IMMATERIAL INFLUENCE

Studies in Material Thinking

SMT VOLUME 15

Communication Design: Material Artefact, Immaterial Influence

PAPER

Cartographic Interfaces for Hybrid Spaces: Communication Design in the Spatial turn.

AUTHORS

Marco Quaggiotto
Giovanni Baule

ASTRACT

The paradigm brought by the Spatial turn and its merging of material and immaterial spaces in a new hybrid space, together with the widespread use of geolocalisation, establishes a deep connection between everyday actions and their immediate and constant geo-spatial positioning. In this context, Communication Design is required to provide access to a hybrid territory that mixes physical locations with the immaterial qualities of context and information. Maps, as interfaces to the spatial dimension, provide tools to represent, narrate, access and act on the complexity of the territory. As narratives, maps are able to address the complexity of space providing shared abstractions and virtual spaces of interpretation. As tools, maps build synthetic spaces for action, which allow manipulating virtual territories that merge real and abstract qualities for specific purposes. As containers, maps reveal accumulations of hidden resources, making implicit contents readable.In a scenario in which digital tools drive design actions toward the design of representation processes, the need is that to supply methods and tools capable of managing narrative and instrumental components of cultural artefacts. Digital cartography, from a design perspective, is not only about portraying the complexity of space, but also about designing interfaces to provide access to hybrid spaces.

KEY WORDS

Maps, Cartography, Interfaces, Access, Communication Design.

COMMUNICATION DESIGN AS *DESIGN OF ACCESS*

Communication Design is now a mature discipline with its own identity that merges traditional know-how with technological innovation and is thus able to establish a constant connection between various disciplinary spheres, their communication forms and their diffusion through communication networks. Communication Design can be considered as a large-spectrum translator that is able to convert abstract contents and messages into readable communication artefacts.

The impact of the digital revolution on multimediality and multimodality has allowed a significant diffusion of a great variety of media in daily life that has led Communication Design to define a set of *artefacts* and *devices* (methods and tools)—both from the disciplinary viewpoint (theory, research and training) and with regard to the professional figures involved. While broadly diversified in terms of communicative outcomes with regard to functions and supports, these design tools nonetheless define a strong, unitary know-how that configures a precise disciplinary field based on open analytical knowledge.

Within this framework, we can consider *designed communication* as a system of devices for communicative access that configure *Communication Design* as *design of access*. Access to information, to textual and multimedia contents, to products, services, identities and to the territory. In this context, designing access means focusing the attention on the steps that lead to the possibilities and methods used to access content. The design of *communicative access* goes beyond a strictly functional and quantitatively measurable role: accessibility becomes a qualitative element and a communicative experience that establishes values that, together, contribute to the very definition of content quality.

THE SPATIAL TURN IN COMMUNICATION DESIGN

Spatial turn is the term introduced by Edward W. Soja (1996), who used it in the mid-nineties to highlight the importance of the category of *space*. Numerous disciplines have confirmed this new centrality: from literary studies to historical studies. Soja builds on the distinction proposed by Michel De Certau (1984) between *place* as 'instantaneous configuration of positions' and space as 'practiced place' (p. 117), proposing the absence of conflict between 'real' spaces and imaginary spaces. The physical, material space (First space) and mental, immaterial space (Second space) are categories that have necessarily to complement one another: space has to be considered as real and imagined at the same time (Third space). Here we can say that the *Spatial turn* is not limited to geographical disciplines, but it can be extended to a large part of the humanistic field, and it can also influence other disciplinary areas, first and foremost Communication Design. The paradigm proposed by Soja has an important effect on Communication Design and on its applications. It means that every content—data, information, documents—is an essential part of the territory and its representations.

The paradigm brought by the *Spatial turn* and the principle of Third space, alongside geolocalisation technologies (that tie both immaterial events

and physical objects to their location in space), transform communicative artefacts into geolocalised artefacts, consequently altering the overall statute of communication. It is, in fact, on the level of communication technologies that the generalised and widespread form of geolocalisation currently in use establishes a deep connection between everyday action, flows, data, experience, narration and their immediate and constant geo-spatial positioning.

The *Spatial turn* in the design, production and fruition of communication conveys a new dimension to Communication Design. It introduces a new attention to the territory as a provider of information, and a sensitivity towards the territory as a store and potential generator of communicative resources that not only describes the territory, but transforms our experience of it. Our proposal for the application of the concept of *Spatial turn* in the field of communication design aims to provide a contribution on different levels. It is both a theoretic approach and a disciplinary repositioning, providing new research questions and experimental path for novel communication artefacts.

TERRITORIES AND SPACES OF COMPLEX IDENTITIES

The stereotypical identity (Remotti, 2001) is based on a mono-identity, on the descriptive and exclusive univocality of a predominant (or presumably so) nature. To simplify the recognisability of places, territorial branding often resorts to the reduction of identities to a mono-identity, to the emphasising of a few single elements to the detriment of others and of the overall context, with the consequent reduction to a stereotype.

A palimpsest, on the other hand, is a support for overlapping writings in which the meaning of the places is constantly 'rewritten': users rework space, they redefine it constantly with new values.

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In a horizontal sense, the territory, like a mosaic, is described by a number of references, communities and forms. In the vertical sense, the territory appears a s a multi-layered entity: a series of stratifications made up of flows, perceptions, discussions and sedimented documents. It corresponds to what, in archaeological studies, is called a stratigraphy: overlapping layers correspond to different moments, to tangible practices and to different stories that describe a space and which all occur in the same place, with synchronic and diachronic intersections.

The idea of the territory as a palimpsest involves trans-disciplinary nodes that concern geography, literature, ethnography and anthropology, and refers to a communicative landscape made up of numerous levels, both material and immaterial. Instead of the simplification operations that lead to the *reductio ad unum*, complex spaces require polyphonic representations able to represent the multiplicity of identities, and the different interactions

between physical and abstract contents. The multi-focal perspective (Westphal, 2007) allows territorial communication to make a territory comprehensible, recognisable and communicable through a combination of different points of view.

ACCESS DEVICES AS INTERFACES AND THE MAPPING PARADIGM

As with every form of access, access to the territory also requires particular forms of mediation that guarantee a transferral by means of a code, with the awareness that every type of mediation requires some amount of filtering and interpretation of the original content. It is in this sense that we can ascribe our devices to the general field of interfaces.

The forms of visualisation of content, the attribution of a coherent image to a complex combination of textual information and visual documents, give shape to a new kind of writing, a synthetic writing that takes its own particular configuration. The construction of the interface implicates a consequent effect: a deep reorganisation of contents that allows the same access to both the real and the imagined, the physical and the abstract. As it operates in the field of visual arrangement and organisation, the interface is a reconfiguration device in that it favours the determination of the new models of knowledge.

MAPS FOR THE PORTRAYAL OF COMPLEXITY: INTERFACES FOR ACCESS TO THE TERRITORY

In the age of geolocalisation, the revaluation of the functions of cartographic interfaces is central to Communication Design. In relation to the territory-palimpsest, maps are confirmed as in-depth reading devices, capable of restoring the complexity of the palimpsest and its stratification.

Maps are, by their very nature, *reconcepting interfaces* that operate a resemantization of their object through variations in the representation (Goodman & Elgin, 1988). A map reconfigures spaces, places and combinations of places. It attributes characters, it provides a recognisable image, an identifiable form; it positions places in relation to one another. Being orientation systems, geographic maps, being maps ‘of content’, take on descriptive and regulatory values, providing functions of orientation and functions of prescription, but their role is not only limited to immaterial domains, on the contrary, they act on the experience of reality itself. They provide predictive functions that enable their users to act on the described reality.

In this context the map becomes, in the broadest sense assigned to it by the researches of critical mapping in the Seventies, a simplified portrayal of a space which highlights the relationship between the components, where *space* is no longer geographic space alone, but also an anthropological and human space. It places different elements belonging to different worlds on a single spatial substrate, creating a space to allow a connection, a comparison or a relationship between them. It shows important information hidden between the data and the connections between

all the elements—displaying concentrations, analogies, similarities, directions or even chaos, shortcomings and an absence of relationship between the data.

In this dis-levelling operation the map is not, however, a passive descriptive or measuring element, but an active component of interpretation (Harley, 2001) that reorients our sense of the material dimension of the geographic space. It carries out an arbitrary reduction of the complexity, influences perception and is a tool of design-related intentionality, which creates a visual abstraction of a reality intended to be communicated in relation to an objective. This reduction of complexity that constitutes an intrinsic but understated aspect of cartography (Farinelli, 2003; Marin 2001) constitutes a powerful example of the power of representation in the shaping of reality as introduced by Maurice Merleau-Ponty (1964), especially in reference to the issues that this perspective raises as related to the practice of Communication Design (Roxburgh & Caratti, 2014).

MAPS AS NARRATIVES: SHARED INTERPRETATIONS OF THE TERRITORY

This mapping model reveals the characters used in pre-scientific maps: medieval maps, far from being nothing more that incorrect or naïve prototypes of the modern techniques of projection of space onto paper, testified to the riches of this method of representation, the telling of a different story from that told my modern atlas maps.

The narrative of the territory goes beyond the geographic illustration of space describing the anthropological space, the concept of space as introduced by Marcel Mauss and later adapted by Marc Augé (1992): a tangible and symbolic construction, principle of sense for those who live within it, loaded with meanings and relationships. Maps tell the story of the physical, material space, but also of all the immaterial relationship with the people that live in it, its identity, its expressions and its memory. In these forms, the map acquires the variety of the text; it appears in various very different ways that share the same geographic, spatial, synchronous support which replaces the sequential model of the text.

In their capacity as cultural and social artefacts, maps (all of them) go beyond the limits of the purely informative component. They tell a story, a context, a point of view that can be more or less explicit, but always present, and they tell much more about the anthropological territory than is required or even planned. The artefact of the map is not limited to the material, but embodies immaterial concepts and ideas about space. ‘Technical’ representations like the modern map of the underground inaugurated by Beck and all its evolutions tell of the recent growth of the metropolitan city, its configuration more and more as the space of networks configured around node and connections as described by Hans Bahrdt (1961), and less and less as a space of places.

MAPS AS TOOLS: SYNTHETIC SPACES OF ACTION

Besides being a portrayal, narration and visual story, the map is also configured as a tool, as a medium that makes it possible to achieve a previously elusive goal. In this role, cartographic representation rightfully

becomes part of the tool-image category, representing, possibly better than any other example, its operative methods and characteristics. The image-tool adds a finalistic dimension, a use, an aim and a plan to the descriptive nature of the portrayal.

Argument Spaces. As with scientific instruments (telescopes, microscopes, radar, MRIs, etc.), the map enables knowledge of a reality that is invisible to the naked eye, offering the possibility to intervene in the world in ways that would be otherwise impossible. However, unlike a lens that merely allows the passage of light in order to shrink or magnify the image, the map is also a cultural artefact which intervenes on the physical object of the portrayal (on space) in order to offer not so much a shrunken image as an intellectual abstraction of the space projected for the purposes of a specific aim. It is an instrument that eliminates the so-called disturbing elements and creates a model of space on which to act that embeds both the material and the cultural, based on the user's operational needs. It supplies a socio-territorial space for human interventions, a geological space for the feasibility study of a dam, an economic-logistic space for the opening of a mall.

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The map forms a surrogate of the territory, an image that replaces it to allow the facilitated performance of determined operations. It is a territory reduced in size to adapt it for consultation; simplified in order to make it easier to read; accompanied by symbols so that it can portray elements that are too small to be visible to the human eye (individual rivers in a world map); equipped with graphic signs that facilitate measurements, orientations and connections to the territory referred to. The descriptive map makes it possible to 'see' the phenomenon as a whole, to measure and identify concentrations, spatial distributions, correlations and distances, as well as absences and voids.

Exploration Spaces. The map, which is born during the exploration phase, is a visual annotation that memorises the territory on a support that enables the storage of the spatial information of the route. At the end of the journey, this is filled in, corrected and translated from the mapper's personal language to be transformed from a personal memory to a communicative artefact, destined for distribution to, and reading and interpretation by, the public. As an artefact for sharing research, the map allows the sharing of personal discoveries, new territories and personal points of view to allow the public to 'see' distant territories that would be otherwise inaccessible, without the need to repeat the route. It allows the continuation of a research begun by others, in order to explore further, to travel farther and to enter into greater detail. In this process, maps rarely constitute the result of an individual discourse. On the contrary, they are the result of corrections and subsequent annotations, made by generations of mappers and explorers.

While, on one hand, the map is a sort of authority that decides what is inside the territory and what is not, on the other hand, exploration maps are an ancient example of collective and collaborative storytelling of the territory. A social artefact, created by numerous authors on the basis of knowledge gained from exploration, becomes a live image that embodies the collective journey and imagination of people across the ages, and evolves with the experience of its authors.

Design Spaces. Unjustifiability, i.e. the quality of drawing and of narration which distinguishes mapping from other forms of scientific image (like radar and tomographies), enables the map to tell things that are not true, showing phenomena that do not exist within the territory. Exploiting this characteristic, the plan frees itself from the diagnostic-analytical methods used to describe what exists (whether visible or invisible), to take on the role of a design tool.

In this role, the map (or plan) enables the organisation of an intervention, displaying a hypothetical future space, a configuration of possibilities. The invisible elements revealed by the map in this case are not small or abstract things; they are invisible because they are not present, but only hypothetic. By virtue of its nature of drawing, the map can give life and reality (a virtual, portrayed reality) to operational designs, creating a sign without reference, a pretense that enables us to imagine the space. It can configure a future scenario, a parallel reality of speculation, allowing us to very tangibly imagine alternative spatial configurations. Not being determined by the real configuration of the phenomena, the map provides a fictitious space in which to carry out tests and make projects, in which to verify hypotheses, taking measurements without the costs and difficulties connected with intervention on the actual territory: an index without reference, a simulacrum. The map 'lies' using its indexical nature to show future phenomena as though they were present, presenting them for evaluation by the spectator.

Once tried and tested on paper, the drawing becomes a plan: a development model of an action to be completed on the territory. What happens is the opposite of the ancient centuriation, where the surveyor would trace on the ground the shape of the city to be built. Here it is not the map that copies the territory, but the territory that copies the map: the city is built first on the abstract space of paper and later translated to the physical landscape. The plan is used to verify whether what is being built is similar to the map, whether the territory is similar to the drawing or whether, in the paradoxical terms of Jorge L. Borges (1952, p. 80) 'the original is unfaithful to the translation'.

MAPS AS CONTAINERS: DEVICES FOR ACCESS TO CONTENTS

The levels of the territory-palimpsest stem from a particular point of view, from a modification of the perceptive filters: they are capable of dissolving the apparent opacity of the places, uncovering underground relationships with contexts and contents. Consequently, different ways of looking at the territories and different ways of looking 'with maps' are proposed

The literary dimension of geography (Papotti, 2002; Iacoli 2002) has been extensively explored: we know that we can review the literary tradition as a network of places and geography of the imagination.

The nature of the map (Farinelli, 2003) as a device is still that of representing territories, but in the meanwhile it redesigns them—it marks new places, identifies unexpected boundaries, it traces not to circumscribe or to exclude but to define invisible horizons. This mapping includes all the evocative functions of memories, of cultures, of images we have of places by means of a specific descriptive knowledge where orientative information necessarily crosses over with narrative components.

Considered in this way, maps are proposed as devices to access contents: this is what they are today, as far as is technically possible. They make it possible to indicate places not only with markers, but with the association of contents (texts, pictures, documents which are fixed on the places mapped).

There is a transformation of the technology of the written word, which has conquered its own mobility on supports over the millennia: it can be anchored to a place or to more than one place because it relives a relationship of context. In this sense, maps are proposed as encyclopaedic containers (Gianelli & Compagno, 2008) and they are confirmed as strategic devices, capable of triggering complex relationships and designing strategies of relationship between contents. They can shed light on the invisible networks and chains that connect information and territory, material and immaterial, revealing an accumulation of hidden resources and stores, making them visible. They make a world of implicit contents readable.

MAPS FOR NEW SPACES: MAP DESIGN

Mapping works on the basis of a paradox or an intrinsic contradiction between its two natures. On one hand, in order to be accomplished and to serve its purpose, it has to be a subjective story of the territory, it has to make selections, deformations and choices. In other words, it has to take a stance in relation to reality, like a cultural artefact. On the other hand, to be used as a tool, it has to take on the nature of a sign, standing in the stead of the territory and forming a representation. In using a map, the user has to forget that he is consulting a drawing and pretend that he is looking at the territory itself. He has to point a finger and say: ‘this is our destination’.

The design of a map has to combine these two aspects of cartographic representation, communicating not so much with a spectator, as with a user. Designing a cultural tool means developing an intellectual abstraction, which allows us to act upon reality in ways that were not possible before. In this context, the designer-mapper is asked to imagine the class of user objectives and provide an abstraction of the reality which enables their achievement, as well as maintaining an opening in the representation which allows a certain flexibility of operation.

Through this delicate relationship, the responsibility of the design is manifested in the design of a cultural tool: operations of abstraction, choice of scale and language contribute to the narration of a virtual reality that forms the basis for the user’s operations. The designer takes on the role of co-author of every successive development, undertaking responsibility for deciding what exists and what is important: designing the territory

distinguishes what is relevant from what is secondary, what is permanent from what is transitory and what is visible from what is invisible. It gives shape to the immaterial through the representation of abstract features, and it dematerializes physical features by removing them from the *hybrid space* embodied by the image.

MAPS AS INTERFACES: TOOLS FOR ACCESS TO THE TERRITORY

The interaction between 'real' and imaginary spaces described by the *Spatial turn* finds its most powerful realization when the web becomes part of the media system, and the Internet expresses an ambiguous and conflicting relationship with space. Mobile technologies linked to the dissemination of smartphones and tablets territorially reshaped the context of the contents and typically global and delocalised communication of the web.

From the point of view of Communication Design, this led to a development of the way the territory was narrated: online maps which, in the nineties, exclusively represented a digitalised version of the normal road maps, were transformed into supports for communication and narration capable of acting as a connection between virtual and real, positioning digital contents in the physical world.

The nature of the dialogue between territory and digital supports is currently undergoing definition. While in the 20th century the style, grammar and lexicon of the map became progressively aligned to consolidated registers and types (infographic maps, topological maps, road maps, etc.), in digital supports mapping has yet to define its own language.

Mapping and Communication Design merge in the definition of a figure capable not only of designing cartographic representations, but also capable of managing the mapping process that leads to the creation of digital, dynamic, interactive, shared social maps capable of supplying new methods of access to the territory.

While the traditional cartographic process focuses on collecting and analyzing geographic data, identifying the characteristics to be communicated, and transforming the data into a map, in the digital context the mapping operation is transformed in the definition of the rules that control the translation process that leads from geographic data to a spatial narration. Real-time data collected from sensors, information extracted from social networks, contents crowd-sourced and supplied by users need to be able to become part of the geographic narration without having to pass through manual representation processes.

This leads to automatic cartographies in which the designer is responsible for the definition of rules of composition, expressed in the form of algorithms capable of translating rough data into representation. Data-cartographies, that inherit the tools from thematic cartography in order to represent data collected from digital sources, archives and sensors. Crowd-cartographies capable of representing the territory as perceived by human sources, which co-operate in a shared description of the territory. Social-cartographies, which represent and narrate the territory as perceived through social communication channels, intercepting communications between users to analyse the narration of the territory.

A VISUAL RHETORIC FOR CARTOGRAPHIC INTERFACES

In this context, Communication Design is in a position to provide methods and tools for the design of processes and images.

At a time in which digital tools acquire a fundamental role as interfaces for access to the territory, the definition of a digital cartography, capable not only of portraying and explaining the complexity of the territory, but also of designing interfaces to act on the territory, becomes a priority. Digital and interactive maps, together with geolocalisation systems, are already technically able to place geolocated contents on digital cartographies. The experimentation goes in the direction of researching coherent and innovative communication formats, capable of holding together narrative and instrumental components of cultural artefacts, in a critical perspective conscious of the powerful effects of representation on the shaping of reality.

Design is not only able to provide the competences of Interaction Design and Interface Design for the development of interactive digital systems, but also the methodological tools related to the development of visual narratives and visual tools. From this perspective, Communication Design can help with the definition of a rhetoric for cartography, intended in the classical sense: a technique designed to select and transfigure elements of reality in order to transform them in an effective communication. A system of languages, tools and semiotic operations that allow for the creation of a meta-language: a technique intended as method for the design of cartographic artefacts.

Such an approach, based on the work on the linguistic components of visual rhetorics (Barthes 1970; Bonsiepe 1965; Groupe µ 2007; Anceschi 1992), in this context is focused on the cartografic model as a specific visual language for the description of space: a design method for the development of visual tools (Wood 1993; Monmonier 1996; Harley 2001) that encompasses operations of selection and classification (inventio), structuring and composition (dispositio), and linguistic choice (elocutio).

Such a methodology, harnessing the competences of design in the construction of visual discourse, might provide a valid methodology to develop a critical and authorial approach to the creation of visual tools.

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ABOUT THE AUTHORS

Marco Quaggiotto /
Research Fellow /
Politecnico di Milano / Italy /
marco.quaggiotto@polimi.it

Marco Quaggiotto is an Interface Design researcher with an interest in user interfaces for the exploration of data and complex systems. His research is focused on the design and development of tools and methodologies to explore, represent, and communicate data-rich scenarios. Currently, he is adjunct professor at the Design School of the Politecnico di Milano, and research scientist at the Data Science Lab at ISI Foundation, working on the design of visual interfaces for complex networks and systems. He also coordinates DataInterfaces, an experimental collaboration laboratory that merges the competences of communication design, data science, and computer science to address the open issues in the creation of tools for data exploration and communication.

Giovanni Baule /
Full Professor /
Politecnico di Milano / Italy /
giovanni.baule@polimi.it

Giovanni Baule, communication designer, is a Full Professor at the Design Department of Politecnico di Milano and at the Design School of Politecnico di Milano where he was Chair of the Degree and Master Courses in Communication Design. He was also co-coordinator of the PhD in Industrial Design and Multimedia Communication at Politecnico di Milano. His interests deal with the theory and methods of communication design. An expert in visual communications, he is engaged in design history and criticism.

STUDIES IN MATERIAL THINKING
www.materialthinking.org

ISSN: 1177-6234

Auckland University of Technology
First published in April 2007,
Auckland, New Zealand.

STUDIES IN MATERIAL THINKING
is a peer-reviewed research journal supported by an International Editorial Advisory Group. The journal is listed in: the Australian ERA 2012 Journal List (Excellence in Research for Australia); the Danish Bibliometric Research Index; and the Norwegian register of approved scientific journals, series and publishers.