Chromocartographies: An Ethnographic Approach to Colours in Laura Canali's Geopolitical Maps

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Color on a map is worth all its costs and frustrations
Arthur H. Robinson, 1976

Color is a cartographic quagmire
Mark Monmonier, 1996

Colour does what people do with it
Gunther Kress and Theo Van Leeuwen, 2002

Navigating Existing Approaches to Colour and Cartography: An Extended Review

Intellectual/Seminal

As Judy Olson states in her *Color and Cartography* entry for the sixth volume of the *History of Cartography* series, there was little academic empirical research during the first half of the twentieth century on colour in mapping, and until improvements to the access to technology for map production and colour measurement later in the century, colour remained an 'intellectual rather than practical'[1] interest within the academy. As for what Olson calls *intellectual* interest in the use of colour in cartography, two seminal interventions can be mentioned. In 1908 Max Eckert introduced the idea of 'map logic' with particular reference to the 'colour logic' in maps.[2] In questioning the nature of maps, Eckert sees the co-existence of an artistic element in cartography alongside a scientific one and finds the transition from the topographic to the thematic map as the entry point for art into cartography. For him, the manner in which themes are rendered graphically 'depends on personal and subjective feeling', given that 'any erratic flight of the imagination' can be tempered by the 'dictates of science'.[3] With regard to colours, Eckert lamented the indiscriminate and immoderate

usages of his epoch, calling for discrimination in choice, right feeling of the receptiveness and individual taste. In his view, however, the choice of colours was to be primarily subject to logic, rather than taste, 'as opinions vary widely as to what constitutes good taste in the juxtaposition of colours'.[4] The colour logic principle implies as follows: that the colours adopted be similar to those of the objects in nature to be represented, that the use of shades of the same colour are provided to depict allied phenomena, that the context of use of the map (for instance a wall map or a map consulted at hand) is carefully considered and that the colour scheme is based on physical laws (such as the spectrum) or on pedagogical experience.

In 1967 Robinson delivered a seminal contribution specifically devoted to the psychological aspects of colour in cartography,[5] which is named by Olson as *intellectual*. Requiring a weighing of psychological and mechanical aspects, colour is for Robinson one of the most complex, frustrating, contradictory and controversial elements of map-making. Nonetheless, colour is crucial to cartography in a number of ways. It functions as a simplifying, clarifying and unifying agent, as a multiplier of visual levels, as a stimulator of visual acuity, as a producer of figure-ground relationships through the production of closed forms and the enhancement of the similarity of areas. Colour has a marked effect on the general perceptibility and legibility of the map. Robinson also acknowledged the importance of colours in the subjective *emotional* (and not only rational) reactions of the map reader: 'everyone, upon looking at a coloured map, usually instinctively likes or dislikes it, quite apart from any understanding of what the map is supposed to be communicating'.[6] Interestingly, Robinson further highlights the emotional dimension of the map-making practice in itself, stating that, despite all the perceptual, technical and financial complications, 'color never fails to be an exciting experience for the cartographic designer'.[7] Stating that, for cartographic purposes, colour is solely in the eye of the beholder, Robinson holds the notion of colour to be more complex than a merely measurable issue or a physiological reaction, arguing that colours on maps are also perceived on the basis of personal experience and cultural contexts (conscious/unconscious reactions, subjective or group preferences, association with moods, feelings or sensations, symbolic associations, societal uses, habitual connotations, traditional significance, rooted cultural experiences, implicit or explicit conventions). Consequently, the list of perceptual aspects of colour that a map designer should keep in mind in his/her act of cartographic communication includes:

      I. Physiologically Based Perceptual Aspects of Color;

      II. Connotative and Subjective Aspects of Color; and

      III. Conventional Aspects of Color.

Each item of this list is then developed by Robinson with reference to the three basic dimensions of colour: *colour hue* or dominant wave length, *colour value* or brightness, and *colour intensity* or saturation. Some of his conclusions are: hue is the perceptually most *interesting* element (people love to talk about it, it leads to cultural conventions) and therefore the creative effort of the cartographer should concentrate on matters of hue; value is the most *important* in terms of the perceptual behaviour of the reader (recognition of form, reaction to figure-ground, legibility) and therefore value differences should have the highest priority; intensity is the *least significant* of the psychological dimensions of colour. Additionally, Robinson concludes that the concurrent application of perceptual, connotative or conventional precepts leads to conflict (for example, should a cold desert be blue because of coldness or yellow because of aridity?) to be resolved with good judgement, and that this complexity discourages the establishment of conventions for the use of colours in cartography (in 1881, at the Congress of Bologna, geologists decided to standardise the use of colours in geological maps). Importantly, Robinson affirms that all the items of his list are susceptible of objective testing, while the *aesthetic* aspects of colour, such as colour harmony, have no place in this *scholarly–scientific* outline. The tasteful use of colours is

something different (and adjunct) to the effective use of colour in cartographic communication. Nonetheless, he recognises that the design of map colours cannot be approached in a purely technical fashion, and that the challenge for a cartographer is to be a communicative artist (or a more modest communicative artisan) aware of the perceptual complications of map colours and informed about the latest scientific research on the issue.

Practical/Empirical

A more *practical* interest (for example empirical experimentations and the development of tools) in colour and cartography emerged during the last decades of the twentieth century, in connection with the quantitative turn in geography. These approaches work in neo-positivist ways, aspiring to *objectivity* in colour use, as for instance with respect to the measurement of colours.[8] Whereas, as Olson conveniently reminds us, the early employment of computers in mapping was criticised for a degradation of map aesthetics (the quality of computerised maps was inferior to that of printed maps), computer technology gradually transformed the making and use of coloured maps into increasingly accessible practices. 'Computer technology transformed the making of coloured maps from a specialised craft into the flexible generation of maps that could be displayed on virtually any computer anywhere', as Olson puts it.[9] A new practical approach to colours led to the introduction of several colour use guidelines and predefined colour schemes for maps. The main objective here is to achieve an *effective* treatment of colours in the production of maps. In 2001, an interactive colour selection tool freely accessible on the Internet, ColorBrewer, developed by Cynthia A. Brewer, was released to enable users, namely mapmakers, to select quickly from diverse effective colour sets for thematic mapping.[10] The tool also provides advice on the end-use environment for the maps by telling if the scheme is laptop LCD display, colour laser print, photocopy or colour-blindness friendly. ColorBrewer presented itself as an alternative to the default, often poor quality and unattractive colour schemes built into commercial mapping and GIS packages, since it provided a wide range of colour-scheme sets designed using both experience and trial and error that can be variously tested by *interacting* with the online tool. Colour is intended to be used to imply categorical difference (for example forests, cities, marshes) or ordered difference (for example population density rates), while the colour schemes are divided into qualitative, sequential and diverging. Once the user has identified a colour scheme appropriate to his or her needs, ColorBrewer provides the numerical specifications of that scheme in CMYK, RGB and other colour specification formats.

Cognitive/Perceptual

This *practical* approach is clearly tied to a *cognitive* one. As Scott M. Freundschuh states in his entry on *Map perception and cognition* for the *International Encyclopedia of Human Geography*, 'research on color perception on maps has included studies on the perceptual psychological system (eye-brain), as well as on people's subjective reactions to color'.[11] For instance, a crucial research interest is colour interactions and the *spatial effect*. That is, how the perception of colours on a map is influenced by the presence of other colours in the surrounding map environment. Colours also influence the *figure* and *ground* formation on the map scene, thus affecting the selective attention of map readers (an issue studied also through eye-movement tracking). Certain colours, Freundschuh continues, can incite feelings and emotions, while colour hue, value and intensity contribute to creating visual impressions. Here the main method consists of presenting to people (also affected by colour-vision impairments) various coloured maps in experimental settings and measuring the responses, with the aim of using the results to inform the design of more effective maps. To give an example, in 2007 Bill Buckingham and Mark Harrower carried out a map-reading

experiment with 242 children to empirically determine if highly saturated colours are necessary for children to easily understand a map's content on the one hand and if children actually prefer highly saturated colours (as is commonly taken for granted) on the other.[12] They found that saturation has a minimal impact on performance (that is, the understanding of the map content), while it has a big impact on preference (with the caution that this result could be the effect of the common exposure to highly saturated colours on maps).

Semiotic/Communicational

Cognitive approaches, as well as practical ones, have been at least partially in dialogue with *semiotic* theory. For instance, in 2015 Deeb and others tested some of the long-standing cartographic design principles regarding visual variables with reference to colour that had been introduced within the semiology of maps but never empirically demonstrated.[13] Following the semiotic approach, designating the map-maker as an encoding agent and the map reader a decoding one, colour can be considered a sign vehicle and thus a communicational resource through which information is conveyed and received. The general aim of this approach is to perfect the communicational function of the map. In his famous 1969 book *Semiology of Graphics* however, Jacques Bertin considered colour as an often useless luxury and as a non-necessary variable.[14] For Bertin, in fact, the variation of hue is useless to the perception of order, whereas the (carto)graphic treatment of information is primarily a matter of ordering. Some advantages are recognised in the capacity of colour to stimulate attention and retention, and therefore Bertin sees colour as more suitable for the (carto)graphic message of a pedagogical nature.

Some interesting reflections on the semiology of map colours are provided by Emanuela Casti, who considers colour to be a very complex communication variable because within cartography it undergoes conventional or symbolic coding without really losing its analogic, associative and natural relationship with realty.[15] Colours, in fact, have proved to maintain their analogic meaning (colour naturalism) across time much more than other cartographic codes. Therefore, Casti states, when colour use is rendered conventional, the communication process of the map becomes more precarious, due to the human mnemonic inability to retain too much abstract meaning of colours. Casti also notes that the fundamentally analogic rather than abstract nature of colours gives to map colours a potential persuasive power so that what is represented is more easily considered real. This consideration of the power of map colours advances a further *critical* rather than merely semiotic perspective. Preoccupied with the abuse of the communicative potential of maps, in his *How to Lie with Maps*, Mark Monmonier dedicates a chapter to colour as a source of *attraction* and *distraction.*[16] He explicitly addresses questions of visual logic (for example the error of using contrasting hues to show differences in intensities), visual perception (for example the tendency for large patches of colour to look more saturated than small patches of the same colour), technologies (for example the bad quality of televised coloured maps) and cultural preferences (for example colours carrying subtle added meanings that could unintentionally affect the interpretation). In general, Monmonier suggests an attitude of suspicion and his approach is mainly pessimistic, above all with respect to non-professional environments: 'color is a cartographic quagmire [. . .] the complexity and seductiveness of color overwhelms many map-makers, and countless maps in computer graphics demonstrations, business presentations, and daily newspapers reveal a widespread ignorance of how color can help or hurt a map'.[17]

It is worth remembering, then, that the cartographic domain has been frequently used to carry out more general reasoning on colours. According to the *socio-semiotic* approach to colour meaning suggested by Gunther Kress and Theo Van Leeuwen,[18] language functions, such as the ideational (constructing a representation of the world), the interpersonal (helping

to enact interactions) and the textual (marshalling communicative acts into events or texts), are exemplarily fulfilled by map colours. On maps, colours are *ideational* because they identity things and concepts (for instance blue to identify water), they are *interpersonal* because colours are intended to act on the map-reader (for instance maps displaying appealing brightness to increase the reader's attention) and they are *textual* because they are embedded into specific textual practices (for instance colours are coordinated to enhance textual cohesion). Thus the domain of cartography is chosen to explain the kind of communicative work colours do more in general, as well as to exemplify one of the domains in which colours, far from being universally or supra-historically determined, show some *regularities* in their use in connection with the communicative interests of a group of sign-makers.

Critical/Sociocultural/Political

An additional approach to colour use in cartography is offered by the intellectual attitude of *critical* cartography, which emerged towards the end of the twentieth century. The objective of critical cartography is to *deconstruct* maps: as socially constructed products, maps embed ideologies, opinions, norms and attitudes with respect to the mapped phenomena, thus the map scholar should evaluate their context of production, inter-textual connections and links with power in order to critically investigate them. In line with this approach and drawing from John B. Harley's foundational research on deconstructing the map, Jenny M. Johnson[19] argued for a critical interpretation of colour use within maps of ethnic groups. She suggested that, since colour has meaning, colour choices in ethnic maps reveal the attitudes of the producing organisation toward ethnicity, attitudes that are generally affected by ethnocentrism, hierarchy and inequality. Johnson quotes an early critical reasoning on colour use in propaganda maps from a 1940 article by Hans Speier, who refers to the strategic use of red in German maps of his time. She also reports that, writing in the early 1950s, Robinson put into relationship such phenomena as: the growth of propaganda maps in the previous decade, the increased facilities in colour reproduction and the emerging issue of the *danger* of using colours on maps. Given these early interventions, at the beginning of the twenty-first century Johnson lamented the lack of studies concerning the connotations and meanings attached to colours, beyond the merely physiological perceptual aspect, thus calling for an updated critical, cultural, contextual and (de)constructivist approach to map colour choices and the particular stories they tell.

As Johnson reports, the habit of attributing brighter colours to one's own ethnic group (while downgrading minorities with less intensive colours) has been considered an *ethnocentric* colour usage, and the habit of attributing dark, dirty or commonly less preferred colours to rivalling groups as an *anti-ethnic* colour usage. Concentrating on historical cartography of the twentieth century, Johnson also explains that map colours on ethnic maps are often culturally used for associative symbolism (for example green for Islam or pink for the British Empire); that single-hue progressions or colour schemes are commonly not used in ethnic maps because of the more typical interpretation of magnitude or transition of phenomena; that colours are used to suggest connections between ethnic groups (for example the same colour for the same dispersed ethnicity, shades of the same colour for subgroups); and that this is done with specific political aims (for example incorporating other groups that declare themselves differently by using the same colour).

More recently, by drawing from the literature on propaganda maps, Silvia Piovan and Valerio Larcher chromatically analysed some historical atlases suggesting how the critical interpretation of the use of colours in nationalistic maps should be better grounded on optical and psychological theories of colours and on emotional or associative symbolism functioning at the time of map creation. They suggest for example the simplistic consideration of red as

a very dominant colour should be related to the notion of red as: the hue to which humans seem to be more sensitive; the hue linked to dynamic and vital attitudes; and the hue of the Roman Empire. [20] Importantly, Johnson contends that despite the emergence of a scientific approach to colour during the second half of the twentieth century, the issue of map colours continues to require an awareness of potential political or cultural connections and subliminal messages, with the consequent need of balancing 'between understanding colour meaning and deliberate design with color for readability'. [21] The colour use for mere readability of political maps, indeed, has been addressed in very technical ways: David Forrest, for instance, introduced in 1996 a digital tool to automate (rather than proceeding by trial and error) the task of colouring countries in such a way that each political unit has a different colour from each of its neighbours (thus addressing the so-called *four colour theorem*, or the colouring of any political map using only four tones). [22]

Aesthetical/Art-based

A further approach to colour and cartography is the *aesthetic* one, as early observed by Eckert and Robinson. In the mid-1980s, for instance, Jeffrey C. Patton and Terry Slocum analysed the differences between utilitarian and aesthetic uses of colour, finding that when using colour aesthetically, it did not significantly affect the reader's ability to recall spatial patterns. [23] More recently, the aesthetic issue has been re-discussed, given the new general importance of cartographic aesthetics at a time of pervasive cartography and convergent media. Noting that cartographic applications are mainly based on Newton's physical/objective colour theory and spectrum-related RGB/CMYK models (with rare reference to Goethe's and others' more humanistic/subjective or painterly ones), Jan D. Bláha and Zbyněk Štěrba addressed aesthetic issues such as *colour harmony* and *colour composition* by analytically applying to cartography the theory of colour contrasts introduced by the expressionist painter and Bauhaus theorist of graphic art Johannes Itten. [24] Following Itten, they consider seven colour contrasts: contrast of basic hues, contrast of brightness, contrast of warm/cold colours, contrast of complementary colours, simultaneous contrast, contrast of saturation and contrast of extension. Stressing that the perception of Itten's seven colour contrasts in an artistic image is very similar to how one perceives them in cartographic work, Bláha and Štěrba discuss their application to thematic maps with the general aim of producing *both* greater usability and higher aesthetic value. Colour contrast, in fact, is an essential aspect of colour use in maps, since inconsistent contrast may cause uncertainty of readability, they state. The concept of *colours harmony* in cartography, defined as something more than a visually pleasant arrangement of colours and more properly as 'a special way to mix colours but in a linked and balanced contrast in chromatic scales and map surfaces', has been addressed in terms of quantitative evaluation by Sidonie Christophe et al. [25]

The notion that aesthetics is an autonomous *objective* in map design and the consequent call for more creative, personalised, expressive and art-affected styles of colour use have been even more strongly advanced by Sidonie Christophe and Charlotte Hoarau. [26] In truth, efficiency is still considered, but as a secondary consequence of aesthetic choices. Whereas the aim here is to make maps in a more *artistic* way by searching for inspiration from artistic movements, the final goal is to elaborate formalised, sophisticated and automated tools that could assist in the *systematic* use of certain cartographic styles (a Pop Art cartographic style, in the specific case). It is not surprising, then, that this approach is seen as an extension of the semiotic one in terms of the *aesthetic management* of chromatic visual variables. The use of well-recognisable styles (with the extraction and parameterisation of the properties of widely known artistic currents) is aimed to guarantee the mediation of the map's message between the producer and the receiver. The import of colour practices that are outside of or unconventional for the cartographic domain is typical of some interventions in the field of

Cartography and Art. The very plastic idea of picking up tints and colour harmonies from Impressionist paintings to directly put them into digital cartographic palettes is shown by Lucie Friedmannová.[27] With her COLorLEGend system, Christophe provided a tool aimed at combining creative inspiration from paintings (for instance by Matisse, Van Gogh and Derain) on the one hand, and the observance of basic map logic principles on the other.[28] Significantly, in all these applications the priority is given to the improvement of coloured map creation rather than to the measurement of the aesthetic response (emotion, perception, feeling, preference), thus the cognitive/emotional approach is at least partially subordinated to an art-based creative approach to the design of maps. It is worth observing, moreover, that the aesthetic approach somehow winks at the field of *Map Art*, but the starting points of the two practices and the contexts of production are quite different. A further under-researched and promising avenue is to confront map colours with *humanistic colour studies*, and in particular with literary geo/cartography.[29] As we have seen, there are a number of ways in which map colours have been researched within cartographic scholarship. Further perspectives, however, could be adopted. In what follows I suggest an additional approach derived from ethnography. Through the case study of an Italian professional map-maker of geopolitical maps, I will add a further layer to the multifaceted research agenda on map colours.

An ethnography of Map Colouring: The Case of Laura Canali

Together with Edoardo Boria, I previously worked on this specific case study during October 2015 by applying ethnographic methods such as narrative and mobile interviews, participant observation, map-elicitation and video-tours.[30] During the previous fieldwork, I realised how the use of colour was crucial in the experience of Laura Canali, therefore I decided to add an interviewing session focused on this particular aspect, which took place in June 2017 at Rome and is briefly reported here.

Laura Canali has created maps for *Limes: Rivista Italiana di Geopolitica* (www.limesonline.com) since 1993, producing so far 3,500 geopolitical maps. *Limes* (from the Latin word that means 'border') is a monthly 200-page periodical published by one of the major Italian publishing groups (Gruppo Editoriale L'Espresso), and Lucio Caracciolo has been the editor-in-chief since its foundation in 1993. Based in Rome, with around 15,000 paper copies sold each month in addition to the e-book and iPad versions and thousands of daily hits on its Web site (for both free and paid content), *Limes* is a leading publication and an eminent opinion maker in Italy in the field of international relations. Every issue is dedicated to one topic and is replete with original maps, which constitute the most recognisable mark of the journal.

Laura became a self-educated graphic artist while working at her father's screen printing company and attending an evening school in the applied arts. Laura then arrived at *Limes* in 1993 at the age of 25, when the graphic designer employed at the periodical, Roberto Steve Gobesso, decided to devote himself exclusively to the cover design and delegate the making of the internal maps, considered as a less creative task, to the new employee. Later, starting from 2009, Laura devoted herself also to the cover design. Indeed, Laura sees herself simultaneously as an 'expert in geopolitical map-making', a 'graphic designer' and an 'artist' (see Limes' website at http://www.limesonline.com/autori/laura-canali and her personal website at http://www.lauracanali.com/?lang=en). In 2008 Laura started painting abstract canvases and more recently she has created and exhibited some pieces of map art to which can be added the map artworks in the small formats of *Limes*' covers (figures 1, 2 and 3).
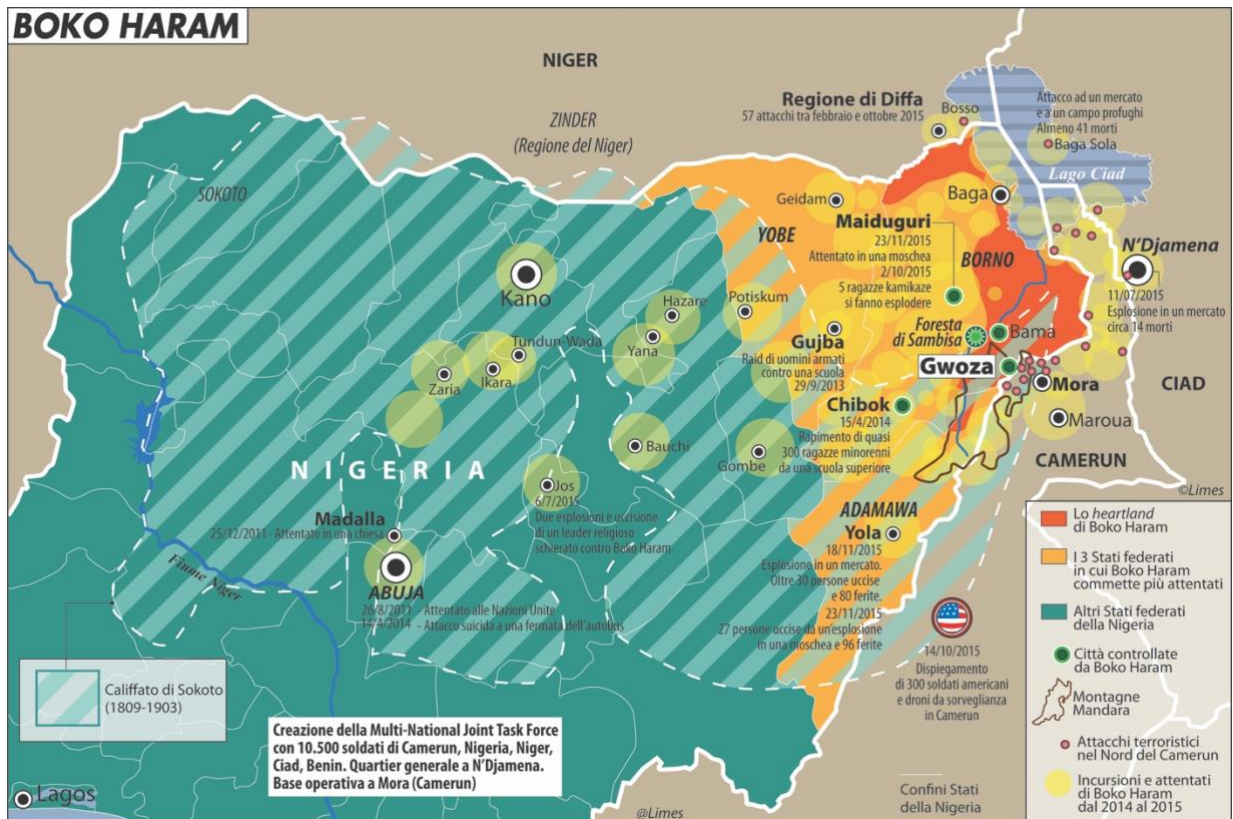
Figure 1 Laura Canali as a mapmaker: Geopolitical map for *Limes. Rivista Italiana di Geopolitica* (2015), by permission

Figure 2: Laura Canali as a graphic designer: Covers for *Limes. Rivista Italiana di Geopolitica* (2015-2017), by permission

Figure 3: Laura Canali as an artist: *Shatt al-Arab*, acrylic on linen canvas, cm 150x100 (2011), by permission

During the first fieldwork I conducted with Laura (I stayed three entire days with her, following the diverse and multiple spaces in which her maps are brought to life), I found that the use of colour is what implicitly links together her different competences and identities. Laura told me that in cartography, the colour is always at the service of meaning-making, while in 'mere art' this meaning can disappear.[31] However, on a different occasion, Laura confessed that 'whether a map of *Limes*, a geopoetic map or a canvas…, colours always overwhelm me'. In her narrations of map stories, the agency of colours thus seems to overcome the cartographer's informational purposes. In her geopolitical maps Laura 'does and undoes' chromatic assemblages, seeks 'aesthetic balance' and provides 'energy' through colours.

Colouring Geopolitical Maps

Within the process of map production at *Limes*, the article that offers the more illuminating view on a given topic is often the best candidate for obtaining a coloured map (colour was introduced only ten years ago and due to printing costs coloured maps remain a small part of the total amount of the maps included in every issue). For the other ones, 'a miraculous balance of greys' – as Laura puts it – is needed. As Harrower and Brewer observed for maps, 'color reproduction (whether on screen or in print) is an inexact science':[32] what looks attractive in the design medium can fail in the display medium. Indeed, the negotiation of colours with the 'guys of the offset print tests' at the various houses where *Limes* is printed (at Rome or elsewhere in Italy) is an important phase of the map-making process, for which the experience of Laura as a graphic designer trained in typographic work is crucial (Figure 4). Obviously, the digital realm (*Limes'* website above all), gives her the opportunity to

expand the number of coloured maps and to at least partially overcome the frustrating problems faced by all graphic designers with printed colours, such as registration misalignment or bad quality of colour. Laura feels more comfortable and satisfied with her maps on the Web: she perceives them as 'more beautiful' because they are 'more similar' to how she sees them while they are brought into life.

Figure 4: Interviewing Laura Canali on some offset print tests of her maps. Author's photograph, October 2015.

For her geopolitical maps Laura uses qualitative, or categorical colours, that vary primarily by hue rather than by saturation and lightness. As we have seen, this is typical for depicting nominal data distinctions as in the case of maps of political areas. This use of colours is also typical of the particular genre of geopolitical maps, to which Laura's maps can be ascribed. Following Edoardo Boria, geopolitical maps are not limited to showing places, theatres of historical events or the distribution of geographical objects. Instead, they openly aim to illustrate existing or potential balances of power in a particular region. In other words, while traditional cartography presents few political elements (e.g., borders, capitals) and portrays a static political situation, a geopolitical map renders the picture dynamic, showing the historical causes of a given political situation, possible future developments thereof, or both. The intent is not merely descriptive, but rather interpretive.

In terms of content, a geopolitical map tends to correlate a multitude of phenomena (political, economic, cultural, social, demographic, religious, historical, ethnic, technological, etc.) and factors (space, distance, time, relative position, etc.). These maps take into consideration opposing political and economic interests and spell them out to the reader through highly

simplified, stylised cartographic drawings aimed at conveying a specific point of view with regard to the represented situation or phenomenon.[33]

It is important to note that Laura considers her making of geopolitical maps as a practice of 'translation'. She translates words into maps, giving graphical form to the articles hosted in the magazine. Typically, *Limes* displays various articles with different interpretive perspectives on a single topic. Consequently, different articles can generate different maps of the same geographical area of interest. Colour is crucially involved in this act of translation:

> I am careful with colours, because with colours you may give sensations . . . colours are linked to the soul. If I put some red bordeaux, it becomes wicked. I am careful with colour, I try to use it without misinterpreting the message expressed by the author [of the article]. I try not to add my impressions. I bring so many decisions… but I feel myself as a means.

As Bláha and Štěrba contend, the *emotional* potential is 'considerably larger in colour than in other cartographic means of expression'.[34] During the first fieldwork, Laura spontaneously expressed her emotional engagement with colours, and the need to control this emotional dimension for *ethical* purposes. Colour is a matter of emotion, and the geopolitical map-maker, for Laura, has the responsibility to dose the emotional impact of colours. I found that her emotional stories about geopolitical map-making were a clear expression of *more-than-representational political geographies*[35] and in particular a case of *emotional geopolitics* in action.[36] Through ethnography and narrative interviewing, map colours emerge as more than visual variables of a representation. Rather, they emerge asculturally determined but also idiosyncratic and affective experiences.[37]

More-than-representational Approaches to 'Emergent' Map Colours

During the second fieldwork period in June 2017, I advanced to Laura my idea of grasping map-making stories about colours through narrative interviewing. I asked her to bring some maps to be used as facilitators in the interviewing process. This ethnographic research style allowed the investigation of nuanced, personal and rational as well as emotional aspects in the practice of colouring maps, thus connoting maps not only as representations but also as practices, events and living entities.

Positioning her professional identity with respect to the use of colour, Laura started the interview by saying that she works on colour *as a graphic designer*, in a way that 'the map [and its colours] emerge along the way', through a process of continuous re-assembling. She underlines that she *makes* colours by herself, not using palettes but instead always determining colours through the input of the CMYK percentages. At the beginning, when colour was introduced at *Limes* to 'animate' the magazine, she was worried that her maps would result as being 'too much coloured, too much childish, and without a theoretical basis', but the editor-in-chief encouraged her on the basis of the 'beauty' of her maps.

In one of the initial map stories about colour, Laura told me about what she calls 'colour necessity', that is a particular emotional state linked to some difficult events that occurred in her personal life and brought her to even dream very specific hues during the night-time and then to start painting in a very pressing and instinctive way. She was initially distressed by the idea of publicly exposing her need for colour explosions: 'colouring means exposing yourself to criticism; colour is bravery'.

With her first map example, *Geuropa divide l'Italia?* [Does Geurope divide Italy?] (Figure 5), she wanted to highlight the relationship between shapes/sizes and colours. The first colour she addresses is black:

> When I use black I always say that it is a defeat, but in other cases black is clear-cut. If you need to point out something precisely, then black helps. Black is not for states; it must be dosed, and neutrally used. Black holds power, it attracts the eye; it is like a gunsight. Here I chose black for the power chain.
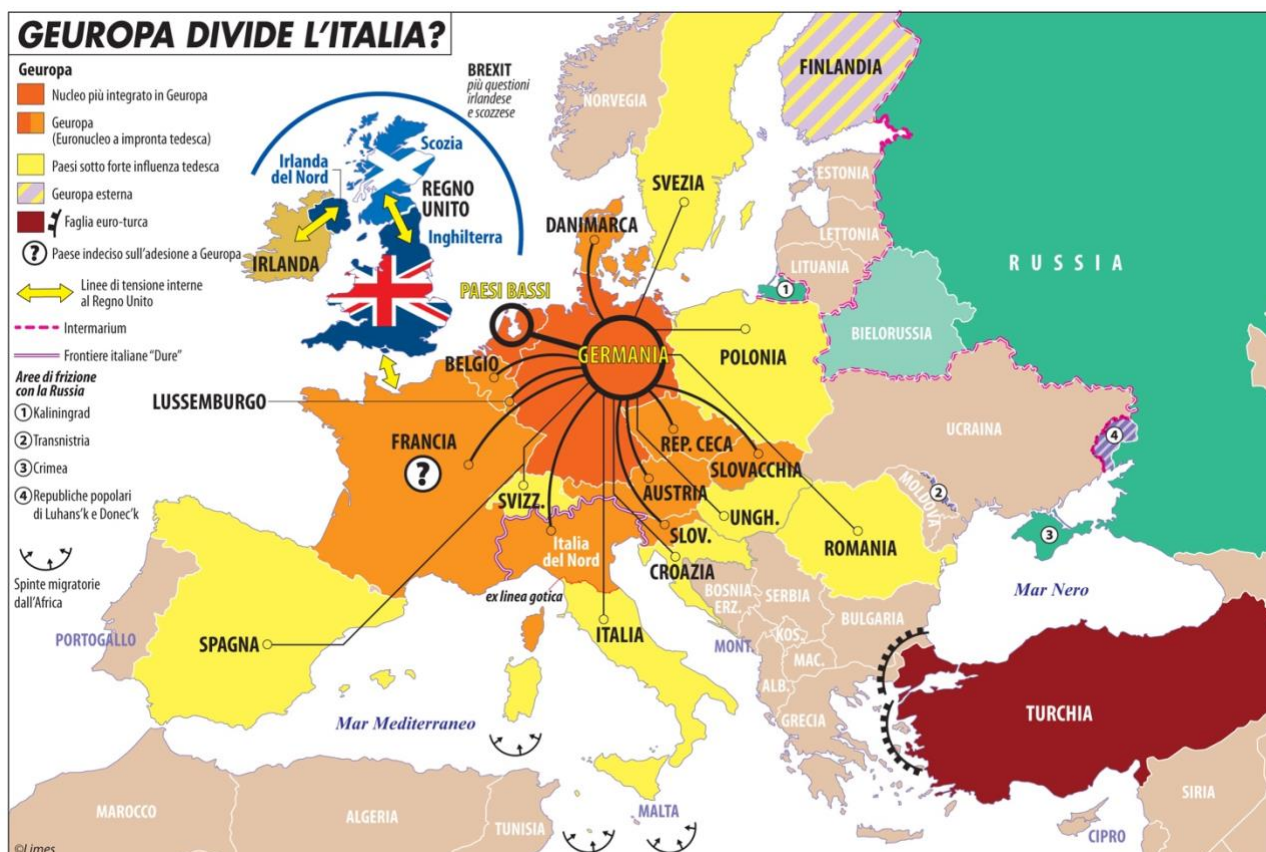

Figure 5, *Geurope divides Italy?* Geopolitical map by Laura Canali for *Limes*, 2017, by permission

Laura, then, comments on the notion that colours on maps are linked to concepts. I asked her if, when she reads an article, while deriving concepts and imagining the related map, she simultaneously finds herself imagining colours in advance. She responded:

> Colours have a harmony, and to reach a colour harmony is not easy, because on maps you have simultaneously to deal with concepts and related colours. First of all I begin with the main concept of the map. The concept has a shape and then has a colour. It is like modelling: you give the shape and then you colour…

> Colour is not thrown, in the manner of Pollock. The shape chooses the colour. One shape needs a certain colour, depending also on its size.

Here Laura seems to – at least in part – confirm the traditional (and recently re-discussed) divide between *design* and *colour*, following which the principal locus of meaning is attributed to design and colour remains secondary.[38] She continued:

> When an article involves very complex issues and several concepts, it is selected for including a coloured map. Colour is like a multiplier…

First there is a main concept, a nucleus, or two. Then there are the following steps. You need colour to put emphasis on this nucleus and concepts around which the map develops. However, if you use red, it creates an alarm. But I have learned to use it for attracting attention without displaying an alarm-red. The war-red needs to be dosed.

She states that she would like her coloured maps to be *both beautiful and clear*, that the colour choices follow her taste and her need for an equilibrium between colours, but at the same time that her objective is a communicative clarity: 'Here I am at the service of the reader; I am not an artist'. The emotional dimension of colours, moreover, is importantly linked to ethical issues: 'The world is complex and fearsome. When I make geopolitical maps, I try not to be alarmist. Other magazines use fear to treat geopolitical themes'.

I asked Laura if she perceives a sort of 'playfulness' in her making of map colours, being that her practice consists of 'creativity, possibility and flow'.[39] She was a little bit disturbed by this question: she feels the 'ludic' dimension as extraneous to her work with a complex and fearsome world, but indeed recognises that there is a kind of *pleasantness* in the processual assembling of colours: 'Disentangling the thought [of an article] is difficult, then arrives the more pleasant part'.

I asked Laura if she associates some nation-states with preferential colours, and she commented:

> Like USA blue, Russia violet, Egypt yellow . . . well, I re-shuffle the chromatic cards, I do not put labels. If you use always the same colour for a nation-state, you give a fixed idea of that state, but states change their roles in different scenarios. Within every map the scenario changes and thus the colours change.

This statement is particularly significant because it refers to the specificities of an updated geopolitical 'dynamic' cartographic genre,[40] which does not rely on fixed political perceptions and stereotypes.[41] The second map example provided by Laura, *Il mondo secondo Trump* [The world according to Trump] (Figure 6), is intended to explain the use of similar hues to create links between states or geographical areas: 'You need to always guide the reader. Colours compel the reader to see'.

The third example provided by Laura, *L'impero americano* [The American empire] (Figure 7), is meant to show unconventional uses of colours:

> This is no more a sea, this is a territory that has been divided into areas of control… Then my idea was to leave the naval routes in blue but to consider this as no more water. Thus I used yellow. This map means also that you need to see this situation from the sea. Colours here help in changing the perspective from which the world is viewed.
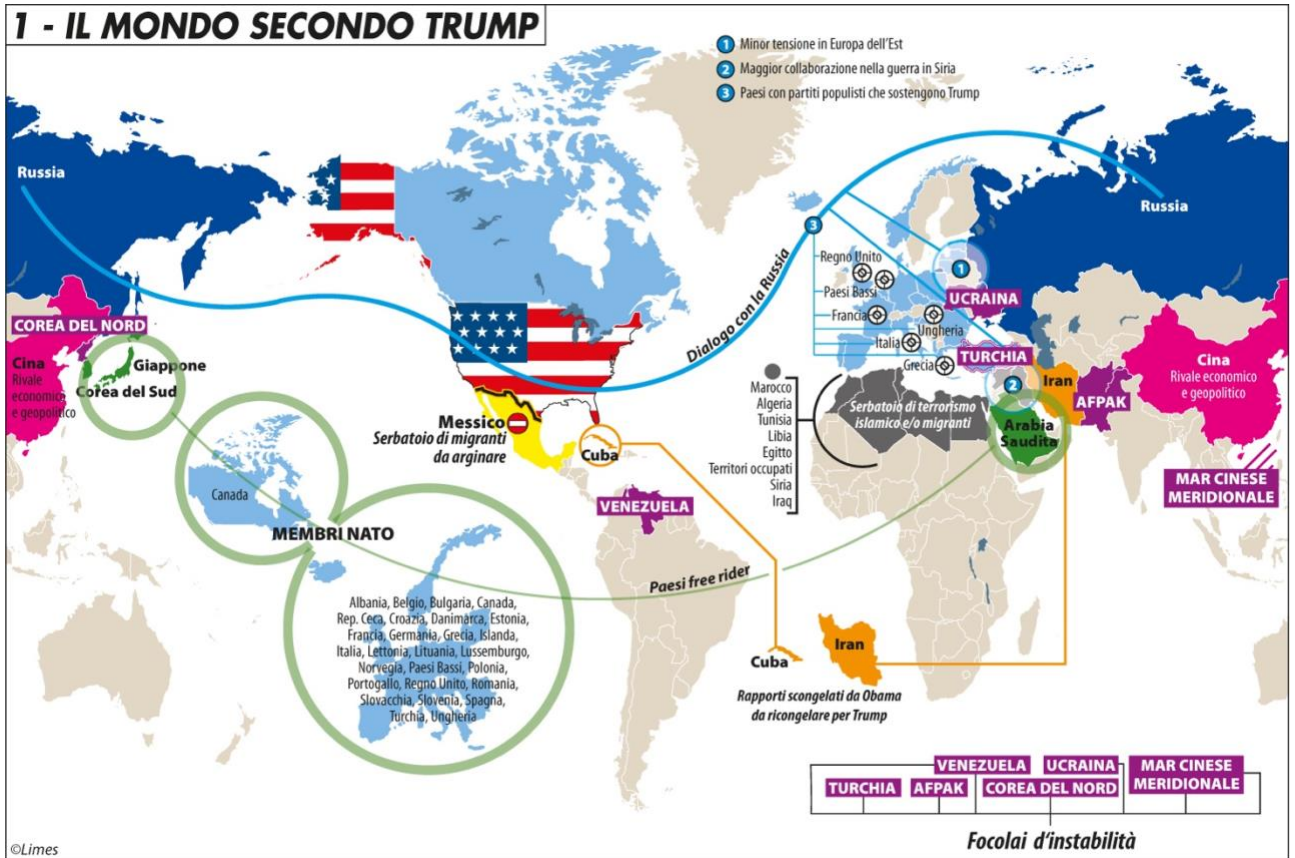
Figure 6, *The World according to Trump*, geopolitical map by Laura Canali for *Limes*, 2016, by permission
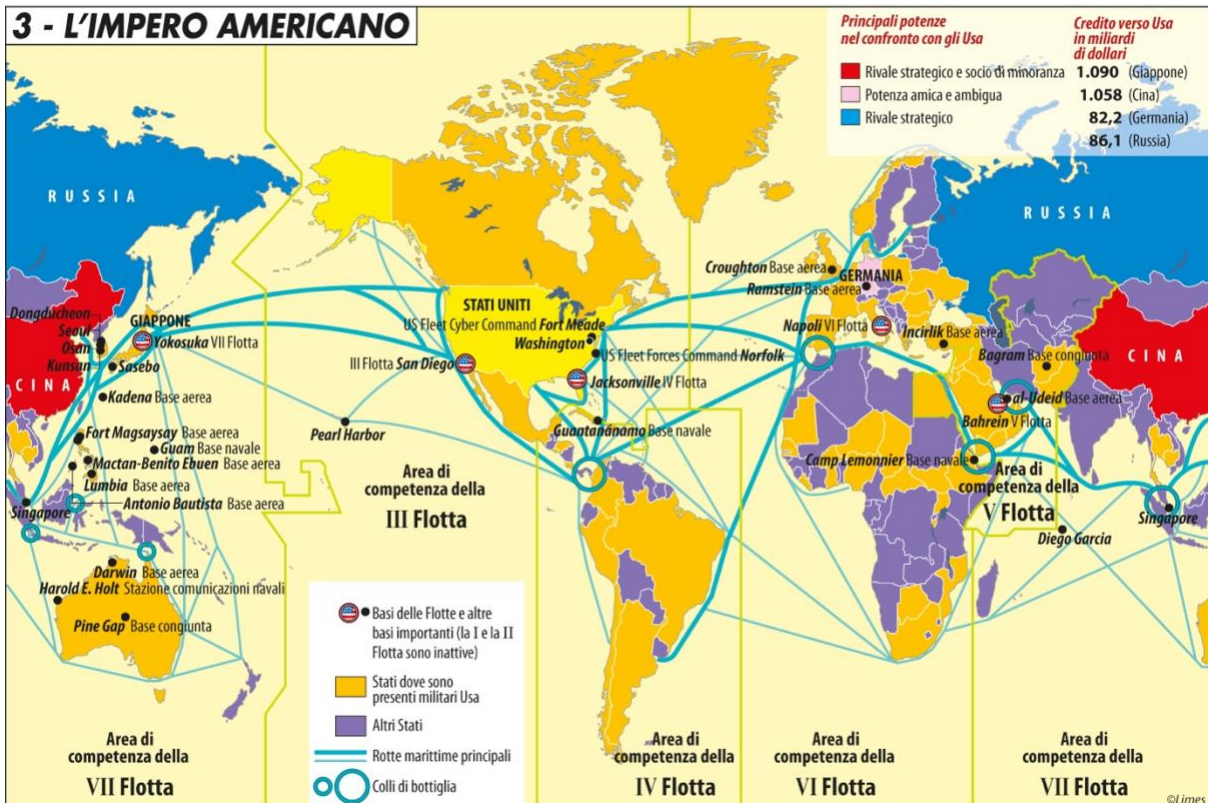

Figure 7, *The American Empire*, geopolitical map by Laura Canali for *Limes*, 2017, by permission

Addressing the notion of freedom in the use of colour, Laura talks a lot about her own *chromatic culture*: 'I observe colour within other dimensions, I make colour experiences in other domains, I continually question my own work, I am always researching.'

She quotes classical interventions, shows me some of her readings (such as Goethe or Kandinskij; see figure 8), hints at the use of colours in movies, literary works, video games and famous works of art (for instance Giotto's frescoes at the Scrovegni Chapel in Padua). 'Chromatic formation is needed, otherwise colour is uncontrollable', she states.
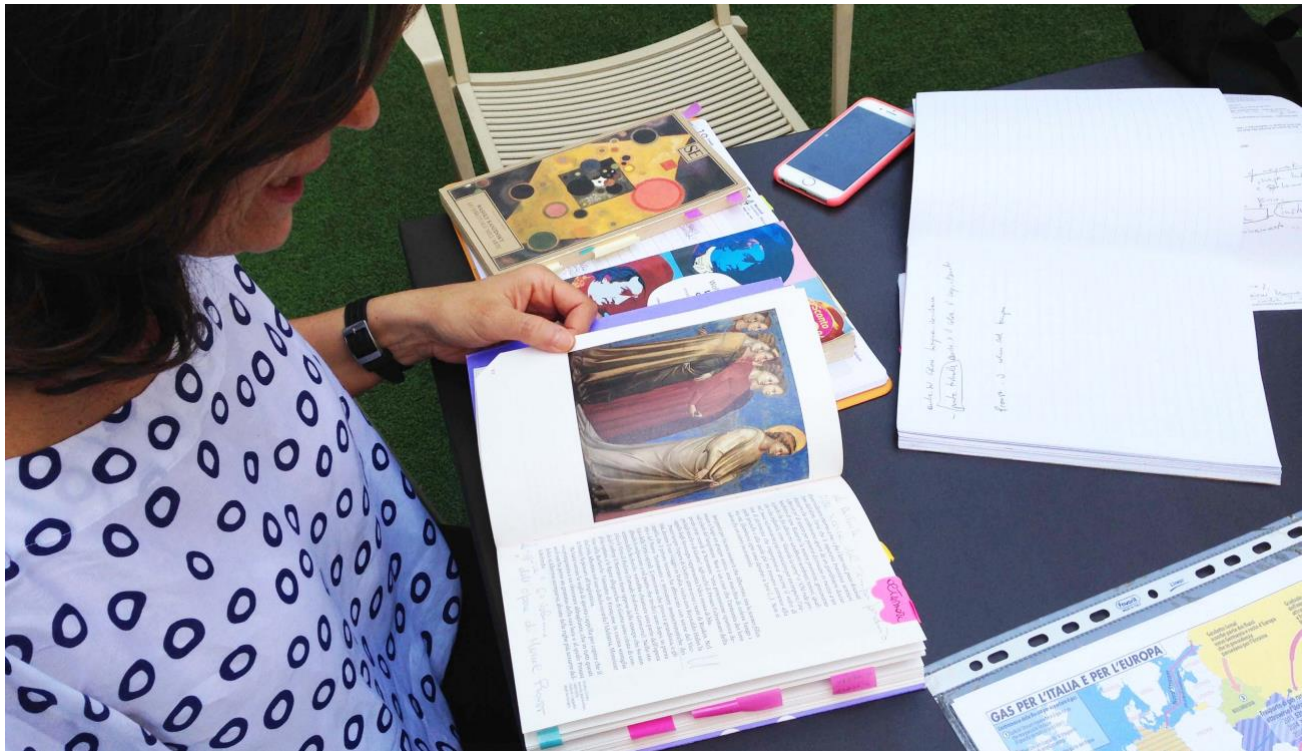
Figure 8, Chromatic cultures and map-making. Interviewing Laura Canali in June 2017, Rome. Author's photograph.

Nonetheless, she feels and wants to feel extremely free:

> I feel soaked in every colour… There are some tints that I prefer, like the lilac, you know, the precise colour of iris; I like very much sun yellow, and then aqua green (cyan with a little bit of yellow).

> …But knowing too much about colour risks to influence me. Sometimes I feel too much aware, and I want to preserve my naivety, my enchantment. I do not want to be overwhelmed by colour codes, I want to remain creative, to escape. Pale colours make me feel uncomfortable. I need strong colours to manage complexity…

> Geologists use colours on secure landforms. Those 'technical' coded colours do not perform the task of representing the world of nowadays, this changing world . . .

Interestingly, Laura adopts expressive formulations in her own naming of colours (like 'confidence blue'), somehow following a tendency that has been observed in present consumer colour cultures.[42] The naming of colours, indeed, is a metaphorical response to

embodied experience, an experiential recoding, and the *colorimetric* digital practice in Laura's work does not replace her need to *expressively* name colours.

Laura pointed out to me a further example of the difficulty in managing geopolitical complexity. Her map *Gas per l'Italia e per l'Europa* [Gas for Italy and Europe] (Figure 9) dissatisfies her. In Laura's words, this map is 'an example of complication in the colour use. A *fritto misto*, a gas red spread, a colour overload'.

Figure 9, *Gas for Italy and for Europe*, geopolitical map by Laura Canali for *Limes*, 2017, by permission

Conclusion

This article has offered an extended review of the various perspectives that may be applied to the understanding of colours on maps. As we have seen, the intersection of different approaches and their reciprocal relativisation has been suggested by seminal, still unsurpassed accounts, such as that of Robinson. The second part of the article has added an additional layer to this stratification of approaches, introducing an ethnographic approach to the practice of colouring maps. The case study of the making of geopolitical maps by Laura Canali at *Limes* magazine has been displayed to show how this additional approach could help to grasp differently the making of map colours but also how the other perspectives variously emerge and function within the map-making processes and events.

Starting from a socio-semiotic frame, Van Leeuwen suggests that every small group of sign-makers and interpreters has a sense of the 'regularities' of the meaning of colours that is internal to that group or domain, according to specialised communicative motivations, needs and interests in a given context and site of appearance. Between constraint and creativity, Leeuwen suggests, there are those motivations, needs and interests, as well as implicit and explicit rules, role models and expert authorities. *Limes*, as a particular site of map

production and reception of geopolitical maps, could be seen at the centre of one such small group.[43] At the same time, however, even if colour is not always 'idiosyncratic, unpredictable and anarchic',[44] the subjective perspective and subversive potentialities of the map-maker remain crucial factors that need a methodological pluralism to be researched. As the excerpts of Laura's map-elicitations show, the ethnographic approach could be a valid means for grasping how map colours emerge in the very process of their making depending on various and discontinuous logical, perceptive, practical, (socio)semiotic, cultural, ideological, ethical, technological, art-based, emotional and experiential premises.

Acknowledgments

Endnotes

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