Book Review

Review of Palle Yourgrau's Book: A World without Time: The Forgotten Legacy of Godel and Einstein

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ABSTRACT

Yourgrau tells us that Godel was a philosophy-loving Platonist, and writes (page 23) on Platonists: "who like Plato believed in the objective, independent existence of ideal, disembodied forms, of which the natural numbers are a paradigm." Here truth discovered objectively becomes conflated with existence, while the person that discovers truth fades in importance. Godel would have been better served by resolving his issues with the "Dutch anti-Platonist, intuitionist mathematician L.E.J. Brouwer," who also visited Vienna as Yourgrau (page 29) indicates. Yourgrau (page 40) tells us that Einstein`s thinking impacted the Vienna Circle, as well as Godel: "It was precisely the hegemony of positivism, Godel wrote later, that allowed the members of the circle to mistake Einstein for an ally and to underestimate the difficulty of rendering mathematics empirically acceptable by reconstructing it as a system for formal manipulation of signs. Einstein himself would awaken the positivists from their misconceptions about the ultimate relationship between his thoughts and theirs. You can find this book at Amazon http://www.amazon.com/World-Without-Time-Forgotten-Einstein/dp/0465092942/ref=cm_cr-mr-title .

Key Words: Einstein, Godel, without time, forgotten legacy, world.

Palle Yourgrau writes (page 11) of "Godel`s foolproof method for evading a rendezvous": "He would carefully arrange a precise location in space and time for the projected meeting. With these coordinates in place, he confided to friends, he had achieved certainty as to where not to be when the appointed time arrived. Yet this method had its limitations. Finding himself trapped at an unavoidable institute tea, he negotiated the territory between guests, noted the mathematician Paul Halmos in his memoirs, with maximum attention to the goal of avoiding any possibility of physical contact."

We are to believe such a shy and sly man when he asserts that time is an illusion, a mere ideality? Yourgrau thinks so, but he has been fooled. It is only that time escapes our attention, like Godel, when we focus on the formal details that Godel projects. Godel`s approach is valid as far as he is able to defeat formality, but I will argue that it is not valid to defeat time itself.

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Perhaps it was positivism that polarized Godel, and pushed him deeper into Platonist philosophy rather than finding an opportunity in Brouwer`s visit? Godel was to adopt a path to defend mathematical intuition, albeit a path that erred in its ultimate treatment of time (in my view).

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Yourgrau (page 28) writes: "Positivism, a particularly severe brand of intellectual minimalism - a spirit that thrived in Godel`s Vienna - is an antiphilosophical philosophy dedicated to the belief that most of what has passed for deep metaphysical thinking over the centuries is nothing more than confusion based on an inadequate understanding of language, which, through artifice, leads the mind by the nose in all the wrong directions. Godel did not share the positivists credo that philosophy begins and ends with an analysis of language and its limitations, nor Wittgensteinian`s doctrine that the subject matter of traditional philosophy, as opposed to that of physical science, is precisely that which cannot be expressed in language."

Yourgrau tells us that it was positivism that was behind the drive to formalize mathematics. Positivism rejected the intuitions that Kant described, intuitions that were found a-priori to empiricism and science. Yourgrau (page 29 -30) writes: "what gave it [science] its logical twist were recent efforts by Frege, Russell, Hilbert, and others to develop logic both as an instrument that served to formalize the physical sciences - and thus to assist in their policing - and as a new branch of mathematics that was simultaneously a foundation for the rest of mathematics."

Yourgrau (page 30) writes: "As Frege`s former student Carnap put it, mathematics is not a genuine language that can express thoughts but rather the logical syntax of language. This was a doctrine that Godel, the true heir of Frege, would spend the rest of his working life to defeat."

Yourgrau (page 40) tells us that Einstein`s thinking impacted the Vienna Circle, as well as Godel: "It was precisely the hegemony of positivism, Godel wrote later, that allowed the members of the circle to mistake Einstein for an ally and to underestimate the difficulty of rendering mathematics empirically acceptable by reconstructing it as a system for formal manipulation of signs. Einstein himself would awaken the positivists from their misconceptions about the ultimate relationship between his thoughts and theirs. And Godel, in short order, would surprise everyone by striking a fatal blow to the most rigorous attempt to reconstitute mathematics as a formal theory of signs."

Yourgrau (page 53) writes: "Godel`s incompleteness theorem of 1931 began innocently, as an attempt not to refute but to fulfill Hilbert`s program. Hilbert`s idea was to safeguard mathematics from hidden contradictions by replacing the intuitive mathematics of each mathematical domain with a system of axioms written in pure formula language that, although having a standard semantic interpretation, could be manipulated according to mechanical rules of pure syntax."

But surprise, surprise, surprise, Yourgrau (page 57-58) writes: "What Godel proved is that mathematical truth is not reducible to (formal or mechanical) proof. Syntax cannot supplant semantics. The leitmotif of the twentieth century, it turns out, stands in need of revision. Mechanical rules cannot obviate the need for meaning, and what gives us access to meaning, namely intuition, cannot be dispensed with even in mathematics, indeed, even in arithmetic. This was the first nail in Hilbert`s coffin. The second nail was not long in coming. Godel soon proved his second incompleteness theorem, which demonstrated, with yet further irony, that if a given system of axioms for arithmetic were in fact consistent, then it could not be proved consistent by the system itself."

And so it was that Godel destroyed an absolute faith in formalism, and left positivism in crisis. Yourgrau (page 106) tells us that Einstein and Godel were united against positivism: "At the heart of Godel and Einstein`s opposition to positivism was their unfashionable realism, their reluctance to make ontology, the theory of what is, subservient to epistemology, the theory of what can be known. At the bottom, the positivist mentality consists in deriving ontology from epistemology."

Both Einstein and Godel found themselves in Princeton, a refuge that became available prior to the turmoil of the second world war. Yourgrau writes of their growing friendship. I can only speculate that their best achievements had passed.

Godel became interested in time, Yourgrau (page 115) writes: "In his contribution to the Einstein volume, Godel would construct a world model for the equations of general relativity whose geometry was so extreme that the temporal component of the resulting space-time structure could not reasonably be seen as representing intuitive time. Einstein had already succeeded, in the theory of relativity, in bringing about the geometrization of physics. What Godel did was to construct a limit case for the relativistic geometrization of time."

The Godel universe implied that time travel was possible in a very fast spaceship. Yourgrau (page 116) writes, "if time travel is possible, time itself is not." Godel thought that he discovered intuitive time to be unreal, and Yourgrau seems to agree with Godel`s conclusion. But what Godel demonstrated was the impossibility to formalize time and make it an abstract dimension in the Godel universe that is suitably elevated to Plato`s ideal realm (again my view). Time itself escapes the formal, and Godel`s Platonist philosophy is only now finding itself weak compared to Brouwer`s intuitionism. It is formal time that is unreal! Or time is real because it is an ideality that can reveal a privileged reference frame enough to ponder the Godel universe!

Godel spent his life defeating formality that only pretends to mimic the intuitive, so he should have anticipated my objection. Yourgrau (page 128) figures as much and writes: "The question that remains is whether this intuitive concept [of time] can be captured by the formal methods of relativity." Nevertheless, Godel`s (and Yourgrau`s) "dialectical dance with time" remains unconvincing to me. Indeed, the time taken for the dialectical dance is not to be ignored.

The bigger mistake is to remove the intuitive from a perceived objectivity, even going so far as to refer to Edmond Husserl to justify this removal. In Husserl`s phenomenology, objectivity is itself to be purified before arriving at a transcendental subjectivity. Yourgrau (page 171) unwittingly reveals Godel`s misconception: "What Godel found valuable in Husserl, however, was a turn to the thinking subject, the source of cognition, which was meant not as an alternative to objectivism, but rather as an account of how what is objective is given to us." But it remains true that Husserl`s phenomenology is better grafted onto Brouwer`s intuitionism, than Godel`s Platonist philosophy.

References

Palle Yourgrau, 2006, *A World Without Time: The Forgotten Legacy of Godel and Einstein*, Basic Books.