VARIETIES OF REASONING: ASSESSING ADEQUACY

by John A. Teske

Abstract. Helmut Reich's theory of relational and contextual reasoning is a courageous initiative for the resolution of cognitive conflicts between apparently incompatible or incommensurable views. Built upon Piagetian logico-mathematical reasoning, cognitive complexity theory, and dialectical and analogical reasoning, it includes the development of a both/and logic inclusive of binary either/or logic. Reich provides philosophic, theoretical, and even initial empirical support for the development of this form of reasoning along with a heuristic for its application. A valuable step beyond the limits of binary, static, and formal reasoning, it takes relationship, context, and perspectival variations seriously in an explicitly reflective and iterative system. We can and do address conflicts not resolvable by conventional appeals to logic or evidence, including those at epistemic boundaries or produced by belief-commitment differences. Although this form of reasoning has real promise, including stepping beyond complementarity in the religion-science dialogue, it seems better directed to causally explanatory theories than to other forms of rendering meaning. Finally, its coextension requirement may render it problematic where functionally coherent *explananda* cannot be identified or are themselves produced or constituted by a belief system.

Keywords: complementarity; epistemology; explanandum; explanation; logic; meaning; rationality.

Our human capacity to reason together, to resolve cognitive conflict, particularly in the dialogue between science and religion but also in interreligious dialogue, inevitably runs up against the epistemic limits of human minds, the limits of what we can know. We reach the limits of what we can

John A. Teske is Professor of Psychology, Elizabethtown College, Elizabethtown, PA 17022; e-mail teskeja@etown.edu. A version of this article was presented at the forty-ninth annual conference of the Institute on Religion in an Age of Science, Star Island, New Hampshire, 27 July–3 August 2002.

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establish on the basis of conventional appeals to logic and empirical evidence, and we are left with conflicts that we do not seem to be able to resolve except by eliminating the very considerations that provide our deeper sense of meaning, including commitments to different religious or ideological worldviews that often drive the conflicts in the first place. In the world of our new millennium—marked by the events of September 11, 2001, illustrating problems of global terrorism rooted in Middle Eastern conflicts so far unresolvable, themselves produced by ethnic and religious differences of historical, political, and economic significance—it becomes increasingly clear that historical methods of resolving conflicts between irreconcilable beliefs about such things as oppression, violence, and war produce unacceptable levels of human suffering. Indeed, the lessons of history are that such methods not only often fail but frequently exacerbate the very conflicts to which they are addressed (Carr 2002). But while there are always limits to what we know, and to the means by which we reason, these horizons are never fixed; as long as human beings can develop the horizons of their minds, there is still hope for what our species might accomplish.

It is this hope for extending the limits of our minds to which Helmut Reich's new work (2002) is so courageously directed. The horizon that Reich wishes to develop is the limit of so far inadequate accounts of our rationality, to help our understanding that in our limits we must be humble about the beliefs we hold dear, or we will surely destroy ourselves. Reich's consummate, disciplined, and empirically rooted scholarship provides a bedrock for his overall theory, which examines logical and relational thinking, background theories of cognitive development, the metaphysical and theoretical grounding, and even some pilot empirical work supporting a theory of *relational and contextual reasoning* (RCR).

The first few chapters of the book may be a hard slog for anyone who does not have at least some familiarity with the relevant literatures, so the reader should beware. By chapter 5, where Reich systematically examines a range of other thought forms, including Piagetian formal operational reasoning, cognitive complexity theory, dialectical reasoning, and analogical reasoning, and compares them systematically to RCR, the system comes into clear focus. Included is a delightful microanalysis of an impending partnership breakup that shows the importance of matching thought forms to the problem at hand and sees the value of alternative forms depending on problem and context. This matching process is one of the issues about which a recent critique suggests that the current "mental modules" synthesis of evolutionary psychology and computational cognition hasn't a clue (Fodor 2000). From here on, in Reich's application of an explicitly formulated heuristic for RCR to problems ranging from religion to psychology, education, and social issues, the power of his system becomes apparent. It was interesting while working through the heuristic in our seminar on this

book to discover the implicit use of much of the RCR system in our very attempts to understand it more fully.

The central thesis of the book is the great need for a broader system of rationality that extends beyond the binary limitations of an either/or system and recognizes that, under varied relationships and contexts, both/and reasoning may be important for resolving conflicts for which there are not clear yes/no or right/wrong answers. It is easy to get frustrated with reasoning that appears equivocal—when regular assertions of "It depends" are often not answered with "On what?"—but it is clear that RCR does provide a system within which such equivocalities and multivocalities can be framed and their dependencies more systematically understood. I think the sort of synthetic work that this represents is precisely the kind of work that is most desperately needed in an otherwise all too fragmented intellectual world. It is particularly likely to help in understanding systemic and global issues such as those of geopolitical conflict and planetary ecology, which often require a complex multivariate, multidisciplinary, and multiperspectival understanding beyond the capacity of a single human mind. For participants in the dialogue between religion and science, attention to relationships that are not causal may ultimately be just as important as turning to nonbinary logics. Reich's work provides some hints in this direction, and his heuristic model includes possibilities for feedback relationships between conflicting *explanans* and the very identification of the *explanandum*. Nevertheless, the heuristic does seem to be best designed for cases in which a functionally coherent object or event can be identified as the explanandum. Unfortunately, in many cases of conflicts or incommensurabilities between belief systems, many differences crop up in decisions about what constitutes the explanandum, especially where the referents are theory-tied or entirely defined in terms of the belief system (sin, grace, and soul come readily to mind). Indeed, some of Reich's applications to religious conflicts are within the belief system peculiar to Christianity, e.g., the divinity versus humanity of Christ or the conflicts that led to the doctrine of the Trinity. For conflict resolution, agreeing on an explanandum that is not so dependent may be a good way to begin. In the spirit of the RCR, one finds oneself saying with Tevya in *Fiddler on the Roof*, "On the other hand . . . ," as the spirit of this system includes similar human and loving attempts to be respectful and open to other points of view.

We see in Reich's RCR an opposition to an abstract calculus of principles divorced from embodiment, relationship, or the staggeringly complex specifics of the world that, in being beyond the comprehension of the individual, suggest much humility. For those familiar with Lawrence Kohlberg's theory of moral development (e.g., 1984), Reich's position shares much with Kohlberg's cultural (and feminist) critics that his theory, in emphasizing abstract social justice and an individualistic Western ideology (Shweder, Mahaptra, and Miller 1990), may miss relational issues of mercy,

beneficence, and responsibility. Moreover, RCR, while potentially inclusive of binary or context-independent logics, does present a potential alternative to the necessarily context-independent cognitive representations of the currently dominant computational synthesis (cf. Fodor 2000). It clearly draws upon the reasoning of other current research toward developing postformal theories of cognitive development, including those addressing cognitive complexity and dialectical and analogical reasoning.

Even in the sciences there are situations in which apparently contradictory or paradoxical theories seem to be required for a full explanation, such as in the case of wave/particle complementarities in physics, and there is a need to hold the tensions in mind—to see the varied situations, contexts, or purposes on which the apparent contradictions depend and retain a rational dissensus in the integration of views rather than collapsing one to the other. While our rationality demands that we resolve inconsistencies when we can, our epistemic limitations suggest some humility in the face of monolithic (or hegemonic) claims. In the Emerson quote of which Reich is so fond, we need to remember that a "foolish inconsistency is the hobgoblin of little minds" ([1841] 1903, 57). There are certainly respectable views among scholars of religion and science that would extend notions of complementarity to other apparent conflicts, as do religious neuroscientists Malcolm Jeeves and Fraser Watts to the relationship between mental events and material substrate. But one of the strengths of Reich's theory is that it is not simply restricted to alternate causal theories but also encompasses a range of relationships between the theories themselves, differentiated, integrated, connected as parts to wholes, along a potential hierarchy ranging from elements to conjunctions, to composites, and even to complete thought forms, as well as allowing for iterations between levels. Still, one worries about the limitations of RCR in deciding upon a common referent or explanandum when there are differing phenomena produced or constituted by different belief systems, in deciding when bivalent logic *is* appropriate, in deciding whether one explanation is sufficiently dominant that another should be dropped, or even in deciding how to construct a particular multileveled synthesis.

Reich's developmental model of RCR draws heavily on the Piagetian sequence of intra-inter-trans, which systematically increases the sophistication of reasoning about objects, about their relationships, and about systems of relationships, culminating in Piaget's logical understanding of formal operations in terms of the INCR group (identity, negation, correlation, and reciprocation). Each level is logically prior to the next. Reich's model includes attention to the development of our second-order reflection on our own thought, Brentano's "intentional objects," from detecting contradictions to evaluating warrant to realizing the criteria and limits of knowing. His five developmental levels move from (1) the belief that only one opposing explanation can be right (*A* or *B*) to (2) a consideration of valid

aspects of different ones (*A* and *B* ?) to (3) a belief that more than one may be necessary (*A* and *B* !) to (4) a specification of the relationships (*A* to *B*) and finally to (5) an overall synopsis ([*A* to *B*]). RCR shares its analyticity with Piagetian thinking, but without the univocality; its synthetic and nonstatic aspects with dialectical thinking, but without the retention of the excluded middle; and its link between commonalities embedded in differences with analogical thinking, but without its disunity. RCR also includes a trivalent logic in which multiple statements about the same explanandum may be incompatible when applied concurrently but valid in different contexts. Reich's key metaphor is a "figure-ground" shift in the number of cubes we see in a line drawing when it is rotated 180 degrees, different numbers being correct in different contexts.

Reich presents a series of empirical studies, and he is honest about their exploratory nature and their limits. His samples are not representative, are based on small numbers, do not include comparisons with dialectic and analogical reasoning, and are not longitudinal. At the early stages of a rather ambitious theoretical undertaking, these pilot studies are probably sufficient for establishing the codability of RCR levels and for demonstrating their relationships to several other theories of cognitive development, including that of Piaget (both the fourth and fifth levels of RCR are correlated with established formal operational thinking) and that of cognitive complexity theory and metalogical thinking. RCR seems to be built on but not reducible to other kinds of cognitive development. The beauty of Reich's work—though one might find fault with the presented problems, the interviewing techniques, and the level of reliability—is that it clearly specifies falsifiability conditions for hypotheses. But competence with RCR includes competence with Piagetian operations and cognitively complex thinking (necessary but not sufficient for RCR); cognitive complexity and RCR share commonalities in measuring differentiation and integration; lower levels of RCR involve the use of formal binary logic; and at higher levels other logics appear in respondents' arguments. Given both theoretical and empirical reasons for the existence of RCR as a postformal thought form, one wonders about the rationality of apparent equivocation, especially at the metaphysical boundaries against which the science-religion dialogue so often finds itself pressed. Another example is the need to extend relational and contextual reasoning into too-often binary taxonomies of relations between science and religion (see Barbour 1997).

To return to complementarity views on the relationship between mental events and physical substrate, or between religious and psychological accounts, what happens if we use a synthetic and inclusive system of nonbinary thought that is explicitly iterative? Although complementarity may represent an intermediate level of development of RCR, it does seem to give up on the possibility of mapping out the relations between alternate accounts and on the iterativity that might make for the reinterpretation of

one in light of the other. To take a simple example, what might be the possible relationship between personal consciousness and an afterlife? Given the scientific likelihood that an intact nervous system functioning in a particular way is probably necessary for consciousness, memory, and personal identity, might it make sense to consider theological interpretations that do not need to deny this? One consistent answer would be to seriously consider the possibility of bodily resurrection, but it might also be reasonable to ask about the theological necessity of any kind of continued ego consciousness at all.

As already indicated, chapter 5 is the crux of this work. Here Reich does a thorough job relating RCR to Piagetian logicomathematical thinking, to cognitively complex thinking, to dialectical thinking, and to analogical thinking. His analysis of the logics that overlap and that separate them is especially useful and thorough, particularly from the viewpoint of cognitive developmental theory, including issues of the excluded middle, analyses of the formal operations based on binary logic (including the INCR system), an analysis of class sets, and even a humorous Internet example of Piagetian formal operations at work. He provides an easily understandable table that shows the aspects of and relationships between opposing explanations as understood within each of these thought systems. While one could take issue with his application of each system to the "impending breakup" situation, it is easy to see the contrasts between a binary account, which tries to assess blame to one or the other party, the cognitive complexity of considering good and bad aspects of the relationship and providing an integrated outcome, the dialectic reasoning of seeing changes and tensions through time, and the analogies of comparative experiences. Of course, Reich would have us see RCR, in which the partners better bring in context and better differentiate their respective experiences, as the one in which they save their relationship. One could certainly come up with more sophisticated versions of the other forms that might save a relationship equally well: a Piagetian account that better identifies the source of the problem, a complexity account that better differentiates the partners, a dialectic account that has the partners shift to a new joint direction, or an analogical one that draws on better examples. Still, much of the rest of this chapter details why it is important to match the form of thought to the structure of the problem and gives examples of the advantages of each of the forms under appropriate circumstances and using different logics, so this point is actually given a fair amount of attention.

For readers not engaged in the academic enterprise of theory construction—of the logic, philosophy, psychology, and empirical evaluation of RCR—the book's second part will hold the most interest. Here Reich makes explicit and provides a heuristic of application for RCR that might otherwise be used only tacitly. The eight steps include (1) defining a functionally coherent explanandum, (2) listing all the potential alternative ac-

counts, even if incommensurable, (3) checking to see that they are coextensive, (4) understanding the context in which each account deals with particular aspects of the explanandum, (5) looking for links and coinherences between accounts, (6) exploring the dependence of relative explanatory powers of each on the strength of the others, (7) developing a synopsis that explains all features of the explanandum under different contexts, and (8) explaining any shifts in meaning of concepts necessary. These steps can also be applied iteratively and, one would think, could involve respecification of the explanandum as well.

Reich makes a first pass at applying the RCR to the relation between science and religion, suggesting that Barbour's four options (conflict, independence, dialogue, integration) might represent different developmental levels of RCR. But he points out that Barbour's options are time invariant and, while exhaustive within a binary system, do not provide a functionally coherent explanandum, which presents a number of difficulties. Reich suggests carving the field into appropriate domains that would provide a more differentiated system, suggests a particular idealized account as a goal, emphasizes the context-dependence of the power of scientific, philosophical, and theological accounts, fosters a more collaborative attitude, and gives some examples of the latter, e.g., cases in which evolutionary theory does not exclude religious belief but they enrich each other.

The next five chapters each apply RCR to a different domain, selecting issues in religion, art and literature, psychology, education, and social issues. His analysis of a conflict between a theist and an atheist (Hans Küng and Michael Shermer) on the nature of human beings is fascinating and instructive and trades on the dissonant views that humans have nonmaterial parts that relate to the transcendent versus the view that we are exhaustively explained by our neurobiology. The explanandum focuses on the capacity of human beings to relate to a perceived transcendent (an important part of anthropology that does not beg ontological questions). The application of RCR to this apparent dissonance results in a number of questions for the protagonists, such as the question of how the soul communicates with memory, how sociocultural influences (like devotion to visions or ideals) influence neurochemistry, and at which level religion and religious experiences are located. The synopsis would have to explain the relations between neurobiology and psychology especially vis-à-vis perceived transcendence. Because there can be no independent verification of transcendence, such arguments might have to center on the acceptability of a first-person ontology of the mental. The final step may be the most interesting, the shift in the meaning of terms such as *soul* to an abstract and relational function like "personal relatedness to others, nature, and what is perceived as transcendent."

Further sections of the book provide systematic analyses of Christian doctrines, the relationship of RCR to theories of religious development,

applications to art and literature (my favorite was Reich's account of gender relations using the poetry of Rainer Maria Rilke), to a multileveled integration of psychological theories and bridges between subdisciplines, questions about control of the educational system, use of RCR in the classroom, and some marvelous, detailed, and insightful analyses of social issues such as overcoming drug abuse, coming to grips with energy issues and nuclear power, and creating new employment possibilities. One wonders how much of the value of such analyses is from Reich's creative genius and how much can be directly attributed to an application of relational and contextual reasoning. But there is plenty here to chew on and enough suggestions for problems that might be more tractable under RCR to argue for more widespread use of a heuristic that certainly looks as though it can open up new possibilities for integrative outcomes to apparently irreconcilable conflicts. Some of the content of different analyses will be of more interest to particular groups (to Christians in the case of the theological doctrines and to Europeans in the case of most of the social issues), but there are lessons here for all of us. The book seminar group at the IRAS conference on Star Island in 2002 found the heuristic quite useful, even in the limited time available, for unpacking a great deal of what might need to be addressed in resolving the Palestinian-Israeli conflict.

Overall, this book provides a thoroughly researched, well thought out, and promising theory of a kind of reasoning we may desperately need, both for advancing scientific insight, particularly in multidisciplinary and other synthetic areas, and for its potential contribution to reducing social conflict. The system requires methodological and epistemological differentiation and attention to context dependencies, and it presses for attention to the coextensiveness of phenomena addressed by particular accounts and the metarelations between those accounts. As Reich indicates,[1] it is clear that such an open, encompassing, differentiated, and necessarily iterative view swims against the cultural current. I do worry about the coextensiveness requirement, especially for a range of concepts and phenomena that are belief-dependent, however much Reich's theory makes possible the redefinition of explananda and shifts in meaning of concepts. Perhaps some of the answers lie in that most basic of empirical understandings having to do with our shared human experience and the possibilities of openly and respectfully, even lovingly, listening to each other despite our differences, understanding that a broader concept of rationality need not deny the possibility of dissensus, and of the differentiated understanding that allows us to agree to disagree even as we work toward more integrated understandings.

Reich's new work is the current culmination of a brilliant career. In its density of thought and disciplined scholarship, conversant as it is with a wide range of disciplines, much of his theoretical exposition is far less than an easy read. His thinking is that of a truly Renaissance man, but it can

also border on the inchoate in how widely and with what facility he ranges across such a wide compass. The work has huge benefits to offer the assiduous reader, plenty of perfectly concrete, engaging, and even entertaining passages for the quicker reader, and a wealth of well worked out applications to cognitive conflicts of intellectual, practical, and social natures for the ethical actor. It is here, and in the clear value of his RCR heuristic, that the average reader may most benefit. For those involved in the religion-science dialogue, there is no question but that Reich has provided us with an extremely valuable tool for developing the horizons of mind.

NOTE

1. In a postscript, Reich refers to two visionaries—Reginald Victor Jones, a British physicist who applied something like RCR to the idea of complementarity in physics, and Daniel Goeudevert, a high-level manager in the auto-making industry—who applied similar ideas to the apparent differences between European Union and National States.

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