An Introduction to Relational Ontology

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There is a lot of talk these days about relational ontology. It appears in theology, philosophy, psychology, political theory, educational theory, and even information science. The basic contention of a relational ontology is simply that the relations between entities are ontologically more fundamental than the entities themselves. This contrasts with substantivist ontology in which entities are ontologically primary and relations ontologically derivative. Unfortunately, there is persistent confusion in almost all literature about relational ontology because the key idea of *relation* remains unclear. Once we know what relations are, and indeed what entities are, we can responsibly decide what we must mean, or what we can meaningfully intend to mean, by the phrase "relational ontology."

Why Do Philosophers Puzzle over Relations?

Relations are an everyday part of life that most people take for granted. We are related to other people and to the world around us, to our political leaders and our economic systems, to our children and to ourselves. There are logical, emotional, physical, mechanical, technological, cultural, moral, sexual, aesthetic, logical, and imaginary relations, to name a few. There is no particular problem with any of this for most people. Philosophers have been perpetually puzzled about relations, however, and they have tried to understand them theoretically and systematically. Convincing philosophical theories of relations have proved extraordinarily difficult to construct for several reasons.

First, the sheer variety of relations seems to make the category of "relation" intractable. Philosophers have often tried to use simple cases as guides to more complex situations but how precisely can this method work in the case of relations? Which relations are simple or basic, and which complex or derivative? If we suppose that the simplest relations are those analyzable in physics, we come across a second problem. Ordinary causes (such as collisions), ordinary fields (such as electromagnetic fields), quantum physics (especially entanglement), cognitive science (especially the mind-brain relation), and complexity theory (especially the relation between emergent properties and the constituent parts in complex systems) represent such a diversity of relations that a unified philosophical account of these supposedly simple cases in physics seems out of the question. Third, relations commonly convey or encode or express value, especially in personal contexts, but also in aesthetic and moral contexts. For example, the relation between a nation and its flag confers dignity on the flag and identity on the nation. But how can a philosophical theory of relation simultaneously embrace fundamental physics and the valuational contexts of flags and nations? Fourth, and finally, some important relations are theological in character, and these present special problems. Theistic traditions speak of the God-world relation, for example, and some Christians speak of the relation between Christ and the believer, and the relations among the Persons of the Trinity. Non-theistic religious traditions such as Buddhism speak centrally of relations, and some Buddhists claim that it is liberating to realize that we have no substantive being of our own but are only ephemeral bundles of relations. Are ordinary relations mere analogies for these theological relations or is there a metaphysical theory than can register them all literally?

In view of these difficulties, the question of the ordinary person, "Why bother trying to construct a theory of relation?" assails any reasonable philosopher. The philosopher worries that the "problem" of a theory of relation may be a pseudo-problem, a mere artifact of a misbegotten love of philosophical abstraction. Perhaps we should cultivate a more commonsense and less metaphysically obsessive approach to life, even in philosophy, as twentieth-century Austrian philosopher Ludwig Wittgenstein famously suggested. The metaphysically minded philosopher would answer that indulging philosophical curiosity need not be a dangerous pastime and, moreover, there are important practical consequences of philosophical understandings of relations.

This claim of important practical consequences may seem far-fetched but there are reasons to take it seriously. One type of reason comes from religion. In the context of Christian theology, if the God-world relation is the metaphysical basis for all relations, then in some beautiful sense the divine suffuses all of reality, making everything sacred and worthy of respect. In Trinitarian thought, to believe that everything is an outward expression of the energies flowing from the loving relations among the Persons of the Trinity ought to transform our spiritual and moral attitudes to everyday life. In the context of Buddhist thought, if the doctrine of *pratītya-samutpāda* (dependent co-origination) is correct, then every kind of relation is a cause of suffering and simultaneously an opportunity for enlightenment, which dramatically changes the way we engage the world. In both the Buddhist and Christian cases, the ruling understanding of relations suggests that we are intimately connected with aspects of the world we normally think have no claim upon us, and this in turn may evoke greater compassion and responsibility among human beings, thereby helping to overcome bigotry, oppression, injustice, cruelty to animals, and ecological neglect (see, for example, Tucker and Grim 1994).

Another reason for thinking philosophically about relations bears on ontology and worldviews. For example, the well-documented human characteristic of overactive pattern recognition leads people to see supernatural causes all around them, thereby inspiring a "folk theory of relation" in which natural and supernatural worlds are intimately related to one another (see Atran 2002, Boyer 2001). If the pervasiveness of this belief is due to cognitive error, then the idea of relations with supernatural entities may be a fiction and we are best off setting the record straight. Similarly, the cognitive tendency to oversimplify leads some people to accept an ontologically reductive view of reality as separated atoms bumping and clumping, after which meaning and responsibility seem to be utterly arbitrary social constructions. If this simple atomism is based on cognitive laziness (Polkinghorne's essay for this volume compiles the evidence from physics alone that shows relations are much more complex than this), then this atomistic view is an oversimplification and, once again, lovers of truth are best off setting the record straight.

Right understanding of the world, responsible engagement within it, and religious concerns all call for a philosophical interpretation of relations. These reasons to think that the metaphysics of relations might be important are mere invitations to a difficult task, however, not any advance on the task itself. Merely pronouncing the phrase "relational ontology" achieves little of significance for nurturing compassion for all beings, promoting ecological responsibility, discriminating between reality and wishful thinking, or attaining any other worthy goal—especially because proponents of substantivist ontology claim to support similar

moral and spiritual outcomes. There is significant philosophical work to do, evidently, after which a relational ontology needs to be operationalized in imagination-forming traditions (such as religious worldviews with compelling ritual practices) if it is to have practical effects. I am concerned here with the philosophical phase of this transformative process rather than the social engineering phase. And I will have to bracket the controversial issue of whether a relational ontology activated in imagination-forming traditions really does have superior practical benefits. So what have philosophers been saying about relations?

Philosophical Issues Surrounding Relations

The history of philosophical and theological reflection on relations has surfaced a number of contentious issues with implications for any conception of relational ontology. I discuss four such issues in what follows.

First, if we are to speak of a relational ontology, we first need to know whether relations are ontologically real or merely attributions made by conscious entities and expressed in language. Some strict empiricist philosophers think of most relations merely as linguistic attributions of significance lacking independent ontological standing. Relations exist in minds and if nobody attributes a relation then none exists. There is an exception: causation furnishes an ontological basis for speaking of the reality of relations. After all, for the empiricist, causal effects and so causal relations exist whether or not conscious beings are around to notice and name them. By contrast, idealist philosophers believe that the conceptual world of reason is the fundamental reality, which confers ontological status on logical, conceptual, and value relations. In fact, some idealists go so far as to reduce causal relations to logical relations because causal necessity is merely a species of logical necessity. Theistic philosophers affirming an omniscient and omnipotent deity utterly reframe these arguments because, for them, God is the fundamental reality, and both entities and relations between entities have to be understood in terms of their primary relation to the ontologically fundamental entity, God.

Second, a pertinent question for a relational ontology concerns the ontological priority of substance and relation. Aristotle thought that relations are ontologically subordinate to entities. We can think of the manifold relations attributable to a set of keys on a key ring—what they can unlock, whether we know where the keys are, and so on—but those relations only exist so long as the key ring itself exists. Moreover, the key ring's relations can easily be changed (say, by changing locks) without affecting the substance of the key ring. This is why Aristotle included relation on his list of categories as subordinate to the primary category of substance, which he interpreted as the bearer of all properties, including relational properties. Some idealist philosophers have argued that Aristotle erred when trusting common sense as a guide in this instance. In fact, the key ring's substance, *properly understood* (i.e. understood contrary to common sense), *does change* when its relations change. Change the locks and key ring is no longer useful in the way it once was, and this affects the substance of the key ring because substance is more than merely chemical constituents and shape. More precisely, the category of substance is actually an empty placeholder and not something with independent ontological standing. Thus, on this non-Aristotelian view, either substance ontologically subserves relations or the two are ontologically co-primal.

Third, if we say relations are ontologically primary (relative to substance), then we need to specify what kinds of relations are ontologically primary. As we have seen, there are extremely diverse kinds of relation, so there is a host of decisions to make. Are the ontologically basic relations causal? conceptual? logical? axiological? What about imaginary relations? perceptual relations? the God-world relation? the intra-Trinitarian relations? At this point I shall consider just a single example that has been central in both Western and South Asian philosophical traditions. Common sense seems to demand a distinction between internal relations that constitute a thing (in the sense that Scotland would not be Scotland if it did not lie to the north of England) and external relations that are merely contingent conditions on a thing (in the sense that Scotland might have an extra tree here or there without changing its very nature). Philosophers have battled over whether relations are all ultimately internal or all ultimately external (both contrary to commonsense), or whether individuals have both internal and external relations. This matters a great deal for a religiously relevant relational ontology. For example, some philosophers try to see the world from an omniscient, omnipotent God's-eye point of view, in which there are no chances or coincidences, which suggests that ultimately there is no possibility of external relations, despite the way things look to us. Again, most traditions of Buddhist philosophy in South Asia reject the idea that determinate particulars have "own-being" or independent substance, and hold that things are constituted exhaustively by their relations. This particularly strong form of the "all relations are internal" view was one of the defining intellectual distinctions between Hinduism and Buddhism, which shows how religiously potent this philosophical issue can be.

Finally, a major division in theories of relation bears on strategies for connecting scientific, philosophical, and religious understandings of the world. On the one hand, science studies causal relations, and only causal relations, though not all causal relations. The prospects of interdisciplinary conversation, and thereby of morally relevant consensus, might be enhanced if we could somehow conceive all relations as causal. We saw this benefit in connection with the empiricist approach to relations that treats causal relations as real in order to fit with science while insisting that other relations are mere conceptual attributions made by conscious observers. Perhaps the first part of this approach can be broadened by means of a more inclusive theory of causation that extends well beyond commonsense ideas of causation. This would furnish a basis in the theory of causation for conceptual and value relations, as well as for the physical relations we normally associate with causation. In fact, there are several theories of causation—some ancient and some devised specifically with this modern strategy of enhancing interdisciplinary conversation in mind—which are tuned to register the conceptual and valuational qualities of relations that simple scientific analyses tend to miss. Such causal theories of relation involve stretching concepts beyond commonsense "hitting" but fundamental physics has shown that such commonsense understandings of causation are not feasible. In this instance, therefore, physics and philosophy seem to be pointing in the same direction—toward the need for an enhanced theory of causation to register the diversity of relations that we want to say are real.

On the other hand, some philosophers pay no attention to causes at all in developing theories of relation. Science does not register the value issues that partly inspire us to develop a theory of relation in the first place, so tying a theory to causal relations for the sake of

conversation with science strikes such philosophers as self-defeating. In particular, value relations, conceptual relations, and logical relations do not seem straightforwardly causal, so we may be better off trying to theorize relations by richly registering their qualities through phenomenological analysis (in the tradition of Edmund Husserl and Maurice Merleau-Ponty and others) rather than approaching them through causation. Martin Heidegger's analysis of the relation between being and time in human life is an astonishing exhibition of what this sort of approach can achieve (see Heidegger 1962).

If we are meaningfully to speak of relational ontology, then we will have to take a stand on most or all of these philosophical issues and others that philosophers have debated in connection with relations.

A Proposal

At this point I move from surveying philosophical debates to taking a stand on the issues relevant to a relational ontology. My view on these matters is exploratory and tentative but there are important precedents for it so I do not travel alone. Moreover, the questions are intrinsically interesting and I hope that articulating one hypothesis in whatever detail space permits will help to make more concrete the rather abstract considerations so far discussed. In fact, I will explore an hypothesis not about a single theory of relations but rather about a entire class of theories, paying attention to the theological significance of my hypothesis.

Hypothesis: All Relations are Causal

I appreciate the strategy for dialogue among philosophy, theology, and science just mentioned in connection with a causal theory of relations. Despite the complexities involved, therefore, I propose that all real relations are causal and thus that we should develop a theory of relation by means of a wide-ranging theory of causation that can register the diverse qualities of relations. If a causal account is not possible in a given case, then the word "relation" would be used in a non-literal, honorific sense. The types of relations that could be covered in such a causal theory would be appropriately rich and diverse if the theory of causation were well structured. The theological ramifications of a sound causal theory of relations are quite promising, also, so there should be no reservations from that point of view. I have space here to indicate what would count as a successful theory of causal relation, to mention the major examples of causal theories of relation, to indicate what a causal theory of relations portend for a relational ontology, and to provide some illustrations of how a causal theory of relation might illumine topics of interest to physicists and theologians. In fact, it will turn out that these are *causal theories of relations and entities*, and thus that they support neither relational ontology nor substantivist ontology but both relations and entities equally.

Criteria for an Adequate Causal Theory of Relation

The capacity of relations to embody and convey value means that a satisfactory theory of causation must explain how causes mediate value. The phenomenological approach to relations naturally registers the value dimensions of relations but abstracts these from their physical substratum and, in extreme versions, also from their psychological and social contexts. The theory of causation we need would span all the way from physical interactions to the mediation of value in relations of social, psychological, moral, and spiritual importance.

A useful theory of causation must take account of the varied and puzzling relations treated in physics. This means registering quantum phenomena such as entanglement, measurement, absorption, and mass-energy transfer, all of which render a commonsense "local hitting" theory of causation untenable. Yet the theory of causation must also handle particle collisions as well as the causal interactions between simple macroscopic physical systems such as billiard balls that have always exemplified commonsense causation.

A serviceable theory of causation will honor the diversity of relations in the whole of reality, within and beyond physics. This requires calling on complexity theory to explain how causation between complex entities emerges with structural complexity from the causal relations among their constituent parts. For instance, the fact that societies achieve things must relate to the way the little parts of a society cause things to happen (see Martin's contribution to this volume for a reflection on this), and this in turn has to reach all the way down to the level of physics. This also requires careful handling of the distinction between basic causes and derivative causes. For example, the basic ontological account of causation might be entered at the "lowest" level of physical reality while higher-order instances of causation such as the way human beings move objects in a game of chess might require additional concepts, such as organization or form, to explain how they work. Derivative causes (in this special sense) would have to be handled without depreciating their philosophical and practical importance, which thus avoids careless reductionism. If this is done correctly, the idea of top-down causal relations (see Polkinghorne in this volume, as well as Murphy and Ellis 1996) may take on an honorific, non-literal status, while top-down modes of analysis would remain crucial for understanding complex systems.

Finally, a comprehensive theory of causation should concern itself with classic theological problems. For example, from a theistic point of view, a theory of causation must either treat the God-world relation, including divine action, within the causal theory of relation (as in process metaphysics) or else regard it as an exception and indicate the sense in which "causal relation" can be a meaningful analogy for the God-world relation (as in Thomist metaphysics). Also, a theory of causation should make sense of spiritual experiences. From a specifically Christian point of view, for example, a comprehensive causal theory of relations should provide leverage for understanding relational concepts such as salvation, communion, sanctification, theosis, love, and judgment. From a Buddhist point of view, a comprehensive causal theory of relations should make sense of attachment and enlightenment, the experience of Samadhi and the nurturing of karuna (compassion).

Contemporary philosophical theories of causation typically ignore some of these criteria. There are counterfactual theories, probabilistic theories, psychological-descriptive theories, and a host of other approaches to causation. But these do not satisfy the criteria listed here. A more ontological approach is needed and this requires a species of metaphysical reflection that has been somewhat out of fashion in western philosophy for the last century or more.

Examples of Causal Theories of Relation

There have been important contributions to a causal theory of relation, even in recent years. Five causal theories of relation that might claim to meet these criteria are participation metaphysics (classically in Plato and later in Neoplatonism), *pratītya-samutpāda* metaphysics

(classically in Nagarjuna and the Madhyamaka school of Mahayana Buddhist philosophy), process metaphysics (classically in Alfred North Whitehead), semiosis metaphysics (classically in Charles Sanders Peirce), and implicate-order metaphysics (classically in David Bohm). We can distinguish these views based on how they view entities, contexts, causes, and ultimacy.

Participation metaphysics takes a hylomorphic (matter-form) approach to entities. The form of a thing already expresses its participation in a well-ordered realm of goodness, truth, and beauty. This is the ultimate context for a particular entity, its ontological basis and fundamental cause. Entities participate in this ultimate context by virtue of their form, which Aristotle named the formal cause in an attempt to clarify his teacher Plato's vague use of the concept of participation. This view has little specifically to say about matter, which makes connections with physics difficult, but it does support a powerful link between form and mathematical models for physical processes (Heller's contribution to this volume presupposes a similarly powerful link between mathematics and metaphysical accounts of nature). This view is also excellent for understanding the God-world relation as the presence of goodness, truth, and beauty in the form of everything that exists. John Zizioulas's view interprets all relations as participating in the divine Trinitarian relations using a participation metaphysics (see Zizioulas 1985 and various places in this volume).

Pratītya-samutpāda metaphysics propounds *anatta*, the doctrine that entities have no essence or own-being (*svabhāva*), but rather are agglomerations of relations that arise within the context of preexisting conditions. Context exhaustively determines the character of an entity, which means that any given thing is what it is solely by virtue of its relations with other things. The religious virtues of this view are its stimulation of compassion and its provocation toward non-attachment, which leads to enlightenment, the ultimate state for Buddhists. In a narrow sense, causation does not apply when entities have no own-being; causation is an impression just as own-being is an impression, and both are misleading. Yet *pratītya-samutpāda* does require things to arise, which requires causes. So the Madhyamaka School of Buddhist philosophy also rejects illusionistic skeptcism by insisting on a middle way between the extremes—entities and causes are both real and not real (the doctrine of two truths; see Eckel 1992). This delicate framing of the idea of causation in contexts is quite promising as a framework for making sense of entanglement and other strange relations in quantum physics but difficult as a partner for commonsense causation in the rest of physics and in ordinary experience.

Process metaphysics centralizes the ideas of prehension (sensing or feeling) and concrescence (becoming actual). The basic entities in this view are occasions that prehend other fully actualized entities and respond creatively to become actual themselves through harmonizing everything prehended (concrescence), after which they can influence other entities. The environment is not a spatio-temporal container, in this view, but rather that which can be prehended, which opens up possibilities of non-proximate influences, action at a distance, and the like. In Whitehead's version, the prehended environment always includes God, which conveys a value-optimized vision of possibilities to lure the occasion toward fulfillment (see Whitehead 1978). Relationality in this case is the causal influence made possible by prehension. Challenges for process metaphysics include showing how complex societies of occasions can maintain integrity through the flux of prehension and concrescence, relating the account of causation to fundamental physics, and handling the idea of God as an

entity with the task of maximizing value rather than as the theologically more familiar idea of an omnipotent creator.

Semiosis metaphysics, deriving especially from Peirce, regards the basic entities of reality as signs, which are constituted by their relations to other signs. Each sign stands for another configuration of signs in some way. The flux of signs expresses transformations of meaning, which at one level are mere physical changes, and at a higher level are thoughts. This defines simultaneously a primitive kind of interpretation sufficient to ground value and an ontologically basic kind of causation sufficient to ground the morally laden relations we care most about. The environment is defined as that which conditions interpretation (See Peirce 1991, Corrington 2000). As in process metaphysics, this subordinates space-time to the construable environment, thereby helping to make sense of some of the peculiarities of fundamental physics, including the non-local phenomena of quantum mechanics. Like *pratītya-samutpāda* metaphysics and unlike process metaphysics, the flux of semiosis goes all the way down, ontologically, so that there is no fundamental ontological atomism, and this offers considerable flexibility in dealing with both fundamental physics and crosscultural variation in ontological ideas of reality. Like participation metaphysics, this view supports a concept of transforming engagement through interpretation that has valuational and religious importance.

Implicate-order metaphysics derives from physicist-philosopher Bohm's attempt to show that a deterministic interpretation of quantum mechanics was possible. Bohm developed physicist Louis deBroglie's idea of a pilot wave or quantum potential that directs particles in accordance with the quantum formalism. This meant that particles with definite positions could be taken seriously but it also invoked the idea of a wave-like entity that links objects behind the scenes in ways that ordinary experience does not register. This implicate order is dense with relations and from it emerges the explicate order of conscious experience as a kind of interactive perspective on the whole. Implicate-order metaphysics is especially good for making a place for conscious experience while also suggesting that ultimate reality is a deterministic flow of interactions of which human consciousness registers only a tiny part. Bohm's later metaphysics was profoundly influenced by the philosopher Krishnamurti and by South-Asian and East-Asian metaphysics (see Bohm 1980).

The Import of a Causal Theory of Relation for Relational Ontology

Most of the causal theories just discussed subordinate *both entities and relations* to a causal flux that is ontologically more fundamental. That is, the entities and relations that are so important in human moral and spiritual experience emerge from a complex causal web that underlies every aspect of our experience. I think this is a wiser philosophical approach than the one-sided strategies of either the substantivist ontology or the relational ontology. If the moral downside of substantivist ontology is that we pay insufficient attention to the important relations that morally oblige us, then the equivalent problem with a relational ontology is that it does too little to interfere with our selfish tendency to pay insufficient attention to the intrinsically valuable entities all around us. The symmetry of these theoretical difficulties shows that *we are better off supporting a theory that treats as fully real both entities and relations at the morally and spiritually relevant levels*. A causal theory of relations and entities is just such a metaphysical theory.

Keeping in mind the criteria for an adequate causation-based metaphysics, and acknowledging that I cannot make a case for my view here, I suggest that the semiosis metaphysics may offer the most promising general approach (see Nicolaidis's contribution to this volume). It registers value as naturally as process metaphysics does, which is the best of the rest in that respect. It makes sense of both local and non-local relations in physics as competently as *pratītya-samutpāda* metaphysics does, and these two are significantly better than the alternatives. It harmonizes well with the challenge of causation at many levels of emergent complexity, which is a problem Whitehead worked hard on in his *Process and Reality*. It is adept at handling theological concerns, which has been the great strength of participation metaphysics. It naturally registers the reality of consciousness, which is a strength of implicate-order metaphysics. And it handles logical and conceptual relations far more naturally than most other views. Semiosis metaphysics is also displays the virtues of metaphysical theories of relation that lie outside the causal fold. In particular, in centralizing the idea of interpretation it is particularly well suited for rising to the challenges posed by phenomenological approaches to relationality. In theistic contexts, it can furnish an account of the God-world relation that is inherently causal, interpretative, and value-laden, with the result that divine action is a built-in aspect of the God-world relation, much as it is in the very different schemes of process theology and Thomist metaphysics.

Illustrating the Causal Theory of Relation

Having indicated why I prefer a semiotic theory, I set aside internal battles among causal theories of relations, which are technical debates pursued among a group of specialist philosophers. Of more interest in this context are illustrations of a causal theory of relation at work. My claim is that a causal theory of relation offers advantages for understanding the various relations that we observe and contemplate in the world around us. I mention one example in fundamental physics, one in the commonsense world of human experience, and some in theology.

Explaining Relations in Fundamental Physics

Commonsense "hitting" views of causation are local, in the sense that we can ignore all events beyond a collision in figuring out how the collision itself works. But "hitting" views of causation cannot make sense of the strange relation of quantum entanglement (technically, non-factorizable, multi-particle superposition), which applies in both deterministic and indeterministic versions of quantum mechanics. Entanglement is non-local, which means that it demands analysis in terms of relations between non-contiguous events. The experimental confirmation of entanglement thus marks the demise of commonsense "hitting" theories of causation.

Entanglement is popularly taken to be evidence for a mystical view of action at a distance, and has been a favorite reference point for folk versions of relational ontology that explain how I know in Sydney the very moment when my brother suffers a traumatic accident in London. But such folk theories tend to neglect the fact that entanglement prohibits non-local information transfer, which ruins the ideal of instantaneous mystical knowledge. I infer from the non-informational character of entanglement that it is useless for making sense of paranormal phenomena, if they occur at all. The philosophical force of

entanglement lies not in supporting paranormal knowledge, therefore, but rather in making space-time relations subordinate to causal relations.

That is, as noted above, metaphysically adequate causal theories of relation tend to define spatial and temporal relations in terms of causal relations, not the other way around. On these views, causal interactions are the fundamental reality (e.g. Bohm's implicate order) and space-time contiguity merely one of several (explicate) manifestations of the underlying flux of real causal relations. This is why the causal theories of relation I defend, unlike commonsense "hitting" theories of causation, have no difficulty with entanglement. But they also do not need to be pressed into support of paranormal phenomena. What phenomena actually occur in the world is an empirical question. Making causes more fundamental than space-time relations in fundamental physics provides the flexibility needed to make sense of entanglement but critical observation and analysis of reports of atypical human experiences continue to set strict bounds on this flexibility.

Explaining Relations in the World of Experience

Moving to the commonsense world of toasters and cricket, decisions and friendship, the main challenge for a relational metaphysics is to show how the relations that obtain between macroscopic entities emerge from the world of the very small, where the theory of causation applies most directly. For example, if Joe decides to make toast for his friend while they watch cricket together, there are a host of causal relations involved, from the mechanics of toasters to Joe's mental causation, and from the meaningful cultural phenomenon of a cricket game on television to the considerateness of an affectionate friendship. How do the causal theories of relation I defend make sense of such ordinary yet often morally and aesthetically loaded life events?

Whitehead has led the way in showing how a causal theory at a very small level can be built up into an account of the causal powers of organisms and cultures, but the account is complex, not completely satisfactory (as he himself realized), and somewhat isolated from the details of physics. The atomism of process metaphysics demands a tight theoretical integration of actual occasions with the fermions (matter elementals) and bosons (force elementals) of fundamental physics that has not been achieved and seems most unlikely. Causal theories of relation not dependent on a fundamental ontological atomism might be better placed to account for the diversity of relations in ordinary life. Nevertheless, Whitehead did more than any other modern thinker to show that a causal metaphysics is capable in principle of furnishing the sought-after explanation of Joe's toaster adventures.

There is too little space to run through the details here but the key idea in Whitehead's framework is a society of actual occasions that inherits its determinate character and causal powers from the organization of its constituent parts. This account of macroscopic causes and properties is elegant because it requires only the mechanics of causation—prehension and concrescence—joined with the organizational form of objects to explain their complex behavior. Similar ideas also work for the semiotic theories of causal relations. In other words, there is no need to invoke novel ontological ideas such as top-down causes to explain ordinary life. Developed causal theories such as the process and semiotic views handle the phenomena of intentional causation and consciousness (such as Joe's decision to cook toast) as naturally as they do lower-level mechanical causes (such as the workings of the toaster). The flux of

ordinary causes is constrained and organized in such a way that ordinary causes have complex top-down, bottom-up, and whole-part effects. These effects do not need to be ontologized as top-down causes in an adequate causal theory.

A causal theory of relations and entities of the sort I defend can explain the wealth and diversity of ordinary causal relations far more competently than a commonsense view of causation can explain the world of the small and the emergent world of complexity. An adequate causal theory of relation is also superior to a non-causal theory of relation when it comes to handling the causal rigors of the natural sciences. This expresses the genius of the contemporary creators of causal theories of relation: Peirce, Whitehead, and Bohm developed their metaphysical theories of causation with the sorts of criteria I listed above strongly in mind. They broke away from commonsense causation in just the way required to produce stable causal interpretations of the whole range of relations and entities.

Explaining Relations in Theology

Finally, let us move to the world of theology. The claims of religion pose a fascinating challenge to a causal theory of relations and entities. Consider the idea of communion with God, which is a precious concept in theistic religions. The participation metaphysics is the causal theory of relation that has the longest history here (it is represented especially in this volume by Zizioulas). On that view, communion is in the first instance a matter of our existence. The form and dynamics of existing beings are immediately transparent to the transcendental virtues of goodness, truth, and beauty. This idea of being as communion can be construed as a causal concept but the participation metaphysics does not parse the causal character of being as communion in any detail. All of the theories of relation I have mentioned can accommodate this sort of causal relation but each invokes different ontological categories to convey the sense in which communion with God is causal in and through the being of determinate particulars. Process theism is a partial exception because it treats God as an entity and understands communion through prehension. But this is a matter of process metaphysics narrowing the concept of God; the idea of being (or process) as communion with creativity itself—the God beyond the process God—can still be introduced into a metaphysical scheme richer than process metaphysics.

In the context of specifically Trinitarian Christian theology, the perichoretic relations among the Persons of the Trinity are especially interesting. Once again, the participation metaphysics supports perichoresis without explaining details, whereas a causal theory of relations and entities can be much more specific, so long as the conception of causation is sufficiently generous. The semiotic metaphysics is especially useful for a rational model of the perichoretic interrelations because the semiotic metaphysics naturally handles inherently interpretative relationships engagement and participation that also ontologically constitute individuals.

Is there any type of relation that makes no sense on a causal theory of relation? The usual candidates are logical relations such as identity, entailment, or negation; conceptual relations such as comparison of magnitude, part-whole judgments, or attribution of properties; and metaphysical relations such as non-causal miraculous divine action. Of these, a suitable causal theory of relation (here the semiotic type of theory has special advantages) can handle logical and conceptual relations. Causal theories of relation obviously have great difficulty

with the idea of a God-world relation involving non-causal miraculous divine action. While I am not sure that non-causal divine action is even a coherent notion, it is the case that causal theories of relation of the sort I am defending tend to line up with theologies that rule out the possibility of a specifically non-causal God-world relation. This can be achieved by rejecting supernatural forms of theism (see Tillich 1951, Neville 1968, Kaufman 2004). It can be achieved by treating God as a causal agent similar to other causal agents (see Cobb 1965, Suchocki 1989). It can be secured by adopting varieties of theism in which divine action is causal in character even if the causes involved are not the same as those evident in ordinary experience of the world (see Ellis 1995, Murphy 1995, Russell 1998). This latter approach appears in the Thomistic distinction between secondary (ordinary) causes and the primary (divine) cause; God as primary cause typically operates in and through secondary causation, rather than non-causally.

Conclusion

The practical moral advantages of a relational metaphysics do not require any philosophical work to realize; inspiring rhetoric is enough. It can be life-changing to feel a profound connection to nature or to other people and the practical effects can be geuine. Religion promotes visions of such relationality and routinely achieves the corresponding effects. To think this through philosophically requires considerable effort—and all the more so when we aim to take account of the wide variety of entities and relations that exist in the world, including everything from morally relevant value-laden relations to relations in fundamental physics.

When we do this philosophical work, we are led immediately to wonder whether awarding ontological priority to relations rather than entities has any significant practical advantages over ontologically prioritizing entities over relations. I have argued that both are one-sided philosophical approaches to metaphysics and that we are better off with a causal theory in which both entities and relations emerge within the complex world from out of an ontologically fundamental network of causes. An adequate causal theory of relations and entities unsurprisingly passes well beyond what is normally covered in theories of causation within contemporary philosophy of science. They must in order to register the many levels and kinds of value that we encounter in the entities and relations we study in the sciences and humanities. The major causal theories of relation in the twentieth century were developed in part to satisfy this impulse.

An adequate causal theory of relations and entities establishes a philosophical defense both against careless dismissal of value in the relations we know about but do not notice or ponder very often, and against the sorts of reductionism that cannot acknowledge intrinsic value in entities. In a world where people and even the natural environment seem routinely disposed of as if they have no value, we would do well to understand that our relationships with the plants, animals, and people on the underside of our lifestyles or outside our immediate focus of our attention are causal, value-conveying connections—grounded in the divine life itself. To be true to oneself is to acknowledge this value-laden interconnectedness among entities, and the responsibilities we incur because of it.

Abstract

This paper argues that there is value in a systematic philosophical approach to relations and surveys some of the major issues in the philosophy of relations. Rather than siding with relational ontology over substantivist ontology, however, the paper argues that the best philosophical approaches are causal theories of relation in which both relations and entities take their rise from an ontologically fundamental causal flux. The causal theories of relation and entities discussed here are Neoplatonist participation metaphysics, Buddhist *pratītya-samutpāda* metaphysics, Whitehead's process metaphysics, Peirce's semiotic metaphysics, and Bohm's implicate-order metaphysics, all of which require an approach to causation that extends far beyond commonsense concepts of causation. The paper illustrates the explanatory virtues of causal theories of relation in relation to the realms of fundamental physics, ordinary life, and religious faith.

Key Words

Relations
Relation, Causal Theory of
Metaphysics, Relational
Ontology, Relational
Causation
Entanglement
Fields
Value
Theism
Non-theistic Religions
Buddhism
Christianity
Trinity
God-World Relation
Anatta
Pratītya-samutpāda
Ecology
Social Justice
Neoplatonism
Semiotic Theory
Process Metaphysics
Participation
Peirce, Charles Sanders
Whitehead, Alfred North
Bohm, David
Implicate Order

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