COLLOQUIA ANTIQUA
12

THE PERIPHERY OF THE CLASSICAL WORLD IN ANCIENT GEOGRAPHY AND CARTOGRAPHY

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PEETERS
LEUVEN – PARIS – WALPOLE, MA
2014

TABLE OF CONTENTS

CHAPTER 4

MAPPING THE EDGES OF THE EARTH: APPROACHES AND CARTOGRAPHICAL PROBLEMS*

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Abstract

Mapping the edges of the Earth/world cannot be reduced to the mere cartographic expression of the conception of the *eschatia* or *perata*. Their cartographical presentation must be related to the customs and conventions that ruled over ancient mapmaking, especially the fact that there was no unified cartographical presentation of the world, and that there was no necessary link between the shape and proportions on the one hand, and the idea of the world on the other. Mapping the edges of the world thus could focus on its physical limits, shape and dimensions, on the human limits of its inhabited part or simply consider them as needless empty zones to be filled with more useful information.

If we consider that the 'world' does not mean here the whole globe but just the inhabited and known part of it, the so-called *oikoumene*, as ancient writers used to, mapping its edges would pose two series of questions, the first regarding the edges of world themselves: what and where were they? Two decades ago, J.S. Romm published a convincing and impressive book about these matters,[1] and for any detail concerning the conception of the edges of the world in ancient thought, readers should consult it.

As a starting point, let us consider that the world could be bounded by linear, physical limits, such as coastlines or mountain ranges, by climatic zones, by the presence of permanent human settlement, or simply by knowledge. Once the boundaries to be mapped have been decided, the mapmaker faces several problems; and it is these that we are going to examine here. He had to choose a general layout defined by contours and insert into its frame a number of legends, drawn vignettes and, if he so desired, other ornamental elements. Though mapping was an identified practice, its execution was not a very clear

* This article was written in 2005. It is presented here unchanged and with only a minor update to the bibliography.

[1] Romm 1982.

concept in antiquity: ancient and mediaeval cartography lies some way between geometry and painting, with the aspects of these two mixed in differing proportions in different instances. If the mapmaker had needed to draw the world just as he thought it really was, things would have been easy. But one of the main differences between modern cartography and its ancient or mediaeval predecessor is that now we seek to draw the world as it really is; in earlier times this was not necessarily so.

Our knowledge of ancient mapmaking remains poor, primarily for want of evidence. A search at Internet resources on ancient cartography yields mostly reconstructed maps, *i.e.* drawn in modern times based on ancient texts. We shall exclude from our analysis the texts of geographers, since we can hardly consider them to be cartographic evidence: they do not describe what a map by Eratosthenes, Dicaearchus or Strabo was or even what it was intended to be,[2] except in a very small number of passages where map-construction or former maps are described or discussed.[3] In general, they just describe the world, not a world map, thus avoiding the choices mapping imposes, so that we can rely upon only the few descriptions of actual maps, such as the so-called cosmography of Julius Honorius.[4]

The well-known Peutinger map, otherwise the *Tabula Peutingeriana*,[5] is almost the sole extant ancient map (though known through a mediaeval copy after a mutilated original) aside from two from the manuscripts of Cosmas Indicopleustes' *Christian Topography* (Fig. 1).[6] We shall add to these the 10th-century Cotton or 'Anglo-Saxon' map (Fig. 2),[7] obviously very close to an earlier document, and a map of Asia contained in a 12th-century manuscript of St Jerome's *de locis sanctis* (Fig. 3), almost certainly derived from a late 3rd- or early 4th-century original.[8] The recently discovered map of

[2] Prontera 1984, 244–51.

[3] As well as the well-known discussions in Strabo and Ptolemy, we find descriptions of maps left by Dionysius Periegetes in the time of Hadrian, and by the *rhaetor* Julius Honorius in the 5th century AD.

[4] Riese 1878, 24–55.

[5] Reproduction and earlier bibliography in Bosio 1984; Prontera 2003; Weber 1976. See also Talbert 2004. A facsimile of the original is available at http://www.euratlas.net/cartogra/peutinger/; and Miller's copy has been reproduced by Bibliotheca Augustana: http://hsaugsburg.de/~Harsch/Chronologia/Lspost03/Tabula/tab_pe00.html. Segments are numbered after Weber.

[6] Bibl. Apost. Vat., Vat. Gr. 699, f19v (Harley and Woodward 1987, 144, fig. 8.12), f40v (Harley and Woodward 1987, 263, fig. 15.2; 351, fig. 18.66).

[7] British Library, Cotton MS. Tiberius, BV, f56v (Harley and Woodward 1987, 348, fig. 18 and pl. 22); Miller 1895, 29–37.

[8] British Library, Add. MS 10049, f64r; Arnaud 1992, 152–69; Miller 1895, 5–13; Woodward 1987, 288–92.

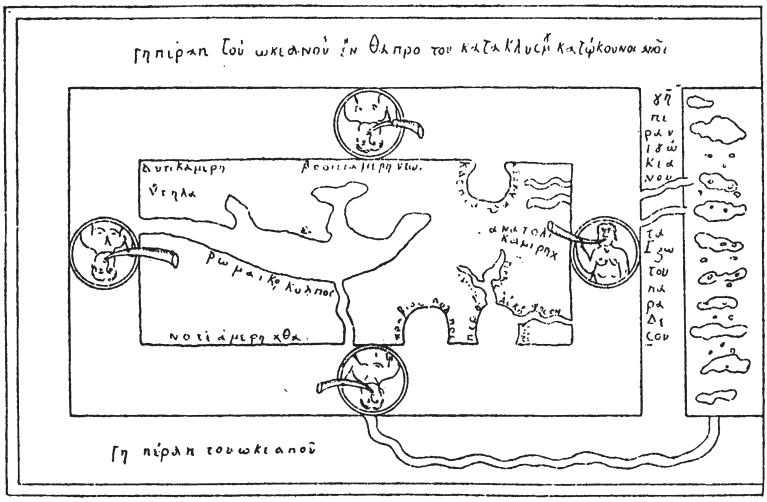

Fig. 1. The map of Cosmas Indicopleustes (after Miller 1895).

Artemidorus and a map-like mosaic from Haidra are worth no more to our discussion than the map from Dura Europos.[9]

I do not intend to proffer here a fully argued theory of ancient cartography. Let me, nevertheless, introduce some preliminary proposals. Greater maps, though neither exceptional nor scarce, remained rather rare. They were prestigious and expensive objects, bound for public buildings much more than for domestic use. They cannot, therefore, be considered as a mere echo of scientific knowledge or as practical utilities. They must be analysed as a particular glance at the world, including a strong cultural, metaphysical and ideological content, more than a mere idea of its shape, size and dimensions.

Being beautiful and expensive objects, maps seem to have been worked out by people who were painters rather than mapmakers (Ptolemy *Geography* 1. 1. 5). Evidence shows that often, even if not always, two people were at work: one painted and the other wrote the legends.[10]

[9] Bibliothèque Nationale de France, Gr. Supp. 1354, no. 5; Arnaud 1989b; Cumont 1926; Dilke 1985, 120–22; 1987, 249.

[10] It may be inferred from the recently discovered manuscript of Artemidorus Book 2 (Galazzi and Kramer 1998) and from the so-called Dura Europos shield (Arnaud 1989b). It is described in the dedicatory epigram of the world map drawn by order of Theodosius II for the University of Constantinople (Wolska-Conus 1973b): inserted at the end of the *Divisio orbis terrarum* (Riese 1878, 19–20) is, *dum scribit et pingit alter*.

Fig. 2. The Cotton map (after Miller 1895).

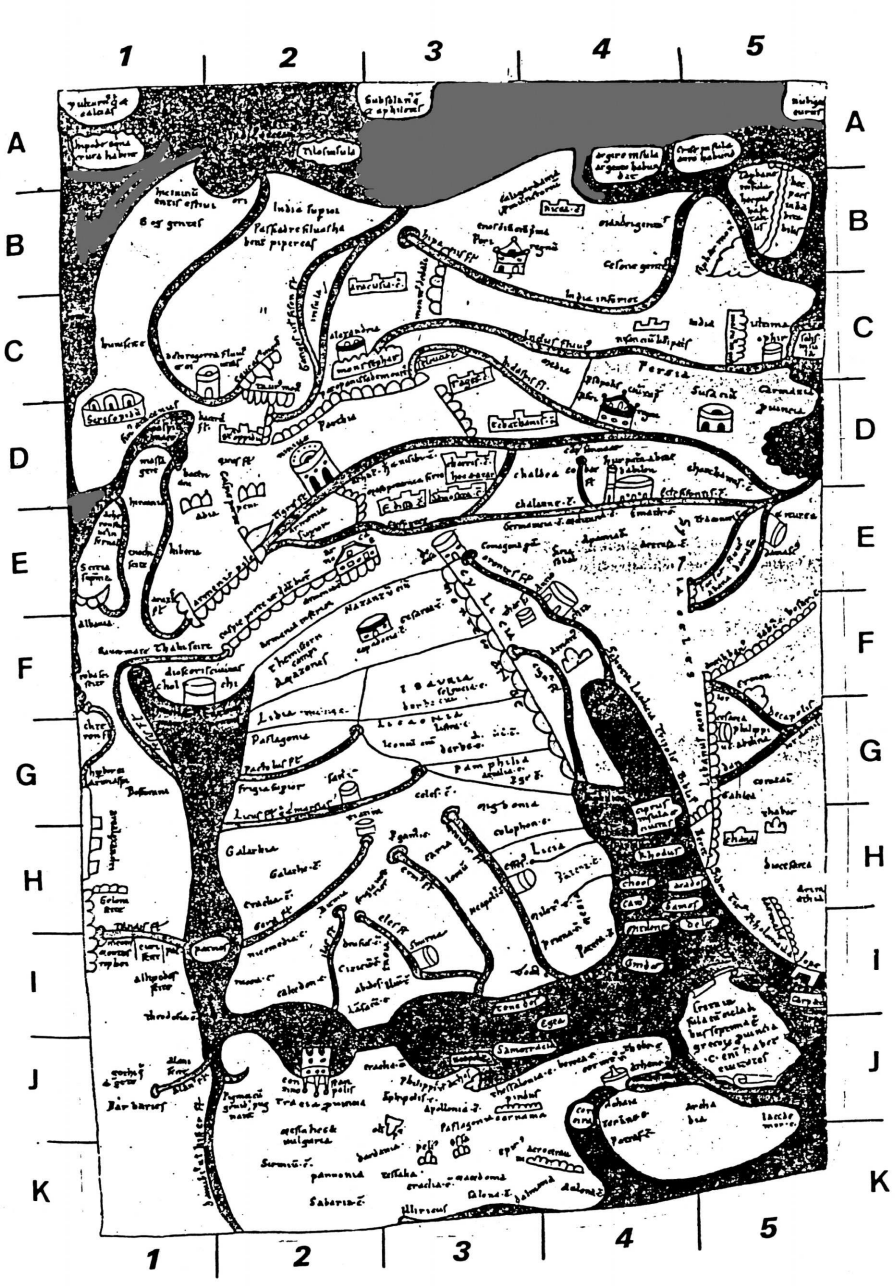

Fig. 3. The Jerome map (after Miller 1895).

Ancient mapping cannot be reduced either to the scientific mapping described by Greek geographers or to the Peutinger map. There was probably a much greater variety of types and, contrary to what was once postulated,[11] it is no longer realistic to associate to each culture and period a specific map or family of maps. The opposition between scientific Greek mapping, practical Roman mapping, and the futility and archaism of mediaeval maps, makes no sense when the evidence is considered. The diversity of ancient maps obviously results from the diversity of purpose of the mapmakers rather from that of opinions about the shape, size and dimensions of the inhabited world.

Deforming shape and scale seems to have been a conscious convention among a great many cartographers in pursuit of putting as much information into the map as possible, rather than respecting exact shapes and positions. The way in which the Peutinger map has been distorted is well known. It has been convincingly argued that the main purpose of such distortions was to increase the space available for the legends.[12] In fact, it provides about threefold the number of legends usually found in a manuscript *mappamundi*.

It is near certain that, together with many maps of other shapes, circular maps were drawn from the Archaic period through to the Middle Ages – though it is often criticised. Authors such as Geminos (in the age of Pompey) did not enjoin against drawing circular maps, he just warned his readers not to trust them, since they did not reproduce the actual shape of the *oikoumene*. Some mediaeval mapmakers drew circular maps and issued similar warnings.[13] It may seem strange that a map would not reproduce the truth. The view of mediaeval mapping – that since geometric accuracy in the *mappaemundi* was not a primary aim, the lack of it should hardly be criticised[14] – seems valid for ancient mapping as well, or at least part of it, as soon as we realise that the conception of geographical mapping held by Eratosthenes, Strabo and Ptolemy was neither the sole nor dominant one. For the ancients, a map, even the most accurate, was always false, since the only certainty was to some extent that of the relative position of places.

In Strabo's time,[15] maybe somewhat earlier, mapping the world at a constant scale was considered a rather desperate enterprise as soon as one wanted

[11] Stahl 1955.

[12] Talbert 2004; *pace* Arnaud 1992, 989–91. *Cf.* Arnaud 1989a.

[13] Geminos *Isagoge* 16. 1. 4; Arnaud 1989a; 1990.

[14] Wright 1965, 248.

[15] Strabo 2. 5. 10: 'The man who would closely approximate the truth by constructed figures must need make for the earth a globe like that of Crates, and lay off on it the quadrilateral, and within the quadrilateral put down the map of the inhabited world. But since there is need of a large globe, so that the section in question (being a small fraction of the globe) may be large enough to receive distinctly the appropriate parts of the inhabited world and to present the proper

to insert a consistent sum of information. It needs a very large scale: at least 7 ft per 10,000 stadia. The map Strabo thinks about is obviously not a wall map, nor a real one, but an abstruse, metaphorical affair.[16] Ancient maps were usually wall maps,[17] as their names indicate: *pinax* or *tabula*. As for a wall map, for the map to remain legible at a glance, it would have been necessary to increase the size of the legends and vignettes in proportion to any increase in the size of the map itself.[18] It would have been very difficult in these conditions to gather more than 800 legends in a single world map, and this is more-or-less the number of legends we find on the largest mediaeval *mappaemundi*, which did not try to respect scale, shape or positions. Furthermore, this number falls quickly if we bear in mind, as Ptolemy pointed out, that a major part of the legends and places to be put on the map had to fit into the same small portion of the known world: the Mediterranean, particularly the Greek world. Unless one adopted the revolutionary solution promoted by Ptolemy alone, the choice was between truth and quantity of information.

This probably explains the difference between geographical and chorographical mapping, as suggested in a passage by Strabo (2. 5. 17), wrongly interpreted as a description of the map 'of the Chorographer' and thence of the map of Agrippa:[19]

> It is the sea more than anything else that defines the contours (*geographei kai schematizei tēn gēn*) of the earth, and gives it shape by forming gulfs, deep seas, straits, and likewise isthmuses, peninsulas and promontories; but both the rivers and the mountains assist the seas herein. It is through such natural features that we gain a clear conception of continents, and all the other diversified and colourful details (*poikilmata*) with which is filled a chorographic map (*ho chorographikos pinax*)!

It seems actually that it does establish a fundamental difference between a geographical map shaped by the seas, exact and deprived of coloured ornaments (*poikilmata*), and the chorographical map, related to places instead of shape, and full of them. This is the same difference we find in Ptolemy's *Geography* (1. 1. 5), when we read that anyone could draw a geographical map

appearance to the observers, it is better for him to construct a globe of adequate size, if he can do so; and let it be no less than ten feet in diameter. But if he cannot construct a globe of adequate size or not much smaller, he should sketch the map on a place surface of at least seven feet' (transl. H.L. Jones).

[16] Prontera 1984, 244–46.

[17] Prontera 1984, 243.

[18] Cassiodor *Inst. Div.* 1. 25; Florus Praef 3; Jerome *Epist.* 60. 7; Riese 1878, 20 (= Tierney 1967, 23), v. 11.

[19] Against the identification of the Chorographer and Agrippa, see Aly 1957, 224, 268. For the sense of a 'chorographical map', see Prontera 1984, 246, n. 116. And more recently Arnaud 2007–08.

but that chorographical and topographical maps required the intervention of a real painter.

This same passage gives us an explanation: though it has long been thought that chorography was regional mapping, it is now clear that the word *chorographia* was applied to works involving the whole world.[20] Thus, the difference is not to be sought in the object but in the pattern of presentation. Chorography is indeed interested in the nature or quality of objects (*to poion*) and to resemblance (*homoiotes*), geography, quantitative data, scale and inscription of the inhabited world on the terrestrial globe. It is interested in mimetic resemblance (*homoiotes*) only as far as the global shape (*schema*) of the world and of its main parts is concerned. Ancient maps hovered at tension in a triangle between three extremes: landscape painting, geometry and organised lists of toponyms within a frame, dissolving when one of these was reached. A huge variety of combination and features was thus to hand to the mapmaker.

In a few words, mapping the world was not only drawing it how one thought or knew it was, although most scholars have supposed this to have been so. Mapping generated its own problems, and one had to manage with choices and priorities that were not only theoretical but practical: what did a map or mapmaker intend to show, given that any priority excluded a certain number of opportunities. It is a modern point of view that a single map can show simultaneously the shape and size of the known world and the actual positions, at a constant scale, of any single place of note. In former times, there was no unified cartographical presentation of the world, rather an accumulation of presentations, each related to a specific aim and perception.

We must consider that, whatever the conception of the world might be, any cartographical approach induced a specific treatment of the edges of the world. It was obviously possible to pay attention primarily to the world as a natural feature. Mapping the world then meant *geographein*: inscribing it with certain physical boundaries. By the beginning of the reign of the emperor Tiberius, in the passage quoted above, Strabo could write: 'It is the sea more than anything else that defines the contours (*geographei*) of the Earth and gives it shape (*schematizei*)' (2. 5. 17). He obviously considered that natural and permanent features belonged on geographical maps; anthropic features, in contrast, should be placed within a chorographical map.

Of the two ancient definitions of the world rightly pointed out by Romm, this, the physical or naturalistic one, goes back to Homer, who considered the world as physically surrounded – and thus bounded – by a boundless Ocean. In fact, there was no doubt for most ancient writers and cartographers that the

[20] Nicolet 1988.

inhabited world was an island surrounded by the Ocean, and that the Caspian Sea, like the Arabian and Persian Gulfs, was a gulf of this External Ocean. These gulfs apart, detail of the northern and western shores of the Ocean remained unknown, thus their presentation could be very schematic. Whatever were the actual shape and dimensions given to the world by the mapmakers, the whole ancient and mediaeval cartographic tradition agreed in the fact that it was an island, and so did all the maps described by Ptolemy (*Geography* 8. 12–14).

If we have a look at the Peutinger map, convincingly interpreted by R.J.A. Talbert as a true geographical map rather than a simple road map,[21] we notice that it fits with this conception: the world is surrounded on each of the remaining parts by the Ocean; and it is certain that the missing, occidental part was bounded by the Atlantic Ocean. Though waters surround the world, we should note the undulating contour which conventionally denotes a coastline along the shore of Europe and Asia as far as the Arabian Gulf. The whole southern edge of Africa, however, is bounded by a perfectly horizontal line used as a base for a continuous mountain range. Whether this was a mistake of the mediaeval copyist or not, we shall never ascertain. It is possible that here the original bore the same undulating line as elsewhere, but that this had become unrecognisable by the badly decayed state of the original. It is more likely, however, that it was intended to be mountain in the original: since the time of Hesiod, it had been normal to place an immense mountain rising to the sky at the southern boundary of the world. Whatever its name might be – Atlas, or *Theon Ochema* as in Hanno's *periplus* – and although its western part, described by Pliny the Elder, was the actual Atlas Mountains of Morocco, its conception as a whole remained legendary (Hesiod *Theogony* 517–518; Herodotus 4. 184; Pomponius Mela 3. 101; Pliny *NH* 5. 5. 7; Hanno 16 [= Müller 1855, 13]).[22] Although the importance of the mountain as a boundary is preserved, it is noteworthy that nothing remains of the legend itself. We can find no written trace relating to this sky-bearing column, unless it were written on the lost segment(s).[23] The cause might also be the Christian convictions of the 4th-century compiler.

The sole exception is Ptolemy. He not only extended the world southward to the equator, according to Polybius and Seneca, but bounded it with unknown lands instead of an External Ocean. Likewise, he considered the Indian Ocean not to be part of that External Ocean but an enclosed sea, surrounded by a

[21] Talbert 2004.
[22] Strabo (17. 3. 2) says that the Atlas extend from the Atlantic as far as the Syrtes.
[23] Talbert 2004, 120–21; Weber 1976, 13.

continuous stretch of land, albeit that the southern part of this remained unknown. This feature fitted with the same principle of symmetry in world structure which established the idea of two or four symmetrical worlds.[24]

Once the island nature of the *oikoumene* had been admitted, its exact shape, proportions and dimensions, and the place of the major cities in certain *climata*, were matters of discussion. Thus the question arose of the actual physical limits of the known world. The answer was summarised by Agathemerus in the 2nd century AD:

> The ancients used to give the earth a circular shape. In the middle of it they put down Greece and in the middle of it Delphi, which they considered as the navel of the world. But Democritus, a man of great experience, first knew that it was oblong, and that its length was one-and-a-half times its width. Dicearchus the Peripatetic agreed with this opinion. Now, Eudoxus said that the length was twice the width, but Eratosthenes though that it was more than twice, Crates that it was semicircular, Hipparchus that it was table-shaped [trapezoidal], others that it was tail-like, Poseidonius the Stoic that it was sling-like…[25]

In Late Republican and Imperial times, the geographical outlook commonplace among the cleverest part of the elites seems mostly to have been Eratosthenian. Cicero, Agrippa and Arrian indeed rely much upon him. Despite some minor debate, such as that aroused by Strabo, there was general agreement with the global frame of world perception erected by Eratosthenes. It is well captured in the small *mappamundi* found in the manuscripts of the *Christian Topography* written in Alexandria in the 6th century AD by Cosmas Indicopleustes:[26] the *oikoumene* appears as rectangular; the Caspian, Arabian and Red Seas were considered gulfs of the External Ocean; the River Tanais, Rhodes, Alexandria and the Nile were situated on the same meridian, which divided the known world into two equal parts – East and West – and which, at Rhodes, was bisected by the line drawn from the Pillars of Hercules to the extremity of India following the Taurus mountain range that divided the *oikoumene* into two other equal parts – North and South.[27] It probably gives us some idea of what geographical maps could look like: rather schematic in their treatment of natural features – the main reason, if not the only one, why they did not need the competence in painting required for chorographical maps (Ptolemy *Geography* 1. 1. 5).

[24] Romm 1992, 60–61, 129–31.

[25] Agathemerus *A Sketch of Geography* 2 (= Diller 1975, 60; Miller 1861, 470); Prontera 1984, 235.

[26] See n. 6 and Fig. 1 above.

[27] Wolska 1962, 245–54.

Many a mapmaker seems not to have paid too much attention to accuracy. In fact the geographical map as imagined by Eratosthenes or Strabo, *i.e*. a map including both chorographical content and a geographical frame, both drawn at a constant scale, was considered by Strabo a very difficult proposition and by Ptolemy as utopian, unless one forewent the opportunity to put all information on a single map and instead created an atlas.

The first difficulty encountered by anyone who intended to map the whole *oikoumene* and its physical limits, and the most natural to any modern scholar, was that of mapping the shape and dimensions of the world as ancient geographers thought they actually were. Much has been written about Greek scientific cartography, so I do not need to deal with it here at any length.[28] Both Strabo and, moreover, Ptolemy knew that once the idea was forsaken of drawing a map on a globe, then a form of projection was required to reproduce a spherical object on a flat tablet. Strabo (2. 5. 11), following Eratosthenes, chose an orthogonal projection very similar to Mercator's; while Ptolemy preferred a conical projection and even describes in Book 7 of his *Geography* something very similar to Bonne's projection.

It is worth mentioning that the shapes enumerated above in the passage from Agathemerus (to which may be added Strabo's cloak-like *oikoumene*) obviously result from different kinds of projections: Crates' *oikoumene* was semicircular because it took place on a globe, as did Strabo's, while Eratosthenes' was rectangular because it was supposed to take place in the orthogonal grid of Mercator's projection. I imagine that few individuals could understand or discuss such sophisticated matters as projections. There is a need, however, to discuss the actual reception accorded to the scientific mapping described by Strabo or Ptolemy. It has been widely accepted by modern scholarship that map typology merely mirrored progress in science and knowledge, leading almost naturally from the circular map to that of Eratosthenes, thence to the Ptolemaic Atlas and, after the supposed dark age of science in mediaeval times, on to the Renaissance.

The way in which Berger, one of the most fervent supporters of the scientific geography of the Greeks, treated the table-like (*trapezoeides*) shape given to the world by Hipparchus is emblematic of what seems to be a mistaken approach to the problem.[29] He could not admit that such a great astronomer could argue that the world was circular. He thus excluded this fragment from the geographical works and then considered that it meant a trapezoidal shape that resulted from Hipparchus' system of projection. The first mistake probably

[28] Berger 1903, 428, 476–79, 540, 609–10, 632–40.
[29] Berger 1869, 35–36, frag. IV.4.

consisted in considering that the information provided by Agathemerus was more than doxographic, and that it was a true fragment drawn from a text of Hipparchus.

Now the comparison of the world with a table was not original. We find it in Plutarch's *Moralia*, where it clearly means a circular map.[30] It can hardly be coincidence that the comparison takes its origins from the works of the Presocratic Ionian philosopher Anaximenes,[31] since we know that Hipparchus had rehabilitated the 'old maps',[32] which have convincingly been identified by D.R. Dicks with maps of the Ionian tradition.[33] Although some have thought that these were not circular but rectangular,[34] we must consider that whatever might be the conviction of some Presoctratics following Agathemerus about the sphericity of the world,[35] Ionian maps used to be circular.

The choice of Hipparchus not to trust Eratosthenes but to rehabilitate the older maps was spectacular and inspired. Overall, he intended to say that it was, and would always remain, impossible to draw a true map of the world, for neither the evidence collected nor the actual state of science and techniques allowed the exact location of places to be determined. He wrote his treatise more against Eratosthenes than to build a new image of the world,[36] and was therefore naturally induced to rehabilitate the old circular map.

Though criticised by Herodotus (4. 36), they were still in use in the time of Aristotle (*Met*. 362 b 12), who criticises them again, and, a century and a half later, in that of Hipparchus; and so they were again in that of Geminos and Pompey and then of Plutarch and Domitian. And there is little doubt that for Apuleius (*Mund*. 7), whose vocabulary shows that he was thinking of a map, the inhabited world was circular: *multae aliae [insulae] orbis ad modum sparsae, hanc nostram insulam (id est hunc terrarium orbem), quam maximam diximus, ornamentis suis pingunt et continuatione ut quidam sertis coronant*. It is otherwise widely accepted that in late antiquity most world maps were circular. We should therefore imagine a continuous tradition of circular maps from the Archaic period through to the Late Middle Ages. F. Prontera has

[30] Plutarch *Quaest. Conviv*. 7. 4 704b: 'I think that the table is an imitation of the Earth, for it feeds us, is circular and stable.'

[31] Anaximenes 377 after Aëtius 3. 10. Fairbanks 1898, 22: 'The form of the earth is like a table.'

[32] Dicks 1960, frag. 12–14 = Strabo 2. 1. 4, 8, 11.

[33] Dicks 1960, 122; Aujac 1966, 204. *Contra* Bunbury 1883, I, 465; Berger 1905, 4016, who thought that these maps were intended to be the map of Dicearchus.

[34] Heidel 1937, 20–21.

[35] Parmenides in Theophrastus frag. 6a = *Doxogr*. 482 = Diogenes Laertius 9, 21–22 = Fairbanks 1898, 106; Theophrastus frag. 17 = Diogenes Laertius 8. 48 = Fairbanks 1898, 106; 365 = Aëtius 3. 11 = Fairbanks 1898, 110.

[36] Berger 1905, 468, 591.

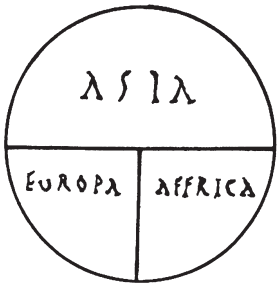

Fig. 4. T-O map (by author).

convincingly argued that the well-known *diorthosis*, or correction, was merely a literary exercise which by no means put an end to the reproduction of ancient models and did not even open the way to the construction of new ones.[37]

Only the shape remained unchanged, and there is much evidence that the content itself fitted with the general common opinions presented above; and it has been shown that the so-called T-O maps (Fig. 4), so popular in mediaeval times, whose origin probably goes back to the early Roman empire and perhaps even to the time of Sallust, like Cosmas' map, fit Strabo's pattern of the continents.[38] Why circular maps remained so popular until the Middle Ages is still a mystery, but one can suggest that it was mainly due to the strength of a tradition warranted by the highest authority: Homer. One should add that it was also supported by the Latin expressions *orbis terrarum*, probably derived from that very shape. Their intellectual simplicity made them easier, and in some ways they could be considered truer than geographical maps, because they professed no opinion about insoluble problems. Since they gave only relative positions to places, some probably considered them truer than those which pretended to give absolute ones, at least provided that it was kept in mind that the shape of the map was not that of the actual world, simply a convention used for want of certain knowledge. Finally, in the four corners of the 'tablet', free spaces were left for texts or images to be inserted: possibly one such was the epigram of Theodosius II's mapmakers mentioned above, and another was that which accompanied the map sent by Alypius to the emperor Julian (Julian *Epist*. 10 Bidez).

[37] Prontera 1984, 245.
[38] Wolska 1962, 245–54.

Enough of the continent. In the passage of Apuleius quoted above, mention is made of the islands which lay beyond it and surrounded it like the jewels of a crown. Since they were situated beyond the insular *oikoumene* in the External Ocean, they could be considered as the ultimate boundaries of the world. Such were Thule, Cerne, the British Isles and Taprobane. Beyond the Indian coast, the Jerome map locates both the *Solis insula* and Taprobane.[39] The former was considered the first land outside the *oikoumene* (Mela 3. 7. 71; Pliny *NH* 6. 86, 97; Solin 54. 4; Mart. Cap. 6. 6999; Dicuil 7. 40);[40] the latter is mentioned in writing: *Hec pars habitabilis*. *Hec pars inhabitabilis*. It shows that the mapmaker considered Taprobane as the ultimate point of inhabited land, thus answering those who thought it the beginning of another *oikoumene*.[41]

Mention of these islands leads us to the second definition of the world. By the time of Herodotus, in fact as early as the Presocratics,[42] there was a new claim for geographers, geography and geographical mapmaking: describing what were the limits, shape, size and dimensions of the inhabited world. The physical limits of the world were no longer a matter of concern; what mattered now was to determine with these which parts were inhabited or inhabitable, and which were not.

Ancient geographers tell us in which ways they were interested in the inhabited instead of the physical world. It is not always easy to be clear how this notion connects with those of the civilised world (*terra qua colitur*), habitable world (*terra habitabilis*) and the known world (*terra qua cognoscitur* / *qua cognitum est*). Some geographers sought to relate these, at least as long as they were making a general survey: thus, Eratosthenes, when he inscribed the physical limits of the *oikoumene* within the climatic limits of the habitable and inhabited world. But once a detailed map was concerned, so were the contradictions of the textual tradition, for the *oikoumene ge* could equally well be bounded by the last known people of mankind or where stood the last habitable land. Furthermore, it was obvious that it was difficult to determine human life in certain linear boundaries, for evidence had shown that hostile conditions could generate intermediate forms of human presence – such as nomadism between permanent human settlements and genuine waste or desert.

[39] Miller 1896, 12.

[40] It seems from the testimony of Pliny that the information was drawn from Onesicritus and Nearchus.

[41] Mela 3. 7. 71, after Hipparchus, who wondered whether it still belonged to the inhabited world or was the beginning of another world; Pliny *NH* 6.81.

[42] Parmenides 365 (= Aëtius 3. 11 = Fairbanks 1989, 110) had already considered that the inhabited world was bounded by an inter-tropical torrid zone.

Those who tried to set anthropic geography into the physical boundaries of the known world had to manage an empty, or near empty, stretch of land between the natural and human boundaries of the world. In addition, in the time of Alexander and again under the Roman empire, the question arose of the limits to which the world could be durably subdued. Unless a schematic presentation was chosen, the problem had to be faced of the *perata*, a boundary consisting of a zone rather than a line.

Schematic maps, though very rough and ready, and probably because they were so simple, were probably far more widespread than the more sophisticated products. Some, like the T-O maps, did not conjecture about the edges of the world; their only scope was to show the internal divisions and proportions of the three continents. Some others are of much greater value for this discussion: those that tried to define the extent of *terra habitabilis* and therefore considered what was inhabited, or which named the people who dwelt at the edges of the Earth.

So-called zone maps were actually maps of the celestial zones whose projection on to the surface of the Earth defined, after Eratosthenes and his followers, five terrestrial climatic zones. Of these, the two around the poles were too cold to be habitable; and it was a common opinion that a third, the torrid zone between the Tropics, was also uninhabitable, though some eccentrics, such as Polybius and Seneca, thought that the Nile floods could not be plausibly explained without a temperate and humid equatorial zone between the Tropics. Between the torrid and frigid zones, two symmetrical ones, one in each hemisphere, were fitted for human life. Such maps occur in the manuscripts of the *gromatici veteres*,[43] and in the so-called Boscovic Anemoscope, but do not mention climatic specifics, which did not appear until mediaeval maps (Fig. 5).

The earliest preserved map is that attributed to Ephoros by Cosmas Indicopleustes, whose manuscripts give the schematic figure of a rectangular map (Fig. 6). It is supposed to give the reader an idea of the global shape and proportions of the inhabited world, surrounded by the Ocean. It places, at the four cardinal points marking the limits of the *oikoumene*, the names of the peoples supposed to mark them: the Celts in the Far West, the Scythians in the Far North, the Indians in the Far East and the Ethiopians in the Far South. As early as the end of the 4th century BC, if the map really is to be attributed to Ephoros himself, it seems that a certain number of peoples, some of whom already appeared in Homer, marked the edges of the inhabited world.

[43] P. 93v, fig. 100a Thulin and Arcerianus A, Wölfenbüttel, 132, fig. 100 Thulin, *ad*. P. 150.16 = fig. 161 Lachmann; P. 94v, fig. 100a Thulin and Arcerianus A, Wölfenbüttel, 133, fig. 101 Thulin, *ad*. P. 152.3 = fig. 162 Lachmann.

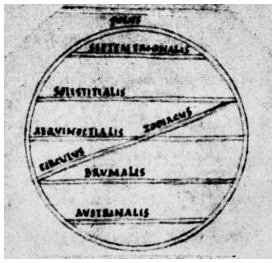

Fig. 5. Zone map of the Gromatici (after Thulin).

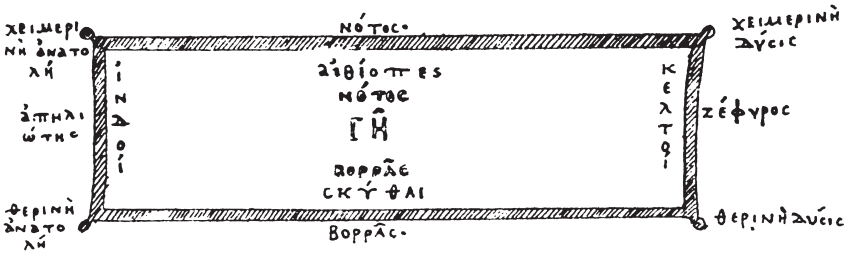

Fig. 6. The Ephoros map of Cosmas (after Miller 1895).

Turning now to the Peutinger map, the point at which the road network ceases to organise the frame of the civilised world creates an impressive gap between the *oikoumene* in its strict sense and the physical limits of the world.[44] It shows in itself the truest limits of what, for its Roman author, were the actual boundaries of the civilised world – the Roman frontier – and contains legends such as *Fines exercitus Syriatice et commercium barbarorum* (X. 2) or *Areae fines Romanorum* (X. 2). One should bear in mind that the first, lost segment of the map probably started with *exploratio ad Mercurios*, the very first and most southerly and westerly place named in the *Antonine Itinerary*, and a symbol of Roman military presence.

The western edges of the map are unfortunately missing, and were already so, on the original when it was copied in the 13th century. We know that the Roman road from Rome to the Ocean at Gades/Cadiz was much emphasised by imperial propaganda[45] as a symbol of Rome's subduing the whole of the known world down to its physical limits. At the easternmost limit of the world (XI. 5), but still

[44] Bosio 1984, 138.
[45] Dion 1973.

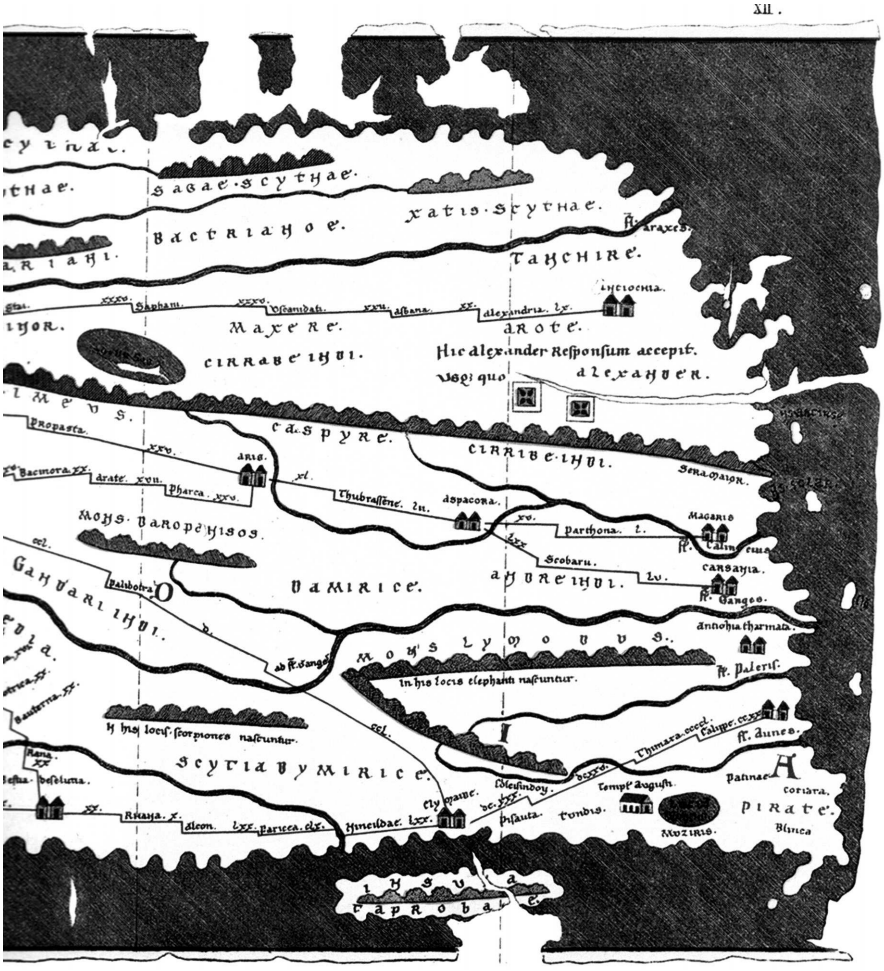

Fig. 7. India in the Peutinger map (after Miller 1895).

in the *zona temperata*, it is noteworthy that the whole of the southern and eastern shores of India up to the mouth of the River Araxes are marked by vignettes and roads (Fig. 7). Such roads were obviously non-Roman but, as nothing distinguishes them, they were obviously to be taken as Roman by the reader.[46] Should any doubt have arisen, it ought to have been washed away by the mention in the same countries of both the *oraculum Alexandri* and the *templum*

[46] Whittaker 2002.

Augusti at Muziris. The idea thus given by the map is of a continuous Graeco-Roman world, characterised by a continuous road network within the whole temperate and habitable zone from the Western Ocean to the Eastern.

Beyond the Roman world, to north and south, lay the *perata*. They provide quite a different image of the edges of the world. Even a quick glance at the map shows that the legends and vignettes, placed between the Roman *oikoumene* and the shores of the External Ocean and often underlined by the use of red ink, provide many examples of exotic animals, human hybrids, deserts or forests, barbarians, etc., which gradually lead us from the *oikoumene* to the very edges of the Earth. Although some look like similar legends borne by Anglo-Norman maps of the 13th century,[47] contemporaneous with the Peutinger map, the numerous mistakes made by the mediaeval copyist in reproducing them make it certain that their writing goes back to at least the mid-4th century lost original.

The narrow stretch of land between the last Roman roads and the External Ocean is mostly filled with the names of barbarian peoples.[48] It is worth mentioning that in the late 3rd and by the mid-4th century AD, when the map copied in the 13th century was drawn and modified somewhat, public inscriptions and Latin writers used to consider the Roman world as the *orbis terrarum,* and the people inside it as *genus humanum*. The surrounding of the Roman world by these barbarian names, gathered in the tight space between the *orbis terrarum* and the Ocean, fits well with the traditional idea of a zone of transition between the *oikoumene* proper and the *deserta*. It seems that for the author of the map, the barbarians belonged to the inferior forms of humanity one should expect.

Nomadism is one such transitional form of humanity. It is unsurprising to find in such sense the *hamaxobii Sarmatae* (VI. 2/3), usually linked with nomadism, or the *Sarmate vagi* (IV. 5–V. 4).[49] It is the way of life that the legend *Bagi Gaetuli*, usually understood as *Vagi Gaetuli*, seems to underline:[50] I would also suggest the reading *Barbari Gaetuli*, which is found on the Cotton map.

The southern and eastern edges of the map provide some evidence of the pattern of legends which occurs commonly in the largest mediaeval *mappae-mundi*, even the oldest. These are generally quite long and formulaic (‘Here…’;

[47] Woodward 1987, 326–33.

[48] See also the word *Barbari alii ignobiles* (Julius Honorius) or *Barbari* (Albi map, 8th century, Bibliothèque Municipale d’Albi, MS. 29 Albi, f57v; Miller 1895, 57–59; Woodward 1987, 348, fig. 18.56) or *Barbaries* (Jerome map), all relating to the same place on the western shores of the Black Sea. The testimony of Orosius *Hist. Adv. Pag.* 1. 2. 54 shows that they were originally intended to mark the northern *Barbaricum* divided from the Roman world by the Danube.

[49] Podossinov 2002, 315–16.

[50] Weber 1976, 62.

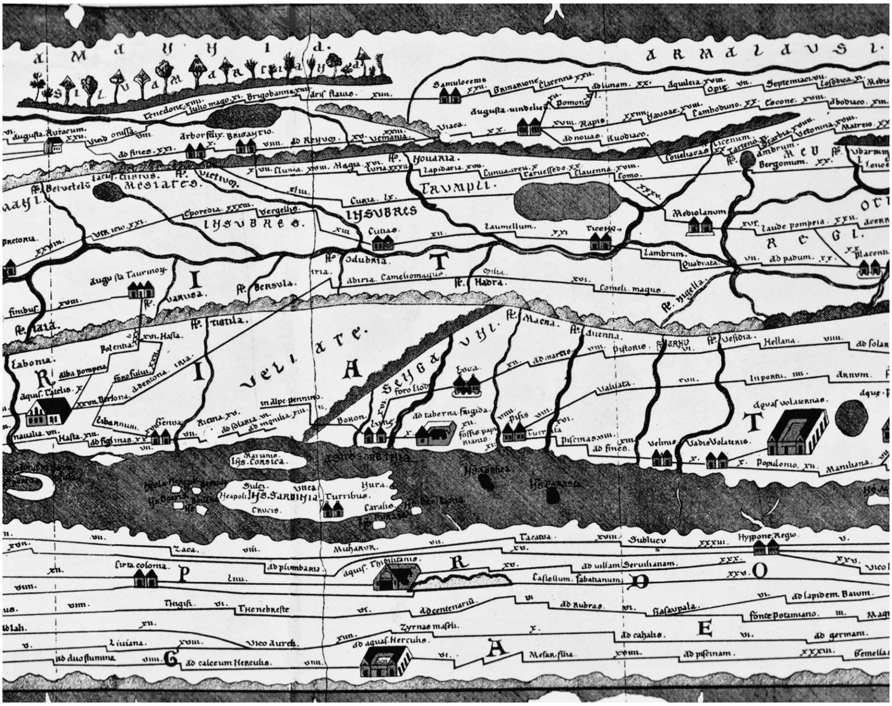

Fig. 8. The *Silva Marciana* in the Peutinger map (after Miller 1895).

'This is…').[51] In both ancient and mediaeval maps, the length of the legends itself is typical of the edges of the Earth. In the 'civilised' parts of the known world, where too much information has been collected to be set in the map, all available space is filled with vignettes and simple place-names. Compared with these parts were entire 'useless spaces', at least to an ancient geographer's mind: these were deprived of permanent human settlements and remained empty. Such were the seas and the *peirata* and *eschatia*.

Now, ancient and mediaeval mapping displays a strong *horror vacui*, both for aesthetic reasons and because maps were also intended to provide as much information as possible. Among other solutions, it was possible to insert sets of images

[51] *Hic Alexander responsum accepit: 'usque quo, Alexander?'* (Peutinger map XI. 4/5; *Hic cenocephali nascuntur* (Peutinger map VIII. 5); *Hic lacus Tritonum* (Peutinger map VII. 4/5); *Hii montes subiacent paludi simili M(ar)eotidi, per quem Nilus transit* (Peutinger map VII. 5); *Hoc flume(en) quidam G(i)rin uocant, alii Nilum appellant* (Peutinger map VI. 5/VII. 1); *Lac[us] salinarum, hic sal per se conficitur* (Peutinger map VII. 4). Cotton map (Miller 1895, 35): *Hic Barbari Gaetuli*; *Hic dicitur esse mons s(em)per ardens*; *Hic Barbari Getuli*; *Hic oberrant Gangines Ethiopes*.

in these marginal countries – think of the figures if fishes and ships painted in the seas on the Dura Europos map as early as AD 200, put down in the map-like mosaic from Haidra or, later, drawn on the Madaba mosaic map.[52] Such also are the forests (*Silva Vosagus*, *Silva Marciana*) depicted on the Peutinger map (Fig. 8). It is also possible to insert there full texts giving ampler descriptions, especially those related to the *mirabilia* which used to take place in these remote countries. Their presence seems to have been the cartographical expression *par excellence* of the edges of the world, for, due to lack of space, they could not take place elsewhere. Since they are often found in mediaeval cartography, some have thought that they are a late addition of the 6th century AD to the 4th-century archetype of the Peutinger map.[53] On the contrary, I believe that they date back to the 3rd-century archetype, for there is evidence of such legends as early as the time of Plutarch. The very first words of the *Parallel Lives* (*Thes.* 1. 1) draw a parallel between such legends and Plutarch's enterprise:

> In their descriptions of the world, dear Sossius Senecio, geographers used to crowd into the edges of their maps parts of the world which they do not know about, adding, aside, legends to the effect that 'beyond this lies nothing but the sandy desert full of wild beasts', 'unapproachable bogs', 'Scythian cold' or 'frozen sea'.

Most translators have considered that the verb *paragraphein* indicated writings 'in the margin'. Of course, the margin here intended is not that of the map but of the *oikoumene* itself. Propertius probably refers to such writings when he introduces a young woman learning from a map *quae tellus sit lenta gelu, quae putris ab aestu* (4. 3. 37). Their common point was to establish that land extended beyond the limits of the habitable world and human knowledge. To meet this goal, they referred to the intertextuality of the *eschatia* and were based upon an old cultural background which cannot be reduced to a sole *mirabilia*: one thus finds mention of Amazons (VIII. 5/IX. 1),[54] also mapped by Ptolemy (*Geography* 5. 9. 10). At the most easterly point of the map (XI. 4–5), where lay the *arae Alexandri*, a legend refers to the *oraculum Alexandri*, meaning that this point marked the ultimate limit of human ambitions, a *nec plus ultra*.

Together with the *arae Alexandri*, the *Lacus Tritonum* (VII. 4/5) is one of the toponyms most strongly connected by intertextuality with the edges of the world. Identified with the modern Shott-el-Jerid in Tunisia, it was very famous in the Early Classical period (Aeschylus *Eumenides* 293; Euripides *Ion* 872–873; Pindar *Pythian* 4. 36; Herodotus 4. 179–180), since it was closely related

[52] Thomsen 1929–30; Avi-Yonah 1954; Donner and Cüppers 1977.
[53] Dilke 1987, 241.
[54] Podossinov 2002, 358.

to the legend of the Argonauts (Apollonius of Rhodes 4. 1552–1553; Orph. *Argon*. 337; Herodotus 4. 179).[55]

Many of these legends characterise countries where monsters or hybrid creatures take the place of genuine human beings; among such can be counted the Cynocephali (Strabo 7. 3. 6; Pliny *NH* 6. 19), dog-headed men[56] mentioned by the Peutinger map (VIII. 5) and by the Cotton map, while the Jerome map names the Hi(ppo)podes and adds *equina crura habent*.[57] Between the inhabited world proper and the Ocean, we find a sort of gradation from human beings to wild beast through these hybrids, half-human, half-beast.

The wild beasts[58] mentioned here are not only part of the *mirabilia*. As in the passage from Plutarch, where they are clearly beyond the limits of the inhabited world, characterised by domestic animals and agriculture; rather, they appear to be hostile to the human life and settlement that they actually replace. This is nothing but the cartographical translation of the conception that appears in the Nilotic mosaic from Palestrina, where, opposite the civilised life of the Delta, the Ethiopians are shown acting like wild beasts to stay alive. As shown by Plutarch, these beasts are another image of the deserts: the *Notitia Dignitatum* maps illustrating Egypt and the Roman East often include snakes or jackals, and the Madaba map filled the desert with the image of a lion attacking a stage. Here, the *horror vacui* convention meets the traditional presentation of the limits of the *oikoumene*.

Deserts are indeed the most common limit of the inhabited world for ancient mapmakers. One remains impressed by the huge number of mentions they receive in ancient maps.[59] In northern countries they could give place to forests, such as the *Silva Vosagus* or the *Silva Marciana* (Figs. 8–9).

All these legends, drawn for travel stories or mythology, show that beyond the limits of the inhabited world stood other limits of the known world: deserts, which marked forever the limit of human knowledge, and beyond them, the mysterious shores of the External Ocean. To know more about these one should turn to the fantastic stories of the oceanic *periploi*, if they could be trusted.

* * *

[55] Magini 2003, 10–11.

[56] Bosio 1984, 145; Romm 1992, 77–81; Fischer 1924.

[57] Miller 1895, 12.

[58] Peutinger map: *in his locis elephanti nascuntur* (XI. 4/5); *in his locis scorpions nascuntur* (XI. 3/4). Cotton map: *Hic abundant leones* (in Albania – Miller 1895, 32); the map also quotes Isidorus *Etym*. 14. 5. 8 (*[Africa] ulterior bestiis et serpentibus plena* [Miller 1895, 35]) and Julius Honorius (*Theriodes insula* ['the island of the wild beasts']).

[59] Peutinger map: *Deserta* (X. 3), *Desertum* (X. 3/4); *Locide Regi* (for *loci dere(li)ct(i)* (VII. 3; *cf.* Weber 1976, 68); *Sors desertus* (VII. 5; Podossinov 2002, 339); *solitudines Sarmatarum* (V. 5–VI. 1; Podossinov 2002, 316); *campi deserti* (XI. 1); *campi deserti et inhabitabiles propter aquae inopiam* (X. 2/3). Julius Honorius: *Anydros*.

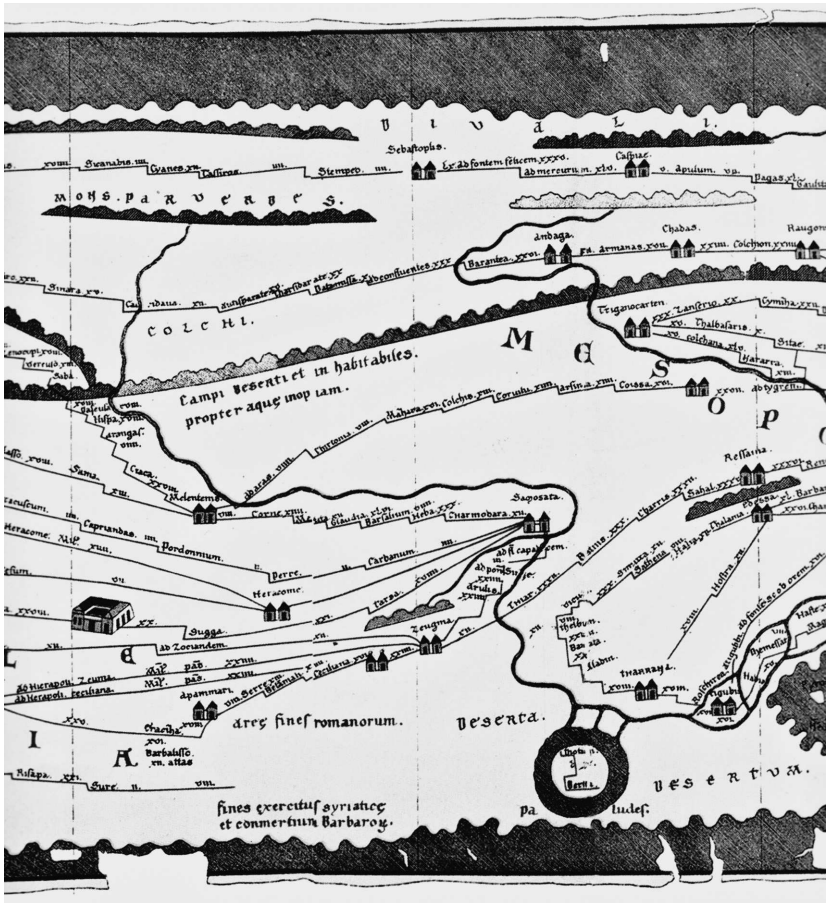

Fig. 9. Deserts in the Peutinger map (after Miller 1895).

Three important facts should be emphasised: first, there used to be no unified image of the inhabited world but as many patterns as there were aims and purposes; second, that huge distortions were admitted, whether on the Peutinger map or on circular maps, showing the variety of chorographical maps; and third, there was usually no place for empty space on ancient maps, for aesthetic and practical reasons. The temptation was strong to fill any empty zone with information drawn from elsewhere. This is exactly the practice condemned by Ptolemy at the beginning of Book 8: [60]

[60] Some scholars believe that Book 8 is a Byzantine forgery. I disagree, unless we are to believe that the whole *Geography* is a forgery. The style is so similar to the rest of the book that it is hard to imagine it not being written by the same hand.

> Once we have seen what should be the drawing at a constant scale of the whole inhabited world, let us now expound what will be the principal maps, if we shall divide this general map into several tables, in order that we may lay out the known countries, using any scale fit with a better reading.
>
> In fact, in one sole world map, in order that the interrelations between the different parts of the inhabited world may be preserved, some parts of it will ineluctably be too narrow to gather the huge quantity of related information, while some others shall be needless because there is nothing to write concerning them.
>
> Most cartographers, for want of such a pattern, have necessarily been induced to distort to the highest point both the shape and dimensions of the countries. Furthermore they did it because of the tablet itself, and not because they adopted such figures as a result of their enquiry. So did, for instance, those who assigned a larger part of the tablet to Europe, both in width and length, because they had many various things to put down in it. For the opposite reason, they assigned a smaller part of Asia in length, to Africa in width; and that is the reason why they moved the Indian Ocean beyond Taprobane towards Septentrion, because the map-tablet prevented them to go further towards the East, and because, instead, they had nothing to describe above Scythia, which lies under Boreas. On the other side, as the map itself opposed them at the southern edge, they moved towards East the Western Ocean because the vast extent if internal Libya or India contained nothing to oppose the western shores as if there had been too many place-names (*Geography* 8. 1. 2–4).

In this affair, Ptolemy was the eccentric, while the cartographers he criticises were the norm. It has been argued that Ptolemy's *Geography*, especially Book 8, was a Byzantine compilation,[61] so his comments should relate to later times. But Ammianus quotes the text of the *Geography* exactly; thus, the stylistic unity of the work is whole and entire, the maps described in Book 8 were already known in the 6th century AD,[62] and the work is authentic. Setting greater value upon scientific knowledge, most modern scholars have inverted the norm of ancient cartography. It can be somewhat puzzling to learn that the majority of maps in Roman Imperial times – Greek and Roman – paid so little attention to the accuracy of shapes, proportions and locations, especially when they appear to have accompanied geographical works – for this seems to be the meaning of the *historiai* mentioned by Ptolemy – whose conclusions about the shape and dimensions of the world were opposite to the image provided by the maps. It must be admitted that the scientific geo-cartography of the Greeks, long considered as the cartographical standard of the Greek world, had less reception in antiquity than it has had in modern times, and that the sophisticated maps described in these clever treatises were ideas of maps rather than actual maps.

[61] Bagrow 1945.
[62] Wolska-Conus 1973a.

One can easily imagine that the perception of the edges of the world, described by Ptolemy as common currency, left little space of any kind for specific presentation of the *eschatia* as a particular space. As in the geographical maps mentioned above, the inhabited and civilised worlds were not fully coterminous with the physical limits of the world.

It is clear, indeed, that in such maps, the shape of the Earth had nothing to do with any theoretical conception of the world. From Ptolemy's testimony, it seems obvious that the lack of space in the map induced most cartographers to give the map itself the shape of a tablet or of the surface on which it was laid out. There is some evidence for such a custom: for instance, Geminos (*Isagoge* 16. 1. 4) associates so closely the shape of the map and that of the tablet, that after he has warned us that circular maps should not be understood as reproducing the actual shape of the Earth, just advises the use of a rectangular tablet to draw the right shape. The Jerome map is probably derived from a former world map, as the preserved mentions of winds from an external source indicate, though it certainly cannot be reduced to a copy of part of a former world map. It is even probable that this 12th-century map was drawn from a map already limited to Asia, since a second map of Palestine was added in the same century from a different source.

Whatever might be the origin of the map of Asia, it has been redrawn in such a way that its rectangular shape is exactly that of the page it is written on. In the same way, although one finds there exact traces of the attention formerly paid to some particular shapes, as shown by the presentation of Spain or Britain (very similar to Strabo's description), the Cotton map has been distorted to fit the shape of the folio. In both cases it is remarkable how details of contours tend to become symbolic rather than to reproduce and specific shape. Once can thus recognise a cape, a gulf or a peninsula, but hardly a specific one.

The pattern of such maps seems very close to that of the circular maps, but unlike them, these were probably intended to avoid any confusion between the actual, possible or probable shape of the Earth and that of the map. They seem to have been a compromise between the conviction that the Earth was not circular and the claim of completeness. Although they paid no attention to accuracy and scale, they were intended, like the Peutinger map, to provide as much information as possible. This was the Chorographer's priority. The edges of the world were not; and they were sacrificed to the presentation of the civilised, known world.

Far from being the mere cartographic transcription of presentations of the edges of the Earth, mapping them required that global mapping problems be faced. There are at least three presentations that rely much more on mapping resources and preferences than on strong convictions about what the edges

actually were. To understand this variety one must admit that maps were remote from the actual shapes and proportions, not just by accident or through the incompetence of mapmakers, but because their makers and those who had commissioned them, whatever might be their convictions about the matter, had chosen that it be so. Their maps were conventionally false, but they were not a mistake in a cartography more interested in the quantity of information put into the map than in the accuracy of the layout.

The idea expressed by Stahl in the 1950s,[63] that a particular map could be related to a particular culture, is certainly to be rejected. So is that of a 'Roman' map – should it be that of Agrippa or someone else? – for it takes no count of the huge variety of types, which were related to what the mapmaker intended to show. According to these preferences, the edges of the Earth were treated in quite different ways, which must relate to the customs and conventions overlying ancient mapmaking, especially the fact there was no necessary link between shape and proportions on the one hand and the idea of the world on the other. Mapping the edges of the world could thus focus on its physical limits, shape and dimensions, on the human limits of its inhabited parts, or simply consider them as needless empty zones to be filled with more useful information!

There was probably only one common point among all maps: the closer some parts were to the edge of the map, the less durable they were and the more quickly they would wear out. If we consider that ancient maps in general were very conservative and tended to copy one another, this fact may finally be worthy of notice. It is indeed in these parts that we find the highest proportion of unintelligible or mistaken legends in the Peutinger map, and where a generally tendency to simplification and banalisation was most likely.

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[63] Stahl 1955.

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