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Causality and Personal Causality in the Philosophy of Xavier Zubiri[1]

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Abstract

Causality has been a key concept throughout the history of philosophy. One of its main uses has been in securing proofs of the existence of God. A review of the history of causality discloses five distinct phases, with major changes to the uses and understanding of causality, with the last ending in a very confused idea of causality. Zubiri pointed out that there are really three elements conflated in the common idea of causality: real production of effects, functionality, and power of the real. By sorting these out, and recognizing that causality in the majority of cases is merely a type of functional relation between "cause" and "effect", many problems are greatly clarified. The type of functionality involved varies greatly, and can involve notions unknown to Aristotle, Hume, or Kant. But especially important is the case of causality involving human beings, since knowledge of direct production of effects is available there that is absent elsewhere. Combined with understanding of the power of the real, Zubiri shows that we have knowledge of what he terms a "reality ground", which theists call "God". Causality once again becomes a key element of natural theology, though in a different and more rigorous way than in traditional proofs of God's existence.

Resumen

La causalidad ha sido un concepto clave a lo largo de la historia de filosofia. Uno de sus usos principales ha sido en el desarrollo de las pruebas de la existencia de Dios. Una revisión de la historia de causalidad descubre cinco fases distintas, con cambios importantes en el uso y el concepto de la causalidad. El último ha desembocado en una idea muy desconcertante de causalidad. Zubiri señaló que hay realmente tres elementos que se confunden en la idea común de causalidad: la producción real de efectos, la funcionalidad y el poder de lo real. Al ordenar estos elementos y reconocer que en la mayoría de los casos la causalidad es meramente un tipo de relación funcional entre "causa" y "efecto", se clarifican muchos problemas. El tipo de funcionalidad varía mucho, y puede involucrar nociones desconocidas a Aristóteles, Hume o Kant. Pero especialmente importante es el tipo de causalidad que afecta a los seres humanos, ya que el conocimiento de producción directa de efectos allí disponible está ausente en otra parte. Junto con la comprensión del poder de lo real, Zubiri muestra que tenemos conocimiento de eso que él llama una realidad-fundamento, algo que los teistas llaman "Dios". Así la causalidad es una vez más un elemento clave de teología natural, aunque de manera diferente y más rigurosa que en las pruebas tradicionales de la existencia de Dios.

Introduction

The apparent conflict between science and religion is often viewed and argued with respect to the existence of God. In particular, demonstrations of God's existence feature prominently in these discussions. The idea, presumably, is to show that God must exist, therefore science

cannot dispense with God or theology, for that matter. Typically these demonstrations utilize causality in some form, require a certain philosophical framework, and purport to show the existence of an unmoved mover or similar entity. To be sure, this is a useful contribution to the science/religion dialogue. If God's existence can be demonstrated in an unequivocable manner, science could not ever be regarded as the sole or perhaps even the most important source of knowledge. The question, therefore, turns on the efficacy of the proofs offered. Because they generally rely on the notion of causality in the physical world, which has been very controversial at least since the time of Hume, their value is likewise controversial. Nonetheless, causality should not be ruled out altogether, since it may be incontrovertible under some circumstances, and therefore useful. If one could identify these circumstances, and show that they are intimately associated with the idea of personhood, then the significance of the proofs as well as the whole nature of the science/religion dialogue would change.

I. Causality and Knowledge

Causality has been a fundamental concept in the history of philosophy, theology, and of science since the time of the ancient Greeks. This is due to the role (or presumed role) of causality with respect to nature, knowledge, and morality. Especially important has been the notion of *real production of effects* associated with causes. The importance of causality for the science/religion dialogue can scarcely be overstated. To understand it, we begin with a brief review of development and role of the notion of causality. This may conveniently be divided into five major phases, shown in Figure 1.

Phase 1. Metaphysical: causality as a principle of nature

The first phase, from the Pre-Socratics (c. 600 BC-400 BC) to William of Ockham (c. 1288-c. 1347), saw the origin and elaboration of the "classical" or "traditional" notion of causality, which was principally the work of Aristotle. During this epoch, causality was viewed as a principle of nature, valid for all things, and therefore the base of much of our knowledge. It became the fundamental explanatory paradigm for the sciences: all true or real knowledge is of causes in the strict, deterministic sense.

Aristotle distinguished four types of cause: material, formal, efficient, and final. Of these, efficient causality, that dealing with production of effects, became the most controversial. Real production of effects means that the cause *actually produces* the effects that we observe; it is not simply coincident with them (constant conjunction). Aristotle went beyond this, however, and made the four causes the key to all change, i.e., all that happens in the world. Correlatively, knowledge of the four causes became the source of all knowledge about the world, and philosophy itself, defined as "knowledge through causes". The knowledge Aristotle envisioned was not just any kind of knowledge. It could have no admixture of uncertainty: we know in the true sense only when we know why things are the way that they are, and why they cannot be otherwise than they are. In other words, we are looking at a strict determinism both in the world *and* in our knowledge of it. Likewise implied is the idea that everything which happens must have a cause—the universality of causal explanation. Causality was thus elevated to the status of a metaphysical principle with universal applicability; hence it was used to make inferences about things that cannot be directly experienced.

On this basis, causality was employed in natural theology, forming the basis for many proofs of the existence of God. As it was understood, a cause really produces its effects, not merely in a phenomenological sense such as constant conjunction, but in a metaphysical sense. During this epoch, nearly all proofs of the existence of God, with the exception of the ontological argument, utilized causality as a principle of nature, and assumed that it was a universally valid principle that could be em-

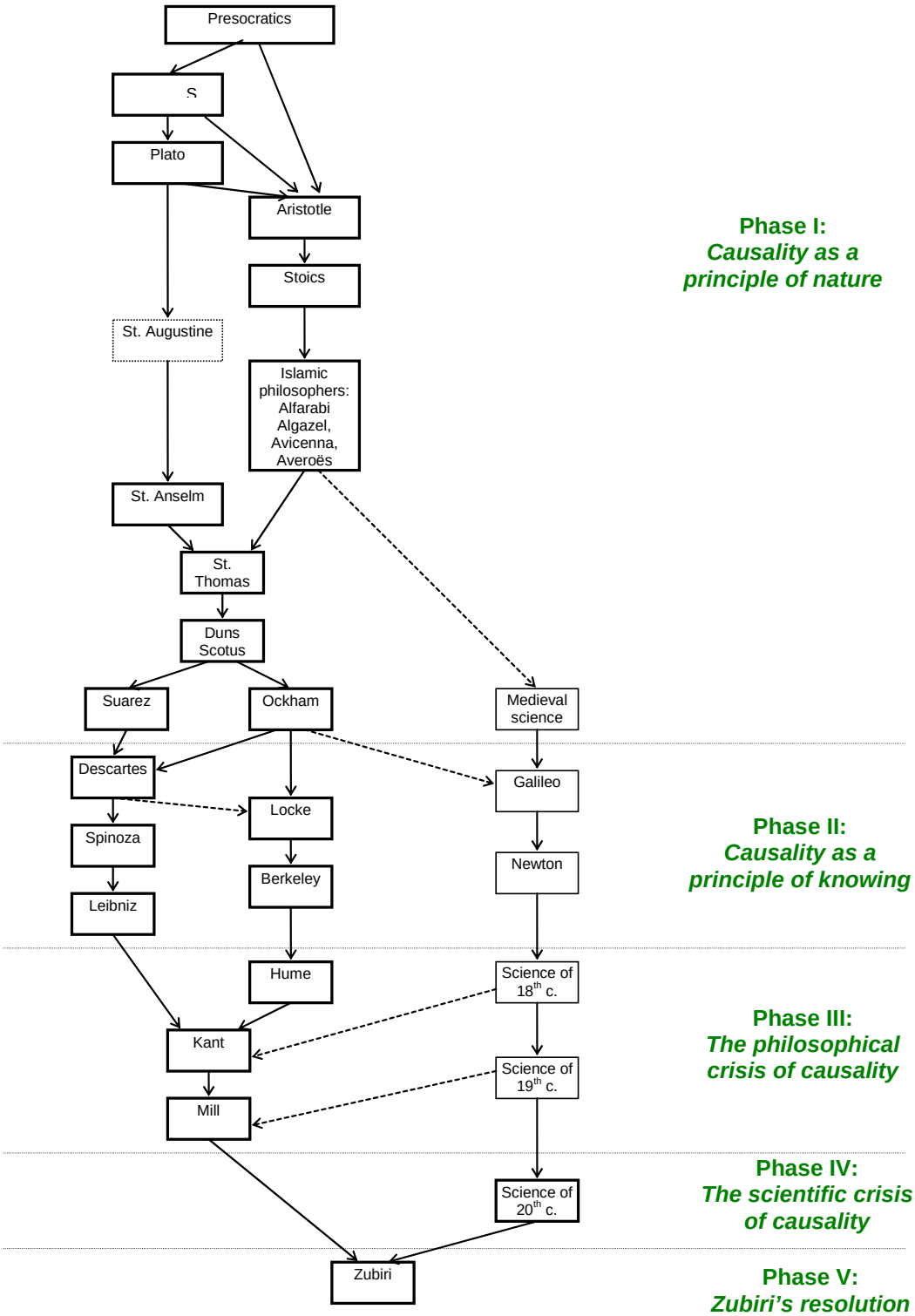

Figure 1. The Five Phases of the Development of Causality

ployed to reason from things of direct experience to realms far removed from that experience. The best-known type of such proofs is the *cosmological argument*, appropriately named because it utilizes causal reasoning about facts (deemed incontrovertible) of the cosmos to infer the existence of some type of being, such as a prime mover.[2]With the Middle Ages came the need to make philosophy, and in particular Greek philosophy, deal with the new world of the great monotheistic religions and what revealed truth man has. This became especially important in the Islamic and Christian traditions. There were three problems that the integration of Greek thought and monotheistic religion entailed:

- Creation of the world, *ex nihilo*, as opposed to the Greek view, according to which the world has always existed. This brought with it new problems of ontology, and of course, causality, since something must have caused the world to come into being out of nothingness—a type of causality not envisioned by the Greeks.
- Universals, or forms. Where are they, and what reality do they have? That is, what is the reality of the formal cause? This was, in the middle ages, the battleground for the proponents of *realism* and for those of *nominalism*, and everyone in between. Realism asserts that universals, such as *man*, are *res*, things, and that these universals are present in all individuals of a species, for example. Nominalism denies the existence of universals in the world; only individuals exist, and universals such as *man* are the creations purely of the mind.
- Reason and its power with respect to things. The central question has to do with the extent to which man's power of reason, his ability to *know* things, reflects something absolute about them. This was Aristotle's assumption, but it can lead to theological issues. For example, if causes are real, and have real productive power, can even God change them? This has a great impact on theological questions such as the nature of God's omnipotence, and the existence of miracles.

The interaction of these questions focused certain questions very sharply, especially with regard to causality. Realism tends to place causality in things, in the world; whereas nominalism tended to place it in the mind. The latter approach leads to downplaying efficient causality as real production.

These questions first surfaced and were taken up by Arabic and Jewish philosophers, beginning in the East (Alkindi, 9th-10th century; Alfarabi, c. 900-950, and Avicenna (980-1037). The focus of these efforts then shifted to the West, to Moslem Spain, and especially Cordoba, where Averroës (1126-1198) and Maimonides (1135-1204) both lived. Of these philosophers, Averroës was the most important with respect to development of the idea of causality.

Averroës was a realist, and especially so with respect to causality. For him, causes have real productive powers and reflect necessary links between things, that is, between the cause and its effect. So we have here a position that has roots directly in two of the themes above: *realism* with respect to universals, and the *power of reason* to penetrate to the heart of nature and reveal how things truly are. It is to him that we owe this elaboration and clarification of the nature of causality. Causality, for Averroës, is characterized by

- real production of effects
- necessary connection between cause and effect
- strict determinism (the effect must follow from the cause)
- uniformity
- contiguity
- temporal priority

However, this soon led Averroës into some serious theological problems—thus impinging on the third theme—because they forced him into some difficult positions, such as his belief that the human intellect is a single, immaterial and eternal form—the only one for the entire species. Furthermore, even God cannot change the nature of things in the world as revealed to us by our reasoning and perception (as separate, distinct, real things), in particular, the relations of cause and effect; and so in this sense at least God is not omnipotent. Therefore accounting for miracles poses some difficulties, which Averroës ultimately gets around by denying that they really are miracles, just very unusual phenomena—a kind of secondary causality theory. And finally, for Averroës, motion is eternal on account of the nature of causality, and so he has an additional problem with the creation of the world. Eventually he fell into the famous "dual truth" theory, according to which something can be true philosophically and false theologically.[3]

In the West, Scholasticism began with St. Anselm (1033-1109), who is best known in philosophy for his proofs of the existence of God, especially what has become known as the "Ontological Argument." Anselm was solidly in the Augustinian tradition, and was unfamiliar with the works of Aristotle, which were to become known in the West in the next century. In the *Monologium*, he gave proofs of the "standard" sort, based on causal arguments. In the *Proslogium*, he gave the "Ontological argument", which is non-causal. Briefly, the argument runs as follows: if we say that God is an entity that is the greatest possible, then no greater entity can exist. But if God existed only in the mind, then we could imagine Him existing in reality, which is greater. Therefore we can imagine something greater than God, if he does not exist. But this is a contradiction to our premise. Therefore God must exist. Though always controversial, this argument later found use in phase two, when causal proofs could not be employed.

St. Thomas accepted the idea of real production, and believed that causes are "out there", that we can perceive them, and that, indeed, everything that happens is caused by something. Causality, for him as for Aristotle, becomes the basis of change in the world and at the same time our knowledge of it. St. Thomas' principal contribution to the theory of causality has to do with creation *ex nihilo*, which is a fact of Revelation that Aristotle never considered. Aristotle's definition of efficient causality requires that one thing act on another, already existing thing, to bring it from potency to act. St. Thomas basically generalizes the notion of efficient causality to mean contributing being to, or contributing to the being or becoming of something else. Or in other words, efficient causality in the sense of creation does not refer to motion and applies to the entire being of the effect, whereas ordinary efficient causality has to do with motion and applies to only part of the being of the effect.[4] Thus Aristotle's efficient causality is a special case of St. Thomas'.

After St. Thomas, the next major contributor to causality is John Duns Scotus (c. 1266-1308). With Scotus, the drift of medieval thought towards nominalism and away from realism, towards a view of causality as in the mind and away from the view of it as in reality, both accelerated, reaching a peak with William of Ockham (c 1288-1347). Scotus accepted the view of causality put forth by St. Thomas more or less intact; he questioned some of the proofs based on it, however. For example, the first or prime mover is simply the cause of motion, that is, a necessary hypothesis to explain the fact of physical motion in the universe. This does not make Him (or it) the cause of the *being* of all things in the universe. Scotus also accepted the view that we can extract knowledge of causes (in the strong sense) from our perception of the world. He based his argument for the existence of God on causality as well, claiming that even in the case of an infinite regress of causes, "the whole series of effects would be dependent on some prior cause."[5]

For Ockham, philosophy and theology are completely separate, and the idea that things, such as they are in the world, could have any influence on the Divine Will, or in any way circumscribe Divine action, is summarily rejected. This is diametrically opposite, of course, to the position of Averoës, and represents a significant downgrading of the idea that causality is about things in the world in some real sense. Ockham's main contribution to the theory of causality is his rejection of the idea of necessity in causes, that is, his rejection of the idea that there is a necessary connection between cause and effect. He also rejects the idea that we can somehow perceive causes with the mind, falling back on the idea of constant conjunction, together with the idea that if *A* causes *B*, and *A* is taken away, then *B* also goes away, implies that *A* is a cause of *B*. Ockham rejects the "first mover" proof of the existence of God, because it cannot be shown that everything which is moved must be moved by something else. Moreover, he rejects the idea that an infinite regress of causes is possible. And he rejects the proof from finality.

Phase 2. Epistemological: causality as a principle of understanding

This second phase receives the idea of causality more or less unchanged from the first phase. But in light of the endless controversies from that phase—about nature, universals, and proofs for the existence of God, together with the manifest failure to achieve the objectives proposed, namely secure knowledge of the world—the second phase sought to construct a secure foundation for knowing, and for this it preferentially employed causality as a *principle of knowing* rather than a principle of nature. As a result, causality, rather than being a tool for understanding what is happening in the world, became more important with respect to the link from the world to our *ideas* about it. There was less interest in what is happening in the world, with respect to cause and effect, and more with respect to the problem of what *causes* our ideas and how we can be sure that they are adequate and convey truth to us. To guarantee this link, it becomes necessary to invoke God himself. Thus in this phase, the focus of causality shifts from *investigation of things and change in the world*, to *justification of our knowledge about the world*. This is a very significant change, though not a rethinking of causality. Philosophers still accepted the notion of causality as developed in the classical tradition (few bought into Ockham's critique), but they used it differently. Not surprisingly, the philosophers of this period relied heavily on the ontological argument, since it is not based on reasoning from causes in the world, and more importantly, it established the existence of God, who can then be invoked for the above-mentioned guarantee of non-deception.

This phase begins with René Descartes (1596-1650). Descartes inherited classical philosophy in almost all of its aspects, and also its fundamental horizon of nihility. But he had a different agenda. He felt that much of the certainty about life, about knowledge, about faith, and about things, which characterized the Middle Ages, had disappeared. So he was concerned with reestablishing certainty, with building a firm foundation for knowledge and belief—in things, in the world, in God. Descartes' procedure, as is well-known, is to begin by doubting everything that can possibly be doubted, and then gradually rebuilding knowledge on the basis of the things he believes cannot be doubted. This led him to his famous first non-doubtable principle, the *Cogito, ergo sum*.

But Descartes needed causality to complete his task. With respect to causality, he did not dispute any of its principle characteristics. For him, as for Aristotle and most of the philosophical tradition since, a cause has power to make things happen; and he relies upon this, as unquestionably true, to help him in out of his self-imposed doubts. Specifically, he restored his confidence in his ability to know things about the world *by calling upon God to guarantee the causal link from the outside world to the ideas in his mind about it:*

> But since God is no deceiver, it is evident that He does not of Himself, and immediately, communicate those ideas [about bodies] to me. Nor does he do so by means of some creature…For he has given me…a very strong inclination to believe that those ideas are conveyed to me by corporeal things, I do not see how He could be defended against the charge of deception, were the ideas produced [caused] otherwise than by corporeal things. We have, therefore, no option save to conclude that corporeal things do indeed exist. [Med. VI, p. 72.]

So now causality, rather than primarily being a tool for understanding what is happening in the world, is needed to guarantee the link from the world to our *ideas* about it.

This phase includes the continental rationalists (Spinoza, Leibnitz), and the English empiricists Locke and Berkeley. Spinoza says, "The idea of an individual thing actually existing is caused by God…" (*Ethics*, Prop. IX). For Leibnitz, since God created the monads, and established the harmonious working of the universe, He *caused* the harmony, and in particular, He *caused* us—human monads—to have ideas about the world which appear precisely in the order and at the time that actual changes occur there.[6] Locke, like Descartes, must also call upon God to guarantee our knowledge of that world, though he does not directly invoke God to guarantee the causal link; he merely tells us that the ideas produced in our mind are adequate for the job they have to do on account of the "wisdom and Will of our Maker".[7] For Berkeley, more than just their guarantor, God *directly causes* our ideas of the world; this extends to observed regularities in the world, which Berkeley calls the *Laws of Nature*.[8]

Phase 3. The Philosophical Crisis of Causality, Hume, Kant, and Mill

In the third phase, David Hume (1711-1776), who remained wedded to the belief that causality can only be of the traditional, strictly deterministic variety, showed the obvious difficulties with the arguments of the first and second phases. In particular, he zeroed in on the connection between cause and effect, and thus cast doubt on the arguments of the first phase and everything that depends upon them. Hume devoted considerable effort to uncovering the psychological basis for our belief in causality, in the strong, classical form. He believed that he had found it in the fact that what we term 'causes' are always found to be conjoined to their effects, and as a result, the mind eventually forms some sort of connection between the two ideas, which in addition have the properties of contiguity and temporal sucession.[9] For Hume, there is no perception of any link or connection between a cause and an effect:

> Should anyone…pretend to define a cause, by saying it is something productive of another, it is evident he would say nothing. For what does he mean by *production*? Can he give any definition of it, that will not be the same with that of causation? If he can, I desire that it be produced. If he cannot, he here runs in a circle, and gives a synonymous term instead of a definition.[10]

The conclusion is that insofar as true knowledge of causes is possible, we can have apodiectic or metaphysical knowledge; but insofar as our knowledge of causes resolves into constant conjunctions, "true" knowledge about the "external" world, and *a fortiori* metaphysical knowledge, is impossible:

> If we take in our hand any volume; of divinity or school metaphysics, for instance; let us ask, Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matters of fact and existence? No. Commit it then to the flames: for it can contain nothing but sophistry and illusion.[11]

This, presumably, also applies to the On-

tological Argument. But Hume still has a use for causality. Hume explicitly accepts three of the classical characteristics of causality: temporal priority,[12] contiguity,[13] and uniformity (which he terms "necessity"). It may seem surprising at first sight that he would retain this latter; but for him, it is related to the idea of causes as constant conjunction. And, he wished to extend the idea to the moral arena, so that morality becomes nothing more than a tendency to always associate certain activities with certain "pleasing sentiments of approbation". Hume wants to make all causes necessary—i.e., deterministic or uniform—to avoid any possibility of something "occult" —some unknown power or agency—coming into the picture.[14]

Kant (1724-1804) felt that Hume's attack on causality was so destructive of knowledge that he had to reestablish it in a secure way. Because he assumed that science requires causality in the traditional sense, he sought to reconstitute it on the basis of his theory of the mental life as synthesis according to the categories. That is, Kant believed that the usual statement of causality, "every event has a cause," is a necessary and universal truth. In the end, Kant was sufficiently persuaded by Hume's arguments that he concluded it impossible to fully reestablish causality in its historical role. As a result, he had to abandon causality for the purposes of speculative metaphysical reasoning such as proofs of the existence of God utilizing sense-based data from the "outside" world. Such reasoning he was compelled to base on moral arguments instead.

Kant noted that some truths are known through morality, in the sense that certain actions are known to be right or wrong without need for any type of causal reasoning based on natural laws or empirical observations. Morality is unconditional because it is intelligible "in itself", and man is something knowable in the fullest sense (unlike physical objects). Thus moral knowledge is more secure than knowledge of the external world. This moral knowledge is impressed on man's conscience; in Kant's terminology:

> …the moral law, although it gives no view, yet *gives us a fact absolutely inexplicable from any data of the sensible world*, and the whole compass of our theoretical use of reason, a fact which points to a pure world of the understanding, nay, even defines it positively and enables us to know something of it, namely, *a law.*[15] [Italics added]

This law, of course, points to a *law giver*. If one accepts the general Kantian approach that moral knowledge is more secure than knowledge of the external world, or equivalently, if one believes for another reason that certain moral imperatives (or facts) are absolute, there would be reasons to question the any philosophical position (such as the omnicompetence of science) that denies this absolute character. Zubiri observes,

> Speculative reason had seen, in causality, temporal determination; here we find ourselves with something different: a determination in the intelligible world—a strict causality which is only in the intelligible order. Hence, what was simply a possibility for speculative reason, is an objective reality for practical reason. Why? Because practical reason has a datum which theoretical reason absolutely lacks, the absolute datum of morality, of the will.[16]

This allowed Kant to construct a transcendental metaphysics not based on the shaky ground of causal reasoning from the world of sensible experience:

> Ultimately, Kant's transcendental metaphysics is the transcendental metaphysics of something immanent: the transcendental metaphysics of the person….It is a Metaphysics in which reason, by means of concepts, reaches the objective reality of the thing-in-itself, to wit, immortality and God.[17]

John Stuart Mill (1806-1873), attempted to modify Hume's theory of causality as constant conjunction so that it could serve as the basis for empirical science. For Mill, the various uniformities found in nature we term the "laws of Nature". He was especially interested in what he terms the process of induction, which is how scientific laws are created from observation, experiment, and other sources. He is also interested in the reasoning processes by which conclusions are deduced from those laws, and other aspects of the reasoning that takes place in the conduct of science. For this, he believes that uniformity of nature and the law of cause and effect are both requisite. He explicitly tells us that he has no interest in metaphysical questions and inferences based on causality. Mill's remarks make clear the shift in emphasis from pure philosophical speculation about causality, to an understanding of it based on the process and outcome of science:

> I make no research into the ultimate or ontological cause of anything.…the causes with which I concern myself are not *efficient*, but *physical* causes. They are causes in that sense alone, in which one physical fact is said to be the cause of another. Of the efficient causes of phenomena, or whether any such causes exist at all, I am not called upon to give an opinion.[18]

Mill demonstrates his empiricist heritage when he also rejects the idea of any force or power between objects:

> The notion of causation is deemed…to imply a mysterious and most powerful tie, such as cannot, or at least does not, exist between any physical fact and that other physical fact on which it is invariably consequent, and which is popularly termed its cause: and thence is deduced the supposed necessity of ascending higher, into the essences and inherent constitution of things, to find the true cause, the cause which is not only followed by, but actually produces, the effect. No such necessity exists for the purposes of the present inquiry.…The only notion of a cause, which the theory of induction requires, is such a notion as can be gained from experience.[19]

This notion Mill attributes to "that invariability of succession…found by observation to obtain between every fact in nature and some other fact which has preceded it."[20] In this respect, Mill is rejecting Kant's notion of causality and returning to something akin to Hume's views, at least with respect to the origin of belief in any causal connection.

Mill inherited from classical philosophy the belief that causal regularity is the foundation of all rational understanding. On the other hand, in light of Hume's arguments and Kant's criticism of Hume, he does not want to commit himself to a closed empiricist perspective; there are too many problems with Hume's view, especially. The question that he wishes to ask is, "What do I really need from the law of causality in order to conduct science?" To answer this question, he tells us, "The truth that every fact which has a beginning has a cause is coextensive with human experience." Recognition of this universal truth, he contends, "is the main pillar of inductive science". So the procedure of science is this: by induction, that is, generalization from uniform experience, causal laws are inferred. Since every event must have a cause, these laws can then be used to make predictions. Mill's belief in strict, deterministic Newtonian physics is revealed by his reference to what has since become known as "Laplace's demon":

> The state of the whole universe at any instant, we believe to be the consequence of its state at the previous instant; insomuch that one who knew all the agents which exist at the present moment, their collocation in space, and all their properties, in other words, the laws of their agency, could predict the whole subsequent history of the universe.…And if any

> particular state of the entire universe could ever recur a second time, all subsequent states would return too…[21]

So for Mill, the last major thinker on causality prior to the upheavals of the 20th century, most of the major pillars of causality were still intact: determinism, universality, contiguity, and temporal priority. The focus is still on causality as the basis for our knowledge of the world, though Mill is ambivalent about his "facts" and whether they are about things in the world.

However, since causality is no longer considered to be a metaphysical principle universally valid for things, it cannot be used in the "old" way (the cosmological argument) to prove the existence of God. Hume and Mill, therefore, rejected proofs of God's existence. Kant recognized that we have other sources of knowledge, and while rejecting the cosmological proofs, argued that we can infer God's existence based on our knowledge of ourselves, and specifically, of our knowledge that we can cause things to happen in the traditional sense of production of reality. This, of course, represented another but lesser-known "Copernican revolution" in Kant's philosophy.

Phase 4. The Scientific Crisis of Causality in the 20th Century

In the fourth phase, the very development of science compelled abandonment of key elements of the traditional notion of causality—the same elements that were considered indispensable in all the previous phases—thus revealing that notion as inadequate. The revolution in science also had profound implications for philosophy, which had always believed that it alone dominated the discussion of the bases of knowing. While epistemology is still within the realm of philosophy, philosophy now recognizes that science can tell us enough about the world that we cannot necessarily rely upon truths considered self-evident from our ordinary range of experience. Of course, theologians have recognized this for centuries.

The principal developments in science were:

- *Einstein's Special Theory of Relativity*, which dethroned Newton's absolute space and time, together with simultaneity and the notion of fixed time throughout the universe.
- *Quantum mechanics*, which introduced pervasive and inescapable indeterminism in our knowledge of nature (and nature itself), effectively demolishing the idea of infinitely precise physical quantities for things, such as momentum, position, time, and energy, and thus destroying the possibility of Laplace's Demon.
- *Chaos theory*, and the recognition that even deterministic laws, such as those of Newton, were insufficient to guarantee ordered behavior. [22]
- *Gödel's theorem*, which showed that the mathematical equivalent of strictly deterministic and complete physical knowledge is unobtainable.
- *The rise of the systems approach*, which recognizes that reality as perceived by finite entities (not necessarily animate) is layered, with each layer's behavior constrained by, but not fully determined by the lower layers. Physically, at each layer, there are uncertainties owing to uncertainties at lower layers, and the impossibility of determining the total set of interactions of things at those lower levels.

During this epoch, proofs of the existence of God tended to eschew any notion of production of reality, or traditional ideas, because of the problems with causality, especially the delinking of causality and determinism. Rather, such as they were, the proofs were based on design arguments (e.g., beauty and order of the universe, or the anthropic principle), though some authors resolutely main-

tained the cosmological argument, despite problems with causality.

Phase 5. Causality and Zubiri's new conception: the primacy of reality

In light of philosophical critiques of the idea of causality, and important developments in science, especially in the twentieth century, Zubiri felt it necessary to completely overhaul our understanding of causes and causality. For Zubiri, the concept of causality is not merely ambiguous, but worse, one which is used indiscriminately to refer to separate ideas and corresponding realities. This has led directly to many of the problems associated with causality, especially with regard to its proper scope and the type and extent of reasoning which can legitimately be based upon it. For Zubiri, *functionality* is the key to understanding *causality*, properly speaking; other notions erroneously subsumed under "causality" require different analysis. So in the fifth phase, Zubiri rethinks causality in the light of his own philosophy of sentient intelligence, with its new concept of reality. He determines that causality as traditionally understood actually involves three distinct notions:

- Real production
- Functionality
- Power of the real

We shall discuss these in turn.

The first is the traditional notion of causality, with its emphasis on the real connection between cause and effect, as discussed above. This is the notion most familiar from the history of philosophy, most often utilized in proofs of God's existence, and heavily critiqued in phases three and four. This notion has its place, but it is a very restricted one due at least in part to the limitations of human knowledge. Technically, it is a type of functionality and therefore a subset of the second notion.

The second notion is the idea of causality utilized in science, but the one which properly applies to much of everyday life as well. Causality is *functionality*, more or less in the sense of a mathematical function that relates quantities. Effects are related in some functional manner to causes. Thus "smoking causes cancer" does not mean that everyone who smokes contracts cancer, but that there is a statistical relationship between the two. It gives us information relating two measurable things, but does not say that the relationship is deterministic, uniform, or requires any type of metaphysical production of reality; it is just that: a relationship that can be expressed in functional language. Similarly, "subprime mortgages cause bankruptcy" does not mean that everyone who takes out a subprime mortgage will go bankrupt, but only that there is some relationship between the two events. Causality is not necessary (or even possible) either as the basis for our connection with the "external" world, nor as the paradigm of all knowledge. Causality as functionality will be discussed further below.

The third notion of causality is what Zubiri terms *power of the real*. This "power of the real" or "force of things" or "force of reality" has long been recognized and reappears throughout history in various guises. Among them, there is the *moira* or idea of destiny in Greek literature. *Nature* is often regarded as the manifestation of the power of the real, especially when we are confronted with our inability to control it. The power of the real also affects us though things that are real by postulation, such as political entities. Today it is a scientific *law* that expresses some type of necessity or force in natural things, though the type and character of the law may vary, and its expression in mathematical terms is given by a functional relation.[23] As we shall see, the power of the real finds its most important application in natural theology. The components of the traditional notion of causality can be visualized as shown in Figure 2.

II. New Understanding of Causality

To appreciate the clarity that Zubiri's new vision provides, and the ways in which it resolves problems with traditional views while maintaining the important

insights in them, we shall examine the three notions in some detail. Then we shall examine one key consequence, namely Zubiri's theory of personal causality and its place in demonstrations related to the existence of God.

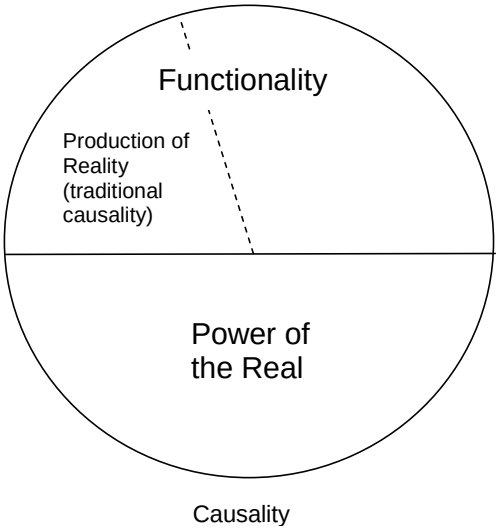

Figure 2. Distinct Notions Conflated in Traditional Understanding of Causality. Note that traditional causality is a subset of functionality.

What is Functionality?

In classical philosophy, causality expressed a particular type of relationship between two things (or events, or processes). Such relationships, with the characteristics described above (determinism, uniformity, real production, etc.), were assumed to be the only ones possible, at least in the sense that all others ultimately reduce to them. As such, they formed the basis for knowledge in classical philosophy, and did so even through the time of Kant. For some schools of thought, such as the Scholastic and neo-Scholastic, they still do.[24] But we now know that things can be related in many more ways than can be adequately described by the deterministic paradigm of classical causality. To describe this situation, Zubiri has borrowed an idea, and related terminology, from mathematics: that of *function*. In mathematics, a function describes a relationship among variables. There may be more than two variables involved, and a given variable may be a function of several or even hundreds of other variables. The function itself describes how one or more variables (the dependent variables) change when other variables (the independent variables) change. This is a much more general way of describing relationships among things, especially since the relationships may only be adequately expressible in mathematical language. They may, for example, involve statistical ideas. Functional relations may or may not involve causality in the traditional sense, or Hume's version, constant conjunction—both of which are special cases of it. Functionality is a much broader concept, capable of supporting inferences such as counterfactual conditionals which are beyond the range of constant conjunction. Zubiri notes,

> …functionality…is dependence in the broadest sense of the word. This functional dependence can assume diverse forms….Succession, coexistence, position, spaciocity and spatiality are types of functionality.[25]

To clarify the distinction between functionality and causality, especially causality in the classical sense, Zubiri points out that functionality does not require the notion of the real influence of cause on effect:

> From my point of view, causality is the functionality of the real *qua* real. Taken in its fullness, *this concept of functionality is liberated from the idea of "influence", and most importantly, leaves open the type of causality which may intervene in each case*. The reality itself of the real, as its own physical moment, is founded on the absolutely absolute reality; therefore, a functionality of reality itself with respect to God exists.[26] [Italics added]

Functionality eschews the dependence of

causality on entities or things, and recognizes that it is more general characteristic.

Functionality is given in the impression of reality, in primordial apprehension; indeed, it is a formal moment of that impression.[27] There is no inferential process required at that level (though this is not the case at the level of logos and reason). How is it given? Zubiri's radical rethinking of intellection supplies the answer:

> …functionality is formally sensed, i.e., not only is it something accessible, it is something for which access is already physically given in sentient intellection, in the transcendental "toward".[28]

Causality is functionality of the real *qua* real, but "reality" does not mean the same thing—a zone of things—as in all earlier philosophy. It is, rather, a formality, something *in its own right*. In this new and more general vision, traditional causality becomes merely a possible type of relation between things. It is something more than just determinism, but less than the most general way of describing those relations. We perceive traditional causality only in the case of our own actions.

The importance of functionality can be best understood through Hume's own example of the ringing of a bell when its cord is pulled:

> In Hume's example, the ringing of the bell just follows upon the pulling of the cord. Now, it is not the case that the bell's ringing is *qua* ringing a function of the pulling of a cord *qua* cord [these concepts operate at the level of logos]; rather, the fact is that it is the reality of the ringing *qua* real [i.e., its formality] which is a function of the reality of the pulling of the cord *qua* reality [i.e., its formality]. And this is something perfectly given, even supposing that the ringing were not a function of the pulling of the cord.[29]

Or to paraphrase Zubiri's discussion, the ringing of the bell is apprehended as real in a primordial apprehension, the same one in which the pulling of the cord is apprehended as real. *This is functionality at the level of primordial apprehension, not at the level of logos or reason*, where Hume was looking. Thus the ringing of the bell is apprehended as a real function of the pulling of the cord, whether or not the pulling of the cord actually operates the bell by itself. Moreover, it would still express a relationship even if pulling the cord only made the bell sound 60% of the time, though it could not be Hume's causality:

> Functionality is functionality of the real inasmuch as it is real. In this sense it is a concept which encompasses many possible types. This formality, this "by" as such, is given in the impression of reality. Hume's whole critique is based upon the content of sensing, but he erred on the matter of formality.[30]

Understanding the functionality of the bell ringing operation through logos and reason, e.g., through the physics of motion of the bell and clapper, the nature of sound waves, their generation through vibrations of the metal bell, and so forth, is much more difficult. So it is not surprising that if one tried to based our knowledge of reality on the achievement of certainty there, skepticism would be the natural result.

For Zubiri, reality is "open" in the most fundamental sense possible. This means that it is, in most cases, impossible to characterize things in complete isolation from one another, as assumed in classical philosophy and indeed throughout most of the history of philosophy. It is on this openness that the possibility of causal connections rests:

> Reality is open formality. Hence reality is constitutively respective. In virtue of this each thing, by being real, is from within itself open to other real things—whence the possible connection of some real things with others. That this connection exists is a fact, and nothing more than a fact. But what is not a fact, but an intrinsic

> metaphysical necessity, is that if such a connection exists it is founded on respectivity. According to this line of transcendental openness, the moment of reality acquires a special character, what in ordinary discourse we call 'the force of things', which consists in the force of imposition of the real.[31]

Real Production

We discussed the notion of real production of effects above, and noted that it is an idea developed over the course of the first phase of the history of causality. The key idea is that the cause really produces the effect, and does so through the interaction of two real things—that which acts as cause, and that which receives the action of the cause. The metaphysical connection between the two is often expressed by means of a *counterfactual conditional*. For example, take the causal statement, "John killed Bob." Then consider the counterfactual conditional statement, "If John had not been here, Bob would not have been killed." The modal implications of such statements is what reveals the metaphysical connection, which is absent in the case of constant conjunction causality. For example, consider the statement, "All the metal in Smith's car is rusty." Clearly this will not support the counterfactual, "If this piece of metal were in Smith's car, it would be rusty." The metaphysical connection between cause and effect, something that goes beyond what science utilizes or needs, or even what we use or need in everyday life, is what gives causality in the sense of real production its great impact. But it is also what limits its applicability, because we can only rarely determine if such a connection exists, and what its nature is. That was the mistake of philosophers in phases one and two—the failure to realize the true scope of causality, and the inapplicability of extrapolations of real production to all relationships where we perceive a connection.

What is the Power of the Real?

The notion of power derives from a primordial experience of reality: it resists us (as in the force of nature), but at the same time captivates us (as in the beauty of nature), dominates us, and we must yield to it. Reality is "more" than individual characteristics, more than real things, but "more" in them:

> And to dominate is just this: to be "more" but in the thing itself; the reality as reality is dominating in this thing, in each real thing. It is not the case that being dominant consists in being more important than being green, but that the moment of reality physically determines, without being a cause, that the green is a form of reality…. Consequently, this dominion is what we may call *power*. To dominate is "more", it is to have power. Here "power" does not mean to be a cause.[32]

So what does domination mean, effectively? It means that we confront a world not of our making, which does not behave in the ways we might like, and around which we must organize our lives:

> …In what measure does this power pertain to reality? Reality, by the mere fact of being real, has a capacity to dominate us… That is an incontrovertible fact, and not a theory. Hence, at no level is this capacity—by virtue of which a reality (not reality itself, but any ordinary reality) makes sense to man—independently of the properties which reality possesses. Obviously: if I wish to fabricate a door, I cannot make it out of liquid water, which has no capacity to be a door.[33]

Zubiri refers to the capacity which real things have to be given meaning in our life, as in the case of the door, as *condition*. Using this notion he refines his distinction between causality and power:

> If causality strictly speaking is the functionality of the real *qua* real, condition is the capacity of the real to have meaning, and consequently belongs to the real thing. Power is the

> dominating condition of the real *qua* real, in contradistinction to causality which is the functionality of the real *qua* real. And precisely because it pertains and belongs to reality in itself *qua* real, it is something which affects not only the attitude of man, but the very structure of things *qua* real.[34]

All causes have the characteristic of dominating over their effects, even when considered simply from the standpoint of functionality. This is owing to the fact that most causality operates at the level of the formality of reality, not the content of impressions. The simple explanation of causality and power in Zubiri is that they are different: causality, in a formula he repeats over and over, is *the functionality of the real* qua *real*.[35] Power, on the other hand, is *the dominance of the real* qua *real*.[36] A specific example may be helpful. In Catholic theology, sacraments utilize things (such as the water of baptism) to convey specific graces or spiritual actions. For Zubiri, this is an example of the dominance of the real, rather than causality:

> I esteem that this production, this *ex opere operato* which, with reception in faith and conversion of heart, produces the reproduction of the death and resurrection of Christ, is not a problem of *causality*, but a problem of *dominance*. It is the dominating of God, of the power of God, where the power of God is just the dominance of the real *qua* real...And this dominance, precisely because it is a power, continues God-forming him upon whom the power is exercised.[37]

Causality (as functionality of the real) and power (as dominance of the real) are thus two separate notions, corresponding to different problems and different areas of applicability.

III. Analysis of Causality as applied to Proofs of God's Existence

In his discussion of Hume, in his main work, *Sentient Intelligence*, Zubiri distinguishes and relates causality and functionality, emphasizing that, in most instances, we do not perceive the real influence, i.e., the power, of cause upon effect. Therefore causes in the classical sense are not given in ordinary experience, and so cannot be used as the basis for extrapolation beyond such experience, and thus the cosmological argument fails.

Nonetheless it is useful to examine in more detail the traditional approach to causality-based proofs of the existence of God, to learn about the deep and perhaps hidden assumptions in them. St. Thomas utilizes the vocabulary and concepts of Aristotle's metaphysics, including the notion of change as reduction from potency to act (first proof), the notion of efficient causality (second proof), certain ideas about possibility and necessity (third proof), distinct degrees of being and notion that higher cannot come from lower (fourth proof), and convergence of cosmos toward an end (fifth proof). In every case, the soundness of the proof depends on the truth of Aristotle's metaphysics. As an example, consider the second proof:

> In the world of sense we find there is an order of efficient causes. There is no case known (neither is it, indeed, possible) in which a thing is found to be the efficient cause of itself; for so it would be prior to itself, which is impossible. Now in efficient causes it is not possible to go on to infinity, because in all efficient causes following in order, the first is the cause of the intermediate cause, and the intermediate is the cause of the ultimate cause, whether the intermediate cause be several, or only one. Now to take away the cause is to take away the effect. Therefore, if there be no first cause among efficient causes, there will be no ultimate, nor any intermediate cause. But if in efficient causes it is possible to go on to infinity, there will be no first efficient cause, neither will there be an ultimate effect, nor any intermediate efficient causes; all of which is plainly false. Therefore it is necessary to admit a first efficient

> cause, to which everyone gives the name of God.[38]

This cosmological proof utilizes the classical concept of causality, which includes uniformity, efficacy, the notion that every cause must have an effect, and the notion that a cause exerts a real influence on the effect. It is used because the idea of causality, in this sense, has been elevated to a metaphysical principal with universal applicability, thus enabling us to draw inferences about things which cannot be directly perceived, such as the existence of God.

The two fundamental assumptions that underlie causality reasoning

As we have discussed, this line of argument was critiqued by Hume, who argued that no perception of causal connections in the required sense is possible, and thus causality itself devolves to constant conjunction. Hence no far-reaching metaphysical inferences, such as that of the cosmological argument, can be drawn using it. Kant accepted this line of reasoning more or less at face value, but argued that causality enters human knowledge through the synthesizing done in our experience of reality. That is, we synthesize our experience so that causality is a part of it. But of course this equally rules out metaphysical inferences based on causality.

If we penetrate to a deeper level, we can discern the root of the problem: the causality arguments are posed within the context of complex rational explanatory frameworks. This is because such rational explanations are usually regarded as our primary access to reality, and thus are the logical place for causality-based arguments. However, rational explanations of reality are exceedingly complex, and subject to constant revision. So the notion of causality in this context is merely an hypothesis, or speculation, not a verified fact. In any practical case of rational explanation, the nexus of causes is too complex to fathom. Moreover, other metaphysical interpretations of "cause and effect" are possible, such as occasionalism.

We can discern two assumptions behind the idea of causality arguments in the context of some rational system. Though rarely discussed, they can radically change the landscape of the issue. First, suppose that the assumption of rational explanation as our primary access to reality is wrong. In that case, we must rethink the role of traditional philosophical proofs of the existence of God, as well as rethinking the priority of science with respect to all knowledge.

Second, suppose that causality is something experienced more directly than through rational explanatory paradigms. That is, suppose that in some cases we can know the productive power we usually associate with causality—thereby ruling out constant conjunction or even Kantian-type explanations of it.

Zubiri follows just this path, disputing both the assumption that rational explanation is our primary access to reality, and that causality (in the fullest sense as production of reality) is a function of rational explanation. Instead, he believes it necessary to look at the fundamental nature of the human person, knowledge of which is based more on what he terms "primordial apprehension of reality."

IV. Personal causality

In Zubiri's view, we do not directly perceive the productive influence of one thing upon another except in the moral sphere, where we *do* perceive the effect of our actions on others. Therefore with that exception, we cannot directly perceive causal connections in the metaphysical sense; we cannot penetrate to the core of things in some Leibnizian fashion and see them as they are. Moreover, in primordial apprehension, we directly perceive reality and do not require the validity of any causal principle to guarantee this perception. In primordial apprehension, we are given functional relations between things, through the formality of reality; and at higher levels of intelligence, additional functional relations can be discerned, as in science, but not causal relations in the traditional, deterministic sense, that of

real production. Moreover, causality is a broader concept than determinism, which emerges as only a special type of causality. Between persons (and only between them) there is a strict causality, which in turn implies moral obligation and moral responsibility. Thus when we say, "John murdered Bill," or "John robbed the bank," we are making statements that go beyond a simple report of observations. In the first case, we are saying that John knew what would happen when he pulled the trigger; he knew that he would produce a certain reality—namely the death of Bill—and that he willed this to happen.

This type of causality is not just a simple application of classical notions of causality to persons, though it is built on that idea. In its most general form, it goes beyond that type of causality, and is irreducible to the causality of classical metaphysics with respect to rational explanation of the world, and still less reducible to the concept of a scientific law because it operates at a more direct level, that of primordial apprehension. This is what Zubiri refers to as *personal causality*: "And however repugnant it may be to natural science, there is...a causality between persons which is not given in the realm of nature." Obviously this causality exists with respect to moral issues such as the cases of murder and theft discussed above. But the expanded idea of personal causality seems peculiar at first glance, since we are accustomed to a different notion of and use for causality. However, anyone who has experienced deep friendship, or seen how the unselfish actions of a good person can radically transform others, will immediately grasp the concept. This is causality in the sense of production of reality—the key component of "classical" causality. Real changes are produced in other people, whose lives are often radically altered by their experience of contact with the good person whose life, works, and example inspired them in ways that no rational argument could do.

Can this notion of personal causality be used as the basis for proofs of the existence of God? Obviously the cosmological proofs based on the applicability of real production to all change cannot be modified for this notion—it is too restricted to make those proofs valid. Moreover, for Zubiri, God is not a reality *object* whose existence can be demonstrated, but a reality *ground* that at some level we experience in an ineluctable fashion, both through the reality of personal causality, and the power of the real that we experience daily.

The "Copernican revolution" in demonstrations relating to God

Clearly, if proofs or demonstrations turn from cosmological scales (God as a reality object "out there") to something that grounds us, known through personal experience, we have experienced a great revolution in our approach and our theology—a new "Copernican revolution", suggested earlier in the context of Kant's philosophy. This is Zubiri's approach—to base such demonstration as is possible on direct personal experience of reality, rather than reasoning based in complex rational systems that can (and do) change over time.[39]

For Zubiri, all human life is, in some respect, an experience of the power of the real. Each person is, in his very constitution, turned toward a reality which is more than he is, and on which he is based. This reality is that from which emerge the resources he needs to make his personality, and which supplies him with the force necessary to carry out this process of realizing himself. This turning of a person to reality is what Zubiri terms *religation* (from the Latin, *re-ligere*, "re-tied"). It is a turning toward some ground not found among things immediately given, something which must be sought beyond what is given:

> ...Zubiri shows that the power of the real that is manifested in religation cannot be grounded in any particular real thing, but only in a reality that is absolutely absolute...for Zubiri, the way of religation leads to an absolutely absolute reality, which will be the ground of the world, understood as the unity of real things, not by vir-

> tue of their properties, but their character of reality.[40]

For Zubiri, human beings are relatively absolute because of personal self-possession; but that self-possession is itself based or grounded in reality. Hence it is not absolutely absolute. The theist calls the absolutely absolute ground, the absolutely absolute reality, 'God'.[41] Religation, clearly, is not a cosmic phenomenon, but neither is it something subjective:[42]

> Religation as a product of the power of the real is something at the intersection of the human and the cosmic. In this sense…the way [of religation] is neither cosmological nor anthropological; rather, it is drawn from a more immediate level, one that is more radical, because it is precisely here that all cosmological and anthropological arguments ultimately have their root. Prior to any theory, religation is a fact for Zubiri, the very fact of human life. It is a fact observable by anyone, because it does not depend on any investigation of what things are beyond apprehension. Rather, it is found in the analysis of the "powerfulness" that real things exert over human life.[43]

The power of the real, through religation, reveals to us something very important and very fundamental about our experience in its totality, and it does so in a way that does not require any philosophical system, such as that of classical philosophy. Moreover, Zubiri was keenly aware of the fact that what we call "God" is not just the ground of human life, but of the world as well. For that reason, he sought a way to integrate them, and that is why power of the real is expressed in terms of the absolutely absolute and the relatively absolute.

In each person's life there is the experience of the power of the real, and the experience of personal causality, both of which cause us to turn to something beyond what is given at the superficial level of ordinary life. Refer to Figure 3 for a schematic representation. This is not an airtight demonstration, nor is it intended to be; it is an analysis of human experience that reveals something not explicable or even expressible in scientific terms. One can still reject the conclusion that the reality ground refers to God; the atheist does so by arguing that he or she needs no grounding—life is self-sufficient. The agnostic does so by claiming that any such ground is unknowable. A discussion of these views is beyond the scope of this article, however.

> The object of reasoning, "demonstrations" if one wishes, as we noted is not to develop an irrefutable "proof" of God's existence. Such proofs as have been proposed have never convinced everyone, and actually had little to do with the faith of most people. Rather, it was their experience of life—personal causality and the power of the real—that was their real contact with the reality ground that Zubiri terms "God". Our understanding of God consequently changes in some ways from the traditional understanding, in the sense that the way of religation and personal causality leads to what we normally understand by God—an ultimate reality, source of our possibilities, to whom we petition for help. The traditional ways led rather to metaphysical constructions.[44] But God is not a "cosmological object": a prime mover, first cause, or a superphysicist who rules universe by physical laws. Nor is He a concept, or terminus of a reasoning process, or any sort of reality object, such as chairs, mountains, stars or galaxies. Rather, God is a *reality ground,* and man's life is woven into his experience with things. This experience is itself, through relegation, an experience of God. In making his own life, each man configures (or disfigures) God in him. God is thus much more indwelling rather than an object "out there" somewhere. An anecdote from the life of Mother Teresa may clarify this notion. On a visit to New York, she

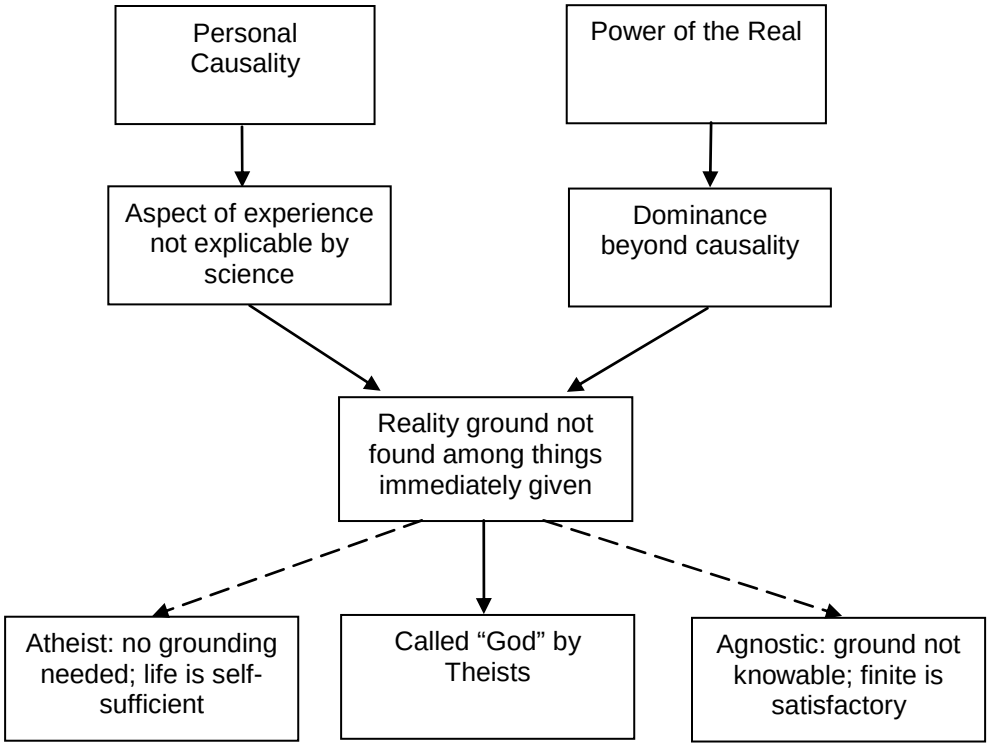

Figure 3. Existence of God Through Personal Causality and Power of the Real

expressed a desire to visit Covenant House, an institution in New York City devoted to helping runaway and abused children. On her visit, she was accompanied by a Franciscan priest, but they had to park some distance away and walk to the Covenant House building, which is in Times Square. On the way, the priest was talking and all of a sudden realized that Mother Teresa was no longer at his side. He looked back and saw her with a drunken man sprawled on the sidewalk. He said, "We must hurry, they are expecting us." But she said, "Here is Jesus".

It is important to understand the metaphysical dimension of this experience, as well as its theological implications:

> As with any personal causality, such inter-personal causality is rigorously metaphysical. And this acquires its greatest reality when referring to the inter-personal causality of God and each human being. The dynamic tension between God and humans is comprised of those phenomena [that] are the very forms of God's causality in the life of the human person…And since this causality is…radically intrinsic to the human person, it follows that these functions are moments of the intrinsic and formal dynamism in which the life of the human person unfolds *from itself*.[45]

In Zubiri's view, this comes about because one of the two persons involved, namely the divine, is in fact interior to the human person. Thus,

> …the help that God provides stems from the very depths of the human person. To help, to console, to listen,

> etc., are not mere psychic phenomena, but are the metaphysical forms through which God is constituting me in my being. Because of this, each human being, whether he or she knows it or not, has the experience of God. This is not the empirical experience of an object, but a metaphysical experience of the ground of his or her personal being. This experience is *in itself* the experience of God. God is something experienced.[46]

Because this experience does not depend upon complex rational explanatory systems, such as Aristotelian or Leibnitzian metaphysics, it supplies a much firmer base for such demonstrations of God's existence as are possible.

*Conclusion: Impact on Science/*Religion *Dialogue*

Understanding of the true nature of causality is important especially for the science-religion dialogue, because so much of the acrimony associated with the "contradiction" between science and religion is based on the assumption that it is a debate between two equals, in the sense that both are rational explanations of the world, and thus are (or can be) in conflict. The cosmological arguments are especially vulnerable to changes in our understand ing of nature brought about by advances in science, thus making theology something of a follower of science. However, if we have causal knowledge that is *not* based on a rational scheme, but on something prior in the order of knowing, then the whole basis of the discussion changes. This suggests that a proper understanding of causality, especially the three components that have traditionally been confused in it, will be essential to grasping the relationship between theology and science and hence our ability to craft demonstrations of the existence of God. Theistic evolution, for example, in all of its variety, is fundamentally based on the theory (or belief or assumption) that there are aspects of our experience of reality that not only are not accessible to science, but that cannot be meaningfully expressed in scientific terms. The notion of personal causality, as well as that of the power of the real, both based on human experience prior to rational explanation of the world, show that this is a viable approach. And it can easily be extended to other areas as well. Demonstrations in the traditional sense may represent a type of overreach. Emphasis on human experience—the experience associated with being a person—appears to represent a better approach to demonstrating the existence of God and relating science to theology.

Notes

[1] Paper presented at Metanexus Institute conference "Subject, Self, and Soul: Transdisciplinary Approaches to Personhood", July 13-17, Madrid, Spain.

[2] These "facts" were often metaphysical in nature; for example, the belief that all motion is reduction of potency to act, which required a contiguous efficient cause. Such arguments are perforce weaker than those based directly on the fact of change in the universe.

[3] Barry Kogan, *Averroes and the Metaphysics of Causation*, Albany: State University of New York, 1985, p. 2-5.

[4] F. Meehan, *Efficient Causality in Aristotle and St. Thomas*, Washington, DC: Catholic University of America Press, 1940,Meehan, p. 187.

[5] Scotus, John Duns, 1962, *Philosophical Writings*, Indianapolis: Bobbs-Merrill Co, p. 46. See also discussion of the cosmological argument in the Stanford Encyclopedia of Philosophy, http://plato.stanford.edu/entries/cosmological-argument/.

[6] Gottfried Leibnitz, *Discourse on Metaphysics*, p. 277.

[7] John Locke, *Essay Concerning Human Understanding*, Bk. IV, ch. 4, para. 4.

[8] George Berkeley, *Principles of Human Knowledge*, part I, para. 30.

[9] David Hume, *Treatise of Human Nature*, Bk I, sec. 6.

[10] *Ibid.*, Bk I, part III., sec. 2.

[11] Hume, *Inquiry Concerning Human Understanding*, Section XII, Part III, paragraph 15.

[12] *Treatise,* Bk I, sec. 2.

[13] *Ibid.*, Bk I, sec. 2.

[14] Ezra Talmor, *Descartes and Hume*, Oxford: Pergamon Press, 1980, p. 127,

[15] Kant, Immanuel, *Critique of Practical Reason*, tr. by Thomas Kingsmill Abbott, First Part, Book I, Chapter I, text available at http://www.knuten.liu.se/~bjoch509/works/kant/cr_pract_reason.txt.

[16] Xavier Zubiri, *Problemas fundamentales de la metafísica occidental*, p. 229 (Hereafter, PFM).

[17] PFM, p. 235.

[18] John Stuart Mill, *System of Logic,* Bk III, ch. V, 2, p. 377.

[19] *Ibid.*

[20] *Ibid.*

[21] *Ibid.,* Bk. III, ch. V, 8, p. 401.

[22] The nature of chaos is sometimes misunderstood. Technically, if initial conditions were able to be specified with sufficient precision - which might mean dozens of decimal places - the chaotic systems could be made predictable for any desired time into the future, though their behavior would remain extremely erratic by normal standards. In fact, however, the necessary degree of precision is chimerical because of quantum mechanical limitations, random noise, and limitations imposed by the atomic structure of the measuring instruments. *Philosophically*, one could go on maintaining that any arbitrary degree of precision in measurements has meaning; *scientifically,* in terms of what can physically be measured, it does not.

[23] Xavier Zubiri, *Inteligencia y realidad*, (First volume of trilogy, *Inteligencia sentiente*), Madrid: Alianza Editorial/Fundación Xavier Zubiri, 1980, p. 197 (Hereafter, IRE).

[24] Jacques Maritain, *An Introduction to Philosophy*, tr. by E. I. Watkin, New York: Sheed and Ward, 1962, p. 64.

[25] Xavier Zubiri, *Inteligencia y logos*, (Second volume of trilogy, *Inteligencia sentiente*), Madrid: Alianza Editorial/Fundación Xavier Zubiri, 1982, p. 37. (Hereafter, IL).

[26] Xavier Zubiri, *El hombre y Dios*, p. 152. (translation of Mr. Joaquin Redondo; hereafter, HD).

[27] IL, p. 39.

[28] IL, p. 40.

[29] IL, p. 41.

[30] IL, p. 41.

[31] IRE, p. 196-197.

[32] HD, p. 87, translation of Mr. Joaquin Redondo.

[33] Xavier Zubiri, *El problema filosófico de la historia de las religiones*, Madrid: Alianza Editorial/Fundación Xavier Zubiri, 1993, p. 42-43 (hereafter, PFHR), translation of Mr. Joaquin Redondo.

[34] PFHR, 42-43, translation of Mr. Joaquin Redondo.

[35] ED, p. 94, 320; PFHR, p. 43, 61.

[36] ED, p. 320; PFHR, p. 43, 61.

[37] Xavier Zubiri, *El problema teologal del hombre: Cristiansimo*, Madrid: Alianza Editorial/Fundación Xavier Zubiri, 1997, p. 348. Translation of Mr. Joaquin Redondo.

[38] St. Thomas, *Summa Theologica*, 1 q.2 a.3.

[39] In one article, "Trascendencia y física", published in 1961 in *Gran enciclopedia del mundo* (Bilbao, 1961, 419-424), Zubiri discussed a possible cosmological proof, based on cosmology as it was then known, rather than on a metaphysical interpretation of sensible reality, as is done in standard cosmological proofs. Though admitting that this type of demonstration, based as it is on scientific facts and theories at a particular time, is not as well-established as the way of religation, Zubiri still thought it useful. A detailed discussion can be found in "La vía cósmica hacia Dios según Xavier Zubiri" by Antonio González, *The Xavier Zubiri Review*, Vol. 7 (2005), pp. 91-107.

[40] González, *op. cit.*, p. 101, author's translation.

[41] Cf. X. Zubiri, HD, pp. 134-178.

[42] Cf. X. Zubiri, HD, p. 128.

[43] González, *op. cit.*, p. 93, author's translation.

[44] González, *op. cit.*, p. 104, author's translation.

[45] HD, p. 203-204, translation of Mr. Joaquin Redondo.

[46] *Ibid*.