

THE REPRESENTATION OF LANDSCAPE: SOME CONSIDERATIONS ON ITS ORIGINS

PIERO BARLOZZINI

L.a.co.s.t.a. Laboratory University of Molise, Campobasso, Italy.

ABSTRACT

Our era is decidedly that of the landscape, at least regarding its verbal and iconic reproduction. One definition, supported by the fields of geography, aesthetics, and law, describes it as a complex of natural and manmade elements that interact within a territory, considered not only from the aspects of function and quantity but also of morphology and quality. In particular, this article investigates the relationship between landscape and graphic language, in particular looking back at the actual situation in which the metric-representative problems manifested themselves that created a tangible crisis in primitive graphic language. It was this crisis that forced our ancestors to begin a cognitive process, which made it possible to formulate the first graphic transposition of visual elements made according to a logical procedure. For this discussion, the information is taken from work shared by the international scholarly community and the choice is guided by the archaeological finds housed in the museums of past civilizations. Particular attention is focused on the ‘primordial’ works that are considered representations of the territory, urban fabrics, or rural activities. For us, these finds are of fundamental interest as they mark the evolution of the representation of landscape. Indeed, they render comprehensible the break that sanctions the transition from the ‘primitive’ graphic system, which we consider spontaneous and personal, to the ‘ancient’ one, that of the first deductive thought, which if not collective is certainly to be considered corporative. The substantial numbers of archaeological finds, but above all the power of expression of some examples have convinced us that the innovation made to the graphic system by these drawings is of great intellectual weight. In fact, they have become the basis of the research, which today leads to the creation of increasingly more detailed representations, to the depiction of earth’s finished image.

Keywords: landscape, representation, survey, sustainability.

1 INTRODUCTION

In recent years, the term ‘environment’ has been modified to such a degree that its meaning has greatly expanded, to the detriment of the historical conception of natural environment and leaving ever more room to the wider modern meaning of ‘all that surrounds’ [1].

This interpretation assigns the word with a meaning tending towards the actual concept of the geographical sphere and therefore a localized and specific group of natural and socio-cultural conditions [2], which through time have become stratified in a certain place/territory. For some categories of scholars the environment, by virtue of this value, constitutes a sort of ‘hypertext’ in which there is room not only for the territorial foundation of a specific collectivity but also, and above all, for the local substratum of developmental processes. Processes which, if not commensurate with the environment’s peculiarities, if unrelated to local needs, or if carried on in rapid stages or in an un-meditated way, alter the dynamics of socio-economic modernization that essentially have always been based on the relationship between man and the environment, that is man and territory, as is unfortunately often seen in western consumer society.

In this situation, where immediate and excessive profit dulls the light of reasoning, man, now a ‘functionary of technology’ [3], has transformed the environment into a laboratory in which to experiment his intentions, killing nature by using it as raw material. Man leaves behind tangible signs of his work, offending the territory, gouging deep into its skin and reaching into the deepest layers of the ground, those regulating the ecosystem, affecting the

usages and customs, the history and the economy of a place, and disfiguring its historical identity. For the record, there is a current of thought in countertendency with this irresponsible behaviour although it is still not widespread. In fact, more recently this way of relating to the environment no longer seems so appealing to younger generations, and the revision of the behavioural course followed to date no longer appears so far off. Besides, in recent decades, environmental education, where once considered a civic value by only a few wise and sensitive people, has begun to be invoked by many people in many places. This state of grace now dwells within each of us in varying quantity. In fact, if stimulated by dramatic facts, it can induce indignation, as well as extraordinary operations of solidarity, among the population. Indignation that may be powerful enough to provide the necessary impetus to overcome the passive resistance of those individuals who remain indifferent to environmental problems and who often hold important political offices. While awaiting an unequivocal sign that this change in thinking has come about, I believe that more can be done in the immediate future to safeguard this vital space. The assumption is that the landscape is a 'primary' value (therefore not subordinate to other values), as it is a place of collective and contemporary memory. In other words, as the site of history's product, a container of references for constructing the sense of belonging to the territory, it ought to be protected through the appropriate management and use of resources, which are not always renewable.

2 A POSSIBLE INTERPRETATION OF THE FIRST NARRATIVE OF THE LANDSCAPE

The search for dialogue, for a relationship between man and environment is certainly not a prerogative in the modern world. In fact, from antiquity onwards, man has operated in line with this sentiment, albeit in an embryonic form that was conceptually very different from that of today. As Erwin Panofsky wrote, 'Indeed Man is the only animal to leave records behind him, for he is the only animal whose products "recall to mind" an idea distinct from their material existence' [4]. Man has not been satisfied with acting in order to change the place in which he settled but has often attempted to describe what he has modified and/or invented. Certainly, today we cannot say with any certainty what the reasoning behind this need was. However, suggestions may be put forward that are perhaps not far from the truth, if one reflects on man's inborn desire to know, to understand things, to in some way perpetuate the elements of the surroundings in which he lives his daily life, almost as if to attain a personal form of survival.

In the description of the relationship between man and the environment, survey stands alongside drawing and becomes the main investigative tool for determining the elements necessary for its graphic representation. Today, their close link to renewed questions regarding space/environment means that both methods are seeing great development in both techniques and technology.

In fact, there is an increasing realization that in order to govern the developmental processes of territorial areas and of the regeneration of abandoned production sites, man needs the critical description of the territory's complex elements. Originally, a concise representation was made on various materials, using diverse implements, and free expressive and literate auto-referenced techniques, to be shared with members of the clan. Today, in the modern era, this representation is achieved using the same tools in every part of the world and is transmitted without any impediment via traditional media and internet.

A significant change in our approach to fellow men probably occurred with the introduction of new elements to the original graphic alphabet at the same time as experimentation

with alternative supports that tried and tested all available types of resistant materials, from animal bone, to stone and tree bark, the first materials used, to baked clay, to papyrus, parchment, paper, and finally digital technology at the end of the twentieth century. This argument presents numerous points for consideration and as the discussion takes shape and, as often occurs, questions come to the fore that require answers: when and where did the relationship between man/graphic sign, that is the representation of the geographic landscape begin? When, where, and why did graphic sign and survey come to be used together? These questions open interesting passages into the history of graphic representation, and that of landscape representation, as they force a selective look at the works of man's invention. However, from this process, which assumes the characteristics of iconological analysis and highlights the hidden or valid contributions of visual culture from other territories, a striking fact emerges which is at first disorientating.

Despite great efforts, scientific research has not yet discovered all the answers to these questions. The limits encountered when seeking the answers are mainly due to the perplexity generated by the very uncertain origins of graphic representation, origins that are the object of new discoveries and continued discussion particularly regarding the content of such representations.

On the strength of this, the most widespread opinion among scholars of this subject sees the relationship between man and graphic sign, and therefore, the representation of facts and things, including that defining itineraries, places, and environmental resources, as among the earliest evidence of human invention and therefore also present in the culture of the first known organized nucleuses, despite the fact that at present the clues certifying its familiarity are minimal. As regards the other aspect under discussion what emerges from the known facts is that the necessity to measure the territory and the need to represent the results appeared later than the appearance of *homo sapiens*, that is *homo faber*, even though spatial-temporal understanding must be ingrained along with the instinct for survival. In fact, this necessity matured to meet the practical requirements of property identification, of systems of use and organizational and planning choices. These factors reveal the existence of an evolved and organized society that was very different from the one in which our first ancestors lived and laboured, where social rules were yet to be written, and wandering the environment in the search for food was common to all animals including the first hominids. Clearly, in order to undertake a measured discussion of the questions raised here, it will be necessary to draw on information from the international scientific community that is in some way linked to this field of research, allowing ourselves to be guided by the precious archaeological finds preserved in museums of anthropology and ancient civilizations present in the five continents. It will be particularly useful to focus on 'primordial' works that are usually described as representations of the territory, urban fabrics, rural activities, or as attesting the important stages in the development of the graphic code. Avoiding any comments that would lead to useless disputes, what matters here is that these representations were created, whether schematic plans drawn from reality or whether they are actual images of a planned design, as has been maintained on certain occasions.

Now, getting to the heart of the discussion we will start with what is considered to be the earliest known evidence.

The earliest example is an incised image on a fragment of mammoth tusk, dating to between 11,000 and 12,000 B. C., found at Mezhirich in the Ukraine, which according to the modern interpretation represents a primordial human encampment (Fig. 1). The drawing was made using simple linear marks and offers indications of the village's social organization. If one looks closely, the village appears to be in an orderly way along the banks of a river and,



Figure 1: Incised image on a fragment of mammoth tusk dating to between 11,000 and 12,000 B.C.

probably even has a bridge spanning the water, while the surrounding environment is shown essentially in terms of natural and manmade elements.

A similar representation is painted on stone in Anatolia, Turkey, found in 1963 during the excavation of the Neolithic settlement of Çatal Hüyük datable to 6,200 B.C. (Fig. 2). The map shows a plan of a village with detailed plans of the houses and common areas. In the background, there is an erupting volcano. The plan's function may have been similar to that of a property register. It is worthy of mention for the accuracy of the plan obtained using only primitive graphic signs and for the capacity for abstraction that can be seen in the differences between reality and the drawing. The double orthogonal projection structuring the image is also merit-worthy, an original graphic intuition used to represent simultaneously both the plan of the constructions and the standing mountain; moreover, the latter was created with a more iconic drawing than the village, suggesting a repetition of natural events.

Another interesting map drawn on stone is that of *Jebel Amud*, discovered in a cave in the Jordanian desert and datable to between 3,500 and 3,000 B.C. Made using the 'martellina' technique (repeated striking of the rock surface with a hammerstone), the image occupies a surface area of about 5 m², and represents a section of territory estimated to be about 2,500 Km² within which there are a number of settlements linked by tracks. In this case, it is very likely that the map was made for didactic purposes, that is to show the clan within the space explored, and it is interesting not only for the conspicuous extension of the represented area but also because its vision denotes an advanced knowledge of geography and mapping. It is incredible to think that it was created using tools that by today's standards can hardly be considered as such as well as without the methods necessary for map making.

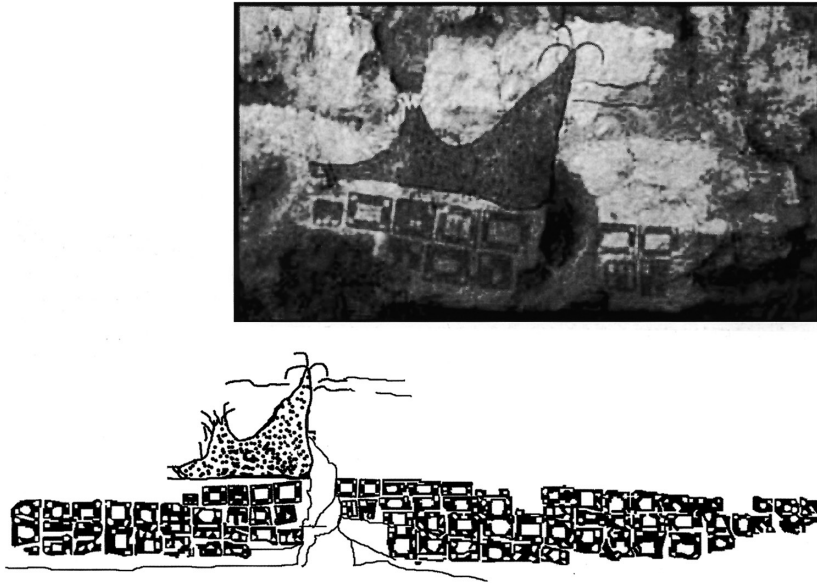


Figure 2: Illustration of the graffito of *Çatal Hüyük* dating to 6,200 B.C.

In addition to narrating the environment, man has also used plans for the organizational modelling of the territory. An important example of this new application is the clay tablet found in 1930 during excavations in the ancient city of *Ga-Sur*, modern *Yorghana Tepe*, which most scholars attribute to the Sargon dynasty of Akkad, 2,500–2,300 B.C. (Fig. 3). The tablet measures 7.6×6.8 cm on the long sides, the drawing shows two schematized hilly areas with a number of semicircles placed on two levels. The image was created by flattening the elevations onto the tablet's surface and therefore it is 2-dimensional. A river runs through the valley between the hills from the top to the bottom of the tablet, ending in a three-pronged delta situated at the centre of the tablet's lower edge.

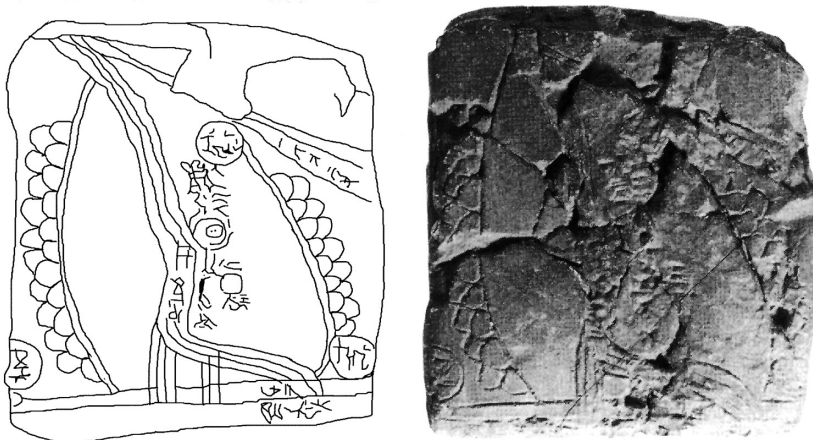


Figure 3: The tablet from *Ga-Sur* dating to 2,500–2,300 B.C. and an illustration of the image.

On the opposite part from the delta, the valley seems bordered by a second, smaller water-course, apparently a tributary of the first. The graphic scheme is completed by a series of three small semicircles at the points of an imaginary equilateral triangle (two at the extremities of the tablet's lower edge and the third on the opposite side). According to modern interpretation, there is a settlement at the centre of this triangle, accompanied by inscriptions in the cuneiform alphabet, naming the objects represented, and indicating the sites of cities, mountains, rivers, valleys, and monuments.

Of later date, but equal importance is a Mesopotamian low-relief of the third dynasty of Ur, 2,112-2,093 B.C., sculpted in the drapes of one of the many statues of *Gudea*, governor of the city-state of *Lagash* [5] found at *Fellah* (Fig. 4). The governor holds a rectangular tablet on his knees, which shows a representation of a city wall with towers and six asymmetrical gates. This probably represents one of the numerous complexes forming part of *Gudea's* great building project. In fact, some see the plan of the temple dedicated to the god *Ningirsu* in this image. An ideogram, about 27 cm long, runs around the tablet's external edge, and on the right side, there is a stylus. Apart from the functional identification of the incised object, which here is of relative importance, the interest in this archaeological find lies in the precise planning indications as attested by the position of the main gates, in the geometric precision of the line of the main fortified walls defining the settlement's perimeter and in the representation of the facades of two of its sections, achieved by changing the angle of the plain on which they stand. Further interest is aroused by examination of the ideogram bordering the drawing formed by two parallel lines between which runs a rhythmical row of elements, only interrupted by damage accumulated over time. This is an interesting graphic/numeric code the like of which is not seen on earlier maps, and which, on scrutiny, must appear as a forerunner of the modern metric scale.

Historical research indicates that in Sumerian society territorial administration was considered a political question. In fact, the terracotta fragment showing the sacred city of *Nippur* relates to the management of urban planning.

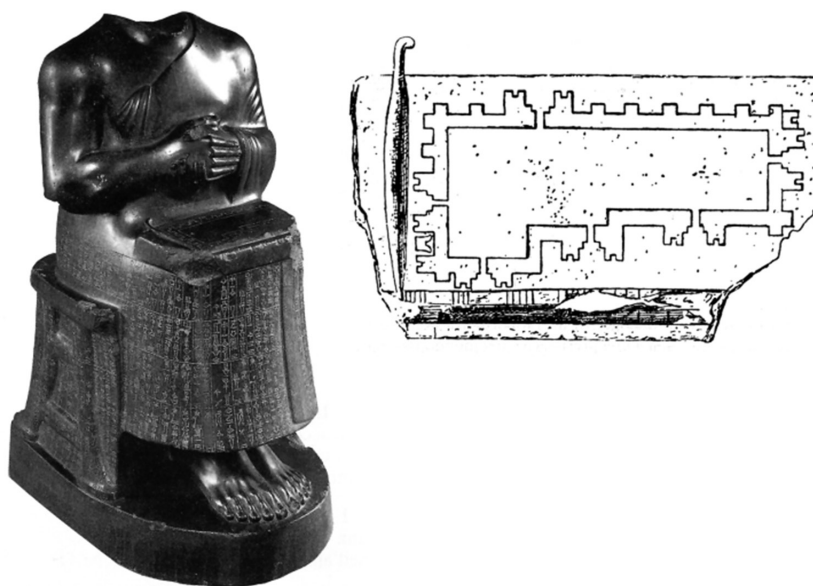


Figure 4: The statue of King Gudea of *Lagash* and an illustration of the city wall with towers.

The rectangular map (21 × 18 cm) dates to around 1,500 B.C. It shows the plan of the city and its defences constituted by a long stretch of wall, partly flanked by the meanders of the river Euphrates, and by a channel beyond which there is a complex of ziggurats, presumably dedicated to *Ekue* and *Ekiur*. Graphically, the drawing is particularly sophisticated. This is visible in the differentiation between the representation of the city's defensive walls, rendered with a double line and the representation of the buildings' walls by a single line, and also in the gaps in the lines used to indicate entrances to the structures. Next to the openings in the city walls are the names of the nearest city in that particular direction.

Furthermore, information relating to the use of some internal areas is provided, for example the gardens, and 'the dimensions indicated close to some stretches of the walls expressed in units of 12 cubits (about six metres) while indications regarding the road network are absent [6].

A comparison between the original drawing and the modern plan made of the archaeological area reveals a surprising level of accuracy in the spatial placing of the represented elements, a similarity between the images suggests that the makers of this map were skilled in the fields of urban planning and graphic representation.

The kingdom of the pharaohs also provides interesting material for research regarding the graphic representation of the geometric properties of the environment and constructions; in fact, it appears that here it made a great leap forward. The evidence reveals the existence of an in-depth knowledge of the territory, but also of a great capacity for analysis, synthesis, and transposition.

Almost no Egyptian maps of the I and II dynasty, 3,500–2,778 B.C., have survived to this day. Therefore, knowledge of the state of art in this period relies almost exclusively on the interpretation of the rare images on walls in the tombs of the Naquada culture, dating to the second half of the fourth millennium B.C. (pre-dynastic period). For subsequent periods, there is a larger amount of documentation, including particularly important cultural evidence from the traditional papyrus rolls.

The increase in evidence is probably due to factors endogenous to Egyptian society, but also to the ravages of the Nile through time. An increase in the number of attestations is also due to the fact that surveying the landscape and its graphic reproduction, here as in the past, came about in a slow and progressive way during the entire period of hegemony, until it became a daily practice for scribes. The historian Herodotus of Halicarnassus, for example, tells us that during the campaign against the Scythians, undertaken by the pharaoh Sesostris, all the conquered land was mapped [7]. Another determining factor contributing to an increase in the variety of evidence during the centuries of their cultural predominance was the introduction of the 'land register', which the Egyptians established in 2,500 B.C. This was an inventory, similar to ours, mainly based on graphic documents drawn up following real surveying operations. Compiled in order to document landed property and as a guide for the systematic and fast collection of taxes on these properties and on agricultural produce, it was also used for restoring the status quo of the property boundaries in areas affected by the annual flooding of the river Nile. A crucial instrument, essential for financing the day to day activities of the rulers, which soon required the institution of a special social caste, probably linked to the priestly sphere. By cross-referencing the data from the interpretation of the images with that extracted from the decoding of the texts, it can be seen that the representation of the geographical landscape only began to be set out according to logical procedures and supported by specifically made tools at around the middle of 2,800 B.C. In fact, a papyrus from this period mentions the 'knotted rope' an instrument used for determining linear measurements. Other contemporary documents mention the 'groma' the instrument that fixed

points within the landscape used for determining alignments, the ‘water level’ and ‘plumb line’, the latter used for positioning the ‘knotted rope’ [8] on the horizon; an operation that could also be carried out by using special vertically held ‘rods’. Another ingenious instrument was the ‘measuring rod’, an object often made of wood and constituted by a bar articulated by geometric divisions associated with numerical and alphabetical symbols, expressed in hieroglyphics, and with units of measurement provided by the ‘digit’, ‘palm’, ‘large and small span’, the ‘foot’ and ‘arm’ [9].

Another remarkable piece of evidence illustrating the landscape in Egyptian art is housed in the Egyptian Museum in Turin. This plan dates to the period of the New Kingdom, at the time of the reign of Setis I, 1317–1301, second pharaoh of the XIX dynasty (Fig. 5). Today, this document is made up of two sections containing drawings and annotations. The largest part, known as the ‘map of the goldmines’, shows a drawn plan of a section of territory bordered in the north and south by mountain formations and crossed by two, almost parallel, main roads. The environment has the typical characteristics of a wide, dry riverbed, rocky terrain with sparse vegetation. The two roads are linked by a winding track from which another branches out. The plans of several buildings, of different shape and size complete the drawing. The context in which they stand is identified by labels written in hieratic code and by the use of graphic and chromatic symbols. In particular, these fragments indicate road directions, the mining properties of the mountains, the definition of the constructions and the words ‘Reign of Setis I’ to identify the period in which a commemorative stele was set up. Whether or not this can be considered as a map or a document attesting a geological study resulting from an accurate survey of the terrain, as suggested by most scholars, the value of this drawing lies in the fact that it constitutes overriding evidence for the use of a graphic language such as orthogonal projection certainly extraneous to visual logic as well as for attesting the systematic use of graphic conventions.

It is obvious that this approach to drawing was an attempt, which today we do not hesitate to define ‘happy’, to offer a more efficient graphic synthesis than had been previously obtained; an intellectual operation that, clearly, can only derive from full awareness of the expressive possibilities of graphic representation. A criterion revealed to be suitable since whenever there is an attempt to offer the greatest amount of information without losing anything of the events’ identity, full mastery of drawing’s linguistic possibilities is reached. That is to say, when communicative necessity is associated with visual criticism to create a graphic, the concept of representation as a scientific instrument is born, a path taken by the Egyptians

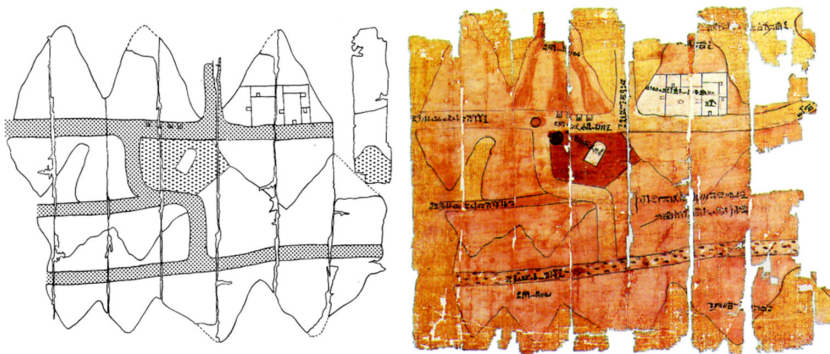


Figure 5: Drawing taken from a papyrus from the New Kingdom, showing gold mines.

each time they had to make a graphic representation of the results of an intellectual process stimulated in response to questions relating to the geographical landscape.

At this point, we can leave the discussion of the archaeological evidence, as our main aim is not to give a chronology of the representation of the landscape in order to understand the state of the art. This text's principal objective is the identification of the actual conditions in which the metric-representative problems arose that caused real difficulties with the use of primitive graphic language, forcing man to define new methodologies. These circumstances are worthy of attention because we can see 'the dawn of a new day', a time when our ancestors experimented continuously and began a new superior cognitive process, if it can be called thus, which, as far as we are concerned, allowed then to formulate the first graphic transposition of visual elements made according to logical processes. It also allowed them to observe the relationship with nature with heightened attention, which, probably, then began to be perceived as a complex structure of symbols [10]. Thus, the conclusion of the historical part of this discussion is the sign that not only tells the reader that the writer has achieved his aim, but also that the answers to the questions posed at the beginning of this discussion are to be found within the historical context. In fact, the archaeological finds from Egypt, in particular those from its Hellenised period are presented here because of their particularly sophisticated graphics, which constitute the materialization of the precepts of an evolved intellectual process.

Without the risk of contradiction, it can be said that human ingenuity in this historical period gave substance to a real change in the pace of the progressive evolution of graphic representation. A positive discontinuity in the line diagram of the development is stimulated by the sudden change in the mental processes regulating the language of drawing, imposed by the necessity of finding a better way of clearly describing a landscape's components. An expressive tool whose peculiarities and the founding principles with which it was formulated support our definition of it as new and in many respects innovative, even though it was largely based on the original graphic sign, a result of mental and practical research that was constant through time and began as an intuition. An expressive tool that ought to be recognized as the embryo of the modern graphic system, because when systematically accompanied by scientific rigour (which with Claudius Ptolemy reached formal completeness), it made it possible to draw up a model of cartographic projection, the archetype of all later representations of the new image of the world. A clear sign of an intellectual process of great importance that is not ascribable to the primitive.

To conclude this discussion, we may add these other considerations to the reasoning set out thus far. The maps described here, as well as being outstanding for the surprisingly modern graphics, also show an accurate layout suggesting the existence of rules observed during the planning phase. In the second place, the image of the concepts presented on the maps, although made with continuous and monotone lines, reflect on a high level that is not seen in these terms in earlier archaeological finds what is occurring in the field of geometry. Neither is it visible in contemporary material from other parts of the world, where representations of the landscape usually continue to appear as coded images, some still in need of being deciphered. Moreover, the positive comparison of real measurements with those on the drawings, seen in some examples, places these archaeological finds among the evidence for the existence of a methodology pertinent to operations of territorial survey. The measuring instruments, some of which are still used today for topographical survey, their management, and the specific definition of roles also provide further evidence in favour of this suggestion. In addition, this reveals the scientific acumen used by the master draughtsmen in drawing the landscape and the dignity and importance associated with such a task.

Mesopotamian and Egyptian knowledge, acquired by mixing empiricism, rationality, magic, and mysticism, and structured around specific objects, such as numbers, the stars and living organisms, was later taken up in quite a different spirit in Greece, which aimed not so much at achieving positive results, but rather towards the discovery of general principles and rational explanations.

3 CONCLUSIONS

Of course, the Mesopotamian and Egyptian maps taken as examples belong to the complex of graphic expressions in which the representation of the landscape can be read. However, they become of primary interest when an attempt is made to define the break that sanctions the transition from the 'primitive' graphic system, which we consider spontaneous and personal, to the 'ancient' one, that of the first deductive thought, which if not collective is certainly to be considered corporative. Furthermore, their power of expression makes it possible to perceive the great cultural weight at the base of the innovation made to the graphic system, a weight also certified by the fact that they have become the basis of graphic research that will lead man to create increasingly more detailed representations. In other words, scientific knowledge of these ancient civilizations, which constitute the intellectual humus, which has rendered possible the triad of representative models – based on the graphic sign – is still used to describe, plan, and document the landscape today.

These ancient drawings, which often arouse a feeling of pathos in us, are the precursors of modern territorial graphic expressions, used by landscape architects and urban planners to fix their ideas before showing them to clients. They are drawings with ulterior properties as the graphic and spatial data is accompanied by information drawn from historical, stylistic, topological, and demographic research; therefore, they are instruments capable of not only expressing the qualities and thus the evidence, but also the quantities and thus knowledge. Obviously, the reference is to GIS technology, acronym for Geographic Information System, created by Ian Mc Harg and Howard Fisher. This is a system, which independently of the digital format in which the landscape data is expressed allows us to georeference it and therefore manage it in a dynamic mode creating in real time a graphic-alphanumerical simulation of the affects the project proposals could have on the territory. Thus, in this new guise, the drawing acquires more characteristics, strategic for applied research and design, and becomes a high-performing tool for representing the finished image of the earth and for seeing from the exterior, via satellite, what has always been seen from the interior.

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