impotent *power* (i.e., capacity) of proximal intention formation. But culpability depends only on the "thoughts and intentions of the heart" so God cannot be the author of sin on our view. In short, *Divine Compositionism* applies only to physical causation; it does not apply to agent (or mental) causation.

⁶⁶ This was held by many of the Cartesian occasionalists of the 17th century.

⁶⁷ See Walter J. Schultz, "'No-Risk' Libertarian Freedom: A Refutation of the Free-Will Defense," *Philosophia Christi*, 10.1 (2008), 183-199. The 'power' to form proximal intentions is spiritual. It has neural correlates, but it is not reducible to the physical.