

Towards an Objectivist Account of Truth in Argument

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Any attempt at an objectivist theory of truth within the context of a theory of argument must confront the two tensions that characterize recent work in logic. The first is a commitment to some notion of correspondence, whether of the ordinary ‘cat is on the mat variety’ or the more technical notion, after Tarski, that rests on the availability of the truths of arithmetic independent of logical argument, thus the notion that true sentences are those that can be mapped onto an arithmetic model known to be true.

The second grows out of the irrelevance of both of these images. There is no point in arguing about cats on mats since the truth is obvious, and arguments about mathematical truths have to do with their being provable, a standard much too high to apply to the overwhelming majority of things one can argue about. Ordinary argumentation deals with issues for which a corresponding reality is none too clear. It generally engages with inquiry, that is an attempt to ascertain what is the case, and therefore confronts a situation in which what is the case is not available as corresponding to our conjectures. Rather, what is the case appears as our conjectures are seen to bear fruit. How much of important argumentation fits this image may be a matter of debate, but it is clear that, for example, most arguments in science fit this model, as do most practical arguments about policies and other sorts of complex decisions. Rather than having reality at hand to compare with our claims, we gradually build an image of reality as our inquiry persists. It is in such contexts that the second issue that pulls at argument

theory becomes essential. Since inquiries are engaged in through dialogical practices among groups and over time and are based on prior understanding and common frames of reference, truth in such contexts is frequently seen to reduce to acceptability, whether actual or of some idealized sort. This of course, is disastrous for an objectivist theory of truth, since no matter how stringent the criteria for acceptability the open question: "This is accepted but is it true?" precludes any notion of acceptability to be adequate to the deep intuition that have governed non-relativistic notions of truth through the ages (Weinstein, 2007).

For the best several years and some half dozen publications I have offered an objectivist account of truth that seeks to pass between the horns of the dilemma facing truth in argument. The model seeks to mimic the rigor and precision found in the Tarski tradition and to exhibit the flexibility needed to capture the dynamical notion of truth in inquiry, that is a notion of truth that is both precise and emergent. The goal is a notion of truth that gives a precise characterization of how we come to know (or better approximate) knowing what is true over the course of inquiry. I hold the notion to three meta-criteria: the notion should be based on noetically compelling criteria natural to inquiry, it should strive to satisfy the demands of clarity of definition drawn from the metamathematical tradition and finally, and perhaps most problematically, it should be relevant to actual argumentation.

In my various attempts to present this metamathematical model of emerging truth (MET) I embedded the presentation in a variety of contexts relevant to argumentation. As indicated, MET moves away from the natural notion of truth as correspondence, common in philosophical thought from Aristotle to Tarski. To repeat the governing insight,

correspondence requires that object of claims be specified independent of the claims themselves. Emerging truth sees truth as a function of such claims and the inquiry in which they are housed. Correspondence is plausible if arithmetic is our paradigm for truth generating inquiry, since the truths of arithmetic are known independent of the logic that accounts for their status as true (in arithmetic, provable). It may also have some purchase when we are dealing with brute facts of common experience. But when we move into the vast areas for which inquiry is required, truth independent of inquiry is impossible to ascertain, since it is the purpose of the inquiry to come know the very truths in question

The metamathematical model itself can be seen as an existence proof; by developing an actual mathematical model of a philosophical concept one may, show that whatever else its failings, the concept is not vacuous. Of course the existence of a mathematical model does not show relevance to any particular area of concern. This is a major lesson to be drawn from the failure of mathematical logic to capture much of what was to be seen essential in argumentation by both informal logicians and argumentation theorists.

In what follows I briefly outline the context that supports the model and then describe the model's salient features. In a recent paper I attempt to extend the model from its basis in scientific inquiry to legal and ethical arguments (Weinstein, 2007b). The paper here will not include that discussion.

The motivation for the MET

The original model was designed in response to the following conjecture: If you ask a sane relatively well-informed person what the universe is made of, the answer is most likely to be some hodgepodge of words about atoms, molecules and the like. That is

to say, the working ontology of the modern world is the ontology of medium level physical chemistry. The question then was how is ontology internal to a point of view such as physical chemistry warranted (Weinstein, 2002). But ontology is traditionally linked to truth and so if one understood the basis for ontological commitment one might have a clue as to how the notion of truth might be thought about (Weinstein, 2007). This is clear both logically and historically. The ontology of natural kinds gave Aristotle his basic understanding of the categorical proposition and through the development of a logical structure could define a truth predicate in terms of something analogous to the modern notion of satisfaction. In Plato the ontology of forms and the requirement of necessity as a hallmark of philosophical truth moved Plato to the geometrization of ontology as in the *Timeaus*, a powerful metaphor that influenced Renaissance science particularly in Copernicus and Galileo, and resonated with the subsequent philosophical and scientific thought in Leibniz and Newton. In the 20th the link was made the basis for modern logic and much of modern metaphysics through the work of the Wittgenstein in the *Tractatus* and Russell's logical atomism. The culmination may be seen in the Quineian aphorism, to be is to be the value of a variable, that is, ontology is to be exhibited through the medium of a truth predicate in an adequate logical language.

More pertinently for the context of the paper, the model addressed my intuition of the centrality of Toulmin's model to an adequate theory of argument, especially the notion of warrant. In a recent paper (Weinstein, 2006) I addressed some of the contentious issues surrounding Stephen Toulmin's influential jurisprudential model. The model gives clear sense of the distinction between backing warrants and grounds and, more important, shows why warrants cannot be collapsed into logical implications. Most

important, the model permits an intuitive analysis of warrant kinds forming a hierarchy of logical strength and thereby affords a graded analysis of argumentative support, based not only upon the evidence but on the robustness of the principled generalizations through which the evidence is seen as relevant to the claim.

The epistemology of the MET

The model draws its epistemology from an overt Copernican turn. That is, rather than looking to purportedly a priori criteria as the source of normativity, I look to successful practice (Weinstein, 2006a). I choose, what seems to me, the most successful epistemological practice in the history of human inquiry: physical chemistry as initiated by the development of the periodic table and continuing with increasing practical and theoretical through the 20th century with the most amazing increase of knowledge at the highest level of reliability. Physical chemistry with its supporting array in physics and in its application to material science, both organic and inorganic is, arguably, the foundation of our entire technological competence.

A brief informal sketch of the MET

The model presupposes a number of things that are unusual in formal logic but quite natural in actual argumentation (Weinstein, 2007a). The first is a relevance filter. It is assumed that any manifestly irrelevant premises are discarded as their irrelevance is ascertained. The second, that a discourse frame sets the standards of rigor in argumentation and that degrees of rigor appropriate to an argumentation context are determined as the argumentation proceeds. This would be part of what the Amsterdam theorists call the opening stage, or part of the backing in Toulmin's sense. Third, it is non-monotonic, that is to say inference is reconsidered as new premises are made

available. Finally, it is dynamic rather than static. An inference is evaluated within a network of associated inferences and the history of the network. This is a basis for a deep reconsideration of the nature of warrants. Warrants are of varying strength, basic distinctions can be made in dimensions of strength, strong warrants are housed within a body of generalizations (not necessarily universal), strong warrants connect such bodies of generalization into progressive networks and super strong warrants are strong warrants of exceptional breadth and depth. Although such language is metaphoric, a precise mathematical characterization has been offered in the papers indicated above. For the purpose here the mathematics is necessary, for it shows that the concepts are not vacuous, but not sufficient. For until such a view is shown to be relevant to actual argumentation, rather than then merely satisfying the stylized image that metamathematics imposes on logical discussions, the view is of little interest to informal logicians and argument theorists. This requires that the intuition behind the mathematics be exposed and its relevance to actual argument be demonstrated. One caution, after all is said and done the mathematics, no matter how imposing, must reduce to a clear and noetically powerful philosophical intuition. One should not be surprised if such an intuition is transparent and obvious once noticed, for that is the power of deep logical advance.

The mathematics proper is characterized by two essential logical concepts, that of modeling (various weak entailment relationship with classical implication as a limiting case) and a deeper sense of entailment that relies on the connection between discrete sets of principles and even vocabulary (what in the philosophy of science is called reduction). Reductions are not unlike the analytic entailments of logical empiricism; my first intuition was to equate such entailments with L-true in Beta in the sense of Carnap's

classic discussion in the *Meaning and Necessity*. I now see this connection in terms of a hierarchy of warrant kinds, that may often appear to be ‘meaning postulates’ but although more rigid than weaker warrants, such warrants are resistant to change and form the foundation of inter-theoretic connection that fuel conceptual advance and deeper understanding.

Although the second of the two functions has the most novelty the first one permits a radical shift in perspective to be clearly seen: that is it is the dynamics, not the statics of argument wherein the essential logical concepts lie. The function that maps a theory onto a body of evidence, the basic insight behind philosophical accounts of explanation since Aristotle and canonized by Hempel and his followers, is no more than that condition that for a significant claim to be about the world there is to be a ‘match up.’ Of course the devil is in the details, but the deep intuition that science is true just when what it describes is the case has been at the center of modern logic and rightfully so.

The problem, of course, is what is to be the case. One source of our strongest intuitions is the clarity and naturalness with which our sense perceptions, memory etc. conform to the world. If there is any candidate for the best epistemological practice besides for physical chemistry, it has to be common sense perceptual based reasoning, which we employ everyday and for the most part do rather well as measured by success at both the species and individual levels. But of course we make grievous errors. It is the path to correct these errors that the model attempts to indicate. The intuition drawn from physical chemistry is clear, We expect our descriptions and measurements to increase in reliable detail and to afford predictive success at an increasingly nuanced level, that is to

say, the models of our assertions must be increasingly adequate to the reality that they attempt to describe. It is the dynamics of this advance that moves truth from truth in a model to truth in a chain of models the members of which are increasing in adequacy to the phenomena as we test and probe in standard ways. Those standard ways are themselves difficult to ascertain, but determine them we do in practice in all of those domains in which we are increasingly successful with our inquiries. The notion has been given precise mathematical characterization in the MET, what is relevant here is the intuition. We are rarely right or wrong simpliciter (at least not in areas that requires argument). Rather the picture emerges through argumentation and other methods of inquiry.

Whatever the power of the intuition of correspondence between our models and reality, physical chemistry teaches us a deeper lesson. It is not only more adequate descriptions and predictions that we require. We require that they be robust, that is reliable. Such robustness appears to be based not on any one chain models (sequences of observations and explanations) but by the coordination of many such sequences (model chains) through an overarching theory, and ultimately the unification of such theories in grand overarching theories that reconceptualize the elements of descriptive models in theoretic terms of deep explanatory power and enormous connectivity. The unification of myriad chemical explanations in the Periodic Table was only the first in a century of advances, as hitherto unrelated area of physical sickness were seen to follow analogous principles that could then be reconceptualized in terms of a powerful micro-theory that resulted in many more empirical determinations and a general increase in the adequacy of the theory-driven models. Organic chemistry is one such grand unification, giving us a

rich understanding of the very architecture of life in chemical terms. The richly connected theories and practices within physical chemistry is the basis for our understanding of pretty much everything else in the physical universe, from the makeup of stars to the making of microchips. Being right in our empirical models is neither necessary nor sufficient. Incorrect models are frequently useful in practice (Cartwright, 1983). Our models need to be progressive, and they need to be embedded in a hierarchy of connections that give logical force to explanations by their depth and breadth, and such a wealth of coordinated theories needs, itself, to be progressive. The mathematics shows that these desiderata are not mere words or amorphous metaphors. The model gives precise mathematical content to each of these, and permits a definition of truth as emerging from inquiry.

Technical Appendix

The most current available model is available in Weinstein (2006). A newly modified version is forthcoming in the Proceedings of the First World Congress on Unified Logic (Weinstein, 2007a). The following is a brief indicator of the essential elements and additional informal discussion.

The basis for the construction is a scientific structure defined as an ordered triple, $TT = \langle T, FF, RR \rangle$, where:

a) T is the syntax of TT , that is a set of sentences that constitute the linguistic statement of TT . The set T is closed under some appropriate consequence relation, Con , where $Con(T) = \{s: T|-e s\}$.

b) FF is a field of sets, F , such that for all F in FF , and f in F , $f(T) = m$ for some model, m , where either:

i) $m \Vdash T$, or

ii) m is a near isomorph of some model, n , and $n \Vdash T$.

iii) FF is closed under set theoretic union: for sets X and Y , if X and Y are in FF , so is $X \cup Y$.

c) RR is a field of sets of functions, R , such that for all R in RR and every r in R , there is some theory T^* and r represents T in T^* , in respect of some subset of T , $k(T)$. We close RR under set-theoretic union as well.

This enables us to define key notions, articulating the history of T under the functions in F and R of FF and RR respectively. An example of the sorts of construction is the basic notion of model chain. The intuition of a model chain permits us to formalize the intuition that a progressive theory expands its domain of application by furnishing theoretic interpretations to an increasingly wide range of phenomena. The basic interpretation is the intended model. Thus, theories have epistemic virtue when all models are substantially interpretable in terms of the intended model, or are getting closer to the intended model over time.

A related, but distinguishable notion, a theory being model progressive begins with the intuition that theories transcend their domain of applications as they begin as conjectures. This notion defines a sequence of models that capture increasingly many aspects of the theory.

The intuition should be clear. A theory's models in the sense of the sets of phenomena to which it is applied must confront the logical expectations the theory provides. That is to say, as the range of application of a theory moves forward in time and across a range of phenomena, the fit between the actual models and the ideal theoretic model defined by the intended model is getting better or is as good as it can get in terms of its articulation.

These constructs, reflecting the model history of a theory T , enable us to evaluate the theory as it stands. By examining the T under RR we add the dimension of theoretic reduction. Similar constructions offer a precise sense of progressiveness under RR . The key intuition here, is that under RR , models are donated from higher- order theories¹ becoming models (or near models) of T while being differentiated from models of T under FF by their derivational history, and the particulars of the RR relation. This enables us to offer essential definitions resulting in a principled ontological commitment in terms of the history of the theory and its relations to other essential theories with which it comports.

The construction enables us to distinguish particular models and their history across the field, giving us criteria for preference among them. It is this ex post facto selection from among the intended models in light of their history that affords ontological commitment and the related notions of reference and truth. The main contribution of the formal model is how it elucidates the criteria for model choice in terms of the history of the scientific structure, TT , within which a theory sits. That is, we define plausible desiderata, not only upon the theory and its consequences (its models under functions in FF), but in terms of the history of related theories that donate models to the theory under appropriately selected reduction relations (functions in RR). It is the structure of the field under these reduction relations, and in particular the breadth and depth of the model chains donated by interlocking reducing theories that determine the epistemic force and ultimately the ontology of the theory.

The intuition should be clear. A theory, whatever its intended models, takes its ontological commitment in light of how the theory fares in relationship to other theories whose models it incorporates under reduction. That is, we fix reference in light of the

¹ Since reduction is irreflexive asymmetric and transitive, 'higher order' is easily defined in terms of a linear ordering

facts of the matter, the relevant facts being how the theory is redefined in light of its place in inquiry as inquiry progresses.

It is the awareness on the part of inquirers of the history of success of scientific structures that enables participants in the inquiry to rationally set standards for model choice in terms of plausible criteria, based on successful practice. Crucially, the formal model enables us to look at the history of approximations, and most essentially, goodness-of-fit relations between models donated from above, from reducing theories, and the original interpretations of the theory. Finally, it permits of a natural definition of truth internal to the scientific structure. Truth is defined in an ideal outcome. Truthlikeness becomes a quantifiable metric as the theories in the structure move towards truth, that is, as the intended model of strong reducing theories substitute as intended models for reduced theories.

The intuition is fairly basic true theories ramify. The force of the construction is in its logical clarity, and what that permits. The construction displays what one can mean by ‘ramify’ and indicates how a metric might be defined. The structure could be modeled with any finitary assignment, and consequences drawn. It offers an adequate metaphor for truthlikeness as the outcome of inquiry of the sort found in physical chemistry, a putative candidate for a naturalist epistemology and a foundation for a scientifically mature materialist ontology even if only an internal realist theory, that is realist within a theoretic framework, which as Putnam has shown us is the most we can hope for (Putnam, 1983).

Works Mentioned

Putman, Hilary: 1983, *Realism and Reason: Philosophical Papers, Vol. 3*. Cambridge: Cambridge University Press.

Weinstein, M. (2002): “Exemplifying and Internal Realist Model of Truth.” *Philosophica* 69.

Weinstein, M. (2006): "A Metamathematical Extension of the Toulmin Agenda," in *Arguing on the Toulmin Model: New Essays on Argument Analysis and Evaluation*. Springer Verlag.

Weinstein, M (2006a): "Three Naturalistic Accounts of the Epistemology of Argument." *Informal Logic*. (26:1)

Weinstein M. (2007): "A Perspective on Truth," in *Reason Reclaimed*, Newport News, VA: Vale Press.

Weinstein, M (2007a): "A Metamathematical Model of Emerging Truth, forthcoming *Proceedings of the First World Congress on Unified Logic*.

Weinstein M. (2007b): "Between the Two Images: Reconciling the Scientific and Manifest Images" to be presented at the OSSA Conference, Dissensus and the Search for Common Ground, Windsor Ontario, CA, 2007