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INTELLECTUAL GENEALOGIES AND NATIONAL DISCONTINUITIES IN  
THE HISTORY OF CARTOGRAPHY: THE CASE OF CHOREMATICS

*Abstract* – One of the most significant innovations in the recent evolution of cartographic studies, today permanently acquired and even considered obvious but nonetheless of great epistemological scope, is the surpassing of the classic linear interpretation of the history of cartography, mechanically interpreting it instead as a continuous and unstoppable process of improvement, driven by technological progress and by the universalization of official standards. A series of original historiographical problems has originated from this decisive intellectual conquest, including the need to rebuild some cartographic traditions until now barely contemplated, being extraneous to the official history of cartography, which was essentially limited to the production ascribable to the geodetic-topographic model. This article deals with the historical events of one of these traditions, the chorematic tradition that had spread in France at the end of the twentieth century as the result of a long and general rethinking of the way space is conceived. We probe the possible elements of continuity that this field of applied research might have with prior historical instances. Moreover, we analyze the opposition met by its proposition, and lastly we try to find convincing explanations for the impetuous but almost exclusively national diffusion of this method of spatial representation.

*Cartography and national cultures.* – The claim of cartography to build a standardized and universal language, strongly manifested since the affirmation of eighteenth-century geodetic cartography, in reality has many exceptions: national practices and habits are widespread, as shown in figure 1, which compares border symbols used in twelve different countries. In addition to symbols, other evident differences from country to country concern toponyms, colors, relief representation, reference systems, scales and more.

BOUNDARIES				
	STATE OR EMPIRE	DISTRICT OR PROVINCE	COUNTY OR PARISH	COMMUNITY
ARGENTINA.....	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
BRITISH (GSGS)....	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
CZECHOSLOVAKIA	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
DENMARK.....	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
FINLAND.....	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
FRANCE.....	++++++	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
GERMANY.....	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
ITALY.....	++++++	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
NETHERLANDS....	++++++	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
RUSSIA.....				
SURVEY OF INDIA	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—
SWEDEN.....	++++++	—•—•—•—•—•—•—	—•—•—•—•—•—•—	—•—•—•—•—•—•—

Fig.1 — Border symbols in 12 national cartographic productions

Source: Olson and Whitmarsh, 1944, p.152

These differences are already very prominent in the official production, i.e. that of state organs to which figure 1 refers. If we then look at unofficial genres, like the maps produced by private firms, the degree of uniformity is then further reduced and the cartographer appears to have ample freedom.

If we then change our focus from single maps to entire national cartographic productions, we can also find relevant differences, with countries that had developed more than others some genres: for example the State interest in central planning had generated in Soviet Union a huge amount of maps of industrial production sites and mining areas, while for historical reasons Great Britain has always excelled in nautical and sea maps.

In this context, which reveals a much more deregulated situation than the normative vocation of official cartography would want, this article deals with the extreme case of a genre that had an impetuous development, in a country of great cartographic tradition, but which had a diffusion limited almost exclusively to that country. We are referring to choremetics, which has a solid reputation in France but which seems to have appeared from nothing and it is little known in other countries.

Because of its peculiar evolution, chorematics is an interesting subject to investigate, able to show how much cartography is susceptible to the cultural climate of a country, and how urgent it is to dismantle the commonplace that a universal cartographic standard will inevitably triumph. Moreover, the apparent enigma of lack of connection with all previous cartographic genres deserves to be reflected upon and encourages the formulation of hypotheses on the subject.

The lack of fame that *chorématique* has outside of France calls for some brief historical notes and the presentation of its peculiar characters, which will be preceded by a discussion on the scientific context that might have prepared the theoretical ground for the development of chorematics. Afterwards there will be an account of the criticism it has received, concluding with a few possible «local» explanations of the amazing «exclusively national» evolution of this original scientific production.

*Chorematics as the result of an evolutionary path of spatial representation science.* – In the beginning of the twentieth century a new awareness of space had produced stimulating thoughts on this profound dimension of human life (Kem, 2007) The incredible innovations in physics were not irrelevant, with the theory of relativity in Einstein's systemization confirming the idea of a multidimensional space (Einstein, 1905). These innovations on the nature of space, questioning the common thought that it was homogeneous, opened up new horizons in a variety of disciplines, with a general objection to the rationalist principles of the modern scientific paradigm.

Driven by these extraordinary innovations in the history of thought, the theoretical reflection on the representation of space and territory had a strong acceleration. As a consequence the available offer had grown considerably: new cartographic genres (e.g. chronographic charts) had made their appearance and others had developed significantly (touristic, road and rail cartography, etc.). Among these, geopolitical cartography had been especially innovative, aiming to provide useful representations for the comprehension of the geopolitical order through the creation of specific graphic symbology which would emphasize the dynamic nature of political and social phenomena (Boria, 2008).

In the period between World Wars the ferments of the previous years thus matured, with the introduction in the cartographic field of promising experimentations, among which geopolitical cartography stood out.. It had however been «stained» by the ambiguous relations with totalitarian regimes, and this had cost it the accusation of lending itself to ideological manipulation and conditioning. For this reason, in the years following the Second World War prevailed a sense of diffidence towards the new cartographic proposals of the previous years. However, the strength of evocative images is — especially in our visual culture — irrepressible and therefore the theoretical horizons opened for cartography by that experience had fueled new experimental currents. It should not surprise that the countries most willing to resume the previous innovative experiences were those less stung by the dangerous cartographic-ideological convergences of the Fascist era: with Germany, Italy and Spain out of play, it was France that relaunched an innovative cartographic production with the introduction of chorems, elementary structures of space. The assembly of these minimal units in spatial organization gave birth to schematic representations of a territory.

Freed from the oppressive — and in every way counterproductive— ideological mark, these new cartographic experiences had reemerged like underground rivers and were applied to less compromising subjects such as urban, regional and transport geography, revived by the stimulating influx of the structuralist thought. *Chorématique* indeed embraced the paradigmatic change that in those years was hitting the Western scientific thought: the success of structuralism, i.e. the tendency to assign to the set, to the whole, different qualities from those of the single parts which compose it, a conception that derives from the holistic principle and which represents a reaction to the reductionism of positivistic origin.

From the assertion that it is impossible to understand a reality just from the isolated analysis of its components, and that it is necessary to have its general and unitary view because each spatial object has value only in relation to the overall situation, structuralism was inclined to have great interest for the field of representations, so much that one of its most notorious applications was *Gestalt* psychology. In

this context of intellectual renovation, chorematism proposed itself as the best example of the adoption of such an approach for territorial representations.

Adalberto Vallega was one of the most passionate geographers investigating the historical origins of the representational modalities - which he studied both in its theoretical foundations and application repercussions - that had tried to overtake the Cartesian rationalism<sup>1</sup>. In his striking analysis on the theory of representation, Vallega has found the crisis point of rationalism in a precise historical moment: «In the mid twentieth century there was a palpable discomfort, involving the ways in which reality is represented, discomfort that has not subsided, in fact it became even more evident as decades passed» (2008, p.54). From then on, due to the affirmation of lines of philosophical speculation which determined a clean cut with the past, new and original ways to represent space would spread, including chorematism, which was recognized by the same Vallega as highly innovative (2008, p.169).

Therefore, the cartographic novelties that had appeared between the wars and that had unexpectedly left «through the window» of geography due to the tragic drift of geopolitical maps, indirectly and inadvertently reentered «through the front door»: it was French regional geography, which was exalting its functionalist inclination, that resumed the subject, wisely purged from political aspects .

*Historical notes.* – In 1962 a young Roger Brunet printed a manual which systematized his studies on the form of geographical objects (1962, figure 2). It contained the seeds of chorematism, although the creator of this new genre would postpone its official birth certificate, giving credit to a subsequent article (Brunet, 1969). Brunet has been unanimously credited as the founding father of chorematism, and would long remain the main motor of the circles that incessantly promoted it in the following years.

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<sup>1</sup> The conceptual and methodological basis that had allowed him to advance in this research field are presented in the trilogy that has appeared in the last phase of his intellectual journey (Vallega, 2004, 2006 and 2008).

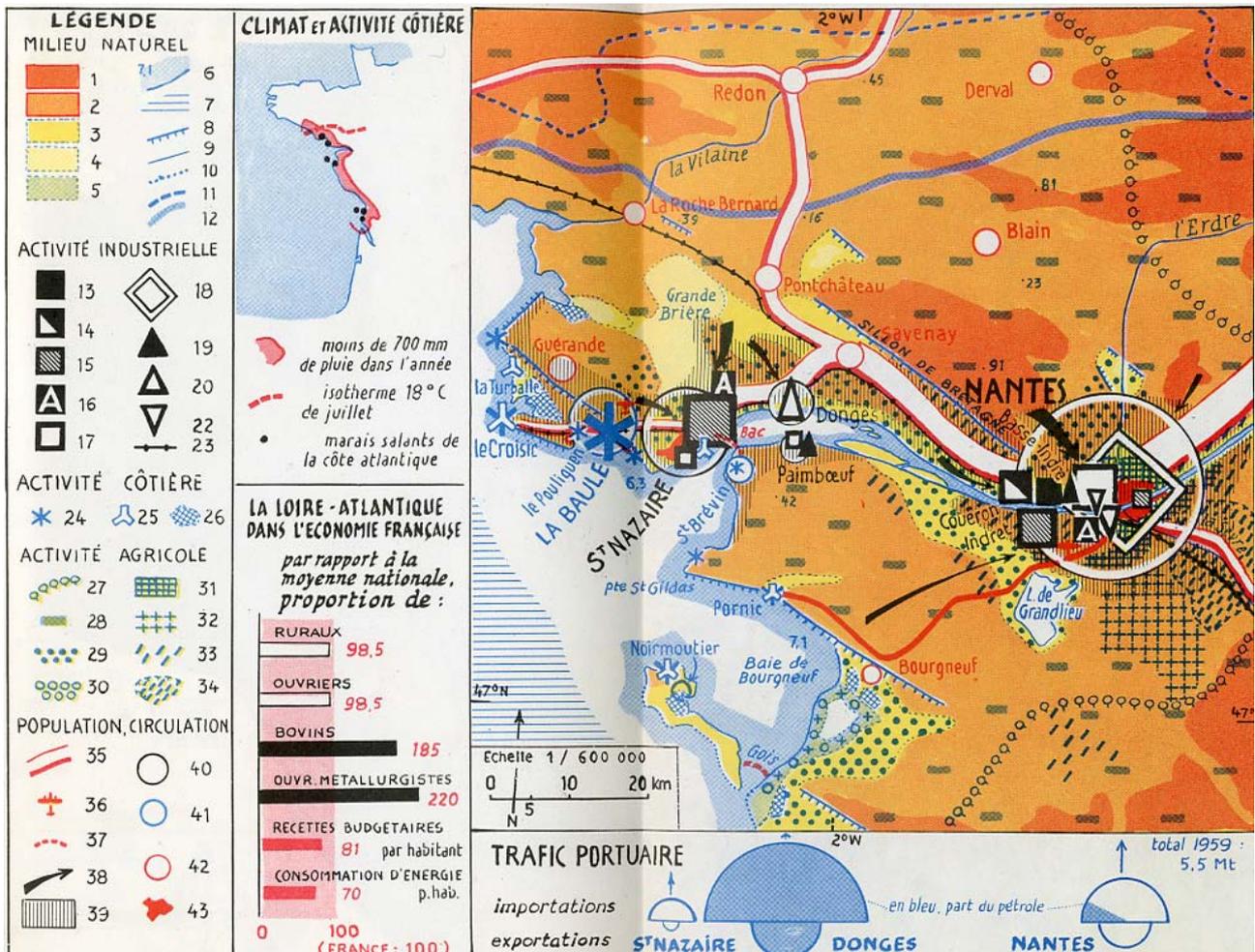


Fig.2 — Basse-Loire  
Source: Brunet, 1962, f.t.

Meanwhile, the theme of cartographic visualization had great resonance among French intellectuals, thanks to Jacques Bertin's authoritative study on graphic semiology (Bertin, 1967; see the long chapter entitled *La cartographie*, pp.285-411). That work had de facto opened a new era in spatial visualization of quantitative information. The author had been trained as a cartographer according to the most canonic standards, having started his career at the prestigious school of Emmanuel de Martonne, at the Paris Institute of Geography (Palsky and Robic, 2000), landing afterwards on a completely innovative research path which enabled him to give a fundamental theoretical contribution to the extension and enrichment of the semiotics of those years, together with authors of high stature such as Roland Barthes, Louis Marin, Ernst Gombrich and Erwin Panofsky.

Neither Brunet nor Bertin ever cited pre-war products, but the common points are evident in the attempt to review at the foundations the prerequisites of spatial representation and in the graphic expedients adopted (Martínez Rigol and Moreno Redón, 2010). Chorematism by then rested on a solid theoretical basis but, as often happens to new research fields, without the full awareness of its founders, which had not yet given it a name: a few years had to pass to see the first use of the term «chorems» (Brunet, 1980) and six more for a summary table which would constitute the chorematic alphabet (Brunet, 1986a, figure 3).

	PUNTO	LINEA	AREA	RETE
<b>maglie</b>				
	capoluogo	limite amministrativo	stato, regione	centri, limiti e poligoni
<b>trame</b>				
	nodi di attestamento, incroci	vie di comunicazione	aree di servizio, irrigazione, drenaggio	rete
<b>attrazione</b>				
	luoghi gravitanti	isotrope, linee orbite	area d'attrazione	legami preferenziali
<b>contatto</b>				
	punto di passaggio	rottura, interfaccia	aree di contatto	base testa di ponte
<b>tropismo</b>				
	flusso direzionale	linea di divisione	superficie di tendenza	dissimmetrie
<b>dinamica territoriale</b>				
	evoluzione puntiforme	asse di propagazione	aree di espansione	trama del cambiamento
<b>gerarchia</b>				
	disseminazione urbana	relazione di dipendenza limiti amministrativi	sottoinsieme	rete gerarchica

Fig.3 – Table of elementary structures of space or basis of chorematies  
Source: Brunet and Ferras, 1993, p.121

The new method, proposed as a real scientific means of expression, was receiving great appreciation: first specialized works, then scholastic texts (especially those by the editor Masson in the first years of the seventies) started replacing old maps with cartograms drawn according to the principles of the new cartography.

In the following years Brunet's initiatives had great success: workgroups were born, as well as research projects, conventions and workshops that developed his method aiming it towards geographic didactics and research<sup>2</sup>. Applicative studies, schoolbooks, conference proceedings, monographic atlases and theme maps will represent its direct material results. Today, if we browse the French geographic

<sup>2</sup> The main operative tool to bring forward Brunet's ambitious scientific project was the GIP R.E.C.L.U.S. (*Réseau d'Etude des Changements dans les Localisations et les Unités Spatiales*) research lab, clearly inspired by the anti-academic geographer Elisée Reclus: its operational base was the *Maison de la Géographie* of Montpellier, and its main organs of diffusion the magazines *L'Espace Géographique* and *Mappemonde*

literature we can find that that technique of representation is extremely common and has transcended the scientific boundaries bursting into the wide distribution publishing industry.

Even without entering the topic of the relation between chorematology and progress in information technology so as not to deviate from the slant of this article - which is not technical but of theoretical reflection and historical reconstruction - we must remember that the advent of *Geographical Information Systems* (GIS) has contributed considerably to the success of chorematology. As an example of contact between these two, it will suffice remembering that Jack Dangermond, founder of the ESRI group<sup>3</sup>, had written a pioneering article on GIS that was, quite significantly, translated and published in French, even before the publishing of the English original (Dangermond, 1983). It contained a table showing the seven basic procedures to represent the position of geographical phenomena. This table presents some similarities with Brunet's table of fundamental chorems, and contains exactly the same basic shapes: points, lines, polygons.

*Characters of the chorematic map.* – For its debt with structuralism, chorematology aims to visually render the overall organization of the territory, from which the single elements prescind. What matters are the relations and structural schemes that from time to time are established inside the system, as well as the functions assumed by the single elements (figure 4).

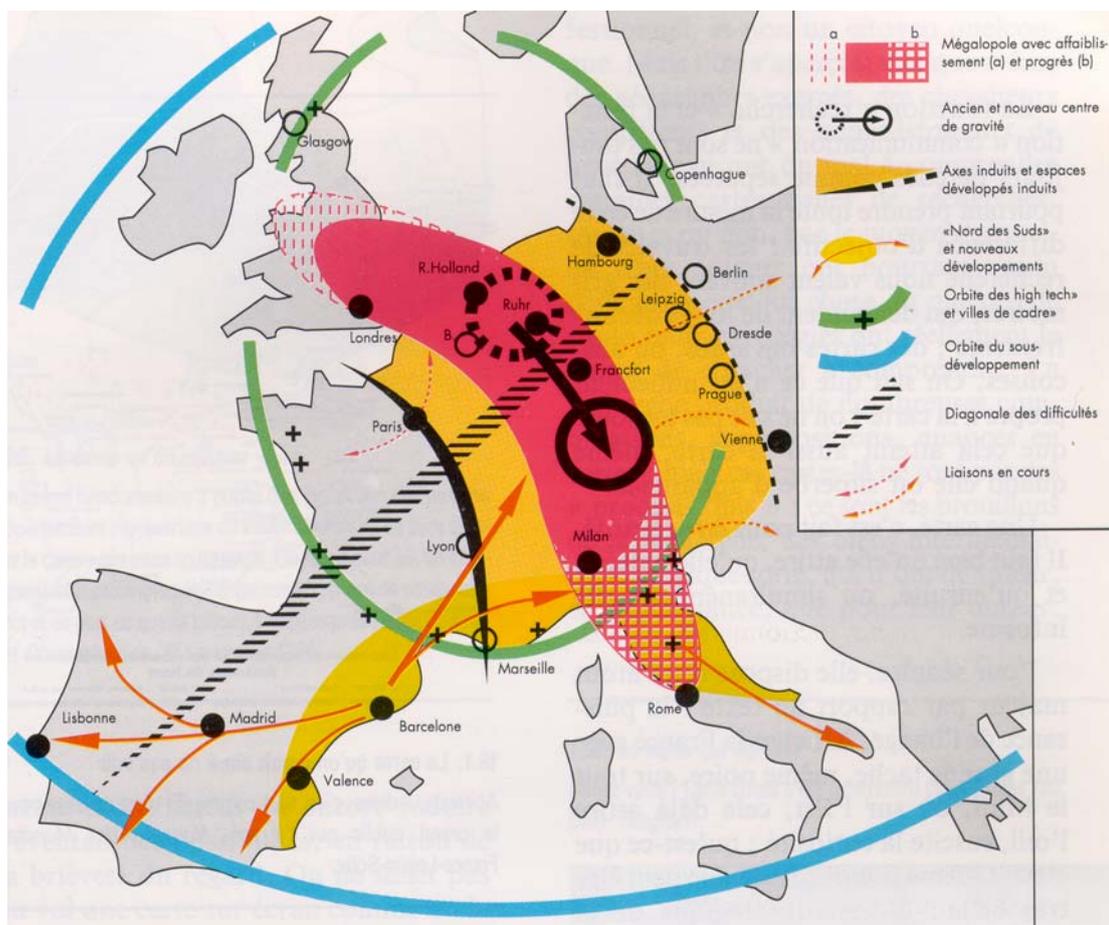


Fig.4 — *L'Europe sous-jacente: structures et dynamiques*  
Source: Brunet, 1989, f.t.

<sup>3</sup> ESRI is a leading American firm in GIS software and applications for the management of geolocalized databases.

From this derives the attention dedicated to the phase of selection of geographical objects: «une carte bien faite vaut toujours mieux qu'une carte bien plain» (Lézy and Nonjon, 1999, p.11). In the construction of a chorematic map it is therefore very important to identify the elements considered essential for the comprehension of the studied phenomenon and of the fundamental principles of organization of that space. Just like the human eye, which does not scan the surrounding environment but evaluates and selects the objects to be memorized, chorematics avoids the simple listing of localized geographical objects, sure that such an exercise does not lead to comprehension, aiming instead to bringing out the most significant elements of the whole. As Brunet rules, «la chorématique sert à exprimer l'essentiel de la réalité géographique» (André and others, 1990, p.38).

Therefore, it is not a simplified representation of reality, as if the chorematic map derived from a progressive simplification of the topographic map, or a byproduct obtained by omitting some elements of the original. Brunet continues: «La chorématique procède d'un mouvement *inverse à celui de la simplification* [italic in the original text], et d'une autre nature. Elle part du simple, et se donne progressivement, jusqu'à un certain point, les instruments de la complexité» (André and others, 1990, p.38).

Chorematics thus reveals to be to much more than just a graphic tool: it is a true method of spatial analysis. The proof relies on the fact that works aimed to build a solid theoretical structure have appeared alongside the applicative studies concerned mostly with the fields of planning and didactics, where chorematics effectively supports traditional cartography.

Moreover, chorematics fully embraces Claude Raffestin's statement: «Representation, denotation or description are effective when they can understand, through appropriate means, significant relations» (2009, p.51). The functionalist origin then inevitably leads to an emphasis on the concepts of mesh, axis and pole, and this drives chorematics to heavily generalize the shapes of geographical objects. This attraction to geometrization of shapes recalls the innovative prewar cartographic experiences quoted above, which in turn seemed to be influenced from this point of view by the artistic avantgardes of the first twentieth century. The thread that might connect this genealogical line seems nonetheless implicitly recognized by the same Brunet when he states: «Le chorèmes ne sont que des arrangements simples des trois figures de base de la géométrie: le point, la ligne et la surface» (1990, p.90), thus resuming the same classification of forms of space made by Kandinsky (1926)<sup>4</sup>.

There are six basic visual variables: size, value, color, shape, bearing and grain. These are applied to basic chorems, each destined to represent a specific spatial configuration.. This elaborate theoretical construction, here only briefly outlined, but as we have seen resulting from a long course of reflection between geographic science, semiotics and visual arts, is considered sufficient to represent any spatial object, clearly without regard for the shape it assumes; of course, the peculiar hexagonal shape of the French territory was well identifiable by its citizens, but geographical shapes are very recognizable, especially those of nations, being well-established icons in the minds of citizens (think for example at the Italian «boot»).

As well as considering itself able to represent every spatial object, in a similar way chorematics thinks it can show the spatial nature of any social phenomenon. This certainty derives from the results obtained in the effort to go beyond the frustrating limitations of classic cartography, which only focused on the visible components of the spatial system. It is not just a matter anymore, for Brunet and his disciples, of building limited imitations of the world, but of informing about the lines of strength that permeate phenomena and configure their spatial nature. Chorems are not just pure and simple geographical objects, but «express an action, a project, a result» (Brunet, 1990, p.118). Therefore, immaterial elements are no longer excluded from the analysis and expelled from the representation, but are considered and expressed. In this exercise a fundamental role is played by the subjective interpretation of the author, which classifies and puts labels according not only to theoretical provisions, but also listening to his researcher's sensitivity.

The lesson of geopolitical cartography shows up again, trying to extend the representation to abstract elements of political life (areas of influence, strategical axes, directions of penetration, etc.. A quick look

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<sup>4</sup> Note that in the French version (Paris, Editions de Beaune, 1963) the title of Kandinsky's work closely recalls Brunet's words : *Point Ligne Surface*.

at the key of figure 4 is enough to sense the affinity between the two genres. Deep inside, both geopolitical cartography and chorematology expressed a fundamental innovation destined to radically change the history of cartography: after a few centuries in which procedural formalization had strongly reduced the cartographer's freedom, at last he recovered the autonomy to cultivate his own perceptions and reflect them in maps.

*A controversial methodological proposition.* – Like every scientific innovation aspiring to change research methodologies, chorematology has drawn criticism and resistance. Due to its strictly national origin, this happened mostly in France and, considering that it undermined the historical revenues of position of traditional cartography, the attacks were strongest in the years of its maximum diffusion<sup>5</sup>. Let us see the essential points of the critic to chorematology.

Brunet's work had revamped the debate on the use of the cartographic model, which enables to «read, beneath the complexity of the representation, the simplicity of the phenomena at play, of expression of laws, mechanisms and general behavior» (Brunet, 1980, p.254). This approach has raised the criticism of those who believe chorematology to be tainted by determinism and inclined towards an unacceptable oversimplification of the complexity of territorial reality, too articulate to be explained with models. Certainly, criticism was favored by Brunet's emphatic prose, which sometimes seems to express a rationalist aptitude in finding general laws, like when he categorically claims that he wants to «discover the order underlying the apparent disorder» (Brunet, 1987, p.189) or when he states that «there is an order in the world, it just needs to be found» (Brunet and Dollfus, 1990, p.76). But in substance the accuse seems based on a misunderstanding: the expression «model» in geographical tradition rests on a deterministic vision, which considers the territory as a mechanical system; Alfred Weber and Walter Christaller have developed models in this sense. In chorematology, instead, the expression«model» has a mainly descriptive disposition, not of normative nature (Chorley and Haggett, 1967, pp.25-26). It should therefore be considered as a representation oriented to describe a specific situation and not, as in the classic sense, a scheme «for the comprehension and presentation of laws, developments, relations and structures» (Ruocco, 1988, p.530). The following quote by Brunet is exemplifying of the care with which the supporters of chorematology interpret the concept of model and at the same time of its undeniable heuristic role: «We have in mind some organizational models of the subalpine region (and not only of the Italian Piedmont), built up areas, coasts, etc.: they are models that will enable the identification of specific geographical beings, subjects of study. We can thus appreciate the difference between the form of space under study, territory, mesh or location, and the models we speak about. This difference is what we call “residue”, but in reality represents its flavor, its own originality» (2003, p.71)

Identifying three categories of *carte-modèle* (1987, p.190), Brunet explains that chorematic research especially concerns representations of organizational spatial forms of a specific territory, ultimately aiming to explain a specific territorial organization. In other words, while in its prevailing meaning the geographic model has a general theoretical vocation and refers to an abstract space, the chorematic representation refers to a specific place, which might share with other places the same spatial behavior, without inevitably resulting in the formulation of general, invariable and unchangeable spatial laws.

Another criticism concerned the allure of chorematology, which would be defeating the precision of contents (Coppola, 2003, p.79). In its effort to describe the real world with the grammar of chorems, it would be bending reality for the benefit of the method, and not the contrary as it should be.

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<sup>5</sup> It might seem a paradox that the strongest criticism to the chorematic method, which questioned the current geographical currents, came from the circle of researchers gathered around the *Hérodote* magazine, which had established its name for its struggle against traditional academic knowledge and for the condemnation of the deceptive use of geography by authority. It was a curious change of roles, placing objectors of the system in the role of the highest defenders of a tool, i.e. the rationalist map, that for centuries had supported the functional exercise of that same power against which they said to be against. A collection of severe criticism against chorematology is contained in issue number 76/1995 of the magazine, with the derogatory title *Les géographes, la science et l'illusion*. A subtitle in the lower portion of the cover adds the peremptory warning *Chorématique Stop!* The same magazine had already published a harsh article by its editor in chief against chorematology (Lacoste, 1993). Chorematology was clearly considered by the radical geographers of *Hérodote* as a new tool of central power, and they did not appreciate its innovative scope on the theoretical and methodological level.

We also note in the volume by Cambrezy and De Maximy (1995) the ripercussion of the debate started by chorematology.

Chorematics, in other words, would be pleased with the captivating abilities of its language, forgetting it is a means, not an end. It would be caring more for the effectiveness of the communicative action than for the quality of the message conveyed. Hence in chorematics there would be an essentially propagandist vocation, more typical of marketing techniques than of scientific tools. For example, with regards to its wide use in territorial planning, chorematics— being invested with scientific authority— would have lent itself to political exploitation for the benefit of local powers, since it would have offered scientific arguments useful for winning financial resources for small and big public works (highways, high speed rail, etc.)

One could object that the effort to describe territorial situations and explain political projects in a way comprehensible to the public can not be considered a fault, on the contrary such method of graphic communication proves to be in full harmony with the visual culture of our times: direct and accessible. Chorematics is accused by post-structuralist criticism of excessively valuing the weight of spatial structures, underestimating that of single components of the system. This would also be limiting its application to small scales.

Other critics claim that chorematics might be victim of technological exaltation, as confirmed by the above-mentioned thought of Jack Dangermond: the rise of information technology in geography might have induced an emulation of the computer treatment of geographical data, breaking up information in basic geometrical elements (points, lines, polygons). Applied to the representation of territory, this scheme might exaggerate abstraction.

We must also admit that the selection of elements of reality made by chorematics is a highly arbitrary operation, but it is impossible not to notice that it forms an inescapable practice, a relentless imposition: each representation requires a previous selection. It is the essence of representation. It is a need common to every representation, including of course cartographic ones like geodetic cartography of rationalist origin, still ingenuously idolized by some for its fidelity to reality. Therefore also a chorematic map portrays just one of the potentially endless interpretations of the territory and its phenomena. It is inevitable that it includes some amount of subjectivity, already in the starting hypotheses postulated by the author and in his previous ideas about the studied phenomenon . Brunet's defense on the subject denotes once again a strong pragmatism and intolerance of gratuitous criticism: «Should I choose between the effort to represent territories – an effort indeed, if done seriously – and the easy statement that any “representation” is suspicious, subjective, arbitrary, and that therefore “everything is equal” and that my discussion counts like yours, independently of what I tell, the choice is clear: I prefer the effort» (2003, p.73).

Some have criticized chorematics for being tied to an abstract concept of space.

According to these critics we should « abandon the idea that a map drawn in Euclidean space is the impassable horizon of geographical representation» (VillEurope, 2002, p.302). There might be an underlying problem of metrics, and the topographic metrics used in chorematics would be inconsistent with the representation of today's world, which would be better represented with topological metrics<sup>6</sup>.

On the whole, there has been a lot of criticism that forced chorematics into a time of reflection, useful for dealing with the new post-structuralist bearing that had imposed itself in those last years . The ambitious research agenda of Brunet and his group was therefore downsized, compared to the exaltation that had accompanied its initial success, but the deep influence of chorematics on French geographical studies was bound to leave trails still visible today

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<sup>6</sup> For «metrics» we mean, according to Jacques Levy's definition, «the way of measuring and treat distances» (Levy and Lussault, 2003, p.607); in this sense topological metrics favors the consideration of meshes to territories, as well as boundaries to areas, the exact opposite of what postulated by the topographical metrics imposed to the geometrical-Euclidean cartographic model by the Cartesian thought.

*Universal paradigms, national adaptations.* – Chorematism was, as we have seen, an almost exclusively French experience<sup>7</sup>. The strictly national characteristic is actually the original element from which this study had stemmed, born to answer the question: why has chorematism had such great success in France, but almost no following abroad?

The matter was interesting since it clearly denied the progressive dream of a linear history of cartography, according to which every new event would be placed in continuity with the past, while breaks and discontinuities would be considered exceptional and detrimental accidents (Harvey, 1980; Wilford, 1982; for a critic to this approach see Edney, 1993).

Moreover, that question made me curious since such a national singularity contradicted traditional schemes: from classic manuals of cartography I had always learned that the evolution of cartography was going in the direction of a triumph of universal standards and norms, pursued not only generically by the irreversible forces of the globalizing destiny, but also effectively by those work groups solemnly founded under the aegis of the greatest international organisms, including the U.N. (Sestini, 1981, pp.64-65 and pp.220-223). This interpretation of the history of cartography did not consider the possibility of autonomous «national ways», as the story of chorematism had otherwise clearly shown. The case evidently presented «local» explanations.

Searching for factors that might have helped solving the enigma of a genre limited to a single country, the attention fell on two characteristics. The first one regards the development of structuralism. This school of thought, from which chorematism has drawn its theoretical basis as we have seen before, had received a crucial contribution from French culture. It should be enough remembering that its main spokespersons, from Barthes to Althusser, from Lacan to Braudel, from Foucault to Piaget to Lévy Strauss, have applied themselves to disciplinary fields even far apart, but are all expressions of the same French cultural roots. Although structuralist traces can be found today in all national contexts, the general cultural climate that evolved in France has brought more advanced results than in other countries. Among these results we can include chorematism.

The second French «exceptional thing» that might have helped the development of chorematism in France more than in other countries, concerns the highly centralized structure of national organization, very active in intervening on society with policies «from above». This characteristic entails great attention by institutions to the subject of urban and regional planning, to which a large part of the chorematic production was applied. This has induced authorities to support its development, allocating financial resources for the activity of work groups dedicated to this subject, recruiting researchers, organizing scientific events, publishing results, etc. Moreover, much has also been done in the field of training. For example, the selection of candidates entering preparatory schools for the prestigious *Grandes Écoles*, places great value on the knowledge of chorematism<sup>8</sup>. Similar attention can be found at the lower grades of the educational system: in geography teaching, chorematism has imposed itself in France as the maximum cartographic model, and cartographic modeling has been a validated scientific knowledge for many years now, becoming a current scholastic practice<sup>9</sup>.

The case of chorematism thus enables us to say, while interpreting the history of cartography, that neither the myth of linear evolution nor that of a progressive internationalization of a common language will stand after being put to the test. Moreover, it enabled to shed light on an often overlooked aspect of the analysis of cartography in the contemporary age, too focused on technical and

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<sup>7</sup> Among the extremely rare applications outside of France, some have appeared in Italy: Giuseppe Dematteis created some maps inspired by chorematism in his study of Piedmontese territory (1989); Elio Manzi includes in one of his works a map by Robert Ferras on the subject of Spanish internal migrations (Manzi, Meelli and Persi, 1990, p.322) and also Mario Cataudella reveals an interest for this kind of representation (1987; see tables XXVI e XXXV). These few practical uses prove a curiosity for chorematism by some of the researchers active on the subject of territorial development and planning, but do not result in accurate theoretical reflections, excluding quick references by Dematteis (1995, pp.20-22) and of the previously cited Vallega (2008, pp.169-174).

<sup>8</sup> In one of these tests we can read: «Il est demandé au candidat d'élaborer à partir du sujet posé, une carte qui sera réalisée sur un fond muet distribué lors du début des épreuves. Ce document – dont le rendu est obligatoire – joue un rôle important dans la définition de la note finale» (BCE Competitive Exam, tests and rules, 2009).

<sup>9</sup> For some decades didactics has received in France the impulse of chorematic research (Clary and others, 1987; Journot and Oudot, 1997) and the apparatus of maps in geographic manuals is usually very rich and varied (we can mention, among others: Donaint P., Knafou R., They H., 1995; Dussaut C., Jalta J., Reineri R., 1995; Dussaut C., Jalta J., Reineri R., 1994). – Among the many publications on the subject, very well done are those by: Arnould, Denisart and Mangin (1999), Cheize and Rousseau (1999), Lèzy and Nonjon (1999), Poidevin (1999), Zanin and Trémélo (2003), Battistoni-Lemière, Le Fur and Nonjon (2010).

technological innovations: the deep change in the way space is conceived – and inevitably, how it is represented – induced by the evolution of the scientific paradigm. In cartography, new cultural awareness and new intellectual tendencies had repercussions on productions far from the dominating geodetic-topographic model.

These productions represent conceptions of space different from that which had generated that model, resulted from alternative formulations of the concepts of distance and position, of original criteria for attributing meanings and symbols, of unusual choices for the formal expedients of maps. These shapes assume different and irregular forms in time, also due to specific influence by the cultural context, but which have some significant common elements. The reevaluation of this little explored asset of cartographic traditions and its long term investigation would contribute to the valorization of the fundamental conception of cartography as a constantly redefined way of thinking space and territory.

#### Acknowledgments

Special thanks go to the three anonymous proof-readers for their critic remarks, which represented a decisive impulse for the revision of some significant parts of this work.

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