

Ptolemy: A Re-examination of His Influence on Modern Astrology

By William D. Tallman

It seems appropriate to contribute a short article on Ptolemy, as he is probably the single most important historical influence on modern astrology. I suspect that a better understanding of his work and the context within which it was done will provide a better understanding of the issues concerning astrology in our time. This article is a simple sketch and is not represented as any form of scholarship; indeed, I welcome any correction it might warrant.

Claudius Ptolemaeus was a Hellenistic Greek who appears to have lived his entire life in Egypt, much of it in Alexandria. The form of his name indicates he was a Roman citizen, which would be in keeping with the fact that he lived during the latter part of the first century and the first part of the second century of the Common Era (CE). Almost nothing is known of the man himself, though some descriptions have him as a rather presentable individual of moderate build, who was a dedicated horseman, and who was also

said to have suffered from halitosis. Apparently, he lived for many years, presumably in later life, in Canopus, some fifteen miles to the east. As a younger man he is said to have been the student of Theron the Elder in Alexandria, who was regarded by some as not having been all that sharp, but good evidence suggests that Ptolemy made up for that at the libraries either there or at Canopus itself. In all of his works he readily acknowledges and makes very good use of the works of the scholars who had preceded him at Alexandria.

Ptolemy, as we know him, was a natural philosopher following the school of Aristotle. This is, of course, not surprising, as Aristotle's heritage had compelling force at Alexandria. Alexander himself had been a pupil of Aristotle as a child, and though he probably had little enough contact with him after he took the crown of Macedon, his teacher's influence had been profound enough that Aristotle made the establishment of a center of available knowledge one of the primary purposes of his namesake city. At the time of Ptolemy's life, Alexandria was nearing a half millennium in age, and was already beginning to undergo the strife that later characterized the populace: the decimation of the Jewish population took place there during his lifetime. Thus, the halcyon period of Alexandria's tenure as the intellectual capital of the world had already passed, but that also meant that the entire (presumably) corpus of the work accomplished during and preceding that time was available to Ptolemy, such that it constituted the substance of the giants upon whose shoulders he was to stand.

It appears that the most important influence on Ptolemy's intellectual development was Hipparchus of Bithynia, at Rhodes. This fellow represents a rather unique standard of intellectual work,

when compared to his colleagues, it seems. He rejected out of hand the theoretical work in mathematics and physics of those who preceded him, as well as that of his contemporaries, and he appears to have done so because a) much of it was suspiciously complex, and b) because it was, in the main, not supported by the data originally acquired as well as that by Hipparchus himself. In this regard, Hipparchus stands as a remarkable foreshadowing of modern science, and it seems to me easy to understand why Ptolemy was so taken by his work. At times, it seems that Ptolemy almost regarded Hipparchus as a colleague and contemporary, but the fact is that they were separated by two centuries in time.

Thus, Hipparchus is seen as a link between Ptolemy and those who lived in Alexandria's golden period centuries earlier. To understand Ptolemy's work, then, we must look at those earlier writings to see not only the earlier context, but to see how the linkage of influence itself developed.

Of the earliest Greek astronomers and mathematicians of the Alexandria period, the most historically interesting is Aristarchus of Samos. This man was a student of the pupils of Euclid, and a very sharp astronomical observer. One of the more inspired efforts attributed to him was the calculation of the distance between the earth and the moon, and by extrapolation, between the earth and the sun. His findings were not even in the ballpark, but his methodology was quite sound, and he reached some conclusions that led him to postulate a celestial system that contained all the basics of that of Copernicus nearly two millennia later. Aristarchus' theories were noted and apparently well received by Archimedes of Sicily, who spent time in Alexandria and who developed a close friendship with a younger contemporary and countryman of

Aristarchus, Conon, also of Samos. Although the heliocentric model was controversial, in that it postulated a moving earth in spite of no sensible indication that it did so, it seems to have survived to be repropounded by Seleucus the Babylonian who was Hipparchus' contemporary.

Alternative models were proposed by, among others, Eratosthenes of Cyrene, and by Apollonius of Perga. These accepted the notion of the motionless earth and were developed by the mathematical advancements that followed Euclid's geometry. Apollonius seems to have basically invented the idea of the epicycles and deferents that were central to the Ptolemaic system. Hipparchus further extended these devices, and much of Hipparchus' developments were very openly made part of Ptolemy's work, accompanied by more than adequate acknowledgment, of course.

Thus, it was the establishment of a rigorous philosophical approach that is responsible for the tenor of Ptolemy's work and turns out to have been the cause of Ptolemy's downfall as well. The rigor was not sufficiently applied by Ptolemy, though it seems to have been by Hipparchus. Hipparchus ultimately was unable to develop a theoretic basis for a model of the solar system, because he could not conceive of one that would satisfy all the data at hand. On the other hand, Ptolemy applied the rigor from a philosophical rather than mathematical (scientific) point of view, and made some basic assumptions that were tragically flawed in logical development.

At root, Ptolemy assumed that the presumption of an immobile earth was supported by the lack of evidence to the contrary (a negative proof is inherently invalid). He did cite a rather interesting experiment in that regard: it was thought that the immobility of the

earth could be demonstrated by throwing an object into the air and observing that it returned to the place from which it was thrown, presuming that it would not have done so if the earth had been in motion for it would have moved under the lofted object, creating a different place of return from that from which it was cast.

Incidentally, it is interesting to compare this simple experiment with the one that millennia later turned modern physics on its head: the Michelson/Morley experiment. Ptolemy fared much better, as it turns out, in other fields of investigation. His work in optics and harmonics made real contributions: for instance, he was the first to investigate the nature of refraction, or the behavior of light across a media boundary, etc. His work in geography, although also productive of rather wildly invalid findings, did in fact establish the methodology of modern cartography (mapmaking) and was the textbook for much later work.

When we look at Ptolemy's work itself, we discover a rather towering achievement of synthesis of natural (protoscientific) philosophical investigation. The basic premises that he made axiomatic were basically two: 1) That no assumptions be made as the basis of accepted theory (thus, unless there was direct evidence that it did so, the earth was presumed to be non-moving), and 2) that the universe was an integral whole, such that it did not support contradictive reality. We see here what may be the first complete attempt to establish a "unified field theory", one might suppose, but in any case, taken in and of itself, Ptolemy's work was rightfully of profound influence on those who followed him.

With regard to our current concern, his influence on astrology, we can look at the specific works on astronomy, the most important of

which was his mathematical demonstration of celestial mechanics, or the Ptolemaic system. In the Greek, it is called the Mathematical Collection of Ptolemy (He mathematike syntaxis). Centuries later in use as a text, it was called the Great Astronomer (Ho megas astronomos) to differentiate it from another collection known as the Little Astronomer. The Arabs applied the superlative form 'greatest' (megiste) and called it the Al Megiste. We know it now by the Latin corruption of the Arabic: the Almagest.

This is a work containing thirteen separate books, each of which treats a different astronomical concept or issue. It is apparently exhaustive in this regard and so was considered encyclopedic and suitable as a complete text for the working astronomer. It is important to note that the Ptolemaic system is capable of producing rather precise and quite accurate data, as long as one does not attempt to get too far away in time from the point of observation. The fact that it does not represent the reality of (solar) systemic mechanics is beside the point; it does very adequately address all of the observed motions of the celestial sphere.

It is said to be a synthesis of the results obtained by Greek astronomy, but this is obviously not the case: it does represent generations of mathematical development, but of a specific system that was created to satisfy specific requirements. In this regard it is a showcase of Greek mathematical genius, but not of Greek astronomy.

This is a very important observation, because instead of regarding Ptolemy as representing the state of the art of Greek astronomical thinking, and thus the essence of the truth of these matters as they saw it, we are made aware that Ptolemy's work represents a stage

in the development of scientific philosophy, and unfortunately not an entirely useful one at that. Once again, Ptolemy forced the theory to fit the requirements of a philosophical rigor that was unfortunately immature and only part of a process of philosophical development. Had he followed Hipparchus' lead in not developing a theory that did not entirely satisfy the data at hand, he would have avoided this error, but in so doing, he would not have been able to make the profound contribution that was the *Almagest* itself!

It is appropriate to point out that the *Almagest* is not the sum of Ptolemy's astronomical works; he wrote a number of shorter works addressing a variety of astronomical concerns. His "Hypothesis on the Planets" provides a succinct statement of his theories explaining the motion of the planets; he expanded on Hipparchus' list of fixed stars; he drew up a list of sidereal phenomena and a chronology of the Assyrian, Persian, Greek and Roman kings for use in calculating the lapse of time between an event and a given fixed date, etc.

With regard to astrology itself, we can take the insight into Ptolemy's methodology and apply it with value to his astrological works, of which only one appears to have survived. It is known as the *Tetrabiblos*, and is a compilation of four books on astrological theory and practice.

Until fairly recently, there was no generally available reputable version of this book, but now the J. M. Ashmand edition of the Proclus paraphrase is easily obtainable, and it is apparently the only translation of the Proclus paraphrase now extant. Other versions of this work exist in direct translations of the original

Greek, and of Arabic translations of the original. It appears that none of these are widely and readily available.

The fact that the most readily accepted edition of Ptolemy's Tetrabiblos is a paraphrase is interesting in that it provides us with some insights into the general issue of Ptolemy with regard to both astronomy and astrology. In order to understand the issues with these editions, we have to look back at Ptolemy's intellectual heritage, specifically that of Hipparchus who was of such profound influence on his thinking. Good evidence strongly suggests that Hipparchus summarily rejected astrology in its entirety. This apparently has led some scholars to question Ptolemy's involvement with astrology in any form, and though that question now seems to be settled it does identify what may have been a point of difficulty for Ptolemy himself. His mentor rejected astrology, but as a philosopher he was forced to deal with it in some fashion. That he did so is obvious, but what is not so obvious is how he did so!

We can understand that astrology was a metaphysical subject, even as the Greeks saw it. That it was a valid study and that it created a profoundly useful art or craft (practice) was not the question, for there was abundant confirmation of that even by those who questioned its nature: it appears that there were some number of very well known and highly reputable astrologers at work in any given time period of interest here. For instance, Thrasyllus was the astrologer to at least one and probably more Roman emperors, and his son followed in his position. Both of these were known for their work, although they did not (understandably) publish either theoretical or clinical data. These are representative of the level of work that could probably be called "international class talent" today.

But why and how astrology worked was definitely not a subject addressed by the physical investigators, but was left to the philosophers instead. In this regard, there is no substantive difference between the situation then and the situation today, with the single exception that the fact that it had valid existence was then not in question.

Therefore, Ptolemy was disposed to address it as a philosophical, rather than as a technical, matter. His approach was to expand on his fundamental stance as an Aristotelian naturalist, and develop his astrology from his systemic basis, and that meant that he avoided dealing with a good bit of the practical part of astrology. In fact, some opinions hold that Ptolemy was not a practicing astrologer at all, and that he merely processed part of the Greek astrological tradition such would conform to his synthesis.

Ptolemy's writing on astrology reflected this synthetic approach and his style was, instead of straightforward as in his other works, rather convoluted and elliptical. It appears that he intended to develop astrology as a valid construct on several levels, and so there exists a philosophical polyphony that is often difficult to comprehend and often appears abstruse and sometimes nebulous. In fact, when properly analyzed, it apparently becomes a fairly rich exposition on the application of Greek metaphysics to daily reality via the use of the astrological arts. Needless to say, this required a fairly complex style of writing that depended on an intimate knowledge of Greek linguistic usage of the time.

Over the years, the Greek language, as all living languages do, underwent a continual process of change, and apparently it wasn't too long before Ptolemy's astrological work was devilishly difficult to

fathom, even for the educated philosophers themselves. The response to this state of affairs was the rewriting (clarification) of Ptolemy's original work so that it was more accessible to the later readers. It is generally thought that this was done by a Byzantine Greek by the name of Proclus, whose works were apparently highly regarded by his colleagues and remain so today. Proclus lived in the 5th century CE and was a Neoplatonist and a follower of Iamblichus who specialized in, among related things, metaphysical speculation. This would tend to explain why Proclus took on Ptolemy's text, if indeed he did.

In any case, the paraphrase, by whoever wrote it, was generally regarded as superior to Ptolemy's own work and it was subsequently translated into Arabic and thence into Latin. Ptolemy's original text was also translated but appears to have been reserved as a reference for the paraphrase textual validity. Inevitably, as one can readily imagine, the paraphrase got some things wrong, but just what they were was nowhere near well understood, and this remains the case today, even if to a much less extent.

The result is that the Ptolemaic astrological doctrine is inherently suspect!

Another scholar who addressed Ptolemy's work was Porphyry, who followed Ptolemy by a century and a half. Porphyry was also a NeoPlatonist, and so both he and Proclus could be presumed to be somewhat less than adequately sensitive to Ptolemy's Aristotelian naturalist point of view. We can suspect that they may have been prone to place their own more elaborate metaphysical structure on Ptolemy's work, although the result of that is far from clear. The point is that Ptolemy's astrological work rather quickly became

vulnerable to reinterpretation such that errors in translation as a result of a failure to understand Ptolemy's intent are quite likely

It is assumed that Ptolemy presented a synthesis of Greek astrological thinking, and this is clearly not the case. Ptolemy represented his own philosophical synthesis regarding astrology, which means that Ptolemy's astrological works cannot be assumed to be valid as a principal statement of the main development of Greek astrological thought.

When we take these two issues together, we get a probable result of a misinterpretation of a misunderstood representation of Greek astrology. This does not speak well of the value of Ptolemy's astrological text.

And it certainly creates a problem for modern astrology as having a direct link with Ptolemy's writings as its foundation. This is a rather powerful issue, I think, because we find we are not able to assume that the astrological tradition as we have it has any real basis outside Ptolemy's philosophical synthesis.

What makes it worse is that we cannot summarily throw it all out, because Ptolemy is not the only source for our tradition, and to the extent what we practice produces dependable results we are forced to conserve what we have while exploring its heritage with a critical attitude. This is a far cry from the skeptic's assertion that a) western astrology is Ptolemaic, and b) Ptolemy has now been thoroughly discredited, and so c) astrology can be presumed to have no demonstrable basis in reality. It does appear, however, that there is good reason to question Ptolemy's work as a definitive representation of ancient astrological theory and practice. In doing so, we would continue the well-documented tradition of astrological

skepticism, as voiced by astrological writers down through the centuries.

The task facing us does not change: a sound theoretical basis for astrology still awaits development. Until that is accomplished, astrology will remain as it is now, abiding in the shadows and on the edge of current common acceptance.

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ABOUT THE AUTHOR: *WILLIAM D. TALLMAN* has been a student of astrology for several decades. He lives in the Pacific Northwest of the USA. Contact him: wtallman@olypen.com