Chapter 1

Introduction

On the Interface of Analytic and Process Philosophy

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> The net result of these [Martin's] papers on Whitehead and Hartshorne is to show that their concerns are much closer to those of contemporary analytic philosophers than is commonly supposed.
> —R. M. Martin, *Whitehead's Categoreal Scheme and Other Papers*

> Now and then I have said, at least to myself, that had I been smarter, I would have made clear long ago how much common ground there is between my way of philosophizing and those more commonly regarded as analytic.
> —Charles Hartshorne, *Hartshorne, Process Philosophy and Theology*

> Whitehead himself was first and foremost a philosopher, as authentically so as Wilfrid Sellars, Willard Quine, Saul Kripke, Arthur Danto, Donald Davidson, or any other leading figure today. Even the slightest perusal of his writings will suggest this to the harshest and most suspicious critic.
> —George R. Lucas Jr., *The Rehabilitation of Whitehead*

This book is dedicated to exploring, in a variety of ways, the complex and largely neglected relationship between two twentieth century philosophical traditions, conventionally understood as "analytic" and "process" philosophy, which have been widely, but I think rather mistakenly, viewed as radically disparate and disconnected. I submit that such exploration is timely, contributes

to an emerging sense of the relative continuity or seamlessness of contemporary philosophical developments among some historiographers of ideas, and most important, illustrates the very real potential for advancing a variety of research programs within both traditions.

The project envisioned here is timely for reasons connected with the emergence of a mood of self-reflection in both traditions. Recently, analytic philosophers have become increasingly self-reflective about the origins, historical trajectories, and status of the analytic philosophical tradition—a set of concerns that runs both implicitly and explicitly throughout this book. This is surely, in part, due to recent critiques of the analytic tradition from the hands of Alasdair MacIntyre, Richard Rorty, Stanley Rosen, Hao Wang, and others, as well as, indeed, the very emergence of such vocabulary as "postanalytic philosophy."[1] Perhaps of equal importance, however, has been the appearance of Michael Dumett's provocative essay on *The Origins of Analytic Philosophy*,[2] which has renewed the debate about the very nature of the analytic enterprise and about those who may be said to be properly engaged in its practice (see discussion of Dummett below). On the other hand, a number of contemporary process philosophers have recently turned explicit attention to the relationship between the two traditions. These efforts include contributor George R. Lucas Jr.'s *The Rehabilitation of Whitehead*, notably subtitled *An Analytic and Historical Assessment of Process Philosophy*, and Daniel Dombrowski's recent book on *Analytic Theism, Hartshorne, and the Concept of God*.[3] The present work continues with this self-reflective preoccupation, but does so by actually engaging a number of leading contemporary analytic as well as leading process philosophers in deliberation on philosophical topics of common interest.

Some recent work by historiographers of twentieth-century philosophy has been quietly dismantling the rather widespread notion that important contemporary philosophical movements have somehow emerged in compartmentalized, well-separated fashions. An important case in point resides in the recently published *Cambridge Companion to Husserl*, which asserts as its main unifying theme that "the so-called rift between analytic and continental philosophy emerges as an artificial construct."[4] The situation with the thought of A. N. Whitehead and various philosophical projects aligned with the "Peirce-Whitehead-Hartshorne axis" of process philosophy is, I submit, somewhat similar to that of Husserl and some members of the recent continental tradition vis-à-vis the analytic. While the entire anthology might be regarded as warrant for this point, I mention here two quick items favoring this contention to show its initial plausibility: (1) A careful examination of the formative period of Cambridge analytic philosophy, especially apparent in, say, the heyday of C. D. Broad's work in philosophy of science (circa 1914–1923), shows the indelible imprint of Whitehead's influence.[5] The English-speaking

philosophical literature of this period abounds with references to "Extensive Abstraction," "Percipient Event," "Cogredience," and other Whiteheadian constructions. (2) Contributor John W. Lango has long argued that the Whitehead of "Mediterranean clarity" (Russell's term) found in *Principia Mathematica* is very much present in the mature speculative system of *Process and Reality*.[6] Apropos of Lango's thesis, it is often ignored that Russell himself eventually confessed that Whitehead was able to show him "at last" how a mathematical logician might make sense of a "vague and higgledy-piggledy world" of process.[7] In effect, from the point of view of detailed and cautious historiography, the emergence of major contemporary philosophical movements has been a far more *seamless* affair than the hastily generalized, diremptive perceptions of those movements would have us believe. The current project on *Process and Analysis* is dedicated to making contributions to this "seamless sensibility."

The plan for this introductory essay is to do the following things. First, I want to clarify the notions of process and analytic philosophy as frames of reference; second, I want to discuss each of the ensuing essays and some of the general literature that addresses the two traditions—in course, making connections and pointing out various "intersections" of concern; and, third, I want to address the notion of postanalytic philosophy with a particular view toward prospects for the *survival* of both the spirit of analytical inquiry and the quests of process metaphysics.

Notions of Analytic and Process Philosophy

In any purported comparison of philosophical traditions, it is helpful at the outset to get clear about the frame of reference for the traditions in question. This is easier to do for the notion of "process" philosophy than it is for the notion of "analytic" philosophy. By "process philosophy" I shall adopt Nicholas Rescher's broad definition: "Process philosophers . . . are those for whom temporality, activity, and change—of alteration, striving, passage, and novelty-emergence—are the *cardinal* factors in our understanding of the real." This means that process philosophy has a general *doctrinal* content in terms of which a given practitioner might be classified.[8] As such, and as Rescher further notes, process philosophy has a long, venerable history stretching back to Heraclitus, and, accordingly, transcends such important contemporary exemplars as A. N. Whitehead and Charles Hartshorne. Notwithstanding, the work of Whitehead and Hartshorne has been so deeply influential for contemporary thinkers concerned with the "processual nature of the real" that they merit pointed mention in any definition of the label "process philosophy." The very fact that Professor Rescher would need to caution his readers not to *identify* process philosophy with particular *thinkers*

(i.e., Whitehead and Hartshorne) bears witness to their enormous influence. Thus, I have not hesitated to employ their names in the very title of this book. The situation is rather different in the case of analytic philosophy. Here it seems to me that any *doctrinal* criterion for the classification is immediately untenable. For "analytic" philosophers hold all sorts of metaphysical, antimetaphysical, epistemological, meta-ethical, ethical, and other views, covering an extremely wide spectrum of opinion. Even the notion of the analytic philosopher as one who embraces "the linguistic turn" is problematic, especially if this is defined in Dummett's way.

In Dummett's book on the origins of analysis, the thesis is put forth that the very essence of the analytic tradition is found in the idea (traced back to Frege) that philosophy's task is an account of thought, an account that must be and *can only* be given in terms of an account of language. All thought is mediated through language, and thus the philosophy of language is the fountain of all genuinely philosophical activity. If this be the criterion in terms of which a philosopher should be deemed "analytic," then it could be argued that a number of philosophers counted by nearly everyone as "paradigm case" analytic philosophers are in fact not so. Thus, it has been argued that Russell[9] hardly counts as an "analytic" philosopher on Dummett's criterion, for Russell's career-long interests were primarily ontological—he wished "to understand the world"—and the effect of his temporary conversion to the Tractarian Wittgenstein's view that logic and mathematics are at bottom *linguistic* phenomena was to give up the pursuit of logicomathematical philosophy as it, so conceived, offered no help in understanding the world. Morever, Dummett's criterion appears to entail that only philosophers of a nonrealist persuasion can be deemed "analytic" philosophers. Thus, not only Russell, but important philosophers such as William P. Alston, Alvin Plantinga, and John Searle (among numerous others)—universally regarded as analytic philosophers—ought not to be so regarded. This seems to be a plain *reductio* on Dummett's position. For these reasons (among others), I shall not adopt the Dummett criterion.

At the opposite end of the spectrum is Dagfinn Føllesdal's view (see RAP, chapter 1). Prof. Føllesdal argues that, not only is it mistaken to characterize analytic philosophy in terms of adherence to particular philosophical doctrines or even adherence to the linguistic turn, it is also mistaken to cast it as an essentially methodological movement concerned with techniques of logic, linguistic, or conceptual analysis. Even though philosophers regarded as quintessentially analytic have often been preoccupied with methodological technique, there is no uniform agreement on which methodologies are the really useful or sound ones. Instead, what characterizes all analytic philosophy is an *approach to philosophical problems that emphasizes justification and argument* (RAP 4–14). Thus, says Føllesdal, Aquinas and Husserl may be

viewed as standing more or less in the analytic tradition, while, say, Heidegger and Derrida cannot be (RAP 12).

To some degree I am sympathetic to this point of view for it has the virtue of including philosophers who are caught up in the recognizable concerns of the analytic tradition and whose widespread exclusion from the conventional "canon" seems arbitrary. Why, for example, should the Husserl of the *Logische Untersuchungen*—a work so concerned with issues in the philosophy of logic that animated both Bolzano and Frege—be excluded or forgotten (as he is on occasion)? Moreover, Føllesdal's contention that any doctrinal, including and especially ontological claims, criterion will fail seems to me to be clearly correct (as suggested above). Consider just the case of Wittgenstein. While the Wittgenstein of the *Tractatus* can be reasonably interpreted as offering an atomistic ontology, what exactly are the "ontological claims" of the *Philosophical Investigations*? Certainly the conventional view is that Wittgenstein makes no such claims at all in the *Investigations*. And Henry Staten[10] has argued carefully for the interesting thesis that Wittgenstein's own linguistic *Ver-wendung* ("use" of language as a turning away from normal usage) and the "zigzag" structure of his writing in the *Investigations* can be viewed as "deconstructive syntax," closely aligned to Derrida's project of deconstructing the very idea of "the form of an entity," thus yielding a purported obliteration of ontology. In light of this, if we were to suggest some set of ontological claims as characteristic of the analytic tradition, then the later Wittgenstein stands outside that tradition, contrary to virtually universal presumption.

On the other hand, it would seem that Føllesdal's criterion is *too* broad. To exclude only Heidegger, Derrida, and a few other "radically subversive" philosophers seems extreme. And even these few exclusions might be challenged (on Føllsdal's criterion), as I recently encountered, for example, a reviewer describing a new reading of Heidegger as so concerned with justification and the logic of his position in *Sein und Zeit* that he might be rightfully regarded as a virtual "Betrand Russell in *lederhosen*"![11]

In addition, it seems to me that Føllesdal's position suffers from a tacit conflation between prescriptive and descriptive notions of the analytic tradition. The prescriptive nature of his criterion is clearly betrayed when he states that, "whether one is an analytic philosopher depends on what importance one ascribes to argument and justification . . . Aristotle, Descartes, as well as a large number of other *truly great* philosophers are analytic philosophers. The way I have defined analytic philosophy, this is almost a tautology for me" (RAP 14, my italics). This forgets that the term "analytic philosophy" has its cultural meaning because of its actual historical usage. In other words, there ought to be some concern with the historically grounded descriptive sense of a term when considering questions of appropriate definition. I thus

concur with P. M. S. Hacker when he states that, "If the term 'analytic philosophy' is to be a useful classificatory term, then it must do more work than merely to distinguish mainstream Western philosophy from the reflections of philosophical sages or prophets" (RAP 52).[12]

I think it wiser to view the notion of analytic philosophy as a "loose" or "soft" descriptive one, which must include both the concern with *argument and justification* and with a *variety* of logical, linguistic, and concept-analytic methodologies. Contrary to Føllesdal, it seems to me a rather plain historical fact that concern with philosophic method, linguistic, and logical tools has permeated this tradition from G. E. Moore's 1903 papers to its contemporary practice, and that this concern is the key, even if vague, organizing criterion exemplified in actual usage. One need not pick a particular analytic methodology as definitive if "analysis" be construed as a soft historical description.

With this soft criterion in mind, I want to suggest that analytic and process philosophy, especially as the latter has been developed by Whitehead, Hartshorne, and at least some of their followers, are not at all disjoined or disparate, but share some substantial common concerns, vocabulary, methodological predilections, and historical trajectories as well as profound differences. The relationship is in fact many-faceted and richly complex. *Indeed, the whole point of this anthology is to begin serious and urgently needed conversation about just this complexity, that is, the implicit and explicit commonalities and disaffections between the two traditions.*

Let me clarify my meaning by discussing a variety of rubrics under which the "interface" between the analytic and process traditions might be understood. These include the following: (1) analytic philosophers who have pursued ideas and theses of process philosophy, (2) implicit analytic themes in the philosophy of A. N. Whitehead, (3) explicit and implicit analytic themes in the philosophy of Charles Hartshorne, and (4) other process philosophers who have used methods or treated work of analytic philosophers. In course, I will provide the reader with a basic orientation to the ensuing essays, will draw various lines of connection, and will offer a general tour of the relevant literature. My aim is to be reasonably thorough in such a tour, which, to my knowledge, exists nowhere else in the critical literature.

Before I get to this task, however, I want to issue some important caveats that more properly contextualize the entire project. My own view of process philosophy is that it is attractive, in part, because it is an extremely global and accommodating perspective. Its purview is sweeping. As Nicholas Rescher has captured the point vividly in a recent essay:[13]

> The fact is that there is nothing inherently one-sided about process philosophy. On the contrary, it is very much of a broad church—a large-scale project that has affinities and involvements across the entire board of philosophical concerns.

Indeed, there is much in the continental philosophical tradition—obviously the work of Bergson, but Nietzsche, Husserl (especially *The Phenomenology of Internal Time Consciousness* and the later "existentialist turn" *Krisis*), Heidegger, and especially Berdyaev and Merleau-Ponty come to mind—which is congenial both doctrinally and methodologically to process thought along the Peirce-Whitehead-Hartshorne axis. There is in fact a bourgeoning literature on this comparative issue.[13] Moreover, there are at least two reasons why the constructive interface between the process and analytic traditions has been largely missed, and why therefore many have seen process thought as more akin to continental projects than analytic ones: First, for many, the broad scope of the analytic tradition has not been recognized or kept in mind, while, on the other hand, explicitly antimetaphysical "linguistic" philosophy of later Wittgensteinian inspiration has been more or less identified with analytic philosophy. On such assumptions, process and analytic philosophy have been glibly and superficially viewed as "oil and water." Second, as Rescher has pointed out,[15] some of the leading figures in the analytic tradition—F. P. Ramsey, Quine, and P. F. Strawson, for instance—have held "antiprocess" metaphysical views due in considerable measure to the influence of "tenseless" logical theory on their picture of the world. As the proceeding discussion in this Introduction and especially chapter 11 makes plain, however, any identification of anti-process logical theory and metaphysics with analytic philosophy is a much too restrictive view of that tradition as philosophers and logicians from Hintikka to A. N. Prior have held just the opposite set of convictions both in metaphysics and logical theory. At any rate, readers must be warned that in making a positive case for the confluence of the analytic and process traditions, I am neither asserting that process philosophy stands *against* the continental tradition in a predominant or clearly discernible fashion nor that process philosophers are never at odds with analytic colleagues (far be it the case!). Such views would seem to me to glibly generalize and grossly overlook the complexity of all the traditions in question. Rather, the emphasis here is to focus on that constructive confluence which has been almost completely ignored.

Analytic Philosophers on Process Thought

While I think it quite true to say that process philosophy has been marginalized, ignored, and/or misunderstood by a majority of analytic philosophers, it is by no means the case that it has been neglected by all. Some philosophers, whose methodological orientations are "analytic" by any standard and who have strong interests in formal and philosophical logic, have in fact taken a keen and sustained interest in the philosophies of Whitehead and Hartshorne. I have in mind such thinkers as the logicians Frederic Fitch, H. G. Hubbeling, and Richard M. Martin, and (Hartshorne's students) Bowman L. Clarke, Lucio Chiarviglio, and Norman M. Martin.[16] William P. Alston, also

Hartshorne's student (whose 1951 University of Chicago Ph.D. dissertation treated the topic of Whitehead and internal relations), has retained at least a measure of constructive interest as is evidenced by his important discussion of Hartshorne's philosophical theology in "Hartshorne and Aquinas: Toward a Via Media."[17] In addition, Hartshorne's defense of his famous modally formalized version of the ontological argument, as well as his enormous career long effort at thinking through the problems of philosophical theology with "exactitude, logical rigor" (MVG vii), has elicited wide discussion among analytic philosophers of religion (for bibliography see notes 16 and 30 in this Introduction and notes to chapters 9–11).

Still others have taken a serious and sympathetic interest in some basic *ideas and theses* of process philosophy (e.g., the objectivity of temporal change, theses of event ontology, etc.), accompanied by either lesser concern with adjudicating the writings of major process thinkers (such as Whitehead and Hartshorne) or considerable to extensive independence from such thinkers. Here I would include, among others, the distinguished philosophers R. M. Gale, Jaako Hintitkka, J. R. Lucas, Thomas Nagel, Karl Popper, A. N. Prior, Wilfrid Sellars, Robert Kane, and Nicholas Rescher.[18, 19] Moreover, it is important in this context to mention that G. H. von Wright has produced an interesting argument for quanta of temporal becoming in his Eddington Lecture on Time, Change and Contradiction. He has also come to agree explicitly with "the kinds of points" that Hartshorne has made against his earlier espousal of a Humean doctrine of external relations in *The Logical Problem of Induction* (for an explication of this critique see below), although he does not hold that the Whitehead-Hartshorne approach resolves the essentially epistemological quandry raised by the problem of induction.[20] And, in an important doctoral thesis, written under Rescher's guidance at the University of Pittsburgh entitled "Towards an Ontology of Process," Johanna Seibt has produced a protacted case for the logical incoherence of standard substance ontologies.[21]

Professor Rescher—the eminent logician, philosopher of science, analytic metaphysician and intellectual historian—has long held the notion that a process conceptuality, as contrasted with that of substance, has sweeping problem-solving utility. His published interest in process thought reaches as far back as an article on "The Revolt Against Process" and culminates in his sustained treatment recently published as *Process Metaphysics* (see previous references in note 18). I am privileged to have his kind permission to reprint here an essay on "The Promise of Process Philosophy,"[22] which presents much of what he does in the recent volume on process thought, but in a more compressed and panoramic form.

Note that this essay contains a section on Process Semantics. This represents a clear example of the sort of "thinking at the intersection" that this

anthology is (in part) devoted to displaying and exploring. Rescher shows how a process conceptuality can be helpful in resolving some semantical difficulties generated by the standard subject-predicate or object-attribute logic (the classical logic of quantification found in the work of, say, Russell and Quine). To mention briefly just one advantage of process semantics, note that "action sentences" that contain conjunctions of predicates can be treated so that a *unit* of action can be properly characterized by *both* predicates. Thus, "Y spoke slowly and thoughtfully" does not become the disjointed "Y spoke slowly and Y spoke thoughtfully," as in classical logic, but rather, in the (partial) process rendition: (∃x) (x is an act of speaking and x is performed by Y and x is a slow action and x is a thoughtful action.) In this rendition, there is no unclarity about the fact that the *unit* of action in question is *both* slow and thoughtful. This kind of "intersection thinking" benefits both traditions. As indicated, it appears to resolve (or surely *helps* in resolving) a much-discussed problem among analytic philosophers, pointedly issued by Donald Davidson, concerning the standard logic-modeling of action sentences. On the other hand, it contributes to a more coherent philosophical package for the process conceptuality, since it avoids the embarrassment of conducting reasoning with a substance semantics that rubs against the grain of a process ontology.

In addition to Professor Rescher's essay, I am privileged to include his colleague Richard M. Gale's essay on "Disanalogies Between Space and Time." Perhaps nothing is more central to process thought than the thesis that the tensed modalities, that is, the notions of past, present, and future—McTaggart's A-Series—are both objectively and extralinguistically real. Professor Gale's classic treatise on *The Language of Time* put forth an important case for this "process" position. (Perhaps this is overstating, but at the least there is in this work a defense of a species of the so-called A-Theory of Time in which tensed language is to be regarded, with process philosophers, as semantically objective.) In course, he presented powerful objections to various arguments from "linguistic reduction" against the A-Theory championed by J. J. C. Smart and others.

This objection runs roughly as follows: For the linguistic reductionist, all tensed language is logically reducible to tenseless, token-reflexive or indexical expressions (expressions referring to themselves). This is purportedly shown by the fact that for any sentential formula involving tense, for example, "P is now an event of the past," we can substitute the "equivalent" expression "P is earlier than this utterance." Since we can always use the tense-neutral verb "*is*" while speaking of past, present, and future events, yet without employing the language of "past," "present," or "future," it seems that it is confused to say that an event changes with respect to pastness, presentness, and futurity, as if these were genuine (ontological) properties of events and not simply ways of referring to events. Gale argues, however, that

such a *reduction* is confused because it ignores profound disanalogies between the spatial and temporal orders. Consider the following analysans for each A-series analysandum:

Analysandum	*Analysans*
X is now present.	X is simultaneous with this token.
X is now past.	X is earlier than this token.
X is now future.	X is later than this token.

Gale comments: "While it is correct to say that 'now' as well as 'this' in the *analysans* of the EP [Russell's egocentric particular] and TRI [token-reflexive] analyses, function as temporal indicators or demonstratives, it would be wrong to say that they pick out, select, or choose a moment of time."[23] In other words, it would be wrong for the linguistic reductionist to make such a claim because "this" is selective on the spatial order, but not on the temporal order. When we wish to point out something in the spatial field of vision we point to the intended object and say "this." And we could do so for any object within the visual spatial field, because things *coexist* on the spatial order. But there is no temporal field of vision analogous to the spatial order of coexistents. We cannot point to some distant future event and utter "this" with the same resulting clear-cut reference.

In his contribution to this volume, Gale continues with this general motif of temporal-spatial disanalogies, but takes it in new directions and provides interesting responses to new objections. Eschewing the naive (and absurd) concept of temporal becoming embodied in the notion that "now" can shift to a later time (a view not held by Whitehead or Hartshorne incidentally[24]), he aims to uncover commitments to modal disanalogies between temporal and spatial-indexical perspectives deeply embedded in our concepts of agency and objectivity.

While Gale's essay represents one important approach within the tradition of "analyzing our ordinary conceptual scheme"—and is thus aligned with P. F. Strawson's notion of descriptive metaphysics—the philosophy of celebrated contributor W. V. O. Quine represents by contrast an effort at revisionary metaphysics grounded in natural science and guided (or constrained) by the bound variables of quantificational logic. As interpreted by Leemon McHenry in his contribution on "Quine and Whitehead," there are important and neglected similarities between Quine's project and especially the A. N. Whitehead of the middle "philosophy of physics" period culminating in the *Enquiry Concerning the Principles of Natural Knowledge*: Both philosophers are revisionary metaphysicians of a decidedly naturalist bent who look to the empirical sciences as well as formal logic for construction of an ontology of *events*. While McHenry wonders at the outset whether Quine

himself would find such a comparison "surprising," Quine responds with an extraordinary affirmation of the comparison: "McHenry ascribes to White-head a dualistic ontology of individuals and properties, and to me a monistic ontology of individuals, including classes. I protest that *my ontology is as dualistic as Whitehead's, and indeed is the same as his* except that classes have a clean-cut principle of individuation, namely, coextensiveness whereas properties have none" (my italics). Quine's guarded ontological requirement for individuation—"no entity without identity"—has moved him to reject the Whitehead-Russell notion of properties in favor of classes; a career-long rejection that he recalls as early as his undergraduate assimilation of *Principia Mathematica*. Nonetheless, the general connections with the "middle" Whitehead are striking, and, so far as I am aware, previously unnoticed.

Quine's relationship to Hartshorne's specific projects (and, by a large measure of implication, the later Whitehead's) is, of course, quite different. In important ways, Hartshorne's and Quine's views could not be more disagreeable. In a brief, but quite interesting, article on Quine in CAP, Hartshorne objects to the following doctrines, which are fundamental to Quine's philosophy: reductionist physicalism, a Humean doctrine of causality and external relations, the inclination toward determinism and a compatibilist notion of freedom, a timeless doctrine of truth (including *contingent* truth), holistic or unqualified empiricism (which Hartshorne suggests is itself a *reductio* on Quine's set theory), a concomitant *sharp* rejection of the *a priori*-empirical and analytic-synthetic distinction, agnosticism or atheism, and perhaps most key, a rejection of the intelligibility of *de re* modality. (This last item is the subject of an important essay in this volume by George L. Goodwin, which I discuss below.) Despite all this, it would be wrong to suggest that, regarding Quine and Hartshorne (and thus the later Whitehead in some considerable measure), "never the twain shall meet." Hartshorne himself recognizes this (CAP 245–246):

> Quine's realism, like Popper's, is congenial to a process philosopher. And his "qualified nominalism" is more congenial to my partly Peircean view of this issue than Whitehead's eternal-objects theory. Also, the rejection of an absolute mind-matter dualism is common ground with process philosophers generally.

Apropos of McHenry's contribution, I would add that Quine and Hartshorne are generally united in their acceptance of event ontology over an ontology of substances; indeed, Quine's bottom-line objection to Kripke's semantics for modal logic concerns its interpretation as entangled in "Aristotelian essentialism," an interpretation averted by Goodwin's suppliance of a Hartshornean event ontological underpinning.

Analytic Themes in the Philosophy of Whitehead

As the above discussion suggests, it is quite possible to see Whitehead's philosophy as containing (largely unrecognized) connections with specific contentions and projects of recent analytic philosophers. This represents George R. Lucas Jr.'s preoccupation in "Analytic and Post-Analytic Themes in Whitehead's Metaphysics" found in his *The Rehabilitation of Whitehead: An Analytic and Historical Assessment of Process Philosophy* (RW). As brief examples of these connections, consider the following: Lucas notes perceptively that Whitehead's position on logical consistency and his rejection of "Humean assumptions about the disconnectedness of discrete objects or formal descriptive principles, such as 'laws' of nature" (RW 142) leads precisely to Hilary Putnam's (1975) analysis of and distinction between "conceivability" and "logical possibility," and consequently to Putnam's treatment of related problems in modal logic and possible worlds semantics concerning essentialism and transworld identity.[25] Or consider the striking similarity between Whitehead's (dispersed) statements on the issue of personal identity over time and Derek Parfit's recent doctrine propounded in *Reasons and Persons*:[26] Personal identity is a matter of "sustained intentionality coordinated from moment to moment (and hence, both an on-going task and achievement of individual agency) rather than a simple substantial reference to the location, properties, and causal activity of the physical body alone" (RW 146).

In his specific contribution to this volume, Lucas makes the case for at least two interesting and substantive connections between Whitehead and Wittgenstein that, to my knowledge, have never been proposed previously:

(1) At a superficial level, it would seem that the cosmology of PR represents just the sort of "senseless" systematic theory "that most disciples of Wittgenstein would surely regard as an alien and unintelligible form of *Sprachspiel*." However, a deeper reading of Whitehead suggests that his elaborate categoreal scheme is not to be taken as a coarsely literal "representation" of reality (a *Vorstellung*), but is rather a heuristic model (a *bildlichen Darstellung*) that illustrates or shows aspects of the real which cannot be strictly "said." As such the scheme functions much like the theoretical physicist's heuristic "picture," for example, as in a quantum mechanical account of the atom, which is most useful for understanding atomic behavior, but certainly does not yield a "sensory image" that is to be taken as literal description. Lucas goes on to suggest that, in particular, Whitehead's "picture" of such matters as time, temporal process, and causality is far more illuminating and satisfying than alternative accounts, and may be regarded as a substantial gloss on Wittgenstein's rejection of the "passage of time" and his call for describing time lapse in terms of process (see *Tractatus* 6.361). (2) Lucas also

develops an interpretation of the mature Whitehead which puts him in the "ironic" and rather skeptical camp of the later Wittgenstein and G. E. Moore as contrasted with Frege and the early Whitehead and Russell of *Principia Mathematica*. Simply put, Whitehead rejects the central idea of "modernism," of *Aufklärung*, namely, that reason is entirely self-sufficient for the purposes of perfecting human knowledge and progress. There is no certainty for us, no bedrock logical foundation for mathematics, and no escape from final semantical ineffability. If this be thought implausible as an interpretation of Whitehead, think only of his (Whitehead's) crisp, starkly anti-Cartesian declarlation: "Philosophy has been misled by the example of mathematics" (PR 8).

Such a declaration should be taken, of course, in its intended *epistemic* context. Whitehead was attempting here to thwart any notion that philosophy can proceed in an arrogantly deductive manner which entertains the pretense of providing apodictic "proofs." However, he clearly did not intend to regard mathematics as providing no important clues to, on Lucas' reading, the best heuristic "picture"of which we are capable (among other sources on this score see "Mathematics and the Good," ESP, 97–113). The case for this is made by James Bradley in his quite original interpretive essay, which focuses on Whitehead's critical reflection on the Frege-Russell notion of the propositional function. Distinguishing between weak and strong theories of existence, Bradley argues that the Fregean propositional function analysis leads to the "weak" theoretical notion that "existence" ought to be exhaustively viewed as instantiation of a class: x exists if 'p of x' can be existentially quantified. This analysis, by definition, dismisses the search for the self-explanatory ultimate, which is the aim of speculative philosophy as exemplified by Whitehead. The strong theorist of existence is unsatisfied with the existentially quantified function and wants to ask, Why is there that which answers a description? According to Bradley, Whitehead takes up the cause of the strong theory by generalizing the modern Fregean concept of natural numbers into the serial connective $n + 1$. (That is to say, a natural number is that which exists necessarily in a series and is that which satisfies the function $n + 1$.) This "successor operator" $n + 1$ is the very model for creativity, and accordingly expresses the "category of the Ultimate," applicable to the entire domain of mathematical entities and in fact any entity whatsoever (including God). Note that all the key characteristics of Whiteheadian actual occasions are abstractly present in the serial function: uniqueness or novelty, intrinsic connection to others, cumulativeness, advance, and synthetic activity. In contrast to G. R. Lucas, however, Bradley's interpretation rejects the notion that Whiteheadian analysis leaves us with "semantical ineffability." Says Bradley, "The concrete, serial act or occasion is rationally and intelligibly describable through and through precisely because it is an ultimate and irreducible given which is intrinsically rule-governed." In the end, for Bradley, the great significance of

Whitehead's serial function analysis is that it represents a truly important effort at fusing the analytical tradition of functional analysis with the speculative effort of reaching intellectual satisfaction, and it does so without succumbing either to pan-rationalism or operationalism.

Yet another and quite distinctive connection between Whitehead and current issues in analytic metaphysics is made by John Lango. In the past decade or so, a number of analytic philosophers have been hard at work on the traditional metaphysical issue of universals and particulars (see footnote 1 of Lango's essay for a brief bibliography). Among these, Keith Campbell's 1990 treatise on *Abstract Particulars* has engendered considerable discussion and has re-opened the debate on the nature of properties, tropes, and relations. Of special interest to Lango is Campbell's argument to the effect that there can be no instances of relational particulars. Whitehead's metaphysics, cited but not pursued by Campbell at a couple of junctures, is especially relevant here as the basic notion of prehension can be interpreted as just such an example of a relational particular to which Campbell objects.

On Campbell's theory, a prehension can be viewed in such a way that it is no instance of a particular because a prehenson has a "foundation" in a nonrelational particular, namely, the prehending subject, for example, the actual occasion. In effect, the relation of prehension is *supervenient* on the actual occasion, and does not stand as a particular fact somehow outside the prehending subject and its objective datum. Just as we might say that two sheets of paper have the same color, namely, whiteness, and this relational fact of sameness is supervenient on the sheets, we can likewise say that the prehension-relation is a supervenient property of the prehending subject—it cannot be a prehensive subject and fail to have the prehensive relation. Ingeniously, Lango constructs a supervenience thwarting counterexample by analyzing a social series of Whiteheadian occasions where novelty is deficient (as in electronic occasions). Consider occasions A, B, C, and D, where A and B are contemporaries, C is subsequent to A and B, and D subsequent to C. It is logically possible that:

> D might have had a different simple physical feeling of C, but with exactly the same subjective forms. Here is how: Instead of feeling C's feeling of *A's* feeling of the defining characteristic, D might have felt B's feeling of it. But we have seen above that the subjective form of *B's* feeling is exactly the same as the subjective form of A's feeling, and thus that the subjective forms of C's two feelings are (by re-enaction) exactly the same. Now, if D were to have felt C's feeling of B's feeling of the defining characteristic, there would also have been the re-enaction of exactly the same subjective form. Therefore, the subjective form of this simple physical feeling that D *might*

have had is exactly the same as the subjective form of the simple physical feeling that D *does* have.

The fact that D could have had an alternative physical feeling, that is, D's prehensions could have had alternative objective data (C's feeling of A or C's feeling of B), entails that the prehension-relation is *not* supervenient on D; the prehension-relation that D does have is thus a *particular* fact of relatedness. Thus, if this counterexample is correct, Whitehead's doctrine of prehension and social occasions provides a powerful challenge to any ontology of nonrelational particulars such as that proposed by Campbell.

There is indeed a rich mine of comparative philosophy here which has only begun to be explored. *If* given a fair hearing, efforts in this vein, such as Bradley's, Griffin's (see discussion below), Lango's, and Lucas's may well have obvious and profound benefits, including renewed interest in and access to bodies of philosophical literature once thought to be utterly removed from one another. In light of such thematic "connections" research, analytic philosophers might be more inclined to read Whitehead and to find surprising suggestions for new approaches to philosophic issues (Lango's case against the untenability of relational particulars is a perfect example). Likewise, process thinkers might be more inclined to consult analytic philosophers and to encounter new tools for the clarification, refinement, and criticism of process theses.

Analytic Themes in the Philosophy of Hartshorne

Whitehead's monumental *Process and Reality* was published just one year before Moritz Schlick's address on "The Future of Philosophy" before the 1930 World Congress of Philosophy at Oxford. Thus, Whitehead's mature philosophical ideas were being presented just as the era of antispeculative positivism was about to take center stage. By contrast, at roughly the same time, Charles Hartshorne's philosophical career was beginning its well-browned post-Ph.D. phase when he was appointed Assistant Professor of Philosophy at The University of Chicago in 1927. Unlike Whitehead, Hartshorne has thus lived through the gamut of the "age of analysis" in its Russell-Moore-Tractarian Wittgenstein, positivist, ordinary language/conceptual analysis, and now "pluralist" phases, and has done so with rather full cognizance, noting on a number of occasions his own sense of "common ground" with the analytic tradition (e.g., CSPM xiv). Thus, in Hartshorne's case, it is possible to draw on a number of *explicit* discussions of analytic philosophers from Russell and Moore to Ayer and Carnap to Wittgenstein, Strawson, Ryle, Quine, Sellars, and von Wright.[27] In an essay published in the Eugene Peters memorial *Festschrift*,[28] I attempted to chart and explicate Hartshorne's relation to various phases of the

analytic tradition by working through his literary corpus with an eye toward published statements on analytic philosophers and issues of concern to analytic philosophers. My findings in that paper were that Hartshorne is "at the least a 'para-traveler' with the analytic tradition, who has employed its tools and some of its vocabulary, while keeping a critical distance, especially, for example, from any claims of methodological definitiveness on the part of some proponents of ordinary language philosophy and from certain dogmas such as verificationism and falsificationism."[29]

Just as G. R. Lucas and others have suggested that Whitehead's philosophy has significance for some recent projects in analytic philosophy, I would also submit that Hartshorne's work does as well. In addition to his much-discussed formalization of the ontological argument into modern modal logical notation (which has, for one, rather consciously inspired the defense of a closely similar modal version in the work of Robert Merrihew Adams[30]), Hartshorne has made some unique and still powerful technical contributions to such issues as the logic of future tense propositions, the logic of relations, genetic/strict identity theory, and metalogical considerations on operator semantics.[31] To give substance to these claims, let me briefly expand upon the first and last of these items (a more comprehensive discussion of the first item is found in the essay contributed to this volume by me and Donald Viney, while the third item is explored in George Goodwin's essay [chapter 9, section on "Individual Identity"]):

1. A good example of Hartshorne's skill at the logical analysis of language is afforded by his paper on "The Meaning of 'Is Going to Be,'" published in *Mind*,[32] a major forum for contemporary analytic philosophy. Here he provides a way of dismantling the logical argument for fatalism—defended by Bertrand Russell, Richard Taylor, Richard Montague, R. D. Bradley, and others—which is grounded on the Law of Excluded Middle. In one form of this argument given by Russell, the claim is that for any arbitrary future event x, our choices are exhaustively limited by the Law of Excluded Middle to the propositional schemas: "x will occur" or "x will not occur." In effect, since (allegedly) these schemas can be formally generalized into the tautologous sentential function $X \vee \sim X$, it is a truth of logic that the future will be one way and not another, that is, since one or the other of these alternatives must obtain on pain of denying the tautologous status of $X \vee \sim X$. Hartshorne observes that the assumption that "x will occur" and "x will not occur" is exhaustive begs the question of fatalism, since it assumes that, for *any* time t, there can simply *be* no indefiniteness with respect to x. Are not the alternatives in fact

a *triad* of statement forms such that "x will occur," "x will not occur," and "x may-or-may-not occur"? Further, the assumption that "x will occur" and "x will not occur" can be sententially formalized as X and ~X, respectively, represents a logical fallacy akin to assuming that $(\forall x)Px$ and $(\forall x)\sim Px$ exhaust the quantificational alternatives for a given variable-predicate function Px. Hartshorne holds that the logical status of "x will occur" and "x will not occur" is that of *contraries* as opposed to *strict contradictories*. Thus, if we sententially formalize "x will occur" as X, the strict contradictory ~X should represent "x *may not occur.*" Significantly, Hartshorne's suggested modal "square of alterns" approach to this issue (see chapter 11 for a full presentation) has a precise analogue in A. N. Prior's square of equipollence and opposition constructed for deontic logic as an extension of the logic of modality in his treatise on *Formal Logic*.[33] There Prior similarly observes that the strict contradictory of "A is obligatory" is "A is not-obligatory," rather than "Not-A is obligatory."

Hartshorne's original move here is to shift the focus from truth values attending propositions (on Hartshorne's approach we need only standard two-valued logic) to alternatives in predicate expression. This solution to the "logical problem of fatalism" has an elegant economy. No need here for Łukasiewicz's three-valued logic or perhaps tenuous distinctions between "analytic" and "synthetic" versions of the Law of Excluded Middle or outright abrogation of Excluded Middle. Nor, as will be argued in chapter 11, does Hartshorne preserve the Law of Excluded Middle at the cost of giving up the Law of Noncontradiction (as charged in Steven M. Cahn's reissued classic on *Fate, Logic, and Time*).[34]

2. Following Peirce's trail-blazing work on "illation" or "entailment" as logically primitive or fundamental, Hartshorne has developed an interesting explication of the idea that the logical syntax of standard propositional or truth-functional logic is such that "the defining power of propositional functions varies inversely with their symmetry" (CSPM 206). To illustrate this briefly, consider material entailment as contrasted with equivalence. Material entailment, as in $A \rightarrow B$, is asymmetrical by virtue of the familiar rule that such entailment is not equivalent to its converse (thus, the formula $[(A \rightarrow B) \leftrightarrow [(A \rightarrow B) \bullet (B \rightarrow A)]]$ has a contingent truth table). By contrast, equivalence, as in $A \leftrightarrow B$, is symmetrical by virtue of the familiar rule that such formula is equivalent to its converse (thus, $[(A \leftrightarrow B) \leftrightarrow [(B \leftrightarrow A)]$ has a

tautologous table). Hartshorne makes the significant observation that equivalence fails to yield truth tableaux completeness even when combined with negation, yet material entailment does so when combined with negation. Thus, (1) any conjunctive statement, say, (A • B), can be rewritten as ~(A → ~B), and (2) any disjunctive proposition, say, A v B, can be rewritten ~A → B. The equivalence case A ↔ B can be cast as the conjunction [(A → B) • (B → A)] and consequently by virtue of the conjunctive replacement rule of (1): (A ↔ B) ↔ ~[(A → B) → ~ (B → A)]. The *most* definitive of functions, the only functions capable of defining all others in singular fashion, are the Sheffer functions, which possess a triadic asymmetry that yet *includes* dyadic symmetry. We see this, Hartshorne notes, in their truth-tabular definitions—the Stroke = "false *iff* both propositional variables are true," and the Daggar = "true *iff* both propositional variables are false." In effect, the triadic relation, i.e., the product of the binary Sheffer construction A│B, which is itself dyadically symmetrical (A is true *and* B is true), stands as an asymmetry in terms of its truth value (false in relation to symmetrical truth). Hartshorne finds a metaphysically ultimate pattern here, namely, symmetry *within* an all-embracing asymmetry.

This is a powerful generalization of ideas that carries a devastating critique of some still prestigious philosophical contentions in the tradition of Hume. If directional or asymmetrical connectedness is a deep structure of possible worlds, as at least suggested by the above considerations on the most fundamental logical syntax, then G. H. von Wright's proposal that "There is no object which implies the existence of any other if we consider these objects in themselves," or more roughly in Hume's phrase, "what is distinguishable is separable," is false and necessarily so (as mentioned earlier von Wright has since conceded that the above proposal is deeply problematic). Contrary to Hume and von Wright, mutual separability of objects or events is not entailed by mere distinguishability. Says Hartshorne, "The letter *a* is distinguishable and separable from the letter pair *ab*; yet the pair is not separable from *a*."[35] In effect, a cumulative totality A • B entails its parts, say A, but A does not imply the totality A • B. In the case of entailment, then, the "conditioning" is asymmetrical and the order matters and this mirrors temporal inclusion and creativity. Yet, temporal inclusion or cumulativeness is found in this asymmetry *by virtue of temporally succeeding events which imply their past*, while the past events (or scope of events) do not do so conversely. "Dogs exist" does imply "mammals exist," while "mammals exist" does not imply that "dogs exist." *Differences in the historical or temporal*

scope of terms comprising propositions has a connection to the semantics of propositions and thus their ordering as antecedent or consequent in the entailment expression. To object to this, as have Quine and von Wright, that such entailment examples as the above employ tense-neutral verbs is simply irrelevant if S. M. Cahn, A. N. Prior and others are correct (as I hold they are) in arguing that a shift of tense from verb to adverbial phrase such that the verb is rendered tenseless does not in fact eliminate tense without at the same time altering the semantic content of the proposition. Hartshorne is correct, it seems to me, in his central contention that tense can be an "uneliminable" aspect of the semantics of propositions.

Other Process Thinkers on Analytic Philosophy

A number of philosophers and theologians, whose main orientation is process thought, have given attention to issues in contemporary analytic philosophy or have employed methods of analytic philosophers.

(1) George L. Goodwin is perhaps the most significant figure within this group.[36] In an essay on Hartshorne's ontological argument included in this volume, he takes up the important question of Quine's attack on the intelligibility of *de re* modality at some length. While the whole project of Kripkean possible worlds semantics, upon which Goodwin's argument in part depends, is controversial, modal logic still has its able defenders, for example, Ruth Barcan.[37] Moreover, mathematicians are finding modal logic to be increasingly important to foundational issues (see, for instance, Geoffrey Hellman's intriguing work on *Mathematics Without Numbers: Towards a Modal Structural Interpretation*[38]). Thus, Goodwin's project *contra* Quine remains significant for the contemporary scene. For the uninitiated, let me provide a very brief account of the essential problem and Goodwin's treatment of it:

Quine has objected to the idea of *de re* modality, since it involves quantification across modal operators, for example, as in (∃x) (necessarily, x is greater than seven), which he regards as logically illicit. Quine points out that we cannot existentially generalize from the "licit" *de dicto* formulation:

(a) Necessarily, nine is greater than seven

to

(b) (∃x) (necessarily, x is greater than seven)

This is because "nine" in sentence (a) is referentially opaque, that is, it fails to denote in a singular way, and thus opens the door to counterexamples in the generalized sentence (b). For instance, Quine holds that "nine" can mean "the number of planets," but surely it is not a property of "the number of planets" that it is necessarily greater than seven. The thrust of this is that, because of referential opacity in quantified modal logic, we do not know what it *means*

to introduce propositions of the form (∃x) N (x > 7). However, Hartshorne is clearly committed, in his ontological argument,[37] to such forms as:

(c) (∃x) (Necessarily, x is perfect)

And, if Quine is right, we do not know what (c) means any more than we know what (b) means.

Consequently, an effective Hartshornean response to Quine's critique of *de re* modality requires an intelligible semantics for modal logic. At this juncture Kripke's celebrated, "Semantical Considerations on Modal Logic,"[40] comes to bear effectively on the issue. On the terms of Kripke's semantics, we *can* get an intelligible notion of sentences having the form of "(∃x) N (x > 7)." Such sentences say:[41]

> that there is some object, x, in this world which has the property, greater-than-seven, in this world and in every possible world in which x exists. In other words, x exists in this world and at least some possible worlds accessible from this world, and x falls under the extension of the predicate, greater-than-seven, in every world in which it exists.

However, while Kripke semantics thus resolves the issue of providing a *formal* semantics for sentences involving quantification into modal contexts, the very terms of this semantics raise the further question of what it means for an individual to exist in various possible worlds. This problem has come to be known as the Problem of Transworld Identity. Quine has challenged Kripke further by arguing that his solution to the problem of referential opacity issues in a semantics involving the notoriously difficult idea of "essential properties." For instance, must C. S. Peirce be a philosopher in every possible world in which he exists in order to be C. S. Peirce in those possible worlds? Could he be a seventeenth-century sea captain in some possible worlds, and yet still be C. S. Peirce? It is just here, Goodwin argues, that Hartshorne's ontology of temporal process can be employed, providing Kripke with intelligible criteria for making "transworld" identifications. The Problem of Transworld Identity seems perplexing and insoluble when employing, to use Quine's phrase, "Aristotelian essentialism," in which essential properties inhere in substances and require no reference to temporality. Hartshorne's event ontology places the search for a criterion for transworld identity in the much wider matrix of successive and causally efficacious temporal units of becoming. "Temporal inheritance" becomes the *essential* factor in determining identity, and thus more readily settles the above questions: C. S. Peirce might well exist as a literary critic in some possible world, since he might have been one in this actual world, that is, since there was a time in the "history" of Peirce in which he was not a philosopher, and he could have been