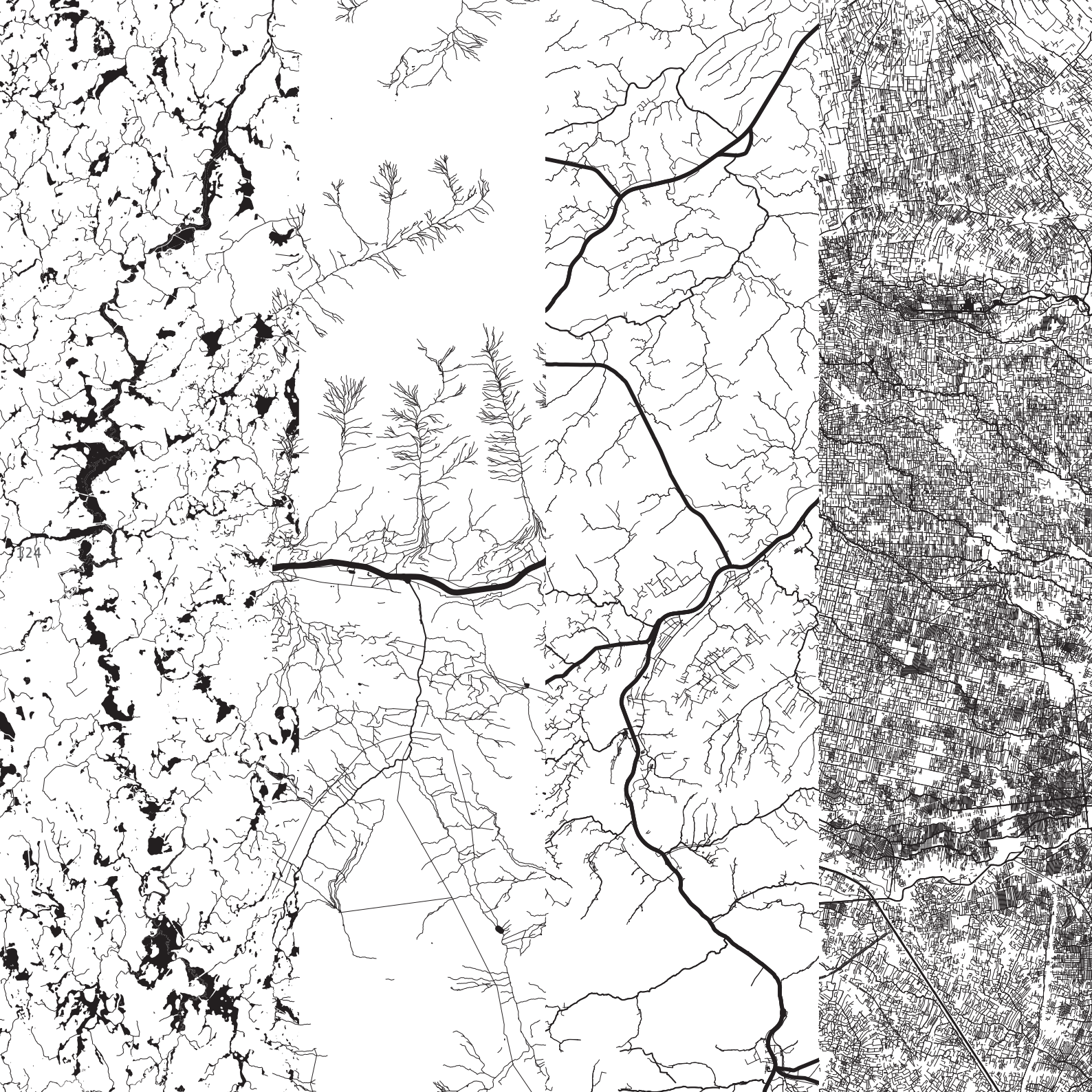




Mapping Water (hi)Stories

Chiara Cavalieri¹

BEYOND MAPPING

In the last decades, territories and landscapes have radically changed and their analysis, description and representation are now raising different questions. Nowadays the increase of cartographies produced by different kinds of users is paradoxically hiding the complexity behind the construction of the contemporary territory. Mapping complexity is neither a linear nor a generic operation: it requires a reflection on the agency of mapping (Corner 1999a) and on the deep meaning of description as a dense and complex act. More precisely, according to Bernardo Secchi, description -as a necessarily act of selection- is the place where the specific and the local must emerge, where the differences become indelible (Secchi 1995). There is no description without an image behind it, and thus in its being described the object is transformed, because in the act of describing the subject codifies and transforms the object itself: describing means both "reading" and "writing" the territory (Corboz 1995). Hence descriptions are never neutral (Corner 1999a): maps represent the result of a subjective process of breaking down and recomposing different levels of reality, according both to personal interpretation and to the intention of the mapmaker. In this sense, as interpretation, maps have power (Wood 1992a): representations are weapons (Wood 1992b), expression of multiple wills, either internal or external (Harley 1989). And it is exactly within these multiple levels that complexity should be reconceived.

MAPPING WATERS

Within these main hypotheses of maps as never neutral and hence as weapons, this text explores the power of water mapping, where for power is not so much meant pure political power - that would require a reasoning on its own and surely a more complex one - but it is more meant as the capacity to disclose the plurality of images and imaginaries, be these individual or collective, nested in one single representation. The reason for mapping waters lies in an attempt to narrow the field of investigation and hence look at a territory from a specific point of view. Water

left:[Fig1] water textures. From left: Boston, Belgium, Lausanne, Veneto areas.

Maps elaborated by the author from: Massgis; Geopunt Vlaanderen, IGN France, VNF, Geoportail Wallonie; Swisstopo; SIT Veneto Region

indeed, with its double role of resource and threat, is a device able to reveal multiple territorial features, empowering maps to narrate “(hi)stories” of different natures. I refer to (hi)stories to underline the fact that maps can tell us different types of stories, where the same narrative can be based upon history, space or other paths suggested by the representation itself.

The purpose of this essay is to reveal the existence of multiple “(hi)stories” enclosed in -water- maps. In other words, to show how mapping is not an isolated act, but that it is capable of generating and evoking a series of interpretations, of representations, of images of reality. A single image can enclose in itself not only different techniques, scales, orders of information, but also different kinds of invisible materials, -drawings, pictures, texts or images- that implicitly accompany it (Gambi 1973) .

WATERREGIONS

Water is the one element able to define a region (MacHarg 1969). Clearly drawn by topography, the watershed has clear borders: its valley represents the unit of surveying the territory (Geddes 1925). Any valley, represents a landscape in transition, a landscape in movement, where each element, dynamic, modification or transformation of the landscape upstream effects what lies downstream. This condition of deep interconnection is the framework for disclosing those invisible materials that stand behind a water map; materials that, once revealed as a system, necessarily call for a renewed environmental and ecological approach.

If we imagine a natural water course, we can follow the sequences of its valley. Starting as a brook amidst the forests upstream, its waters increase downstream where they flood a flat landscape, rich in riparian vegetation; the water is channelled into numerous meanders that the water course has built itself in time. Before reaching the river mouth, its waters slow down and stagnate in brackish swamps before reaching the sea.

Now we imagine a river -the same one- in a normally urbanised valley. Water is withheld upstream by the hydroelectric works; deviated and channelled into the irrigation conduits; drawn -from the same water body and from the water table- to feed the aqueducts, purified and piped again into the same system; stored in various types of basins both for flood lamination as well as for facing periods of drought.

A complex system guided by a sole principle: the natural downward sloping of the ground. There where flow cannot occur naturally due to the lie of the land, hydraulic devices of different degrees of sophistication artificially provide the pumping of the water upwards, re-inserting it into its natural cycle .

In virtue of this simple characteristic, that is the perpetual movement of water towards the river mouth, that lies at the base of the functioning of all water regions, be they natural or not, as in the previous description. With the variations in the geography of places, the nature of the ground, the altitude, the water courses change shape, dimension and capacity, calling for different water management strategies while becoming somehow generators of a transition of

landscapes. This delicate balance between water and infrastructure is calibrated on the basis of conditions that are today undergoing strong societal and environmental changes. The ecological region needs to be conceived again as a complex and interdependent system, and, if the decline of planning has to a certain degree nested these currents of thoughts (Corner 1999b), today climate change forces us to (re)define a gaze where long term scenarios (Giddens 2009) and ecological thinking (Viganò 2013) call for recovered representations of wateregions.

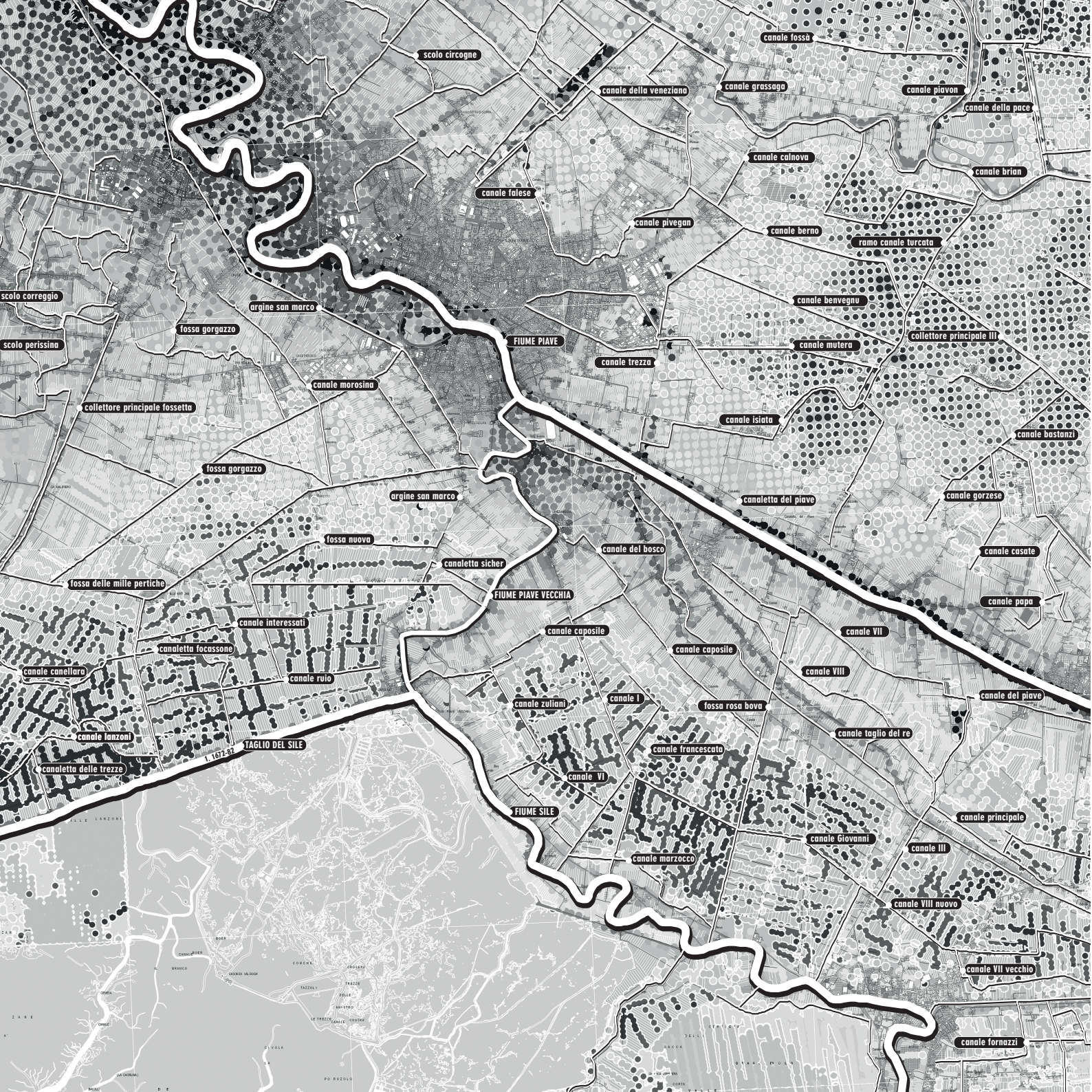
WATERFIGURES

Even if water has one unique direction, the way it is described and mapped, along or across the ecological region, can be multiple. Landscapes of water can be very different both along the same watershed and within different regions. Water cartographies can delineate the way large scale territories are constructed, evocating -without mentioning- their topography, their measures and their textures [fig.1].

To describe water means a process of understanding the visible and the invisible, a continuous operation of crossing scales, of observing landscapes, of revealing dynamics and ultimately disclosing that projectual image, that implicit project which lies behind any description (Dematteis 1995). According to the research questions being tackled, water can be observed from several angles and take on different figures.

Firstly, one has the image of water as a territorial machine, as rationality through which the territory has been transformed over the centuries (roman centuriatio; reclamations; dams; canals...), as a system that works on different scales. In this perspective, depending whether the machine is still in use or not, water landscapes represent either economic devices or pieces of the cultural heritage, where both conditions become relevant for local and international policies.

A second image that emerges from observing water is its double side of both risk and resource. Today, the environmental crisis and climate change are becoming visible - in evermore frequent flooding and tidal waves, winter snowfalls, drought, extreme events, water pollution and the presence of absence of drinking water - and constitute the unfolding phenomena of shifting geographies - both human and of landscape. Within this figure water has to be considered dynamic, as a process through time, that requires the insertion of a temporal dimension within that of the two-dimensional space of the map, and that opens the question of drawing the transition . Lastly, water can act as a topological device, as that vector by which cities and different forms of inhabiting have been measuring themselves over the centuries, establishing a critical distance from the nearest bodies of water, trying to find a balance between the threat and need for resource, often resorting to complex machines to pursue the right measure. Within these different figures, one can orient the process of description into different directions: mapping water hence appears as a bifurcating path rather than a unique process.

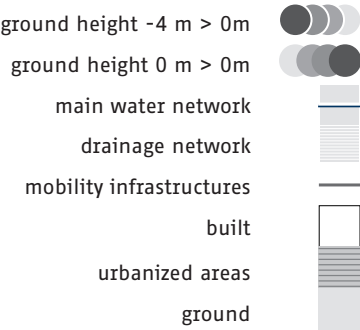


WATERSTORIES

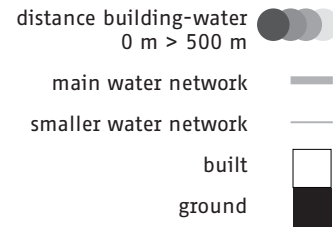
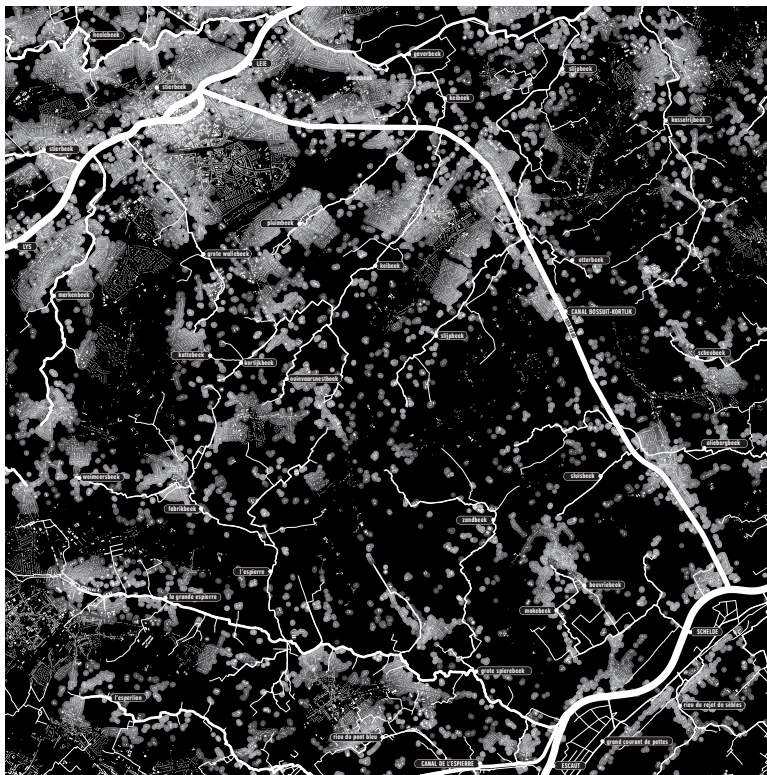
The act of mapping is first of all an act of translation (McKenzie 1986; Harley 1989; Corboz 1995; Secchi 2011) : the one of transforming reality into a drawing, and within the process of translation the map has the power of producing (hi)stories, narrating different tales without the necessary order that a written description would require (Woods 1987; Secchi 2011). To “describe” a map is hence an inverse operation: one of finding and disclosing possible paths enclosed in one drawing, one of interlinking different isolated documents, one of reordering a series of elements into one discourse. And this second translation, where reality represented in a map becomes text, is neither neutral nor unique: the subject -the reader- modifies the object -the map- according to his specific interpretation. Indeed, according to Jacobs, a map is the mediation between two mental images: that of its producer and that of its reader (Jacobs 1992, p.37). To better explain this mediation let’s observe figures 2 and 3 . These two maps share the same scale but not the same legend; they speak about two watersheds, different in terms of space and extension, where in both cases heavy modifications have changed the natural course of the waters.

They portray different places (the Veneto Region and Belgium) and they enclose stories that -between visible and invisible- are certainly very different, but that can somehow be connected. On the one hand [fig. 2] the microtopography of a place reveals the construction of a completely artificial ground, the history of the reclamation in the Veneto region and the constructing of the lagoon margin. On the other hand [fig.3] through a graphic greyscale, water as a rationality around which the diffuse Belgian city has been built is highlighted, where often a safe distance is maintained, mainly from the minor water courses, in the places where the hydraulic risk is higher for the simple fact it has not been managed.

Continuing by sorting clues: in the first case [fig. 2] the topography is explained by the legend, in the second [fig. 3] it is up to the reader to rebuild the crests of the reliefs through the sources of the rivers; on the one hand [fig. 2] the minor waters are an entirely artificial drainage network while on the other [fig. 3] one is dealing with what are practically natural water courses.



left: [Fig2] Italy, Veneto Region: the northern border of the Venetian Lagoon. The map portrays the end of a valley section, in a territory where different cycles of reclamation have dried up the natural extension of the Venetian Lagoon. This map is an elaboration of the regional topographic map (1:5000) where each number representing the height of the ground has been transformed into a point: the greyscale with white outline represents the land below sea level (the darker tones showing the deeper levels); the greyscale simple represents the land above the sea level (the darker tones showing the higher levels). Map elaborated by the author. Sources of data: SIT Veneto Region, map 1: 5.000



[fig. 3] Belgium, East Flanders and Wallonie Picard. The map portrays a portion of two of the main Belgian rivers: the Lys-Leie and the Escaut-Schelde. This map represents the distance of residential building from the nearest body of water (minor waters -third order or below- have been excluded from this elaboration). Each point (greyscale) represents a building closer than 500m to the water course (the lighter the closer).

Map elaborated by the author. Sources of data: Geopunt Vlaanderen, IGN France, VNF, Geoportail Wallonie

MAPPING BETWEEN VISIBLE AND INVISIBLE

One could continue mentioning marks and traces, elements and codes referred to -explicitly or not- in the single legends: if we can possibly define these brief notes as elements for the construction of (hi)stories that are visible in some way, the selfsame two maps enclose some invisible, less evident (hi)stories that demand an effort of the imagination and that rely on other representations, reference materials from elsewhere, only partially evoked in the fragments of the drawing.

In the first case, that of the Veneto, the main water courses have for the most been diverted from their original course, changing their capacity, section, geography. To defend the lagoon from an excessive deposit of debris and hence from the possibility of its being silted up, the waters of the Piave that originally flowed out were artificially conveyed, in different moments in time, inside two of its small tributaries, reducing the section of its last stretch, the Old Piave. A first attempt, the Canale del Taglio del Re (1565-79), failed due to a huge flood at the end of which the river regained its original course, leaving a trace in the topography of the place, visible to an attentive reading of the map. The second attempt (1641-64) corresponds to the current water course, where the waters have remained, even if on several occasions over the years they have

tried to regain not only their own natural section, but also the land that originally belonged to them, or that is the entire blue area shown on the map (D'Alpaos 2010). Once navigable, these water courses are not only today a fundamental part of the hydraulic machine of reclamations and responsible of diffuse flood hazard, but also largescale tourist areas, ecological corridors that cross a substantially homogeneous agricultural landscape.

In the second case, the Belgian one, the main water courses are first and foremost protagonists of a European scale transformation: that of Canal Seine North Europe , that a little further to the south bifurcates and from a single -giant- canal becomes a network. Both the Lys/Leie and the Escaut/Schelde are undergoing adaptation: their sections have to in fact reach the standards demanded by the project , and one witnesses a true and proper broadening of the banks, raising of bridges, a rethinking of pieces of towns and cities that become occasions for local and territorial projects (Debaere 2018). Acting as a great economic corridor, the project is creating a collateral process of marginalisation for those water courses hence excluded from the transformation, (i.e. Canal de L'Espierre). Getting back to the map, in this case as well as in the previous one, the waters of the two main courses have been artificially connected: the Bossuit-Kortrijk channel, 15,6 km built from scratch, is an object that, via locks and hydraulic works, enables water and goods to travel up the topography of the area and counter the lie of the land. An object hence extraneous to the lie of the valley, at certain points the Bossuit-Kortrijk canal interrupts the courses of lesser rivers. Built in the 18th century (1858-60), even today the canal retains its economic value inasmuch as designated as a canal of unidirectional exchange by the Seine North project. Beside the economic importance, these places, have become nowadays territorial devices of widespread tourism, that cross a multitude of landscapes a lot more complex and varied than in the Veneto. A second type of invisible story, of questions raised by the map themselves is that relative to the 'vocabulary of water'. A vocabulary that is deducible by merely observing the names of the water courses, that enclose different levels of information. Geographical information first and foremost, both in a political and in a physical sense. The change of language in the Belgian (i.e. Lys, Leie; la Grande Espierre, the Grote Spierebeek; Escaut, Schelde) waters is clear, highlighting hence the presence of an invisible border between Flanders and Wallonie within the map. The language of reclamation in the Italian case is equally clear (i.e. canale, collettore, scola, fossa, fossetta; in English: canal, connector, drain, drainage, channel, ditch), suggesting that one is very near the coast, without having the coast appear on the map. Secondly, one has the information that reveals hierarchy and type of water. According to the different term assigned to single water courses (i.e. rieu; courant; beek; canal; fiume; taglio... in English river, brook, stream, creek, canal, cut...), one can in fact deduce the section, the natural or artificial statute, the role it has had in the construction of the hydraulic machine (i.e. old; canal I, II, III etc.). Lastly, one has the topological information, that alludes to physical places (names of villages) or typological objects (i.e. kasteel; fabrik; sluis, in english castle, industry, lock...) that have had a particular role in the construction of the territory.

CARTOGRAPHIC PALIMPSESTS

The invisible is the result of a double process: on the one hand it reveals the reason of these maps, the research question that generated them, on the other it emerges by the autonomy of the map itself, of what Harley defines the internal power of the map (Harley 1992) that, in being constructed, takes on the power of being able to disclose what is unexpected and not sought. If a map is not an isolated object, the way different materials are related to it should be investigated through the analysis of its different components. In order to disclose (hi)stories, I believe it is important to reflect on the process of construction of the map itself, on the visible and invisible apparatuses, like the legend, the captions, the system of signs and labels comprised by the same, what has been excluded from the map and what has been selected. According to this point of view, the map, complete with all its apparatuses, appears like a palimpsest, using the metaphor in the same way in which Gerard Genette used it for the written text (Genette 1982). Evidently the use of the same metaphor for the territory (Corboz 1983; et. al 1993) cannot but reinforce the idea of the description as translation, within which the relation between cartography, text and territory raises an important point in respect to the selfsame role of the representation. I believe that the first step towards the building of a cartographic syntax, that need for a separate reflection, is that of breaking down the map and its apparatuses, and reconstructing them as dense bibliographies, that allude to the same number of texts. Texts that are certainly necessary for tackling the challenges of the 'next urban question.'

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NOTES:

1 Chiara Cavalieri is architect and Urbanist, currently post-doctoral research at Laboratory of Urbanism, EPFL Lausanne. Over the last years, she taught in the field of architecture and urbanism and at a number of different international schools.

2 for a research on the work of Lucio Gambi as an attempt of disclosing the invisible see Mangani, 2008.

3 here I re-elaborate some elements that I proposed in Cavalieri 2012

4 transition is an emerging theme in the frame of either environmental, economic and social crisis. See, for example, the cycle of conferences "Dessiner la transition" organized jointly by Brailard Foundation, Geneve and Metrolab, Bruxelles (ULB and UCL universities).

5 the concept of representation as translation has been broadly investigated in: Cavalieri 2018

6 figure n. 2 is a re-elaboration of one map of my doctoral research partly published in "The Next Urban Question", 2013. Figure n.3 emerges from a research on the "Blue Space" of Eurometropolis Lille Kortrijk-Tournai carried out in the Laboratory of Urbanism (2016-2018). This sort of comparison of two images, part of two different researches and periods represent the developing of a research path since 'the next urban question' (Secchi 2013).

7 as it is known, the "Seine North Europe" project entails the building/adaptation of a canal which will enable Paris to be connected with the Franco-Belgian-Dutch navigational network. This connection entails a series of adaptations to existing canals. A little to the south of Lille, also due to different national economic interests, the canal bifurcates and the huge economic corridors become two, that thus enable the ports of Ghent, Antwerp, Rotterdam and Amsterdam to be reached.

8 the network will allow two ways circulation of boats 'grand gabarit' classified Vb (135x11,4x3,5m). See Agence Lille Metropole, 2015.

9 its section is classified as Va, enough for allowing one way circulation of 'grand gabarit'