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Pierre Moret

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STRABO

From maps to words

Pierre Moret

Most specialists of Strabo agree that his *Geography* did not include maps specially designed by him to illustrate his work. He never claimed to be a cartographer and the poor arguments he advances to address disputed issues based on astronomical evidence show that he was not comfortable with mathematical cartography. But there is no such consensus as to whether he routinely used existing maps when drawing up his regional descriptions, how he possibly used them and from which authors he obtained them. Due to the almost complete loss of Greek and Roman maps and the ambiguity of literary testimonies on this matter, it is extremely difficult to address this issue. Rather than attempting to interpret ambiguous expressions in which words semantically related to the idea of “drawing” or “representing” can be understood either literally, referring to real maps, or metaphorically, enhancing the descriptive efficacy of words, I will focus on Strabo’s regional descriptions themselves, in order to unravel their construction process. Two western provinces of the Roman Empire, Iberia and Gaul, which are the subjects of Books 3 and 4 of Strabo’s *Geography*, will be used as the primary material for this analysis. Strabo’s descriptions combine unidirectional sections based on road itineraries or sailing directions, with 2D descriptions irrefutably inspired by real cartographic knowledge. The places of Polybius, Artemidorus and Posidonius in this complex setting are discussed, in the light of the new evidence provided by the discovery of the so-called Artemidorus papyrus.¹

If there is one topic in the history of science for which research has reached no consensus, it is the role and diffusion of geographic maps in Greek and Roman antiquity. For some modern authors, the use of maps was only customary in very restricted circles of scholars focusing on astronomy, physics and geography, and remained marginal among officers, administrators, or even simple travellers.¹ For others, the use of maps transcended the scholarly elite and became popular among the educated classes in Greece from the end of the fifth century, and in Rome from the second century BCE onwards, to such an extent that it influenced the world vision of cultured Greeks and Romans.²

This situation can be explained by the ambiguity of the rare written testimonies. To cite but one example, the burlesque cartography lesson given by Socrates in Aristophanes’ *Clouds* (v. 200–217) could have been invoked either to affirm that Greeks were familiar with the geographic map from the end of the fifth century BCE, or conversely to demonstrate that this

manner of spatial representation was incomprehensible for the average Athenian.³ Moreover, the terms central to these debates are ambivalent: *pinax*, the Greek word generally used to designate the map, is also the name of the tablet used to write on; and *graphēin* can refer to the act of tracing a letter as well as the act of drawing a map. As for the material evidence, no map prior to the Late Roman Empire was known until recently, aside from cadastral plans on marble or bronze, which are of a different nature.⁴ The recent discovery of the Artemidorus papyrus, which contains an unfinished regional map,⁵ changed the situation, but did not lead to a new examination of the global problem.

Strabo is at the centre of this debate for two reasons: because he is virtually our only source for the cartographic achievements of the Alexandrian scholars, and because he is, before Ptolemy, the only conserved author providing detailed reflections on the conception and fabrication of maps. At the same time, and this is the paradox of his work, there is every reason to believe that Strabo himself did not produce any world map or regional maps.

First of all, I will examine what Strabo says about maps in the long historiographical, theoretical and methodological introduction of his work (Books 1 and 2). He discusses existing maps, which he could have seen or for which he read descriptions, and also gives his advice for drawing up the ideal map. I will then assess to what extent the construction of his regional descriptions, in the fifteen following books, is based on a real use of maps, and to what degree the principles set forth in his introduction are applied. In order to do so, I will take Books 3 and 4, with descriptions of Iberia and Gaul, as an example.

Strabo and Alexandrian cartography

Strabo's cartographic reflection is based on a critical examination of his predecessors' concepts, from Eratosthenes to Posidonius.⁶ ~~But, it must be noted~~ that a fundamental contradiction underlies Strabo's discourse: on one hand, he expects the reader to "master the principles of mathematical sciences"⁷ (2.5.1), and he devotes lengthy explanations to difficult problems of mathematic geography; on the other hand, he states that "in lieu of a geometrical definition, a simple and global definition is sufficient" (2.1.30), because his aim is to enlighten rulers and generals in decision making (1.1.16–23), mainly from a historian's and philosopher's point of view. The quest for scientific legitimacy appears to be a major preoccupation in Books 1 and 2, where Strabo addresses general questions, but becomes secondary in the regional descriptions of the following books. For instance, faced with the uncertainties of scholars as to the dimensions of the northernmost countries of Europe, and the distance separating them from the parallels of Rhodes and Byzantium, he abruptly ends the discussion by stating that "for governmental purposes there would be no advantage in knowing such countries and their inhabitants" (2.5.8). Inevitably, this contradiction impacts the way Strabo considers the role of maps.

In the background are the "old maps", *arkhaioi pinakes*, rendered definitively obsolete by the mathematical project of Eratosthenes (2.1.2–3), but which, according to Strabo, some more recent authors, such as Hipparchus, continued to keep as models (2.1.11, 2.1.38). Did they represent a round, flat and symmetric world, following a long-standing tradition that emerged at the end of the sixth century?⁸ Strabo says absolutely nothing of this, to such an extent that we can wonder whether he had firsthand information or simply knew of them through Eratosthenes and Hipparchus. Remarkably, whereas Strabo often refers to accounts of the archaic period from an antiquarian's point of view, he does not seem to display the slightest interest for the first Greek maps.

The map of Eratosthenes is the only one that he comments on in detail, forming in a way the horizon of his historiographical inquiry. But even in this case, it is not impossible that Strabo comments on it without ever having seen it. In his time, this map had become a “discursive object”, reduced to statements and measurements that had been subject to repeated discussions and corrections during the two centuries separating Eratosthenes from Strabo.⁹ Indeed, on account of the mathematical method used in Hellenistic cartography, it was possible to switch from the geometric figure to the verbal enunciation of its properties, and vice versa, without loss of information. It thus became possible, for the first time in the history of geography, to reproduce the basic structure of a map without the necessary mediation of a drawing used as a model. A close reading of Book 2 does not enable us to resolve definitively what documents Strabo’s commentary was based on: the text of the treaty of Eratosthenes with the accompanying map, or the text alone. Twice in Strabo’s *Geography*, mention is made of the associations of images that could be suggested by some details of Eratosthenes’ map: the drawing of Mesopotamia, between the Tigris and the Euphrates, is compared to a boat (2.1.23), and “the Nile is said to be similar to the letter N written reversed” (17.1.2). But in both cases, it is Eratosthenes himself who is presented as the author of the simile; it was his idea, Strabo tells us, to refer to geometric figures or common objects in order to make the subdivisions of his map easier to mentally perceive and memorize (2.1.21–23).

This analogical process, reused by Strabo in the continuation of Book 2 and in several passages of the following books, has undergone in-depth analysis.¹⁰ It stems from two different cognitive mechanisms. The geometric shapes, which can be parallelograms,¹¹ trapeziums¹² or triangles,¹³ are not merely memory aids. They are, first and foremost, the basic frameworks used to construct the map, following the method elaborated by Eratosthenes, which consisted in reducing parts of the world to the simplest possible figures and inserting them in the orthogonal grid of latitudes and longitudes.

Conversely, the similes referring to familiar objects, as the Peloponnese to a leaf of a plane tree (2.1.30, 8.2.1), or Iberia to an ox-hide (2.1.30, 2.5.27), are the accidental result, a posteriori, of a drawing that had nothing to do with them. This second category is the unquestionable proof of the existence of maps that were not simple geometric sketches, since without the mediation of the small scale drawing and associated spontaneous ideas, no one would ever have mentally depicted Mesopotamia as a boat or Iberia as an ox-hide.¹⁴ These comparisons also attest to the *poietic* power of the map, which becomes the instrument of a new imagination process, by giving form to the fiction of the earth seen from outer space.¹⁵

For Eratosthenes and still more so for Strabo, the purpose of these analogies was didactic. They were intended to transmit the map by the *logos*, to “draw up the map of the world by describing it”.¹⁶ Confronted with the spectacular achievements of Hellenistic cartography, such as the Crates sphere (2.5.10), Strabo “does all he can to draw with words a visual picture of shapes of countries and topographical features”,¹⁷ thereby asserting the autonomy of geographic discourse in relation to its cartographic referent.

A virtual cartographic programme

The recommendations given by Strabo for drawing up a map – or rather, as we shall see, for writing a description replacing a map – appear through his comments on his predecessors’ theories, to such an extent that it is not always easy to distinguish his own programme. In a first passage (2.1.30–34), he recommends not to be limited to geometric data, and to give more scope than Eratosthenes to regional descriptions. “A country is well-defined when it is possible to define it by rivers or mountains or sea; and also by a tribe or tribes, by a size of such and such proportions, and by shape where this is possible” (2.1.30). In sum, he advocates for giving a

physical and ethnic content to the schematic and disembodied divisions of Eratosthenes, which he describes as “rough outlines” (*tupôdôs*) (2.1.34). The overriding ambiguity at the beginning of this passage – is it about a written description or a drawn map? – is soon dissipated when Strabo specifies as regards the regions, that it is essential to “state (*eipein*) their greatest length and breadth” (2.1.30). It is thus up to the geographer’s *logos* to fill in the cartographer’s sketch, as he says more forcefully at the end of his introduction: “my first and most important concern, both for the purposes of science and for the needs of the state, is to give, in the simplest possible way, the shape and size of that part of the earth which falls within our map” (2.5.13).

The maps are more specifically evoked in what Strabo calls his “second beginning”, from 2.5.1 onwards. The question of cartographic projection is raised from the beginning of this second stage of the introduction: how to “fix positions (*topothetein*) for the whole of the inhabited world”, by drawing it (*graphein*) “on one and the same plane surface” (2.5.1)? Here the verb *graphein* undoubtedly refers to tracing a line: it is clearly a map.¹⁸ Two answers are given (2.5.10). First possibility: to construct a model of the globe ten feet in diameter, drawing a quadrilateral in the northern hemisphere as defined in paragraph 2.5.5, “and within the quadrilateral put down the map of the inhabited world”. Second possibility, if we cannot make such a sphere: “sketch a map on a plane surface of at least seven feet, for it will make only a slight difference if we draw straight lines to represent the circles, that is, the parallels and meridians”.

For the first time in this very long introduction, the technical characteristics of a map are described. First of all, the dimensions: a little over 2 m long, with a width of about 1 m, taking into account the dimensions attributed to the inhabited world (2.5.6–7). These are not at all implausible: the fragment of the Dura-Europos map, on parchment, indicates a map of at least a metre;¹⁹ the map of the Artemidorus papyrus measured at least 99 cm long;²⁰ and the implementation of a wooden panel or *pinax* of 2 × 1 m was technically straightforward. These imposing dimensions undoubtedly explain why ancient maps are lost: their format was not the same as that of the accompanying treaties, and they were not made of the same materials.²¹ The second technical characteristic is the orthogonal projection recommended by Strabo on account of its simplicity, and because the resulting deformations are considered to be negligible. Practical rather than theoretical reasons thus guided his choice. He specifies a little further the way in which the grid of parallels and meridians should be plotted in relation to two straight reference lines, “one of which will run through the entire greatest length and the other through the entire greatest breadth of the inhabited world” (2.5.16).

In the following paragraph, Strabo changes scale abruptly, by speaking of “gulfs, deep seas, straits, and likewise isthmuses, peninsulas, and promontories” which enable us to “gain a clear conception of continents, nations, favourable positions of cities, and all the other diversified details with which our chorographic²² map is filled” (2.5.17). The meaning to attribute to the adjective “chorographic” is subject to discussion. For G. Aujac, Strabo is referring here to a “regional map”,²³ whereas for F. Prontera and J. Simon the term could be applied to a variety of geographical pursuits.²⁴ The fact that Strabo employs the expression *khôrographikos pinax*, while a little earlier (2.5.13) he was still speaking of a *geôgraphikos pinax*, clearly indicates, in my opinion, that the scale is no longer the same and that the term refers to a detailed representation of places (*khôroi*), which may be graphic²⁵ or literary.

This semantic shift reveals Strabo’s real project. His focus of interest is regional geography, from a very broad perspective including the physical, ethnic and political features of each country, and often even their history. As soon as he addresses the heart of the subject, the mathematical principles which he talked about beforehand take second place; and in spite of the use of the word *pinax*, the focus is no longer on a map, but an encyclopedic project²⁶ which calls upon all possible knowledge, and consequently can only be led by the *logos*.

Two case studies: Strabo's Iberia and Gaul

The examples of Iberia (Book 3) and Gaul (Book 4) allow for a more accurate analysis of Strabo's "chorographic" method. We note from now on that Strabo did not know these regions himself: everything he says about them is second-hand knowledge, forcing us to reflect upon his sources. In both cases, he begins by a brief presentation of the overall shape of the region, using data already cited in Book 2: dimensions consisting of length and width, natural limits, orientation. Significantly, the position in relation to the reference parallels (those of Rhodes and Byzantium) is no longer mentioned, as if the astronomical context was no longer of any use. Moreover, before exposing this meagre cartographic information, the first phrases concern the inhabitants: from the perspective of living conditions and economic potential in the case of Iberia, from the point of view of ethnic divisions in the case of Gaul. The hierarchy of information is thus clearly set forth: Strabo intends to focus on men – their origins, customs, way of life, resources, relations with Rome – and the map is only one of many resources for this global project. The initial draft is then completed, during the course of the description, by measurements of distances and diverse topographic notations.

There is every reason to believe that a map, or several regional maps, were not part of Strabo's project.²⁷ He never refers to a map illustrating his description, in these two books or elsewhere. Moreover, the cartographic data that can be drawn from his descriptions are heterogeneous. As he had no map to draw up, Strabo did not realize that the measurements of distance taken from different authors were not all compatible with each other.

In spite of these difficulties, several researchers, since the eighteenth century, have attempted to reconstruct the map "*in mente Strabonis*"²⁸ (Figure 15.1). These attempts entail two risks. The first is to misleadingly imply that Strabo's map really existed. The second is that, as we are ignorant of the aspect that these Hellenistic maps may have had, it is almost impossible to avoid the tendency to use the modern standards of cartographic representation.²⁹ Notwithstanding these objections, I take the risk of adding a new proposal (Figure 15.2) which is the graphic representation of objectified elements contained in his descriptions (measurements of length or distance in stadia, mentions of headlands and gulfs, orientation following cardinal points, etc.). The aim is not to reconstruct a map that would have materially existed, but simply to help to intellectually grasp the data scattered throughout Strabo's text, to test their coherence, and to compare them with those described by other geographers (Figure 15.3).

The proposals made (Figures 15.1 and 15.2) lead to very different results as far as the orientation of Iberia and the general shape of Gaul are concerned. These divergences can be explained by a different interpretation of two basic forms for which Strabo's discourse is contradictory. It is appropriate to examine them for an instant, as they play a decisive role in the geometric construction of Western Europe.

Iberia and the height of the Western Mediterranean triangle (Pillars – Narbo – Strait of Sicily)

Strabo indicated three times, citing Hipparchus as his source, that Byzantium, Massilia and Narbo "are situated approximately on the same parallel", 4,900 to 5,000 stadia – that is seven degrees of latitude – north of the parallel passing through Rhodes, the Strait of Sicily and the Pillars of Hercules (2.4.3, 2.5.8, 2.5.40–41). These 4900 stadia, from 36°N to 43°N, are the height of the Pillars – Narbo – Strait of Sicily triangle that structures the form of the western Mediterranean. Given that the Rhodes parallel runs roughly through the middle of the sea (2.5.8), Strabo logically concludes that the distance from Narbo to the Libyan coast is over 5,000 stadia,



Figure 15.1 Different reconstructions of the map of Western Europe according to Strabo. a: Miller 1898; b: Aujac 1969; c: Lasserre 1966; d: Gosselin 1790; e: Müller 1857; f: Berthelot 1933

contrariwise to the opinion of certain authors, whom he does not name (2.4.3). But a little further on, Strabo writes exactly the opposite, this time based on evidence from navigators: “the longest passage from Celtica to Libya, namely, that from the Galatic Gulf, is 5,000 stadia, and this is also the greatest width of the sea”. There cannot thus be more than 2,500 stadia between Massilia and the Rhodes parallel; which leads to Strabo’s new conclusion: Massilia is not on the parallel of Byzantium (2.5.8, confirmed in 2.5.19).

The only way of resolving this contradiction consists in finding which of the two measurements, 2,500 or 5,000 stadia, is compatible with the dimensions of the Iberian Peninsula which forms one of the sides of the triangle: 6,000 stadia for its length from the Pyrenees to the western coast (2.4.4), 5,000 stadia for its width (2.5.27), and 4,000 stadia for the distance from the

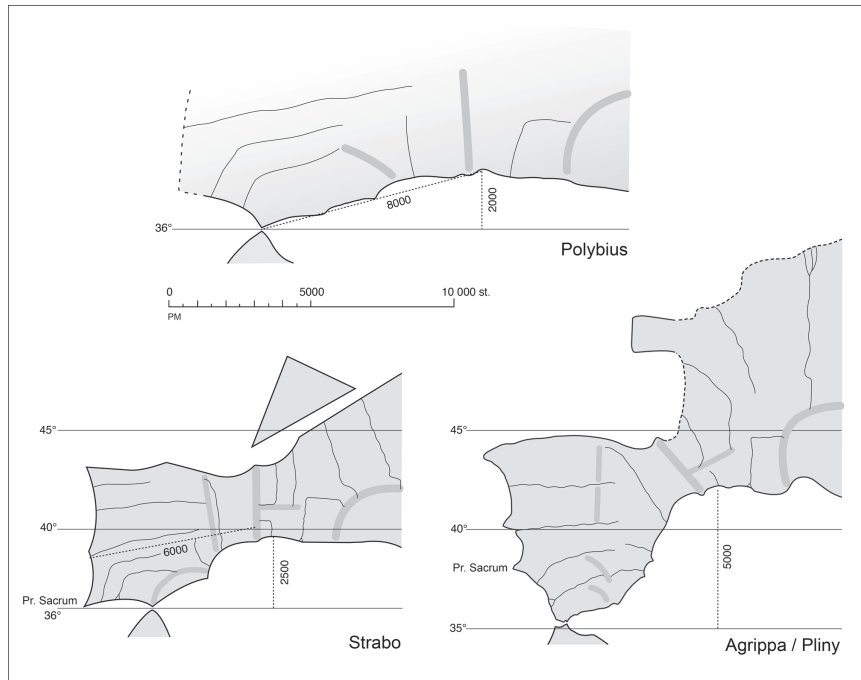


Figure 15.3 The basic frame of the maps of Polybius and Agrippa (through Pliny), according to Moret 2012 and 2016, compared with that of Strabo.

Pyrenees to the Pillars, in a straight line through the interior of the land (3.4.1). Iberia would be required to have much greater dimensions than these to adapt to a triangle with a height of 5,000 stadia, and in addition its shape would be very different to the ox-hide evoked by Strabo, as can be seen in the few reconstructions that follow this criterion³⁰ (Figure 15.1, a–b). On the other hand, Strabo’s measurements conform perfectly to a triangle with a height of 2,500 stadia, in keeping with the indications in paragraph 2.5.8 (Figure 15.1, c–f). I thus placed Massilia and Narbo on a parallel situated at mid-distance between that of Rhodes and that of Byzantium (Figure 15.2), in accordance with several former attempts.³¹

It is worth noting that Strabo here rejects the authority of the Alexandrian scholars, which was however founded on Pytheas’ astronomical observations at Massilia (2.5.8), and accepts the estimations of anonymous “navigators”. In addition, he believes that the Pyrenees are oriented north–south, an unfortunate choice that leads him to deform the whole of Western Europe by compressing it in latitude. This represents a regression in relation to the vision of Eratosthenes, which was less far removed from reality. But the most striking fact here is that for a controversial issue that was crucial to the construction of the figure of the Western Mediterranean, Strabo preferred to use an empirical method based on maritime and terrestrial itineraries, rather than the astronomical-mathematical method developed by Eratosthenes.

The figure of Iberia that can be drawn from these general traits and other information, found in Book 3,³² may bring to mind the image of an ox-hide, if we follow Strabo’s indications: “an ox-hide, whose neck parts, so to speak, fall over into the neighbouring Celtica” (2.5.27). Indeed,

the resulting form is approximately rectangular, with its western side roughly parallel to the Pyrenees (3.1.3), the Nerion Cape at the north-west and the Sacred Cape at the south-west (3.1.3) corresponding to the rear limbs, less pronounced overhangs corresponding to the forelimbs,³³ and a “neck” formed by the narrowing of the peninsula before the Pyrenees (Figure 15.2. a). As stated above, such a comparison could only emerge in the mind of someone with a map in front of him: the addition of the partial images that a navigator could memorize during the course of a circumnavigation of the peninsula would never have produced this result.

The Gallic trapezium

Strabo gives an accurate description of the geometric frame of Gaul, between the Pyrenees and the Rhine:

Next to Iberia towards the east lies Celtica, which extends to the River Rhine . . . On its eastern side it is bounded by the River Rhine, whose stream runs parallel to the Pyrenees; and on its southern side it is bounded by the Alps and by our sea itself in the region where the so-called Galatic Gulf widens out . . . Opposite this gulf, and facing in the opposite direction, lies another gulf that is also called Galatic Gulf; and it is between these two gulfs that Celtica has its least breadth; for it is contracted into an isthmus of less than 3,000, but more than 2,000, stadia. Between these two gulfs a mountain range, the so-called Cemmenus Mountain, runs at right angles to the Pyrenees and comes to an end in the very centre of the plains of Celtica. (2.5.28)³⁴

There is however uncertainty concerning the relation between the northern and southern coasts. In Book 4, Strabo evaluates at 4,300 or 4,400 stadia “the Celtic length that extends from the outlets of the Rhenus as far as those northern ends of the Pyrenees that are near Aquitania; this is the shortest distance from the Pyrenees to the Rhenus, since, as has been said, the greatest distance is as much as 5,000 stadia” (4.5.1). But in a passage of Book 2, where he emphasizes the parallelism of the coasts of Celtica, Strabo writes that the northern coast, from the border of Iberia to the River Rhine, “stretches lengthwise about 5,000 stadia” (2.5.28). There thus appear to be two models and Strabo seems to have hesitated between them: on one hand, a perfectly orthogonal rectangular grid, of about 5,000 x 3,000 stadia, in which the north to south flowing rivers and the Cemmenus Mountain in an east to west direction, delimit several, equally rectangular subdivisions³⁵ (Figure 15.1.c). On the other hand, a more complex model, which adapts the same parallelograms (to reiterate Strabo’s term, 4.2.1) to a trapezoidal frame, with an oceanic coastal line running northeast from the Galatic Gulf (Figure 15.2). Like for Iberia, the graphic test enables us to choose between the two options: only the second can assimilate practically all of the length measurements and elements of description in Book 4.³⁶ It is also the only option compatible with a distance of 3,700 or 3,800 stadia along the Massilia meridian between the Mediterranean and the “oceanic coast of Celtica” (2.1.12; 2.5.8), and which enables us to insert the western part of Europe in a continental mass that widens towards Germania and Scythia.

From the itinerary to the map

In several passages of Books 3 and 4,³⁷ the use of geometric references and the repeated mention of spatial markers display a global vision in two dimensions, which suggests that Strabo had cartographic documents in front of him representing the regions he described. It is easy

to distinguish these passages from those relying on unidirectional, hodological³⁸ sources, such as maritime, fluvial or land itineraries which provided Strabo with some of his distance measurements.³⁹ On the other hand, Strabo's descriptions suggest a rather sound knowledge of the techniques and graphic conventions of Hellenistic cartography. Book 4 presents two good examples of this.

The first is directly linked to the problem we just brought up; the shape of Celtica. After observing that two different measurements existed for the length of Celtica between the Pyrenees and the Rhine, one of 4,300/4,400 stadia along the oceanic coast, and another of 5,000 stadia through the middle of the land, Strabo attempts to explain this discrepancy:

It is reasonable to suppose that there is a convergence from the parallel position between the river [the Rhine] and the mountains [the Pyrenees], since at the ends where they approach the ocean they tend to orientate towards each other. (4.5.1)

This comment is fundamental. It signifies that in the description (or on the map) to which he refers here, the straight lines running through the mountain chain and the river converged towards the north. The notions of "parallelism" (*parallēlos thesis*) and "convergence" (*sunneusis*) introduced here by Strabo make reference to a debate on the methods of cartographic projection, reflected in a difficult passage of Book 2 which describes a process whereby the meridian lines are represented as straight lines gradually converging towards the north.⁴⁰ Strabo thus takes the point of view of a cartographer by assimilating rivers and mountain chains to meridians.

The second example concerns the problem of equivalence between the real measurements, taken from a road, river or maritime route, and the measurements used to give the dimensions of whole regions on a small scale map. Strabo says the following about the Rhine:

Asinius says that the length of the river is 6,000 stadia, but it is not. In fact, it could only slightly exceed the half of that in a straight line, while the addition of 1,000 stadia would be quite sufficient for the windings. (4.3.3)

In other words, Strabo estimates the straight line route at 3,000 stadia, which corresponds to a length of 4,000 stadia following the curves and meanders. The first measurement is based on a geometrisation process, which is characteristic of Hellenistic cartography: this type of plotting enabled Strabo and the authors by whom he was inspired to use major rivers, in combination with mountain chains and coastlines, to construct the "parallelograms"⁴¹ that form the backbone of their chorography.

The coefficient used here by Strabo, that is a reduction of a quarter between the measurement of the real itinerary and that of the corresponding straight line, is similar to that found elsewhere for land routes: for instance, a third for the distance between the Pyrenees and the Pillars (3.4.1: 4,000 stadia in a straight line inland, 2,000 more along the coast).⁴² Several annotations show that this practice was systematic. To cite but one example, Strabo specifies that the length of the river Tagus from its source to its mouth must be calculated "without reckoning in the windings of the river, of course (for this is a thing geography does not do), but estimating the distance on a straight line" (2.4.4). The art of the geographer advocated here by Strabo is based on his capacity to simplify, to standardize, and in sum, to draw up a rational and consistent figure from a collection of disparate measurements.

The sources of Strabo's "map"

We have just seen that the geometric pattern on which Strabo's descriptions are based implies that he consulted one or several maps, and its coherence suggests the well-reasoned programme of a geographer who was also a cartographer.⁴³ For Iberia and Gaul, it is very unlikely that Strabo's source was Eratosthenes, of whom he said, perhaps with some exaggeration, that he was "completely ignorant of Iberia and Celtica" (2.1.41). According to the meagre elements given by Strabo, Eratosthenes did not consider Iberia to be a peninsula in its own right. For him, it was only a subset of the westernmost "promontory" (*akra*) in Europe (2.4.8), which he called the "Ligurian promontory" (2.1.40), also inhabited by Gauls outside the Pillars (2.4.4).

Similarities with Polybius and Artemidorus are evident, in particular as regards the erroneous notion of a south-north orientation of the Pyrenees, but important differences separate them (Figure 15.3). Strabo rejects most of the dimensions given by Polybius to Iberia and the west of the Mediterranean. He never cites Artemidorus in relation to the general measurements of Europe, but what we now know of this author through the recently published papyrus shows that his representation of Iberia was different:⁴⁴ a more elongated rectangle with the long sides roughly aligned along the parallels, and with the Sacred Promontory deported towards the middle of the west coast, whereas Strabo puts it at the south-west angle of the peninsula (2.5.14).

On the other hand, Latin authors are rarely cited in Books 3 and 4, as far as cartographic issues are concerned. The measurements of an unnamed Latin "chorographer" are only to be found in the descriptions of Italy and Sicily.⁴⁵ Besides, the general structure of the representation of the western provinces in the work of Agrippa, as far as it can be reconstructed from Pliny's *Natural History*,⁴⁶ substantially differs from that of Strabo (Figure 15.3).

Through a process of elimination, only Posidonius remains. Strabo very rarely cites him for measurements of distance or elements structuring the whole description; but when he does so, it is for important points, such as the position of the Sacred Promontory, on the same parallel as the Pillars (2.5.14), or the width of the Gallic isthmus east of the Pyrenees (4.1.13). In addition, the physical description of Gaul appears to adopt the viewpoint of an inhabitant of the Transalpine province before Caesar's conquest: the Mediterranean coast and the Rhone Valley are familiar landscapes, but everything beyond there is very poorly known, with crude errors and lacunae (in particular as regards the hydrographic networks) which would be inconceivable in a source from the time of Augustus, and even hardly admissible after Caesar's campaigns.⁴⁷ Therefore, Strabo's main source for Book 4 can be dated to the beginning of the first century BCE, and is very likely to be Posidonius. Although he was certainly not a cartographer, Posidonius' thinking was not restricted to astronomy and mathematical geography and there is every reason to believe that he also addressed issues of regional geography.⁴⁸

In conclusion, it is possible to confirm that Strabo did not produce maps, but that he was familiar with the cartographic production from the end of the Hellenistic period. Although the geometric patterns based on this knowledge only play a rather reduced role in his descriptions of Iberia and Gaul, as they are soon supplanted by ethnographic and historical data, their consistency points towards the strong influence of Posidonius on Strabo's conception of western Europe.

Notes

- 1 Janni 1984; Arnaud 1989a ; Jacob 1992 ; Prontera 2010; Brodersen 2012.
- 2 Dilke 1985; Harley and Woodward 1987; Nicolet 1988.
- 3 Jacob 1985, 36.
- 4 Dilke 1985; Talbert 2009.

- 5 Galazzi *et al.* 2008; Moret 2012.
- 6 Jacob 1986.
- 7 The translation is that of H. L. Jones (1917–1932), with several modifications.
- 8 Heidel 1937; Jacob 1985, 29 and 45.
- 9 Jacob 1996, 42 ff.
- 10 Dueck 2005.
- 11 Gallia Narbonensis: 4.1.3.
- 12 Libya: 2.5.33.
- 13 Britain: 4.5.1; Sicily: 6.2.1; Italy: 5.1.2; Libya: 17.3.1.
- 14 This case is radically different from that of traditional comparisons based on what the human eye can really see, when for example mountains are compared to a woman's breast (7 fr. 33, 14.5.3, etc., see Dueck 2005, 39) or to a pinecone (13.4.1, 17.1.10), or the harbour of Brindisi to a stag's head (6.3.6).
- 15 Jacob 2002.
- 16 Arnaud 1989a, 21.
- 17 Dueck 2005, 56.
- 18 As at the beginning of 2.5.11: "I shall assume that our drawing has been made on a plane chart".
- 19 Arnaud 1989b.
- 20 Gallazzi *et al.* 2008.
- 21 The Artemidorus papyrus appears to be an exception, as it combines a text and a map in the same document; but it is worth emphasizing that the geographical description and the unfinished map do not refer to the same country (Moret 2012).
- 22 Jones erroneously translates "geographical map".
- 23 Aujac 1969, 98.
- 24 Prontera 2006, 80; Simon 2014, 33, who advocates the idea of a "world chorography".
- 25 The existence of regional maps is now confirmed beyond any possible doubt by the Artemidorus papyrus (Talbert 2009).
- 26 Counillon 2007, 76.
- 27 Gosselin 1790, 4; Dubois 1891, 354; Prontera 2010.
- 28 To use Zimmermann's expression (1888).
- 29 Talbert 2009.
- 30 D'Anville 1762 (reproduced in Gosselin 1790, pl. X); Miller 1898, pl. VIII.2; Aujac 1969, unnumbered folding plate. Same criterion in Schiano 2010, 77–80 and pl. VI, Figure 2.
- 31 Gosselin 1790, map 4; Müller 1857, pl. III and IV; Berthelot 1933, 11; Lasserre 1966, unnumbered folding plate (notwithstanding important differences regarding other aspects of these reconstructions).
- 32 For details, see Moret 2012.
- 33 Strabo mentions an "obtuse angle" on the northern side of Iberia, between the Nerion cape and the Pyrenees (2.5.15), whereas the gulfs and capes of the southern side are not described.
- 34 See also 4.1.1, 4.2.1, 4.3.3, 4.1.14.
- 35 This is what inspired the figures of Lasserre 1966, unnumbered folding plate, and Thollard 2009, Figure 12.
- 36 For details of the analysis, see Moret 2014 and 2015.
- 37 Book 3: 1.3, 1.6, 2.1, 3.3, 4.1; Book 4: 1.1, beginning of 1.3, 1.11, 2.1, 3.2, 5.1, etc.
- 38 Janni 1984.
- 39 Book 2: 1.8–9, 2.3, 3.1, 3.4, 4.1–2, 4.6–9; Book 4: end of 1.3, 1.9, 6.1.
- 40 2.5.5: "Though it is true that the meridians everywhere, since they are all described through the pole, all converge (*sunneousin*) to one point on the globe, nevertheless it will not matter if on the planar surface one makes the straight lines for the meridians converge only a little. For even this is not necessary in many situations when the lines [representing the meridians and parallels on the globe] are transferred to the planar surface and drawn as straight lines (*eutheian*) nor is the convergence (*sunneusis*) [of the meridians] as conspicuous as the curvature [of the globe]". Translation Berggren and Jones 2000, 32, commented by Shcheglov (2007, 10).
- 41 Gallia Narbonensis is one of these parallelograms (4.1.3); the Pyrenees, the Garonne and the Loire define two others (4.2.1).
- 42 A century later, Marinus of Tyre assigned the same correction coefficient of one-third to itineraries based on coastal navigation (*teste* Ptolemy, 1.13.2–3).
- 43 Prontera 2010, 86–87.
- 44 Gallazzi *et al.* 2008; Moret 2012.

- 45 5.2.8, 6.1.11, 6.2.11, 6.3.10. Cf. Simon 2014, 33.
 46 Moret 2016.
 47 Moret 2015.
 48 Prontera 2010, 87.

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