Concise Summary of Untying the Gordian Knot by Tim Eastman

The goal of *Untying the Gordian Knot: Process, Reality, and Context* (Lexington Books, 2020) is to provide a comprehensive vision and framework for rethinking the fundamental nature of reality, rethinking the ontology of the world. It begins with the premise that our very limited human experience of reality is nevertheless a worthy lens to both experience and hypothesize about the real world and that we can deepen our understanding without adopting notions of reality that defy our experience. Rather what is required is to apply both humility and our creative imaginations to think differently about what we know.

The fundamental premise, which is the wedge that opens this new way of understanding, is to appreciate that reality, at the quantum level and that of human understanding, is constituted by both the actual and the potential, by what has manifested and by what might have but didn't manifest. Consider my recent close encounter with a car running through a red light; if I had hit the brake a 1/4 sec later, I might not be here now to share this incident. The actual-potential distinction is easily recognized in events that didn't happen or choices that we didn't make.

Any vision or framework that takes account of the fullness of human experience needs to account for multiple ways of knowing: the scientific, which focuses on knowledge that is free of context (i.e., true for all times and all places throughout the universe); the humanistic and artistic, which embrace context as their focus (think of historical documents or an artist's painting of a particular sunset as experienced); and the way of Spirit, an ultimate context in which all ontological reality is grounded (considering questions about the ground of ethics or ultimate meaning).

Context is unavoidable. Everything that manifests does so within a context. Only abstractions are without context. The great effort and expense that laboratory scientists exert to identify context-free physical relations indicates the ubiquity of context and the immense difficulty of eliminating it. Another example: in biological science, a great annoyance for medical research is the placebo effect.

The ubiquity of context is an indication that, as the mystics say, everything is in some relationship with everything else. The challenge for a bottom-up explanation that limits itself to scientific methods alone is to show how this pervasive relationality might be so. One stumbling block for standard scientific accounts is how subject-predicate structures and the language of 'things' that permeates most Western languages contributes to the confusion. In contrast, contemporary field theory in physics indicates that everything that manifests is essentially in process. In contrast to most Western languages and worldviews, Chinese language and worldviews are grounded in the premise that everything is in motion. The appearance of the unchanging quality of many objects is a product of the shortness of our lifespans or the insufficiency of our sensory organs (microscopes are extensions of our visual capacity). Further, Western scholarly traditions tend to treat processes as taking place within pre-given spaces. But in fact, processes have both a

temporal element and an element of extension. Just as process is a more fundamental notion than time (that is, time is our way of measuring process), so extension is a more fundamental notion than space (space is our language for talking about and measuring extension).

These elements of reality are foundational to quantum physics, which is not only the basic foundation upon which our current understanding of the world rests but also the most well-tested of current physical theories. In understanding quantum process, we work backwards from the effect, that is, outcomes are all that can be measured; from such outcomes we work back to inferred causes. But to date, interpretations of quantum process have not been able to uniquely identify causes; consequently, some scientists have inferred the existence of 'hidden variables' that are yet to be found. But another way to view the same data is to focus on how a pre-process potentiality can help us to understand what might happen within a given context, and such potentiality is governed by a different logic, ontologically considered, than the logic applicable to actualized outcomes; i.e., a logic of *potentiae* (a non-Boolean logic* of potential relations) in contrast to a logic of actualizations, or measured outcomes (Boolean logic); with such a distinction, there is no need to posit hidden variables or multiple worlds.

In quantum physics, as shown by Michael Epperson and Elias Zafiris, the sequencing of fundamental events always involves "a pure state of potential outcome states (these are not mutually exclusive and can violate PNC** [transitioning] to a mixed state of probable outcome states that are (a) mutually exclusive (satisfying PNC, i.e., "at most one outcome state will be actual upon measurement") and (b) exhaustive…satisfying PEM***, i.e., "at least one outcome state will be actual upon measurement" (Epperson and Zafiris, *Foundations of Relational Realism*, 2013, 37). Any such fundamental quantum event necessarily involves input, output and measurement (or physical interaction) context. In this way, the fundamental input-output-context triadic of my *Logoi* framework† is initially embodied in quantum process itself. Nevertheless, in this essay, I'm here most often applying a broader framework for the notion of context that is broader than the notion of measurement context in science.

Now, returning to the question of how causes and effects are related, the standard view has tended to presume a spatialized 'God's eye view' in which processes or events can be laid out on a line and cause-effect relations have a similar linear relationship. However, with the actual-*potentiae* distinction, our view of any physical system gives rise to a distinction between temporal/process (diachronic) perspectives on causal relations, and emergent 'include and transcend' (synchronic) perspectives. The fundamental process underlying causal relations for any physical system involves both aspects, both causation and emergence.‡

The importance of the above distinction between causation and emergence becomes especially clear in complex systems in biology where, for even elemental biological systems, there are implicit models of the system's environment, which enables them to make

'decisions' for their survival based on these implicit models rather than on random behavior. Indeed, if adaptations were entirely random, essentially all outcomes would be failures. Thus, the 'cause' lies in the model, not just in the external situation that stimulates an organism's response; correspondingly, emergence in complex systems is similarly dependent on implicit models. At the same time, processes of such complex systems are ultimately grounded in fundamental quantum process. Details about this model-dependent feature of complex systems theory are laid out by Robert Rosen in his work on anticipatory systems.

In complex systems, information is ultimately a way to quantify inputs, outputs or contextual factors. The simplest way to characterize information is to describe it with numbers that can be entered into computer programs. This is like keeping track of all house numbers and street names but without reference to the land upon which the houses are built; the numbers refer to the 'map' and not to the physical territory. Such numbers-only (input-output dyadic or syntactic) schemes, which dominate current data and information systems, are fundamentally incomplete when compared to information frameworks that include semantic (context referential) and pragmatic (functionally relevant) aspects. In his concise work *What is Information?* (DEMO, 2014), Robert Logan lays out the limitations of the numbers-only approach to information. For example, standard syntactic treatments of complex systems only handle one dimension of organization and paradoxically attribute higher complexity to entirely chaotic phenomenon because, within such a treatment, the quantity of information scales with the number of discrete elements. Terrence Deacon and Spyridon Koutroufinis show how, especially for the modeling of life systems, an optimal measure of complexity is situated, as it must be, between completely ordered and entirely random distributions ("Complexity and Dynamical Depth," *Information 5*, no. 3, 404-423, 2014), illustrating how information is relative to context and depends on the environment of its usage. This is yet another example reflecting the fundamental input-output-context triadic of the *Logoi* framework.

The new framework proposed in *Untying the Gordian Knot* shows how the movement beyond simple dyads enables a route to solution for many famous Gordian knots, such as the basis for meaningful information. These advances are reflected as well in recent progress in fleshing out context, which is the third element (something 'about') in every conceivable input-output relationship. The rapidly growing scholarly field of semiotics (the theory of signs) focuses on the pervasive presence of triadic relations. This is because a sign signifies only through being interpreted via some context, and such context for any complex system is ubiquitous in human and biological systems. The imbedded characteristics of any physical system within more inclusive contexts applies as well in fundamental physics due to quantum physics and field theory results, which illustrate that the application of symmetry (i.e., immunity to a possible change) and other physical principles is ultimately limited by broader contexts, which then require some approximation or symmetry breaking.

We experience a sense of meaning through relationships (friends, family, community), which reflect modes of context at multiple levels. As Nicholas Rescher states it "context determines meaning" (Rescher, *Metaphysical Perspectives*, 2017, 37). The framework proposed in *Untying the Gordian Knot* enables an understanding of meaning, not just via human social interaction but also as part of the fundamental nature of reality, and such understanding requires a multi-disciplinary interplay of logic, physics, semiotics, complex systems and process thought, through speculative, yet systematic inference. The unifying *Logoi* framework proposed in *Untying the Gordian Knot* enables an understanding of meaning, not just via human psychological dimensions or social interaction, but also as part of the fundamental nature of reality. This is accomplished through 'bootstrapping' parcels of meaning, from a humble 'hug' to the highest levels of spiritual expression, through the radical ubiquity and web-like relationality of triadic relations, context, and multi-level semiotic processes. Our real world is a weaving together of both prior actuals and multi-layered subsets of *potentiae*, which comports with common sense and human experience.

This realization of the ubiquity of meaning provides as well a segue into the way of Spirit, which is focused on considerations of deep meaning and ultimate context. Through a review of anomalous cognition, spiritual experiences, and analyses of ultimate dimensions of being and becoming (incorporating both the contingent and the non-contingent), *Untying the Gordian Knot* concludes with pointers towards ultimate meaning and possibilities for spiritual grounding, which is part of a critical realism that affirms the best of science and humanities, and sees these ways of knowing as complementary and synergistic.

_____

* Boolean logic is a simple two-valued logic, involving discrete no/yes (or 0/1) responses to well-defined propositions, which traces back to Aristotle's works, and which was articulated in modern form by George Boole in the mid-nineteenth century. This standard logic is the logical basis of modern computing and networking systems. In contrast, non-Boolean logic allows for three-valued logical analysis and enables a logic of potentiality, not just actuality. Yet, separate from these ontological considerations, a Boolean approach that incorporates context at multiple levels can practically unify our ways of thinking (Randall Auxier, private communication, April 2021).

** Principle of Non-Contradiction (PNC) is a requirement of any binary logic; e.g., upon actualization, contradictory claims cannot be maintained about actualized outcomes.

*** Principle of the Excluded Middle (PEM) is a requirement of any binary logic; e.g., upon actualization, an electron's spin is either up or down, not some ambiguous 'middle.'

† I have used the adjective *Logoi* for this hypothesized unifying framework to indicate the metaphysically fundamental role of process and relations; *Logoi* (plural form of *Logos*) is Greek for rational principle, ratio, proportion, or relation.

‡ Causality is the term used when emphasizing epistemic aspects of causal relations; causation is the term used for an ontological focus (see Menno Hulswit, *From Cause to Causation*, Kluwer, 2002). Most works on causal relations focus on causality.

_____

Contact: Tim Eastman, Silver Spring, Maryland (240-505-8259; plasmaeric@gmail.com) April 2021