

BOOKS

A Science of Causality and Hypothesis

The appearance of the first English translation of this ground-breaking work by the father of modern astronomy is cause for rejoicing. As Kepler says, “the occasions by which people come to understand celestial things seem to me not much less marvellous than the nature of the celestial things itself.”

The *New Astronomy*, or, as it was actually titled, *On the Motions of the Star Mars*, is the work, published in 1609, in which Kepler announced his discovery that the orbits of the planets are ellipses, rather than various compoundings of circular motions, and that the rate at which a given planet travels is inversely proportional to its distance from the sun (a law which later became, because of the approximation used by Kepler for calculation, the law of equal areas).

The entire work asserts that astronomy has to be considered as *Celestial Physics*. Kepler described his new astronomy as “*aitiologetos*” or “based upon causes,” and this book is a triumphant vindication of the theoretical method expressed by Kepler in his first work, that the causes of created things, especially in astronomy, must be searched for in the Creator’s wont for producing the most beautiful creation.

Kepler is here engaged in a polemic with the professional astronomers of his day, using the incomparable accuracy which his new insights allowed, to force them to acknowledge his radical method and conclusions as inescapable. The requirements of this task, however, mean that the book is not easy reading for those unfamiliar with the terms and operations of observational astronomy.

One is struck by Kepler’s working through of the observations in terms of three geometrical images, the earth-centered or Ptolemaic, that of Tycho Brahe, with the earth stationary and the sun revolving around it, while the other

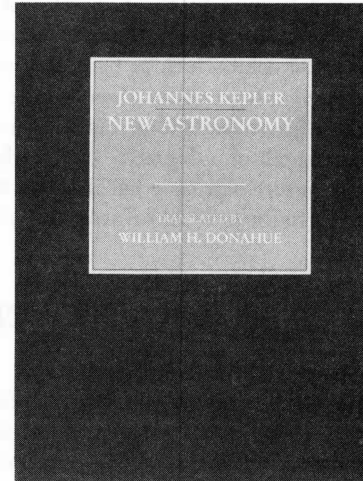
planets move around the sun, and the Copernican. Kepler was using the treasure-house of data which Brahe had amassed, and was involved in battles with his heirs, so he had no choice but to refer to the Brahean hypothesis. However, the necessity of this was turned by Kepler into a crucial part of his pedagogy. He uses the equivalence of the results to show the scientists of his day that merely fitting data to a model cannot prove that the model is correct, but instead the causes which are implicit in the model must be assessed.

Throughout the first sections of the work, he accustoms the reader to compare the possible physical processes by which each of the geometrical models could be expressed, at the same time that he disproves the charges of rash innovation by painstakingly working-through each possibility, and testing each against the data which Brahe had spent his life amassing. The image which is created is that of the investigator at the mercy of the data, but this is merely the image. In his wonderfully playful dedication, Kepler makes clear that it is *he* who has conquered Mars, and not the reverse.

The Platonic Impulse

This is only the second complete English translation of any of Kepler’s book-length writings, none of which are available in other languages except German and the original Latin. The translator and the publisher are therefore to be thanked for making this complete version of a major work available. However, the reader must be wary of the attempts, embedded in this edition, to explain Kepler’s achievements as the result of his abandonment of his previous commitment to the outlook of Christian Platonism in favor of an Aristotelian adherence to data and the reduction of the *reasons* for things to the mere physical causes by which they occur.

In fact, the publication of this monu-



**Johannes Kepler:
New Astronomy**
translated by William Donahoe
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mental work may have been in part prompted by the idea that here, Kepler could be portrayed as he is described in the Foreword, as having “passed through the refiner’s fire,” with the “youthful speculations of his *Mysterium Cosmographicum* . . . behind him.” It is true that, because of the task he has set himself, Kepler does not specify as much as elsewhere the hypothetical foundations of his analysis. However, the misunderstanding indicated by describing this work as “a foundation for the development of classical (i.e., Newtonian) physics” is refuted by Kepler’s own words throughout. For example, Kepler places an attack on the proto-Newtonian Ramus, and his demand for “an astronomy constructed without hypotheses” directly after the title page, which the translator references as an endorsement in his Introduction. Throughout the book, footnotes detail the errors which Kepler made in computation, and often reflect the translator’s amazed incomprehension that Kepler could nevertheless arrive at accurate conclusions despite them.

A better sense of Kepler's own approach is given by the complete version of his renowned statement when the circular orbit which he had calculated turned out to differ from Brahe's data by eight minutes (one minute of arc is one-sixtieth of a degree): "these eight minutes alone will have led the way to the reformation of all of astronomy."

The first sentence of the same paragraph, conveniently ignored by the Aristotelians, reads "Since the divine benevolence has vouchsafed us Tycho Brahe, a most diligent observer, from whose observations the 8' error in this Ptolemaic computation is shown, it is fitting that we with thankful mind both acknowledge and honor this benefit of

God." Here, and throughout his life's work, Kepler understood that the key to science is the understanding that "it neither was nor is right" (as he quotes from Plato's *Timaeus* at the start of his youthful *Mysterium Cosmographicum*) "that he who is the best should make anything except the most beautiful."

—Sylvia Brewda

Plato's Method Versus Neoplatonism

John M. Dillon is to be commended for completing this first-ever English translation of Proclus' *Commentary on Plato's Parmenides* after Glenn Morrow, who had translated nearly half of it, died in 1973. The only previous translation of this work into any modern language was published in 1900 in German. Therefore, this translation is extremely valuable; not because Proclus (A.D. 410-485) provides us with a valid interpretation of Plato's dialogue—which he does not—but rather for two other reasons.

First, it has historical value, particularly in light of the fact that Plato's *Parmenides* dialogue, like most of Plato's writings with the exception of the *Timaeus*, was not itself available in the Latin West even during the lifetime of Cardinal Nicolaus of Cusa (1401-64). Therefore, Proclus' work, which was probably translated into Latin in the 1280's, was the sole means by which this critical dialogue by Plato was available to the Renaissance thinkers, including Cusanus.

Second, even though the "neo-Platonic" method employed by Proclus leads him to an erroneous interpretation of Plato's dialogue as a whole, it nonetheless serves a useful negative function. Proclus' attempt to derive a positive philosophical system from the *Parmenides* is clearly not the intent of Plato's dialogue nor does it reflect Plato's own method, and Proclus' commentary is therefore a useful contrast from a methodological standpoint to the approach taken to Plato's *Parmenides* in the recent period by Lyndon LaRouche in such locations as his *In Defense of Common Sense* and *Project A*.

The immediate thing that one notices about Proclus' commentary is, that despite its length it extends only to the end of the dialogue's first hypothesis, or less than half the extent of the whole. From this first hypothesis Proclus constructs a Neoplatonic metaphysical system.

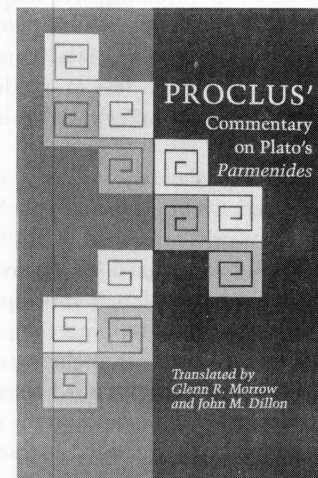
The first hypothesis of the *Parmenides* is "if there is a *one*, the one will not be many." From this hypothesis Proclus derives the idea of a transcendent God, who is beyond being and therefore prior to anything created. Although he does not comment at length on the second hypothesis, he does make reference to it. The second hypothesis is "if a one *is*, it cannot be and yet not *have* being." The "one which is" is therefore both a one and a many.

While not endorsing Proclus' method nor his interpretation of the *Parmenides per se*, to which he had no direct access, Nicolaus of Cusa, referring explicitly to Proclus' commentary in such locations as *On the Origin* (1459) and *On the Not-Other* (1462), argued on behalf of a notion of God, the Absolute One, as Not-other, i.e., as not many, in contradistinction to the universe it transcends, which, being created (having being) *is* both one—in likeness of the Absolute One—and also other or many.

There is a fascinating passage in Proclus' *Commentary* which is coherent with Cusanus' notion that the Not-other or God is "the other of the other," i.e., is not only transcendent but also immanent in His creation. Citing Plato's letters, Proclus writes: ". . . a divine light is kindled in us through which there comes about—in such a

way as is possible to us—a glimpse of it, which makes us participate in it in respect of that part of ourselves that is most divine. But the most divine thing in us is the One in us, which Socrates called the illumination of the soul, just as he called the truth itself light. This illumination is our individual light, and so, if it is not impious to say this, here also like is apprehensible by like: as the sensible is by sensation, the opinable by opinion, the knowable by science, so by the One in ourselves do we apprehend the One, which by the brightness of its light is the cause of all beings, by which all participate in the One."

On the other hand, Cusanus criticized Proclus for his attempt to construct a rational defense of the existence of a multitude of pagan gods through his doctrine of *henads*. Cusanus' concept



Proclus' Commentary on Plato's *Parmenides* translated by Glenn R. Morrow and John M. Dillon
Princeton University Press, Princeton, 1987
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