The Ptolemaic View of the Universe
Wolfgang Hübner

The ancient geocentric system commonly is termed "Ptolemaic," and the same is said even of ancient astrological lore, although Ptolemy did not invent either the geocentric or the astrological system. His principal merit was to have focused the history of astronomy for nearly a thousand years from 800 B.C. down to his age, the late second century A.D., into a comprehensive account, and to have described all the complicated motions of the stars in an elegant abstract language. But he has been severely indicted in Robert R. Newton’s *The Crime of Claudius Ptolemy.* Newton tried to demonstrate the zero reliability for nearly all observations—those Ptolemy claims to have made himself and those that he attributes to other astronomers as well. Newton writes (354): “Instead of abandoning the theories, he deliberately fabricated observations from the theories so that he could claim that the observation prove the validity of his theories. In every scientific or scholarly setting known, this practice is called fraud, and it is a crime against science and scholarship.” And he adds a comparison (365): “This reminds me of a political cartoon that I saw some years ago ... The cartoon showed a pedestrian who


had been knocked down by a passing car and who was now lying beside the road. The car had stopped a short distance beyond, and the driver was running back toward the victim while calling out: 'I'm a doctor. You're lucky I happened to be passing by!' He explains: "Ptolemy is the doctor-driver and the victim is the science of astronomy," adding "we do not owe Ptolemy our thanks for the small amount of earlier astronomy that he has preserved. Instead, we owe him our condemnation for the large amount of genuine astronomy that he has caused us to lose."

The task of refuting this violent attack has been made easier by the Danish scholar Kristian Peder Moesgaard, who invoked the monograph of his compatriot Olaf Pedersen, A Survey of the Almagest, published three years before Newton's volume. Ptolemy indeed calculated and extrapolated more than he observed, and his astronomical data depend largely on the great Hipparchus. In his famous star-catalogue, for example, he always added 2°40' to the ecliptical longitudes observed by Hipparchus. But he assumed a too slow precession of the equinoxes, one degree in 100 years instead of 71.6 years. So his catalogue given for the year 137 was only right for the year 63.

But this was not a deliberate fraud. Ptolemy spent all his efforts in synthesizing the results of earlier astronomy originating in the work of the Babylonians, earlier than himself by a millennium, and to bring them into an elegant abstract form, which was worthy to be transmitted to the Arabs in the eighth and ninth centuries and to the western thought during the dark ages of science until the reawakening of science from the twelfth century onwards. The French scholar Germaine Aujac rightly qualifies his works as "ouvrages de synthèse."

I address here two matters: first the so-called Ptolemaic cosmology, which was not invented by Ptolemy, and second the specific Ptolemaic version of astrological geography.

1. Cosmology

Ptolemy was not only an astronomer and astrologer. He wrote many other works, on the theory of cognition, mechanics, harmonics, optics, and geography. This universalism is not only an individual trait; to the contrary, we can recognize two external principal influences. First there were the Pythagorean and Platonic traditions, so intimately connected that the Pythagorean nucleus and the Platonic additions can hardly be separated. Nevertheless it is clear that the magnificent idea of the harmony of the spheres does go back to the Pythagoreans, first of all the analogy between the musical intervals and the distances of the planetary orbits. Ptolemy follows this in the Kanobos inscription, which now generally is considered genuine. At the end of his treatise on harmony, where he enlarges on the relationship between the musical intervals and the zodiacal aspects, he adds the analogy between the three main intervals (octave, fifth, fourth) and the Platonic threefold soul. The Kanobos inscription, containing principally numbers pertinent to our solar system, was on a stone monument (στήλη) dedicated in the temple of Serapis at Kanobus. It seems to be something like the account of data concerning our human and solar system that was recently sent by missile into space in order to inform some extraterrestrial beings about our globe.

But there is not only a Platonic but also an Aristotelian heri-

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2 O. Pedersen, A Survey of the Almagest (Odense 1974).
tage, since Alexander the Great had been taught by Aristotle; and his successor in Egypt, Ptolemy Soter, had called to his court the Peripatetic Demetrios of Phaleron to found the Alexandrian Mouseion. Among the Platonists it was the wilful Hera- kleides Pontikos who continued the doctrine of the universal spirit; among the Alexandrian scholars it was Eratosthenes, nicknamed “Pentathlos”—that is, one who exercised many disciplines.

The Ptolemaic system finalized three main generally accepted doctrines:
1. First, despite many discussions, the universe generally was imagined to be closed (limited), the exterior shell (or skin) constituting the inner part of a hollow globe. This belief allowed a certain confidence in a pre-established harmony and a sentiment of security amidst the loneliness of an otherwise unlimited space without any supports.
2. But this universe was also imagined to be eternal, because all celestial bodies appeared as globes, and the globe in spherical geometry (as well as the circle in two-dimension planimetry) was held to be the ideal, hence eternal figure. All celestial motions must be circular orbits, and every apparent deviation had to be explained by additional circles grafted onto the circles (έπικώκλια). Eudoxos of Knidos established 26 such circles, and Aristotle went up to 55.

That the universe was limited in space, but eternal in time, was a contradiction that was never resolved, although some philosophers sought to distinguish between the eternal gods and

3. The third axiom was the central position of the earth despite some attempts to move the earth from this sure and fixed position.

(a) First, the Pythagorean Philolaos postulated in the middle of the universe an unseen fire (which was not the sun), around which the seven planets plus the earth and an unseen “anti-earth” (άντιγηθόν) revolve. In this way he arrived at the holy Ten (δέκατον) of the Pythagoreans. But Plato and his students felt uneasy with this idea, and they stopped the alleged motion of the earth.

(b) It is not clear whether Herakleides Pontikos, in his lively dialogues, discussed the revolution of the earth around the sun, but he surely discussed its daily rotation.

(c) The first actual heliocentrist was Aristarchos of Samos, who put the sun in the very center of our planetary system (in which he was right, though his view that the sun was the center of the universe was wrong). Aristarchus had some followers like Seleukos of Babylon, but neither Hipparchos nor Ptolemy accepted his theory. The main reason that seemed to refute it was that one could not observe any parallax of the fixed stars: i.e., if the earth circled around the sun, the stars would have to appear during the movement of the earth every day under a different angle; but one had to wait for the year 1838, when Friedrich Wilhelm Bessel finally observed the parallax of a fixed star. The ancient astronomers were able to determine rather precisely the distance of the moon from the earth; but the distances of the sun, the planets, and even the fixed stars were so inconceivably huge that all attempts to determine them failed. The authority of Hipparchos condemned the heliocentric theory to remaining only a transitory, discarded idea.

But in another sense antiquity was fairly aware of the vanishingly tiny extent of the earth in relation to the immense cosmic
distances. It was not only the middle (το κέντρον, the center), but also a σημείο (the cross-point of two straight lines without any extension), in Latin punctus or punctum.\(^\text{10}\) Considering this infinitely small size, the moralizing Stoics warned man to recognize the vanity of all human glory (and all imperialistic expansion, too) and appealed for modesty in all human affairs.

4. More eagerly than in the other philosophical schools, the Platonists had discussed the order of the seven planets (the luminaries sun and moon included), and here we encounter many different proposals.\(^\text{11}\) It was fairly easy to describe the motion of the moon, the only true "planet" in the ancient sense (that is: turning around the earth); it was also less difficult to describe the orbits of the three exterior planets (Saturn, Jupiter, and Mars) with their rather slow and rather regular motions—apart from their turning back when they are seen in opposition to the sun; but it was extremely difficult to understand the rapid motions of Mercury and Venus, which are always near the sun, so that for these two companions of the sun also helio-satellite systems were proposed. Ptolemy adopts a system attested since Archimedes in the third century B.C.,\(^\text{12}\) which prevailed as the standard system of all astrological handbooks and was never questioned by astrologers (see fig. 1).

This system owes its widespread success to its marvelous symmetry, which satisfies a human need for geometrical order. I would like to elucidate this by five points:

(a) First there is the medial position of the sun amidst the seven spheres.\(^\text{13}\) Although in this system all the eight spheres (the spheres of the seven planets and the sphere of the fixed stars) rotate around the earth and hence the sun moves too, it could be called "heliocentric" in the sense that the celestial body that grants all our life is placed in the middle of the scale. Cor-

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**Figure 1: The canonical planetary system**
responding to the distance from earth, the Pythagorean harmonists also attributed to the sun the fifth musical interval, which they called μέσον, "the middle."\(^{14}\)

(b) On each side of the medial sun we find a triad of planets: The triad of the exterior planets\(^{15}\) is constituted by three male deities of three generations: Κρόнос-Saturn (the old grandfather), Ζεύς-Jupiter (the middle-aged father), and Αρης-Mars (the young son). A prognostic correspondence to the three generations is attested already in the early astrologer Sudines in the third century B.C.\(^{16}\) When in 1781 the first new planet was discovered by the Hannoverian William Herschel, it was named for the moment for its discoverer, discovered by the Hannoverian William Herschel, it was named Uranus, a very elegant solution, not only because Uranos was the father of Kronos (so that the series of generations was expanded to four), but also because already in antiquity, beyond the sphere of Saturn one ascended to that of the heavens, οὐρανός, whose wife Gaia, since Copernicus, had advanced to being a planet.\(^{17}\)

The triad of the inner planets (moon, Mercury, and Venus) form a less coherent group, but the need for symmetry assimilated their characters one to another. They move more quickly and, at least for an observer on earth, less regularly than the exterior planets. The moon, more fanciful, deviates up to the north and down to the south of the ecliptic, hence its "lunatic" character that antiquity related to the female gender which it shares with Venus. So, by esprit de géométrie, Mercury too became at least an hermaphrodite, if not quite a mere female planet.\(^{18}\)

(c) In fig. 1 the symmetry between the upper and the lower triads becomes even clearer: The two planets near the central sun are hot, hence they govern all things that have to do with heat: Mars with war and Venus with love. Even today their symbols mark the two genders. We know that already in early times Ares and Aphrodite were worshipped together by the Greeks,\(^{19}\) and the Romans continued to do so, putting them on one lectus of the lectisternium, or venerating them in the same temple of Mars Ultor.\(^{20}\)

On the other side, far from the heating sun, we find two cold and mostly moist planets, Saturn and the moon.

In the middle between the central hot and the marginal cold planets, two well-moderated planets circulate, the "jovial" Jupiter and Mercury, his youngest son (among those born from a goddess), who in more than one regard resembles his father. Their common moderate temperament tends to laughter,\(^{21}\) and when they act together, it results in a tragicomoedia like the Amphitruo of Plautus.

(d) This perfect symmetry of focal energy diminishing from the center in two directions resembles the now better known symmetry of the five terrestrial zones, with the hot tropics in the middle, the northern and the southern temperate zones, and at the extremities the arctic and the antarctic regions. It may be that

\(^{14}\) C. v. Jan, "Die Harmonie der Sphären," Philologus 52 (1894) 13–37, esp. 23; Burkert 297.

\(^{15}\) Called by Ptol. Apotel. 3.8.3 Αὐξάνων; see W. Hübner, "Astrologie et mythologie dans la Tétrabibl e de Ptolémée d'Alexandrie," in Sciences exactes (supra n.10) 325–345.


\(^{18}\) A. Bouché-Leclercq, L'Astrologie grecque (Paris 1899) 103–104 (hereafter BOUCHÉ-LECLERCQ).


\(^{20}\) E. Simon, Die Götter der Römer (Munich 1990) 140.

\(^{21}\) One looks in vain for the laughter of these gods in D. Arnauld, Le rire et les larmes dans la littérature grecque d'Homère à Platon (Paris 1990).
the heavenly symmetry was invented in imitation of the terrestrial one. In late antiquity these five zones of the earth were paralleled with the five true planets (apart from the two luminaries), as shown in fig. 2 (Achilles Isag. 29 Maass).

The northern hemisphere is ruled by the traditional male triad of the three generations: the polar region is given to the old and cold Saturn, the temperate zone to the temperate Jupiter, and the tropics to Mars who replaces the central sun (which itself remains out of consideration here). In the southern hemisphere in descending order it is Venus’s turn, who gets the southern temperate zone, so that in a regular parallelism the two beneficent planets, Jupiter and Venus, govern the two temperate zones. The antarctic region is given to Mercury, who is often encountered in a final position: he governs the last age of the world (Firm. Math. 3.1.14), the little finger, and so on. The author of the geographical analogy, however, appeals to the fact that the southern part of the earth was invisible for the ancients just as Mercury is difficult to observe (Achill. Isag. 29 p.65.9 ἄφανής).

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(e) In some sources (in the Kanobus inscription and in Neo-Platonic authors\textsuperscript{24}) we find the four elements interpolated between the earth and the moon (fig. 3). This order was facilitated by the homonymy of the term "earth," either celestial body or one of the four elements. The astrologers rejected Aristotle's \textit{quinta essentia}, but accepted the widespread system of the four elements that can be arranged in a two-dimensional figure, either according to the opposition hot-cold or according to the opposition dry-moist (fig. 4). The various sources frequently disagree about which element held the final position: usually it was occupied by the earth,\textsuperscript{25} because (as the homonymous celestial body) it constitutes the inner and the lowest part of the universe. In this way the two "flow" elements, air and water, mediate between the fire of the stars on one side and the solid and ponderous earth on the other.\textsuperscript{26} Rarely the final position was occupied by water, because one might penetrate deeper into the sea than into the earth, and because the sharpest contrast was seen between fire and water, and water in general was associated with perishableness. It was this hierarchy that the astrologers adopted without any further discussion.\textsuperscript{27}

Between the two low and female elements, earth and water, one ascends through the mediating air up to fire, the element of the stars and the divine part of the human soul as well (fig. 5).

2. Astrology and Geography

Geography was not included in the seven liberal arts, but Varro (and after him Martianus Capella) treated it together with geometry. Martianus Capella calls geometry with a Pla-

\begin{itemize}
\item \textit{elements}
\item \textit{triplicities}
\item \textit{social classes}
\end{itemize}

\begin{figure}[h]
\centering
\includegraphics[width=0.8\textwidth]{figure5.png}
\caption{The hierarchy of the four elements}
\end{figure}

\begin{itemize}
\item \textit{fire}
\item \textit{air}
\item \textit{wa} - earth - \textit{ter}
\end{itemize}

\begin{itemize}
\item \textit{1}
\item \textit{3}
\item \textit{2} + \textit{4}
\end{itemize}

\begin{itemize}
\item \textit{άρδος}
\item \textit{παρηγματοσύνον}
\item \textit{τιμωρησία}
\end{itemize}

\textsuperscript{24} Ptol. \textit{Ins.Can.} p.154.9–10 Heiberg; cf. I. Düring, \textit{Ptolemaios und Porphyrios über die Musik} (Göteborg 1934) 281–282. See also Salustius \textit{Πειρ θεόν} 6; Chalcid. \textit{In Tim.} 178 p.207.6–9; Boeth. \textit{Cons.} 4 m.1.

\textsuperscript{25} Parmenides \textit{ap. Arist. Gen.Corr.} 2.3 330b2; Pl. \textit{Ti.} 32b, etc. It is only in the last of the many varying enumerations in \textit{Timaeus} that the order appears according to alleged heaviness: fire-air-water-earth. This order became authoritative with Aristotle: \textit{Cael.} 1.3 269b28 etc., \textit{Meteor.} 1.2 339a15. For the varying order of the two lower elements, Burkert 62–63; R. Klibansky, E. Panofsky, F. Saxl, \textit{Saturn and Melancholy} (London 1964) 64.

\textsuperscript{26} Astrology employed this system, so far as can be seen, only in relation to the four cardinal points, where the earth receives the lower culmination (\textit{imum caelum}): Anon. \textit{CCAG} I (1900) p.158.13–16.

One must never forget that in antiquity the sky was much better known than the earth. Farmers and navigators observed the movements of the stars that served as a common calendar. Except for the southern polar region, in clear weather the sky was always visible from all countries, but the earth beyond the Mediterranean area was unknown, and the reports of the explorers often were fantastic and could not be verified.

Today, to the contrary, almost all parts of the earth have been discovered. We know much more about the universe than in antiquity, and every day the television news shows us the terrestrial globe from that astronautical perspective which the Ciceronian Scipio could only see in a dream. Only a very small number of persons even of higher education recognize the motion of the fixed stars, or know the order of the planets—not to mention the strange order of our planetary week which we use every day.

Hence globes of the sky historically precede those of the earth, and they were much more frequent in antiquity. In the Renaissance the two globes got equal rights, so that every important library proudly exhibited a pair of equally shaped globes: one of the sky and one of the earth (fig. 7). But in our homes the terrestrial globe prevails, and if there is a celestial one, this is—rather than for the study of the stars—for superficial decoration. To put it briefly: today our knowledge and our way of life are more "geocentric" than in antiquity.

Ptolemy wrote first the Syntaxis and then the Apotelesmatica (better known under the title Tetrabiblos), but his Geographia only at the very end of his life, and it seems that this work remained unfinished. It had a similar fate in modern times, for there is no critical edition after that of Nobbe (Leipzig 1843–1845). One

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28 Mart. Cap. 6.581, *germanae ipsius Astronomiae*. Ptolemy uses this Platonic expression for the two highest senses, seeing and hearing (*Harm*. 3.3 p.94.1 Düring), καθ’ ἑαυτόν (μονή), and if we consider the speculative two-dimension system of Nicomachos of Gerasa (fig. 6), which shows the same structure as that of the four elements in fig. 4, we see that geometry and astronomy both deal with quantities (μεγέθη), but differ in that geometry deals with absolute quantities that do not move, and astronomy with relative and moving quantities that are related to other things. Hence not only astronomy and geometry, but also astronomy and geography were closely linked in antiquity (and even in modern times our geographical atlases usually contain maps of the sky). In order to determine the geographical latitude and—with more difficulty—longitude (the meridian), one had to use sundials and horologia along with astronomical knowledge. So Germaine Aujac is right when she states that "astronomie (voire même astrologie) et géographie vont toujours de pair" (8).

29 *Arithm*. 1.3.1–2, quoting in what follows the Pythagoreans Androkydes and Archytas; see Hübner (*supra* n.1) 52–55.
may compare the great French edition of Pliny the Elder, which began to appear just after the Second World War. The most recent volumes have been very slow to appear; Books 3–6 concern geography. The enormous mass of numbers and exotic names causes many editorial difficulties. In his *Geographia* Ptolemy enumerates not less than about 8,100 names of localities, which he entered in 26 maps: 10 maps for Europe, 4 for (northern) Africa, and 12 for Asia.

But apart from these difficulties, there is to be observed a tradition in prose works and even more in didactic poetry: from Eratosthenes and Aratus’ *Phaenomena* to Bonincontri and Pontano in the Renaissance and Alexander von Humboldt in his *Kosmos*, authors follow a descending movement from heaven down to earth, from macrocosm to microcosm, in their single works as well as in the sequence of their works, and so did Ptolemy when he went from the stars down to earth.

Ptolemy’s *Geographia* is a good example for our statement that in antiquity the earth was far less known than the heavens, for here he is (and must be) less exact and less reliable than in his famous description of the sky in the star-catalogue of his *Syntaxis*. From the earth’s surface he embraces only about 80 latitudinal and 126 longitudinal degrees, that is, in a north-south direction less than half and west-east about one third of the surface. Since he rejected the almost exact value of the circumference of the earth calculated by Eratosthenes in favor of that wrongly calculated by Poseidonios, his model of the earth became too small, so that he induced Christopher Colombus, who used an edition of Ptolemy’s “Cosmographia” (this was the Renaissance title of the geographical work) to believe, when he arrived in America, that he had discovered India.

He is more speculative in his astrological geography. The distribution of the twelve zodiacal signs to the countries of the *oikouμενη*, in early astrological works, was linked to two other locational structures: the *melothiasia* (the distribution the twelve signs to the member of the human body) and the *deorum tutelae* (the distribution to the six male and six female deities of the

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38Stickelberger (supra n.34) 207–208.
Roman lectisternium). The numerous systems vary according either to the date of their origin or to the political horizon of the inventor's native country.

In general, the astrological systems combine single planets or single zodiacal signs with certain countries (or groups of countries), but Ptolemy here differs from all these systems, as he differs in many regards from the astrological handbooks of Antiochus, Vettius Valens, Firmicus Maternus (the only one preserved in Latin), Hephaestion, Paulus Alexandrinus, down to Rhetorios in the seventh century. One misses fundamental chapters on the qualities of the zodiacal signs and the four triangular elements, on the melothesia, the Egyptian decans, the paranatellonta, on the draconitic nodes of the moon's orbit (treated theoretically in the Syntaxis, 6.6). So Germaine Aujac is right when she remarks: "Le non-dit ne manque pas non plus d'intérêt dans l'œuvre de Ptolémée" (22). Nor does Ptolemy articulate the habitable world according to the three traditional continents attested since Herodotus (Europe/Asia/Libye= northern Africa), although he follows this orbis tripartitus in his Geographia (2–8). An application of the three continents to the zodiac would have produced a system like that of the three squares determining the nature of the four seasons (fig. 8).

The middle of the entirely developed seasons is constituted by the four "solid" signs: Taurus for spring/Leo for summer/Scorpio for fall/Aquarius for winter. This square called "solid" or "fixed" is preceded by the "tropical" ("turning") square that marks the beginning of the seasons: Aries for spring/Cancer for summer/Libra for fall/Capricorn for winter, and is followed by the "double" signs that mark the end of the seasons and the transition to the next: Gemini from spring to summer/Virgo from summer to fall/Sagittarius from fall to winter/Pisces from winter to spring again. In this way eight ambiguous signs prevail over four signs of certain classification.

But instead of such a threefold system, Ptolemy prefers a quadripartition of the zodiac. In this case he had two possibilities: either a system of four coherent quarters (or quadrants)

39 Hübner (supra n.23) 237–242. There is also a rare geographical melothesia in Ps.-Hippocr. Hebd. 11.


41 Hübner (supra n.27) 74–80 §1.311.

42 On the manifold systems see Hübner (supra n.27) 261–274 §7.17, and 441–452.
or a triangular system with four so-called triplicities of alternating signs. Although the four quarters correspond to the four seasons of our solar year, in astrology they were rarely related to the four edges of the world (fig. 9). The main directions are generally enumerated cross-wise, so that the first letters of their Greek names, spelled in the order east-west and north-south, ΑΛΩΝ ΑΛΩΝ, form the acronym ΔΔΑΜ. But Ptolemy, like most other astrologers, disdains this simple analogy in favor of a more complicated triangular system. In this arrangement the peoples of the same group are not crowded together in the four quarters, but spread all over the zodiac, according to the alternating order of the four triplicities.

We know ten or (eliminating simple errors) at least nine such systems that distribute the four edges of the world to the four tropical signs, that is the cardinal signs of the four triangles. The earliest of these systems goes back to Geminos, the most widespread is attested from Antiochos on, who probably was

43 Hübner (supra n.27) 264-265 §7.171.2, cf. 82-87 §1.32.
44 F. Dornseiff, Das Alphabet in Mystik und Magie (Leipzig/Berlin 1925); Hübner (supra n.27) 268-270 §7.172.14.
45 Geminos 2.8-11: see Hübner (supra n.27) 261 §7.171.11.
46 Antiochos CCAG VIII 3 (1912) p.112.23-26: see Hübner (supra n.27) 261-262 §7.171.13.
Ptolemy's contemporary. Moreover, it combines the four elements (fig. 10). This system starts from the vertical difference of the two tropical signs (in the true sense) that confine the zodiac: Cancer in the north and Capricorn in the south. These two tropical signs rule the two female triplicities of water and of earth. While this distribution is clear, the horizontal difference east-west changes every time, for across the eastern and western horizon pass all rising and setting stars. In this system, of the two remaining male triplicities the fiery triplicity of Aries is assigned to the rising east and the opposite airy triplicity of Libra to the setting west.

The German scholar Franz Boll, the rediscoverer of Ptolemy and the explorer of ancient astrology in general, supposed that Ptolemy wanted to relate these zodiacal triangles to geographical ones;\(^47\) but this opinion has been rightly rejected by Richard Uhden.\(^48\) Ptolemy accorded the greatest importance not to the zodiacal signs but to the planets that rule these signs or their triplicities. He developed this in two different chapters, more generally in Book 1, in more detail in Book 2, where he considers 72 countries, that is, not less than six countries for each sign on the average.

(a) Chapter 1.19

Astrologers who tried to distribute the seven planets on the circle of the twelve zodiacal signs were troubled by the fact that the numbers 7 and 12 (or 4) are incompatible. One solution was found in the system of the twelve so-called "planetary houses" (fig. 11).\(^49\) After subtracting the two luminaries (sun and moon) and giving the sun to the Lion and the moon to the Crab (fig. 11 bottom), there remained ten signs that easily could be distributed to the five remaining true planets in such a way that—in the usual descending order from Saturn to Mercury—every planet gets two houses: on the right side, starting from the sun's Lion, the day house, and on the left, starting from the moon's Crab, the night house.

We need this system of the planetary houses to understand Ptolemy's rulers of the four triplicities, which also have a ruler by day and a ruler by night (figs. 11 and 12).\(^50\)

1. The first triplicity (consisting of Aries-Leo-Sagittarius) is governed by day by the sun; the Lion's ruler, and at night by Jupiter, the daytime ruler of Sagittarius.

2. The second triplicity (Taurus-Virgo-Capricorn) is governed by day by Venus, the Bull's nighttime ruler, and at night by the

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\(^47\) Boll (supra n.9) 194–204.

\(^48\) "Das Erdbild in der Tetrabiblos des Ptolemaios," Philologus 88 (1933) 302–325, esp. 304–305.

\(^49\) Bouche-Leclercq 188–189.

\(^50\) Bouche-Leclercq 199–206.
3. The third triplicity (Gemini-Libra-Aquarius) is governed by day by Saturn, the nighttime ruler of Aquarius, and at night by Mercury, the Twins' nighttime ruler.

4. The fourth triplicity (Cancer-Scorpio-Pisces) is ruled by Mars by day and by night as well. This reveals the difficulty arising from the fact that twice four rulers are needed, but there are only seven planets to use, so that for the last triplicity one planet is lacking. Ptolemy backs out of the business by joining to Mars his old companion Venus (and moreover the moon), the other nocturnal planets according to fig. 14, so that the co-ruler of the triplicity is Venus by day and the moon by night.

Ptol. Apotel. 1.7 and Bouché-Leclercq 103–104.
In a second step Ptolemy distributes the triangular rulers to the edges of the world. As each of the four triplicities has two planetary rulers, the directions are also divided in two: a main direction ruled by a main ruler (σινοκοδεσπότης) and a secondary direction ruled by a co-ruler (συνοκοδεσπότης), so that the four combinations of two directions form four quarters of the circle: north-west/south-east/north-east/south-west. In this way Ptolemy combines the triangular system with the quaternary system (figs. 13 and 15).

1. The first triplicity owes its mainly northern direction to Jupiter, the daytime ruler of Sagittarius, and its secondary western direction to Mars, the nighttime ruler of Aries. These two directions form together the north-western quarter.

2. The opposite second triplicity owes its mainly southern direction to Venus, the nighttime ruler of the Bull, and its secondary eastern direction to Saturn, the daytime ruler of Capricorn. These two directions form together the south-eastern quarter.

3. The third triplicity owes its mainly eastern direction to Saturn, the nighttime ruler of Aquarius, but its secondary northern direction to none of its zodiacal signs. Ptolemy associates Jupiter, the other diurnal planet according to fig. 14, with Saturn. These two directions form together the north-eastern quarter.

4. The opposite fourth triplicity owes its mainly western direction to Mars, the daytime ruler of Scorpio, and its secondary southern direction to Venus, which rules the Fishes, having in this sign also its exaltation (ψωμα), which astrologers explained by the extreme fertility of fish. These two directions form together the south-western quarter.

In fig. 13 we can see that the vertical (north-southern) axis is occupied by the two benevolent planets (Jupiter and Venus),
and the horizontal (west-eastern) axis by the two malevolent planets (Saturn and Mars). Mercury remains ambiguous as in fig. 14. Moreover, the two northern (and upper) quarters are governed by the two higher and more efficacious planets (Jupiter and Saturn), and the two southern (and lower) quarters by the two minor and weaker planets (Venus and Mars). In this manner—as elsewhere in astrology—the north prevails over the south.53

(b) Chapter 2.3

Chapter 2.3 is the longest of the Apotelesmatika and fills out the basic and preliminary chapter of Book 1 with geographical details. It is divided into two parts. At the beginning (2.3.3–8) Ptolemy repeats the four quarters from the first book, and then he treats at full length all the 72 peoples (or countries), that is, six countries for each sign on average. In the following chapter he will sum this up in a short diagram (2.4).

In the more general beginning each quarter gets two names (fig. 16). The continents’ names are accompanied by a main people’s country. In order to bring the three continents into a quadrifolial system, Ptolemy divides the largest, Asia, into two parts, which occupy together the two eastern quarters (north-east and south-east). And as Asia is divided into a βόρειον μέρος and a νότιον μέρος, also the two southern quarters are linked by the two opposing Ethiopias—known since Homer and mentioned by Ptolemy also in his Geographia (7.3.1), ἐσπερία Αἰθιοπία and ἑσπεριά Αἰθιοπία. Only Europe remains without any link in the north-western corner, and specified by Gaul (Κελτογαλατία), opposite to Σκοτία on the eastern side.

53 For example in the system of the commanding and obeying signs: Bouchara-Leclercq 163. Hübner (supra n.27) 67–71 §1.221.4. See also Varro Rust. 1.2.3, et sine dubio quomiam salubrior pars septemtrionalis est quam meridiana, et, quae salubriora, illa fructuosiora.

Figure 16: The four quarters and the three continents

In the following paragraphs (2.3.9–11) Ptolemy establishes with great diligence a sort of interpenetration of the effects exercised by the respectively cross-opposite quarters of the triplicities, the north-western and the south-eastern on one side and the north-eastern and the south-western on the other, alleging that the marginal peoples of the οἰκουμένη are governed by the three signs of the triplicity itself, while the peoples situated near the center (i.e. near the Mediterranean Sea) assume some of the qualities of the opposite triplicity (as shown in the inner circle of fig. 16). So the peoples of Europe (in the north-western triplicity) verging to the center are influenced by the qualities resulting from the opposite south-eastern triplicity of southern Asia and vice versa; and the peoples verging to the center of northern Asia (in the north-eastern triplicity) are
influenced by the qualities resulting from the opposite southwestern triplicity of Libya (northern Africa).

All the parts of the four quarters verging to the center are governed not only by the rulers of their respective triplicities, but also, as an additional influence, by Mercury, who grants to these central peoples their faculty of eloquence, humanity, and civilisation, because this god unifies them: διὰ τὸ μέσον καὶ κοινὸν αὐτὸν ὑπάρχειν (2.3.11).

So we find two subsequent binary determinations: first that of the two main directions (between north and west, for example), and second between the more marginal and the more central position. To these cross-related influences we may compare ch. 1.9, where each brilliant star (or each little part of the constellations) is determined not by a single planet, but by the influence of a main planet and "a little bit" (ἡρέμα) of a secondary planet.54

What Ptolemy explains in the following is too detailed to be repeated here. Take as an example Europe, which belongs to the north-western triplicity (2.3.12–21). In all Ptolemy enumerates eleven regions: Britain, Transalpine Gaul, Germany, Bastarnia (the southern parts of Russia plus southern Poland), Italy, Cisalpine Gaul, Apulia, Sicily, Tyrrhenia (i.e. Tuscany), Celta (perhaps western Spain), and Spain in general. Since the first triplicity is called "ruling" (ἀρχικόν: see fig. 5) and its governors are Jupiter (for the north) and Mars (for the west: see fig. 13), these peoples are said to be in general independent, liberty-loving, fond of arms, industrious, very warlike with a tendency to leadership, and so on.55

In order to make specific this general statement, Ptolemy relates the different countries to the three individual signs of the triplicity (Aries-Leo-Sagittarius):

1. To the Ram and its nighttime ruler (Mars) belong the regions of four ferocious races: Britain, Transalpine Gaul, Germany, Bastarnia, "whence their inhabitants in general are fiercer, more headstrong, and bestial."56

2. To the Lion and its ruler (the sun) belong the countries of four more civilized races: Italy, Apulia, Sicily, Cisalpine Gaul: "because these peoples tend more to leadership, being benevolent and cooperative."57

3. To the Archer and his daytime ruler (Jupiter) belong the peoples of Tyrrhenia, Celta, Spain: "whence their independence, simplicity, and love of cleanliness."58

After distributing these three groups of distant peoples to the three signs of the north-western triplicity, Ptolemy considers eight other peoples situated near the Mercury-influenced central region of the οὐκομένη: Thrace, Macedonia, Illyria, Hellas (i.e. northern Greece), Achaia (southern Greece: the Peloponnesse), Crete, the coastal regions of Asia Minor, Cyprus. Since these regions are placed in the south-eastern angle of the north-western quarter, the principally north-western character of the subjacent peoples is impregnated with qualities of the opposite south-eastern quarter governed by the second triplicity (Taurus-Virgo-Capricorn) and its planetary rulers Venus and Saturn, where one must add the rulership of the central and ubiquitously working Mercury. Since the influences of the two opposite triplicities are overlapping, the inhabitants reveal a mingled constitution of body and soul.59

54Apotel. 1.9 and the brilliant commentary by F. Boll, Antike Beobachtungen farbiger Sterne (AbhMünchen 30.1 [1916]).

552.3.13, ἀνυπότακτος τε εἶναι καὶ φιλελεύθερος καὶ φιλόπονος καὶ πολεμικότατος καὶ ἴημονικός καὶ καθαρός καὶ μεγαλουχος.

562.3.15, ἦθεν ὡς ἔπιπαν οἱ ἐν αὐτὰς ἄγριώτεροι καὶ αὐθαδέστεροι καὶ θηριώδεις τυγχάνουσιν.

572.3.16, διόσπερ ἰημονικοί μᾶλλον οὕτω καὶ εὔρεχτοι καὶ κοινοικοί.

582.3.16, ἦθεν τὸ φιλελεύθερον αὕτως καὶ ἄλλον καὶ φιλοκάθαρον.

592.3.18, κεκραμένοι τοῖς τε σῶμασι καὶ ταῖς ψυχαῖς.
He then describes the effects that the zodiacal signs and their planetary rulers exercise on ethnicity. On the whole, these central peoples owe to Mars (the planet ruling the west) their tendency to leadership, nobility, and independence, and to Jupiter (the planet ruling the north) their liberty-loving, self-governing, and democratic character that induces them to establish many laws. 60

So much for the peoples situated more on the periphery of the north-western triplicity. As to the peoples placed in the central angle, the influence of their own triplicity is overlapped by that of the opposite south-eastern triplicity: thanks to Venus (the ruler of the second triplicity) the inhabitants are lovers of music and learning, fond of contests and of pure life, and thanks to Mercury (the daytime ruler of the Virgin, one partner of the second triplicity) they are social, friendly to strangers, justice-loving, fond of writing, and very efficacious in eloquence. 61

Here again Ptolemy modulates the different characters according to the three individual zodiacal signs:

1. To the Bull and to Venus (his daytime ruler) belong the Cyclades, the shores of Asia Minor, and Cyprus, the "Aphrodian" island (it is well known that Venus was a marine goddess and worshipped particularly in harbours, centers of prostitution). Hence Ptolemy concludes: "For this reason they are, on the whole, luxurious, clean, and attentive to their bodies." 62

60 2.3.18–19, ἡγεμονικῶν μὲν..., καὶ γενεάς καὶ ἀνυπόστατοι δὲ διὰ τοῦ Ἀρεως, φιλελεύθεροι δὲ καὶ αὐτόνομοι καὶ δημοκρατικοὶ καὶ νομοθετικοὶ διὰ τοῦ τοῦ Δίος.
61 2.3.19, φιλόμουσαι δὲ καὶ φιλομαθεῖς καὶ φιλογουνταί καὶ κοθάροι ταῖς διακατές, διὰ τοῦ τῆς Ἀφροδίτης, κοινωνίκοι τε καὶ φιλόξενοι καὶ νομοθέται καὶ καθαροίς καὶ ἐν λόγοις πρακτικάστοι διὰ τοῦ τοῦ Ἑρμοῦ. There is a strange addition about mysteries: see n.69 infra.
62 2.3.20, οἱ μὲν περὶ τὰς Κυκλάδας καὶ τὰς Παράλειας τῆς Μικρᾶς Ἀσίας καὶ Κύπρον τῷ Ταύρῳ καὶ τῷ τῆς Ἀφροδίτης μάλλον συνοικειούντα τῇ ἔθεν ὡς ἐπὶ τὸ πλήθος τρυφήται εἰσὶ καὶ καθάροι καὶ τοῦ σώματος ἐπιμέλειαι ποιούμενοι. The last effect is mentioned already by the Augustan poet Manilius for the Bull, which is considered the first female sign and accompanied by the seven Pleiades (5.146–147): cura sui cultus frontisque decorae / semper erit; see Hübner (supra n.27) 542.

2. To the Virgin and to Mercury (her daytime ruler) belong northern and southern Greece and Crete, because "they are better in reasoning and fond of learning and exercise the soul in preference to the body." 63
3. To the odd Capricorn and to Saturn (his daytime ruler) Ptolemy attributes the races of northern Greece: the Macedonians, Thracians, Illyrians, "because they are acquisitive, but not so gentle, nor social in their institutions." 64 In this way the extreme southern sign of the south-eastern triplicity (Capricorn) approaches the fiery character of the primarily determining north-western triplicity.

This is only the first of the four triplicities concerning Europe placed in the north-western part of the οἰκουμένη. The influence exercised by the opposite second south-eastern triplicity is answered by a reciprocal influence from the north-western triplicity which returns its influence back to the south-eastern triplicity. A similar cross-interpenetration combines the two other triplicities: the north-eastern of northern Asia and the south-western of Africa.

The levels of all these manifold parallelisms are extremely different: in a sort of spiritual "catch as catch can" astrologers picked up whatever they could find to use as a reasonable argument. 65 Let us take only three domains concerning mythology, religion, and science. The association of Saturn with Venus governing the south-eastern triplicity leads to the property σπερματικῶν ("rich in seed," 2.3.24), and this is based on the aetiological myth of Kronos' genitalia which, thrown into the sea, generated Aphrodite. In order to explain the combination of the moon with the Amazons, Ptolemy pretends that the female

63 2.3.21, διὸ μάλλον λογικοὶ τυγχάνουσι καὶ φιλομαθεῖς καὶ τὰ τῆς ψυχῆς ἀκόαντες πρὸ τοῦ σώματος. Cf. on the Virgin Manili. 4.194: illa decus linguae facet regnumque loquendi, with Hübner (supra n.27) 561.
64 2.3.21, διὸ φιλοκτήματοι μὲν, σὺν ἕμεροι δὲ ὑπὸ τῆς ὑπὸ κοινωνικοῦ τοῖς νομίμοις.
65 For further details see Boll (supra n.9) 199–200.
σελήνη has an "oriental and manly shape," although (we may add) the moon in general is related to the west.

As for religion, of the two planets of the south-eastern triplicity Venus creates, in Egypt, worshippers of Isis, and Saturn, in Asia Minor, worshippers of Mithras-Helios, and Venus alone hints at mysteries "because of her western shape," which contradicts her southern position (see fig. 13) and can only mean that, as a partisan of the moon (see fig. 14), she belongs to the night and to the west.

Finally science: in Babylonia, Mesopotamia, and Assyria the Virgin is said to generate astrologers, who observe and calculate the motions of the five planets, because the Virgin is the day house of Mercury, the astrologer's planet par excellence.

In conclusion, we may ask why Ptolemy preferred this extremely complicated combination of quarters and triangles instead of working with the clearly determined four edges of the world. One reason may be that he wanted to counter a serious argument advanced against zodiacal geography in general, pronounced since Carneades and Panaitios and repeated by Christian writers. These critics remarked that all parts of the inhabited world are populated with all kinds of mankind, and if the stars determined the character and behavior of entire peoples, individuals would be more homogeneous. And if, on the other hand, foreign individuals move from their homes into another country, they do not change, but normally retain their original character. Ptolemy counters this criticism with relativism, the favourite of all astrologers, who cautiously avoided predictions too clearly pronounced. Franz Boll has shown that in the philosophical discussion, here again Ptolemy is not original—although he does not depend on Poseidonios, as Boll believed—but when he united his astronomical and his geographical interests relating the variegated terrestrial ποικιλία of mankind to the city of stars (the heavenly Λυχνόσολις), and when he implemented the general strategy of relativism with an extremely sophisticated astrological cross-interdependence of opposite triplicities, this seems to have been his own invention.

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66 2.3.40, διὰ τὸ τῆς σελήνης ἀνατολικῶν καὶ ἔρευναμένον σχῆμα. See Boll (supra n.9) 201–202.
67 2.2.10 of the western region, τούτω τὸ μέρος σεληνικῶν τυχάνει, πάντοτε τῆς σελήνης τὰς πρῶτας ἐκπολές καὶ ἀπὸ συνόδου φαντασίας ἀπὸ λίβας ποιουμένης. διὰ δὴ τούτων νυκτερινῶν δοκεὶ καὶ θηλικῶν καὶ εὐφύνυμον, ἀντι­κειμένων τῷ ἀνατολικῷ. In the Amazons we encounter a sort of "antipathy."
68 2.3.23, σβήσω αὐτὸ τοῦ γὰρ τῶν μὲν τῆς Ἀφροδίτης Ἰσημοιαζόντων, τοῦ δὲ τοῦ Κρόνου Μίθρακ "Ηλιών.
69 2.3.19, μυστηρίων δὲ μάλιστα συντελεστικοῖς διὰ τὸ τῆς Ἀφροδίτης ἐσπέρων σχηματισμὸν.
70 Hübner (supra n.23) 127 and n.2.
71 Panaitios ap. Cic. Div. 2.97, plus terrarum situs quam lunae tractus ad nascentium valere (see the parallels given by A. S. Pease ad loc.), and principally Bardesanes Liber regionum, quoted by Eus. Praep. Evang. 6.10 and by others (= FrGrHist 719 f. 3). See Boll (supra n.9) 183–187; Bouchez-Leclercq 584–585.
72 Boll (supra n.9) 204–235, esp. 204: "In Wahrheit ist er auch dazu lange nicht selbständig genug gewesen."