Between Cartography and Representation: borders and maps of early modern Bologna and Modena

Volume I

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BETWEEN CARTOGRAPHY AND REPRESENTATION:
BORDERS AND MAPS OF EARLY MODERN BOLOGNA AND MODENA

ABSTRACT

In the early modern period the border between the states of Modena and Bologna - cities under the control of the Este family and Papal State respectively - was marked by two main watercourses: the Panaro River and the Muzza canal. This generated an abundance of manuscript materials – drawings, maps, notes, chronicles – dealing with questions relating to water changes which in some parts made the border very unstable and, therefore, subject to continuous interventions to reinscribe political and administrative ownership. The maps, in particular, focus on the possibilities and frustrations of establishing and representing a definitive border, continuously challenged by the properties of water: its transparency, its motion and its instability; in other words its fluidity.

By taking into account a variety of unpublished manuscript visual and textual documents, my research draws attention to how this material stresses the idea of the 'border' as a process. I explore attempts to define borders by water and the resultant ambiguities.

In seeking to understand how the maps work visually, I draw attention to the tension between what can be represented and what escapes description, that which remains problematic, contingent and self-contradictory. In this paradox, I argue, the two sides of cartographic representation lie: the constant oscillation between opposites, between certainty/uncertainty, visibility/invisibility, opacity/transparency. My focus moves in between these opposites where instability, conversion and uncertainty acquire

a distinct theoretical status. Thus, the analysis of the visible aspects of this ambiguity becomes an investigation into the problematic nature of representation itself.

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NOTES ON TRANSLATIONS AND ABBREVIATIONS

My study is based on extensive archival and primary research. Unless otherwise noted, all translations are my own. Primary Italian sources are cited in English. As the translations are intended to give readers a sense of the original, priority has been given to meaning rather than word-for-word veracity. For the archival documentation abbreviations are as follows:

- ASBO for Archivio di Stato di Bologna
- ASF for Archivio di Stato di Firenze
- ASMO for Archivio di Stato di Modena
- BAF for Biblioteca Ariostea di Ferrara
- BCA for Biblioteca Comunale dell'Archiginnasio di Bologna

INTRODUCTION

The map is open and connectable in all of its dimensions;
it is detachable, reversible, susceptible to constant modification.

Gilles Deleuze and Félix Guattari[1]

The ambiguity and indeterminacy of a border

The flow of rivers determines the horizontal format of an early seventeenth-century map from the Bologna Archive (fig.1).[2] The map emphasises the extension of two watercourses: the Panaro River and the Muzza canal. These watercourses marked the border between Modena and Bologna, city-states which in the early modern period were controlled by the Este family and the Papal States respectively.

The course of the main canal, the Muzza, is logically at the centre of the composition, logically because it was the main focus of disputes and conflicts (fig.1a). The Panaro River is represented at the top, with its origin visible in the mountain on the left-hand of the Passo of Sant'Ambrogio that occupies the right side of the map. This river is constituted by a central waterway with banks on either side. The indication of the ordinary river-course together with the maximum flood area convey a sense of aquatic motion and, in this act, simultaneously suggest the unstable and precarious nature of a border marked by a river and the equally difficult problem of fixing it into representation (figs.1b-1c). The border changed and moved its position frequently, highlighting an awareness of something that can hardly be measured, precisely because

[1] Gilles Deleuze and Felix Guattari, *A thousand plateaus: Capitalism and schizophrenia*, trans. Brian Massumi (London-Minnesota: University of Minnesota, 1987), 12.

[2] ASBO, Assunteria di Confini ed Acque, vol. 4, n. 38. Early 17th century (ink and watercolours on paper, 130 x 50 cm): Map of border between the Bolognese and the Modenese territory with the representation of the Panaro River and the Muzza canal.

of its temporary and changeable nature.[3]

This thesis grew out of my research in the State Archives of Bologna and Modena. Here, an abundant number of manuscript materials – drawings, maps, notes, chronicles – deal with questions relating to water changes and to the complex disputes that arose as a consequence of such changes. Maps focus on the possibilities and frustrations of establishing and representing a definitive border, continuously challenged by the properties of water: its transparency, its motion and instability, its fluidity.

By taking into account a variety of unpublished manuscript materials, my research draws attention to how these sources stress the idea of the 'border' as a process, both visually and textually. I explore attempts to define borders by water and the resultant ambiguities. Within this ambiguity, borders become a conceptual tool to question fixed conditions of separation and stability, revealing contradictions and ambivalence. I also aim to develop theoretical insights about cartographic representation and the many ways of representing borders, which will extend the significance of the analysis beyond the case studies of Bologna and Modena.

One of my main areas of analysis is the complex articulation of the border between the provinces of Modena and Bologna that was marked for a short distance by the Panaro River and by various roads and canals in a long arc from the Apennines to the lowlands. In geographical terms, the thesis focuses on the high plain and first belt of hills between Bologna and Modena, an area between the Panaro River in the west and

[3] The border could and did change every year depending on the frequency of flooding. In this respect, it is useful to remember that the area considered in this study is very flat and therefore rivers flow very slowly and as consequence their riverbed is low. These factors increase the chances of flooding. On the history, formation and geology of the Panaro River, see Gianfranco Casperi, "Geologia della pianura del fiume Panaro," in *Il sistema fluviale Scotenna/Panaro: storie d'acque e di uomini*, 1988, ed. Franco Serafini and Antonella Manicardi (Nonantola: Centro studi, 1988); Maurizio Pellegrini, Alessandro Colombetti and Adrano Zavatti, *Idrogeologia profonda della pianura modenese* (Rome: Quaderno Ist. Di Ric sulle acque CNR,1977).

the Samoggia River in the east, crossed from north to south by the Nonantola road, a path itself marked by the Muzza canal (fig.1).

The importance of this border can be traced back in history to the thirteenth century when the cities of Modena and Bologna came to identify the frontiers of their respective territories, basically following pre-existing episcopal territorial limits. However, the history of this border has more distant roots in the time of the Longobard occupation (sixth to eighth centuries), when the area became the limit between the Exarchate of Ravenna and the Longobards, and then between the Empire and the Papal domains in the Middle Ages.

The controversy continued in the early modern period during which the Muzza acted as the border between the two neighbourhoods under the name of *limes Mucia*. More specifically, in the early modern period the border was marked by the Muzza canal in the area of Ponte dei Galletti and Redù in the Nonantola territory; in the proximity of Castelfranco and the Via Emilia the border coincided with the Panaro. The territorial instability and the consequent difficulty of marking the limit of the two states in a stable way are highlighted in the cartographic material both in the State Archives of Bologna and Modena. The wide ranging and well-preserved documentation concerning this area remains relatively unexplored, and has not yet been published. I have mostly attended to the three collections of *Acque e Strade*, *Mappario Estense* and *Confini dello Stato* in the State Archive of Modena and the *Assunteria di Confini ed Acque* of the State Archive of Bologna.

My research considers the difficulties that arose when mapmakers had to represent such a fluid border. The attempt to represent a border in flux, to reduce and confine it into a map, was a task that could never be completed. Floods could cause unpredictable river changes and humans living along the river repeatedly had to cope with the alterations of their physical environment. This was especially true of the Muzza

canal where the abundance of water in some parts made it very unstable and, therefore, subject to continuous interventions to reinscribe political and administrative ownership.

Specifically, the fixing of physical landmarks on the ground was a fundamental mechanism activated usually at times of flooding. This practice was generated by an act of movement, of overflowing, across and beyond territorial control. Therefore it seems that the continuous attempt to enclose territory through the practice of fixing landmarks was accompanied by the opposite process of border crossing. However, the rapid change of the border was not only contingent on natural causes but also on the contested use of water and other resources and engineering measures undertaken up and downstream. An excessive influx of water required careful management of the entire water system to avoid serious damage to the canal as this caused broken banks and also problems for navigation and milling.

One of the most frequent points made in the documentation concerns the construction of dams that obviously could cause disruption, with consequent disputes between the involved parties. In this way, fixing landmarks on the ground was not enough to settle differences, even when the border was translated into lines that acquired a seemingly objective dimension through cartography, or when lines were materialised into representation and accords were generated and duly signed by all concerned.

It is clear that in such a context, when the border came into representation through maps, these were quickly out of date. Water transforms the border and slips it into another position. Here, then, representation could never convey the fundamental reality but, instead, only register one single condition and moment among multiple possible conditions generated by the shifting waters. At the same time, when we speak of a border crossing and its translation into a map, we are aware that that process is reduced into the exigency of a moment. Equally clearly, the impossibility of drawing

the border once and for all has produced a huge quantity of documentation whose formal and material heterogeneity express a variety of visual and rhetorical strategies. In almost every case, holding onto this sense of ambiguity remains important; the border continues to preserve an uncertain relationship to what is still essentially distant from reality.

As a result, my study also invites us to reflect upon the ambiguous and paradoxical nature of borders as capable of generating opposite phenomena. On the one hand, it brings forward the idea of borders as territorial limits which have played and continue to play an important part in the constitution of the nation-state. On the other hand, borders result in places continuously subjected to negotiation and interpretation: sites that are in constant flux and consequently generate an intense production of text and images. The roles of these texts and images, in turn, is paradoxical: they help to set up, maintain, police or contest the very idea of the border whilst, at the same time, pointing towards its essential fragility, its propensity to natural and social erosion.

Before proceeding to a deeper analysis of the subject of this thesis and providing an outline of its structure, in the following section I will use the large-scale painted maps which still decorate the *Sala Bologna* in the Vatican Palace to introduce the special significance of Bologna in the history of cartography. This particular room was commissioned by the Bolognese Ugo Boncompagni when he was elected pope in 1575, the first Jubilee year after the Council of Trent, with the name of Gregory XIII. In this introduction, I will draw attention to the symbolic and political relevance of cartography in early modern Papal politics and to the complex ways cartography deals with borders and city limits. This will help us to understand the broader implication of my type of analysis which brings out the deeper side of cartography, which is often paradoxical and resistant to simple interpretations, even though such imagery often claims for itself veracity, accuracy and comprehensiveness.

Mapping Bologna and its Territories in the Vatican Sala: borders and maps of early modern Bologna

Bologna provides an ideal case study for exploring the relationship between cartography and visual representation in early modern Europe, partly because it comes with a wider range of cartographic sources than most other European states. The historical cartography of Bologna is characterised by a variety of maps using different techniques to describe its territory. It spans five centuries of territorial imagery, from the sixteenth to the nineteenth century, and it shows the evolution of survey methods and a local descriptive style. One reason for this output was the political need to understand and cartographically possess Bolognese territory once the polity had forcibly become incorporated into the Papal States in 1506. Part of this enterprise involved considerable effort to determine the relationship between Bologna and the neighbouring Modena: hence my explicit focus on this process.

In the fresco of *Bononiensis Ditio* or *The Jurisdiction of Bologna* in the Gallery of Maps in the Vatican Palace four representations are inserted within the frame (fig.2). Collectively, these imitate a print with a crest and three cartouches with views. In the bottom left there is a perspective map of Bologna with a high viewpoint above the city showing the magnificent polygonal circuit of defensive walls dated to 1380 (fig.2a). There is also, in a separate section of the fresco, a view of a fortress, with the stellar shape characteristic of sixteenth-century fortifications, with the city seen in profile (figs.2b-2c). This view appears to be out of focus, as if seen through a window that opens onto the city in the distance, where soaring towers and steeples dominate the view (fig.2c).

The perspective map, fortress, profile and overview together aim to capture the entirety of vision and to represent the total space observed.[4] The representation as a whole seems to start with a viewpoint anchored to the ground through the representation of the Apennine ridge, which is shown in accordance with a line of trees, as if seen in landscape painting, but then it gradually advances upwards, to a higher point of view surveying the valley, mountains, gorges, forests, villages and castles. At first sight, the point of view of the fresco seems to follow the slow advance of a bird's flight. Yet, in fact, various points of view are adopted in the representation of individual architectural and natural objects. While the mountains, trees, and architecture have a point of view anchored to the ground, the cities have a higher point of view, a bird's eye view, which differs from the representation of the region's water system, painted directly above, and from the three views of the city below (fig.2).

In the perspective map of Bologna depicted at the bottom left of the fresco, the borders of the city are clear and its shape is framed by a depiction of countryside using a different viewpoint, now anchored to the plain (fig.2a). In contrast, the profile view of Bologna located at the bottom right of the fresco is shown from an opposite viewpoint, now located on the hill (fig.2c).

The border is here a frame that describes the limit of representation with the view offering the experience of a three-dimensional illusion.[5] The fresco as a whole, with its mixed techniques of projection and diverse graphic solutions combined in the

[4] The ambition to convey a totality of vision in cartography has been exhaustively tackled by Lucia Nuti in her influential works: "Misura e pittura nella cartografia dei secoli XVI-XVII," *Storia Urbana* 62 (1993): 5-34; "The perspective plan in the sixteenth century: The invention of a representational language," *The Art Bulletin* 76, no.1 (1994): 105-128; *Ritratti di città. Visione e memoria tra Medioevo e Settecento* (Venice: Marsilio, 1996); "Mapping places: Chorography and vision in the Renaissance," in *Mappings*, ed. Daniel Cosgrove (London: Reaktion Books, 1999), 90–108; "L'artificio del vero ritratto," in *Tra oriente e occidente: Città e iconografia dal XV al XIX secolo*, ed. Cesare De Seta (Naples: Electa, 2004), 22-28.

[5] Giovanni Ricci, "Città murata e illusione olografica: Bologna e altri luoghi (secoli XVI- XVI)," in *La città e le mura* (Bari: Laterza, 1989), 265-289.

same representation, testifies to the complex ways that early modern mapping weaves together landscape painting and cartographic conventions. In doing so, the collection of maps aspires to be a total representation: an illusion that is suspended between extremes of reality and symbolism, objectivity and subjectivity, art and science.

The construction of a representation in which two or more views are juxtaposed, as separate images, began to spread at the end of the sixteenth century in central and northern Europe. In the next century this was developed into a way of representing the totality of a city. The combination of a main view and smaller detailed views at the edge of the image constitutes a kind of portrait, in which the truth-effect evoked by architectural and natural details tempers the patent unreality of the whole. This type of depiction is determined by the juxtaposition of several images and different projective techniques: vertical projection, oblique projection, horizontal profiling, a "reality of collages,"[6] as Leonardo Benevolo defines it. The general aim was to have a representation that was as detailed as possible and thus to achieve a "holistic vision that could look around buildings, move in multiple directions and see building façades as well as contours of streets."[7]

The ambition to represent both truth and totality was often the goal pursued in the later sixteenth century in the construction of maps. The case of Bologna, a walled city of compact design and visible from a hill, provided mapmakers with excellent points of observation as well as the opportunity to work towards an overall and thus seemingly truthful representation. Yet the very possibility of pursuing this ambition through the combination of details or of partial views in the same document resulted in a visual paradox.

[6] Leonardo Benevolo, *La città italiana nel Rinascimento* (Milan: il Polifilo, 1969), 43.

[7] Ibid. My translation unless noted otherwise.

The fresco of *Bononiensis Ditio* exemplifies this double ambition: although intended to be a comprehensive and accurate image, it is clearly an illusion. In its entirety, it is patently an imagined representation and not a transcription of something seen. The goals of accuracy and totality come into conflict with each other and what emerges is an image of multiple images. The overall effect of the composition of views, considering their limits and purposes, is that they interrogate the values underlying the representation of space itself and also its internal boundaries.

What I am stating here is that the combined views located at the margins of the fresco not only close off, but also open up, the cartographic representation to its own contradictions and ambiguities. As such, the consideration of borders is essential for understanding the porous nature of early modern cartography and the complex ways that territories were reproduced in visual form from the sixteenth century onwards.

The need to define clearly the limit of territories prompted early modern states to produce cartographic documents that focus especially on showcasing themselves as reliable representations of border areas.[8] However, as the next paragraphs will show, a closer examination of some well-known printed cartographic examples concerning the territory of Bologna reveals a similar interest in the representation of the territory beyond borders.

If we consider borders as limits between features of landscape, such as the perimeter wall separating the city from the countryside, we can make an important observation: this separation does not imply a distinction in accuracy, since the city and the countryside are equally represented in a plausible and detailed way, as testified, for example, by Agostino Carracci's engraved map of 1581 (fig.3). In this map, the territory

[8] An example is the contribution of Federica Badiale who has dedicated one study to the theme of mapping and representing the borders between Modena and Bologna, "I confini in documenti cartografici antichi quali elementi di separazione tra noto ed ignoto nell'Appennino tra Modena e Bologna" (paper presented at the conference La cartografia strumento di rappresentazione della divisione, dell'unione e della differenziazione dei territori, Gorizia, Italy, May 5-7, 2010).

surrounding the city walls is characterised by a care for accuracy in the representation of agricultural space, which is not inferior to that of the urban space (fig.3a). This balance was lost in maps printed later in favour of an increased focus on the details of the urban space.[9] In the Carracci map there is continuity between the inside and the outside of the city walls, including the edges and internal structures which emphasise the distinct shape of Bologna. This dual concern is modelled on the needs of trade essential to the life of the city which is likely why the map underscores its advantageous position as a hub for exchanges between the plain and the rest of the Italian peninsula. The large polygonal shape of the city occupies most of Carracci's map. It is crossed by numerous roads and canals for transporting heavy goods that run from outside to inside the city walls, coursing between houses, warehouses, and mills. It both connects and sets up a contrast between full and empty spaces, and between roads and buildings. This map, in short, expresses an interest in representing the space outside the city's walls, and thus in showing a solid link between the city and the surrounding countryside.

Other famous maps of Bologna also invoke the central function of borders. More explicitly they generate rhetorical statements as to the impossibility of keeping separate and distinct spaces by dividing them with boundaries. To explain why, I want to return to the frescos that decorate the *Sala Bologna* in the Vatican palace.

The entire room glorifies Pope Gregory XIII's home city with two large frescos on the walls at right angles to each other (fig.6). One represents a vast bird's eye view of Bologna as if isolated from the context of its jurisdiction and from the surrounding countryside (fig.4). The other is *The Map of the Territory of Bologna*, the oldest surviving representation of the Bolognese territory. Despite partial damage, it can be

[9] See Dario Trento, "Cartografi e periti nella campagna bolognese," in *Paesaggio, immagine e realtà* , ed. Anna Ottani Cavina and Francesco Vallerani (Milan: Electa,1981), 27.

considered one of the more detailed depictions (fig.5).[10] The fresco shows a remarkable vitality in the section focusing on the plains: the grassland areas appear cultivated, there are rows of trees as well as centralised and scattered settlements. The fresco suggests an alteration to the order of the countryside, showing the rise of a new rural economy that has completely changed the relationship of the city to its suburbs.

This change corresponds with the political situation: after the annexation of Bologna to the Papal States in 1506, the city and its territories were governed for the following three centuries by a legate in close collaboration with the local oligarchy. Together, they followed a common trend in this period, by which the Italian patriciates left business behind to renew a focus on agricultural income. Rehabilitation and land reclamation were undertaken; great works of irrigation quickly transformed the wetlands, previously characterised as *aria malsana* (bad air), into fertile places.

Leandro Alberti (c. 1470-1552) was the first to document these major initiatives of conquest of land in the plains, seeking to grasp the human, agricultural and political implications. In relation to the Bolognese plain, he wrote:

> For fifty years and until now, the land has been highly dried and filled with soil, only a bit of which you can see, starting from Ravenna ... and for many miles ... you can see these places dried out, across the territory of Ravenna in the towns of Bagnacavallo and Lugo, and those near to Bologna, in the past it was difficult to imagine how this marshy land (which was used for fishing in the past) could now be cultivated and worked. [11]

The territory was now divided into larger parcels of land and the focal point of these estates was the villa or country house, which the new owners used to symbolise their

[10] See Giovan Battista Comelli, *Dalla pianta di Bologna, dipinta nel Vaticano e di altre piante e vedute di questa città* (Bologna: tipogr. Alfonzo Garagliani & figli, 1896).

[11] Leandro Alberti, *Descrittone di tutta l'Italia* (Bologna: A. Giaccarelli, 1550), 22.

control over territory.[12] The emergence of the suburban area surrounding the main city is again clearly observed by Leandro Alberti:

> Everywhere beautiful buildings appear, which in some places look like villages, containing many houses linked with ornate gardens and beautiful vineyards. Gardens that also contain citrus, never seen before, which to grow in these places needs water and therefore it is conducted specifically through some secret little canals .... ways of water, very delightful. [13]

Alberti shows how the contrast between countryside and city is overcome by implementing a much stronger form of controlled landscaping, linking the city ever more closely to the territory. Both in the testimony of Alberti and in the frescoes analysed, there is a focus on lush countryside in which peace, abundance, and prosperity reign – all presented as civilising and rationalising what were previously foetid marshes. Even in the case of large hydraulic works undertaken in the country, the diary of the Bolognese notary Cesare Nappi informs us about the rational reorganisation of water from the plain, recalling a speech dating back to 1471 which recommends the restoration of the river "to allow ships to come from Ferrara to Bologna."[14] In addition, family records of the period recall the process undertaken by the great patrician families from Bologna who made territories previously considered uncivilised and enmired fit for agricultural use and human habitation.

As this suggests, maps such as those in the *Sala Bologna* had a propagandistic and authoritative value for conveying visually and metaphorically the political extension of Papal influence as well as the changes in the social and political

[12] Further insights on the agricultural reform during Gregory XIII's pontificate see Nadia Aksamija, "Il contado riformato. Ville, agricoltura e politica negli anni di Gregorio XIII," in *La Sala Bologna*, ed. Francesco Ceccarelli and Nadia Aksamija (Venice: Marsilio Editore, 2011), 47 – 55; Trento, "Cartografi e periti nella campagna bolognese," 23-24.

[13] Leandro Alberti, *Libro primo della deca prima delle Historie di Bologna* (Bologna: Per Bartholomeo Bonardo e Marc Antonio Grossi,1541), 16.

[14] Corrado Ricci and Alberto Bacchi della Lega, eds., *Gaspare Nadi. Diario Bolognese* (Bologna: Romagnoli Dell'Acqua, 1886), 176.

management of space since the sixteenth century. The numerous printed and painted cartographic examples concerning Bologna suggest the interest of the Papal States in using maps as an instrument of political persuasion. Interest in the Bolognese territory beyond the city itself, as depicted for example in the Vatican frescos, can be read as part of political propaganda intended to celebrate the work that made the countryside fertile, thereby demonstrating the powerful role of the city.[15] Such a representational interest is important considering that in Italy, in purportedly realistic representations of cities, it was in fact rare for the space around the city to be represented.[16] In contrast, the frescoes in the Vatican, Carracci's printed map, and others by Franz Hogenberg (1572) and Johannes Blaeu (1640) share a focus on spatial representation and on describing the extramural planted sections (figs.7-7a; 8-8a). These examples, through the repetition of the city's shape and of the urban fabric, provide the conditions through which concepts of boundedness, centrality, and unity are challenged by a renewed engagement with the spaces outside the city walls.

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[15] Even descriptions given by early modern foreign travellers to Bologna demonstrate the importance of the countryside. These descriptions, often in the form of a letter, focus on the city of Bologna with its major monuments, as well as on the surrounding countryside, emphasising its abundance and fertility. Here is one example: "The town lies at the foot of Apennines, having in the south hills that dominate where olive trees, vines, figs, apples, pears and other fruit trees grow. On all sides for a long way a fertile countryside is visible that produces wheat, barley, beans and other grains. [...] Also in the fields lie long rows of neat trees, full of vines [...]. And there are very wide meadows, dense forests, so useful for firewood and construction, as well as for hunting: not missing sources of hot and cold water with healing characteristics, and many other special features and products besides the Bolognese countryside, so for its abundance and its opulence it was not unjustly called *Bologna la grassa*." The passage is from the *Theatrum orbis terrarum* by Willem Janszoon Blaeu published for the first time in 1640. He was a Dutch printer and made his trip to Bologna in the second half of the sixteenth century see: Albano Sorbelli, ed., *Bologna negli scrittori stranieri* vol. 1 (Bologna: Zanichelli), 204.

[16] See Cristina Maritano, "Paesaggi scritti e paesaggi rappresentati," in *Arti e storia nel Medioevo*, ed. Enrico Castelnuovo, vol 1 (Turin: Einuadi, 2002), 313.

Although the painted and printed examples analysed above have a different function from state maps that were specifically designed as instruments for territorial action and administration, they all share one feature: they draw attention in some manner to territorial fluidity and shifting boundaries.

On the other hand, administrative maps were often constructed with great care to document legal and administrative boundaries and, when necessary, they may have been used to help settle border disputes. Hence these types of maps do not have celebratory meanings or symbolic purposes; their main function was to provide specific information gathered from direct physical observation of territory. Most of these drawings and maps were integrated into governmental reports. The reports mostly concern disputes and conflicts, but also the delineation of drains, damming of waterways and assessments of minor river damage. Because of the combination of written text and visual representation, there is an unusual wealth and variety of information in these cartographic documents. Obviously, it was assumed that the two documents could be consulted together and thus the link between textual and pictorial maps will be carefully considered in this thesis. My aim is to open up a dialogue between maps and textual reports, bringing them into a close proximity. Hence, through a comparative analysis between maps and their attached reports, I draw attention to early modern dynamics of representing water and attempts to control its flow.

Whenever a visual representation defining the territorial space is not completely precise, the accompanied textual reports help to clarify the context and reasons behind any existing problems or disputes. Moreover, the textual descriptions explain the complexities of hydrography, providing details of single objects (walls, embankments, dams etc.), and technologies relating to water engineering. In this case, images and texts are complementary and mutually elucidatory.

It should also be noted that the material dimensions of these manuscript sources are significant in many ways. Their format and function, along with the interests of cartographers and authorities as conveyed in their texts and visual imagery, are different from those of printed maps. Woodblock and engraved maps were produced in multiples and widely disseminated, typically for viewers beyond the regions represented, in contrast to the local political and evolving concerns registered in manuscript maps.[17] Of course, sometimes manuscript maps incorporated copies of printed maps, with the former providing commentary on the latter. Crucially, in manuscript maps there is considerable formal variability and the medium allows for changes during each stage of production. As the sources studied in this thesis demonstrate, different styles and points of view may be contained in the same document and there are unpredictable cartographic details resulting from the use of different media within the same document. In some cases the description of territory is very detailed while in others it is only very roughly sketched. Furthermore, the manuscript maps are not precise in establishing points of reference as their aim was to provide directions and distances to reach a determined place.

The cartographic documentation under analysis comes with a variety of ways of representing borders and with several descriptive styles. These styles articulate the different aims of the maps: some are accurate, neat and clear, others rough and ready. By paying more attention to the materiality of maps it is possible to better understand the processes of their making and hence the specific functions of different pictorial styles or representational strategies. For example, in some cases pencil marks are visible on the maps suggesting that they were sketched on site, then developed and refined at a later point.

[17] Juergen Schulz, "Maps as metaphors: Mural map cycles of the Italian Renaissance," in *Art and Cartography: six historical essays*, ed. David Woodward (Chicago: University of Chicago Press, 1987), 97-122.

Further examples present precise and secure dark marks resulting from a series of elaborations following visits to disputed places, upon which detailed notes were taken. In other cases, the drawing is the result of careful elaborations of the notes taken on site and then transferred into maps. Additionally, the organisation of the page and the text within it seems to depend largely on the conditions of production. If the map was drawn on site, the recourse to words to fill the limits and inaccuracies of the drawings is often focused on the border area and on any disputed aspects. Hence verbal description and visual representation work together to give a full picture of the social and political management of a highly unstable border. Because the border was often subject to territorial disputes, the artistic and narrative techniques are often highly subjective and heterogeneous. Each cartographic document mingles diverse languages, sources and styles: landscape painting, abstract and conventional symbols, imaginary and real topographic features.

The exceptional pictorial quality of the source material considered in this thesis provides an ideal focus for exploring relations between cartography and visual representation. Accordingly, the ambiguous relationship between water and the border will introduce fundamental concepts for the analysis of questions pertaining to representation. To these ends, my thesis draws on a variety of research methods from history, cartography, engineering, geography, natural history, and art history. My arguments are in part developed from ideas within the disciplines of history, geography, cartography and border studies, it also engages with art history and aesthetics. The art-historical approach includes exploring the complex pictorial forms of border description, taking into account the different media used and the visual role played by water in this rich repertoire of representations. This approach reveals both the process and the stylistic evolution of diverse forms of borders and of how they are described. In

turn, such an analysis of formal and material elements introduces multiple possibilities for understanding these cartographic forms.

Fixing the flow: chapter outline

Starting from a close analysis of the archival material, the overall trajectory of this thesis is to build up a multi-faceted analysis, both appropriate to the empirical material and to the complicated questions and problems which it generates.

The basic structure is as follows. In chapter 1, I open up the complex historical issue of the border through an analysis of state agreements, to account in detail for the history of conflicting parties from the fourteenth to the eighteenth century. That is because the importance of the border area between Modena and Bologna is, in part, a consequence of its long history of contest.

I mostly focus on the history of this contest in the early modern period, although there is also a brief overview on the question of this border during the Middle Ages. It could not be otherwise, as I would have faced a lack of sources concerning the Middle Ages. The territories that in the Roman period had corresponded to Mutina and Bononia by the Middle Ages no longer had certain definition, even though the strip of land between the Panaro and the Samoggia was the core of many battles and was recognised as area of frontier. During the twelfth century, with the battles that involved Modena, Bologna, and Nonantola, this region was in a condition of territorial fluidity, during which each municipality with its respective countryside was coming into being. It was only in 1278, when the King of Romans Rudolph I of Habsburg completely renounced the remaining imperial claims on the Romagna, that Bologna became part of the Church lands. From that moment on, the border between Modena and Bologna took on pan-European importance as it became the political boundary between the Papacy and the Empire—a state of affairs which lasted until the Unification of Italy.

It must be emphasised here that this thesis is not just about a particularly contested boundary, even if that contest is exceptionally illuminating in terms of both local and European history. Instead, by drawing attention to an unusually rich body of early modern archival sources, my aim is to understand what precisely constituted a border, what were the conditions for its existence, and how it was managed in this period. This allows me to establish what remains consistent and what changes over time in the maps, as well as to account for any ambiguities that remained in the process of defining a border. I also explore the manifest need for redefinition and re-organisation of what escapes from a determined and stable condition, exemplified very helpfully by boundaries defined by water. This leads me, in chapter 2, to consider in more detail how image-makers tackled the paradox of a border marked by water, the instability of which escaped definitive representation.

In addressing the paradox of a border, which in reality is boundless, the analysis of its visible aspects becomes an investigation into the problematic nature of representation itself. To explore this, I examine several sixteenth-century treatises which highlight early modern discussions relating to borders that are found along rivers and in wetlands. I also draw attention to the process of re-mapping the border, looking at how the same place came to be represented at different times.

In chapter 3, I investigate the idea of the border as a set of spatial practices. I consider maps and itineraries in terms of bodily movement: the map as an example of the immobile body and the itineraries as an example of the mobile body. In this type of material there are two contrasting images of bodily comportment: one inherent in the process of mapping a place, the other generated by the map itself. In the first part, I analyse sketches and maps with their attached letters and reports to address the multiple ways a place may be visually constructed and experienced, and how in turn this is expressed in specific cartographic forms. In the second part, through an analysis of two

unpublished itineraries, I also address how bodily movement is an essential component of mapping and of the production and reproduction of knowledge about a place. Bringing out the importance of the body and its figurative possibilities in cartographic representations sheds light on various ways in which the world was known, described and experienced in early modern Europe.

Together, these three extensive chapters are meant as an invitation to look at borders as processes rather than simply as lines on maps. Such an approach will reveal the paradoxical nature of the border in the early modern period and also how this was given visual and textual form in spite of – or perhaps because of – the very impossibility of representing firm political and/or natural boundaries.

In chapter 4, I open up my argument to the more purely art-historical. This takes the form of a proposal, a preliminary attempt at developing a methodology whereby the border becomes a means of analysis, offering a series of strategic concepts for engaging with pictorial forms. The border as method makes it possible to unlock some of the ambiguities inherent in any cartographic or indeed pictorial representation. Using the border as such, therefore, offers a usefully ambivalent viewpoint to help encourage broader critical thinking about early modern visual culture.

In the conclusion I consider the wider implications of my argument for border studies, the history of cartography, and art history. Here I will suggest that by focusing on a micro-territory one learns to pay attention to the metaphors, contradictions, and complexities inherent in the process of representation. In the next section of this introduction, I want to focus on the issue of the border in flux, a key point and a way of introducing a conceptual framework for my thesis as a whole.

Beyond boundaries, towards fluidity: state of literature and theoretical framework

In an important study concerning Antiquity, a border is defined as the track on the land made by the plough. In the Roman period, ploughing tracks represented the original furrow that founded the city space, drew the skyline of the city, and separated the city from the countryside, the inside from the outside.[18] This, however, is not how borders are commonly conceived in modern thought.

Since the late seventeenth century, borders acquired a linear form and were delineated on maps, which at that time became fundamental instruments in the process of nation and state formation. Then, with the European colonial expansion from the sixteenth to the nineteenth centuries, borders in the form of lines were drawn on maps to define territorial possessions, which in fact remained more or less unknown except through maps.[19]

Throughout the centuries, the social and political processes that turned borders into lines on maps has shaped the way we conceive of borders today. We are more used to thinking of, and representing, a border as a fixed line that encloses territory and defines space rather than as an area or process where things occur. Borders, in fact, are complex configurations with forms, practices, and meanings that extend far beyond lines on maps.

Turning to the question of the semantic richness of the term, 'border' can signify different things. Borders can have a referential use, meaning limits between states, classes, ethnic groups, cultures, and ways of thinking. Moreover, the word 'border' can make reference to intrinsic characteristics of an object, such as a writing style or a

[18] For further insights on the conception of borders in the Classical Age, see Marta Sordi, *Il confine nel mondo classico* (Milan: Vita e pensiero, 1987), 3.

[19] See for example, Emanuela Casti, "The analogical and digital systems in euclidean cartography: The colonisation and iconisation of Africa," *Diskussionsbetraege zur Kartosemiotik und zur Theorle der Kartographie* 4, no.2 (2001): 15-28.

discipline. 'Border' can also identify a typology; it may refer to territorial or non-territorial boundaries, social or natural, linear or non-linear, tangible or intangible. In short, 'border' can refer to physical spaces and objects but it also has a conceptual or metaphorical significance, thus increasing its diversity of meanings and uses.

Despite the numerous functions and meanings of the word 'border', scholars have traditionally considered it as defining sovereignty, territorial limits, or as mere static and fixed lines.[20] The term border has become increasingly common in recent literature, especially in anthropological studies of borders and frontiers, both real and metaphorical.[21] Scholars have also tried to address the complex terminological distinctions between the English terms 'border-boundary–frontier', but they do not seem to have come to a successful distinction.[22] Since it would be too complex and beyond the scope of this thesis to make a distinction between these terms and to address the various theories deriving from this issue, I have decided to use these terms interchangeably. In this way, I wish to open up the concept of border by using the term to designate physical and concrete phenomena as well as to convey metaphorical and theoretical ideas.

Yet, in the last ten years, scholars have begun to question the very concept of 'border', challenging its traditional conception as a limit of sovereignty consisting of

[20] A complete overview on the interest and study of border in the historiography, with particular reference to the early modern period see Alessandro Pastore, ed., *Confini e frontiere nell'età moderna. Un confronto tra discipline* (Milan: Franco Angeli, 2007).

[21] Since the nineties, numerous anthropological journals have dedicated entire volumes to this topic, a few examples are: *Revista de Antropologia Social*, 3 (1994); *Annual Review of Anthropology*, 24 (1995): 447-565 and more recently *Focaal. European Journal of Anthropology*, 3 (2003).

[22] For a distinction between 'border' and 'boundary' see Edward S. Casey, "Boundary, place and event in the spatiality of history," *Rethinking History* 11, no. 4 (2007): 509. More on terminology and meanings of border see Daniel Power, "Frontiers: terms, concepts, and the historians of medieval and modern Europe," in *Frontiers in Question. Eurasian Borderlands, 700-1700*, ed. Daniel Power and Naomi Standen (Houndsmills-London: Macmillan, 1999), 1-12; Piero Zannini, *Significati del confine. I limiti naturali, storici e mentali* (Milan: Bruno Mondadori, 1997), 5-8.

static lines, and focusing on its opaque semiotic character.[23] In other words, attention has moved away from the study of the evolution of and changes to the territorial line, to concentrate on borders as active agents in any given society, as a product and producer of different identities and meanings. As Henk van Houtum states:

> The turn to 'bordering' starts from the assumption that any border is not a stand-alone entity, detached from other territories or societies, but is a socio-spatially constructed and always dynamic configuration of social relations and networks. And as this approach also applies to territories other than states, such as (macro)regions, cities and neighborhoods, a border is now increasingly seen in the scholarly literature as less connected to states alone.[24]

The insight that a border cannot be studied as something isolated from its political and social context has led to the study of borders beyond the focus on states or nations. Given this this thesis takes state borders as its focus, I aim to open up my analysis to a multiplicity of historical, conceptual, and metaphorical issues, so as to do justice to the complex question of what a border actually comprises.

This is a question of some urgency. As many scholars have noticed, the notion of the border is at the centre of contemporary phenomena and political debates. For example, according to Anssi Paasi, borders have now lost traditional meanings and are acquiring new values in a society defined by globalisation and the increased flow of people, goods, images, and so forth. In fact, when boundaries are analysed in their multiple cultural, economic, political and other dimensions, they cannot be understood

[23] For further discussion on the semiotic character of border in maps see Franco Farinelli, *La crisi della ragione cartografica* (Turin: Einaudi, 2009); Christian Jacob, *The sovereign map: Theoretical approaches in cartography through history* (Chicago: University Press, 2006); John Pickles, *A history of spaces: Cartographic reason, mapping, and the geo-coded world* (London and New York: Routledge, 2004); Cameron Angus, "Ground zero - the semiotics of the boundary line," *Social Semiotics* 21, no.3 (2011): 417–434; John Brian Harley,. *The new nature of maps: Essays in the history of cartography*, ed. Paul Laxton (London: The Johns Hopkins University Press, 2001); Walter D. Mignolo, *Local histories/global designs: Coloniality, subaltern knowledges, and border thinking* (Princeton, NJ: Princeton University Press, 2000); Mark Monmonier, *Drawing the line: Tales of maps and carto-controversy* (New York: Henry Holt & Co, 1995); Louis Marin, "Frontiers of utopia: Past and present," *Critical Inquiry* 19, no. 3 (1993): 397- 420.

[24] Henk Van Houtum, "Remapping borders," in *A companion to borders studies*, ed. Donnan Hastings and Thomas M. Wilson (Cambridge: Blackwell, 2012), 405-418.

as simple and static lines of demarcation.[25] Sandro Mezzadra and Bratt Nailson have recently argued that, despite the fluidity of the economic and financial system of globalisation, we assent to a multiplication of borders:

> We are confronted not only with a multiplication of different types of borders but also with the re-emergence of the deep heterogeneity of the semantic field of the border. Symbolic, linguistic, cultural, and urban boundaries are no longer articulated in fixed ways by the geopolitical border.[26]

In this passage, it is explicitly acknowledged that the character of borders means that they are capable of generating opposite phenomena. These conditions are exemplified today by multitudes of people challenging borders, including those who are crossing the Mediterranean on a daily basis and by the brutal policies of containment that cause the emergence of new borders. Within this contradiction, borders themselves question the fixed conditions of separation and stability, they both generate and reveal ambivalence. The border appears now in its paradoxical character: an area which offers both inclusion and exclusion, conflict and agreement. It is particularly useful to explore this issue in an early modern context when borders were not at all conceived as straight lines marking territories and political dominions. They did not block or obstruct the movement of people or objects; rather their presence would often challenge the conditions of power, people and resources as these existed along constructed lines of demarcation. Adopting the above interdisciplinary perspective, the present thesis is, in part, meant as a

[25] The theoretical writings of Anssi Paasi deserve a prominent mention when discussing the development of political geography in relation to the issue of the border. Paasi crafted a set of complex and useful theoretical and methodological reflections on the role of political geography, which for decades have sustained an image of the world as if it were divided into simple and self-explanatory territorial units: "Fences and neighbours in the postmodern world: Boundary narratives in political geography," *Progress in Human Geography* 22, no.2 (1998):186-207; *Territories, boundaries and consciousness* (New York: J. Wiley & Sons, 1996); "Deconstructing regions: Notes on the scale of spatial life," *Environment and planning* 23, no. 2 (1991): 239-256.

[26] For a discussion of globalization and borders in relation to migratory movements, capitalist transformations, and political life see Sandro Mezzadra and Brett Neilson, *Border as method, or, the multiplication of labor* (London: Duke University Press, 2013).

contribution to a broader literature that explores the semiotic richness and porousness of borders, their wide and complex symbolic and material implications.

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As should be clearer by now, what I wanted to suggest by analysing the frescos in the Vatican and the printed views of Bologna is that these maps are far from homogeneous and coherent objects with transparent meanings. At a closer look, they reveal an ambiguous and paradoxical character that has often been marginalised in the historiography.

Although the last decade has seen maps studied using different methodologies and critical approaches, most scholars of early modern cartography tend to focus on political, symbolic, and social dimensions. These studies have contributed a great deal to our understanding of sixteenth and seventeenth-century printed and painted maps – we recognise them now as social products that can function as symbolic, political, and propagandistic instruments in service of power.[27] For example, Mark Rosen's recent work, *The Mapping of Power in Renaissance Italy: Painted Cartographic Cycles in Social and Intellectual Context*, highlights the rhetorical power of maps as instruments of persuasion and narration.[28] There are also many studies focusing on particular cartographic projects and their purposes, as well as on how maps allegedly reflect their

[27] The studies adopting this approach are numerous. On painted cartographical cycles in Renaissance Italy see for example: Francesca Fiorani, *The marvel of maps: Art, cartography and politics in Renaissance Italy* (London: Yale University Press, 2005); Lucio Gambi, Milanesi Massimo and Pinelli Antonio, *La galleria delle carte geografiche in Vaticano. Storia e iconografia* (Modena: Panini, 1994); Schulz Juergen, *La cartografia tra scienza e arte: Carte e cartografi del Rinascimento italiano* (Modena: Panini, 1990). On the occasion of the recent restoration of the *Sala Bologna* in the Vatican Palace a monograph on the frescos has been published with contributions by Francesca Fiorani, Nadia Aksamija and Michele Danieli. See Francesco Ceccarelli and Nadja Aksamija, eds., *La Sala Bologna nei Palazzi Vaticani* (Bologna: Marsilio, 2011).

[28] Mark Rosen, *The mapping of power in Renaissance Italy: Painted cartographic cycles in social and intellectual context* (Cambridge: University Press, 2015).

cultural, social, and political contexts. Although this is a useful way of exploring what maps communicate, it often risks suggesting that cartographic meaning is somehow hidden behind their production or underneath their surfaces.[29]

These studies are certainly an important framework for my research but they have not considered maps as objects that continuously challenge understanding and interpretation. In this thesis, I suggest that maps, in representing territorial demarcations, become highly ambiguous images. This ambiguity leads us to continuous critical interrogation.

Thus my aim is not to find hidden communicative intentions behind maps, but rather to focus on them as surfaces and objects, as representations. In light of these considerations, the crucial aim of this thesis is to show that a theoretical dimension is as important as a historical and social perspective, especially in the analysis of large scale manuscript representations of contested territories. My study of a border in a state of flux elucidates the metaphorical and conceptual dimensions of manuscript cartographic sources that were produced strictly for territorial management. Such a perspective has been neglected in studies of Italian manuscript maps, particularly those produced by administrative authorities for territorial management, for which a systematic analysis has yet to be written.[30]

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[29] On the political silences of maps see John Brian Harley, "Silences and secrecy: The hidden agenda of cartography in early modern Europe," *Imago Mundi* 40 (1988): 57-76.

[30] The *history of cartography* gives a helpful general overview of the official state of cartography in the context of Renaissance Italy with contributions by Emanuela Casti, Leonardo Rombai and Richard L. Kagan and Benjamin Schmidt. Yet, at the same time, the interest in this material has been expressed in a fragmentary way by specialised and local studies such as: Laura Federzoni, "La carta degli Stati Estensi di Marco Antonio Pasi: Il ritratto dell'utopia," in *Alla scoperta del mondo*, ed. Mauro Bini and Ernesto Milano (Modena: Il Bulino, 2001), 241-285; Lodovisi Achille, *Il transunto della pianta delle Valli di Comacchio: La storia travagliata di un monumento cartografico* (Ferrara: Le immagini, 2007); *Strade incerte: Viabilità, cartografia e marginalità nella Garfagnana in età moderna* (Modena: Aedes muratoriana, 2006). A recent article and more relevant for the sources considered in this thesis is by Laura Federzoni who carried out an important analysis of the Egnazio Danti's map of the Palata estate, a large scale manuscript map of the estate of a noble family from Bologna 'Pepoli' placed in the lowlands between the city and the borders with the Este Duchy. She has argued how this map was essentially a glorification of the political and economic power of this family within the Papal State, see Laura Federzoni, "Egnazio Danti's map of the Palata estate and the lands of the sixteenth-century Bolognese

The ambiguity of an unstable border led to the difficulty in finding appropriate representational terms for it (whether visual or textual). As a consequence I have had to open up my analysis to the basic problems inherent in representation, its power able to combine depth with surface, visibility and invisibility, as well as image with words. The co-existence of these opposites is supported by those philosophers who challenge the definition of representation as something related to figuration, mimesis and reality, thus posing a new paradigm in aesthetics and for all forms of contemporary art practice. This issue has been the main focus of the major modern philosophers from Gottfried Leibniz and Immanuel Kant to Ludwig Wittgenstein and Theodor Adorno. Together with others such as Louis Marin, Michel de Certeau, and Gilles Deleuze, they have enriched our understanding of how representation speaks through pictorial and textual modes of enunciation and narration. These scholars have contributed significantly by questioning the idea of representation based on continuity and similarity and, in the process, opened up the way for discourses on discontinuity and difference.

It is beyond the scope of this thesis to review the entire philosophical literature on representation. However, I am using some philosophical arguments to engage with the paradoxical character of the material discussed in this thesis. This helps to complicate and sometimes even subvert some of the standard paradigms applied to early modern imagery, showing how purportedly scientific and comprehensive maps always leave something out, always fail to cohere fully.

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aristocracy: practical and symbolic dimensions of estate surveying in the Renaissance," *Journal of Historical Geography* 42 (2013): 110-123.

Finally, while I stress the ambivalence of borders, my aim is not to consider them simply as an object of research but also as a methodology to investigate the surviving cartographic documentation. Adopting this perspective means to engage with various knowledges, disciplines, and meanings, and at the same time with a flow of conceptual and philosophical problems.

The elaboration of an approach which emphasises concepts such as indeterminacy, ambiguity, fluidity, and multiplicity in relation to visual text can be found in continental philosophy, including thinkers such as Jacques Derrida, Michel Foucault, Felix Guattari and Gilles Deleuze, and those within the phenomenological tradition, especially Maurice Merleau-Ponty and Martin Heidegger, who have been especially influential for the visual arts. More recently, Edward Casey and Paul Crowther have developed this tradition further.

An important reference for my own work is Casey's *Representing Place, Landscape Painting and Maps*.[31] His comparison of maps and landscape paintings interrogates philosophical problems of representation in relation to early modern cartographic practices. In the wider context of art, Crowther's main contribution *The Phenomenology of visual art (even the frame)* introduces an approach that he defines as 'phenomenological depth', based on the "ontological reciprocity between the subject and object of experience."[32] Individual visual elements are explored in detail according to the responses of viewers and their various conditions of perception and action. In relation to my work, this phenomenological approach is highly relevant as an orientation towards matter and process in the making of maps.

[31] Edward S. Casey, *Representing Place. Landscape painting and maps* (Minneapolis: University of Minnesota Press, 2002).

[32] Paul Crowther, *The phenomenology of visual arts (even the frame)* (Stanford: Stanford University Press, 2001), 3.

Some of the theories on cartographic communication elaborated during the 1970s and early 1980s deployed a simple model based on the scheme author-map-reader. Although these studies cannot be reduced to a single coherent theory, the emphasis on making and reading of maps generally led to linear and objective models. The limits of this approach have been challenged by semiotics, iconology, phenomenology, structuralism, post-structuralism, and in studies of cartography by John Harley.[33] In *Deconstructing the map*, Harley famously argued that it is important to consider contradictions, gaps, and silences of maps in order to interrogate how they serve as instruments of power and social order.[34] This method has the main benefit of allowing us to consider the cartographic object not as a transparent or scientific record but rather as a highly ambiguous form of representation.[35] Another merit of this approach lies in its consideration of the materiality of the cartographic object, which is often overlooked in studies that subordinate pictorial meanings to socio-historical contexts. As James Elkins has emphatically stated, art historians sometimes leave behind close visual analyses of the works because formal and material issues are

[33] On the application of deconstruction theory see: Barbara Bartz Petchenik and Arthur H. Robinson, *The nature of maps* (Chicago and London: The University of Chicago Press, 1976), 23-42; John Keates, *Understanding maps* (London: Routledge, 1996), 88-116; Christopher Norris, *Deconstruction theory and practice* (Bungay: The Chaucer Press, 1982); Denis Cosgrove and Stephen Daniels, eds., *The iconography of landscape* (Cambridge: University Press, 1988); Peter Brunette and David Mills, eds., *Deconstruction and the visual arts: Art, media, architecture* (Cambridge: University Press, 1994). On the criticism of deconstruction: Jonathan D. Culler, *On deconstruction: Theory and criticism after structuralism* (Ithaca: Cornell University Press, 1982); Alberto Martinengo, ed., *Beyond deconstruction: From hermeneutics to reconstruction* (Berlin: De Gruyter 2012).

[34] John Brian Harley "Deconstructing the map," *Cartograhica* 26, no.2 (1989): 1-20.

[35] Some of the most influential articles by John Brian Harvey where he introduces the ambiguous nature of maps: "Silences and secrecy: The hidden agenda of cartography in early modern Europe" *Imago Mundi* 40 (1988): 57-76; "Maps, knowledge, and power," *The iconography of landscape: Essays on the symbolic representation, design, and use of past environments*, eds. Denis Cosgrove and Stephen Daniels (Cambridge: Cambridge University Press, 1988), 277-312; "Deconstructing the map" *Cartographica* 26, no. 2 (1989):1-20; "Cartography, ethics and social Theory" *Cartographica* 27, no. 2 (1990): 1-23; and his introduction "The map and the development of the history of cartography" *The history of cartography*: *Cartography in prehistoric, ancient, and medieval Europe and the Mediterranean*, ed. John B. Harley and David Woodward, vol 1 (University of Chicago Press, 1987), 1-42.

assumed to be outside of historical and theoretical interpretation.[36] Descriptive insights are sometimes used to underpin the expressive authority of the text, and thus materiality becomes reduced to formal and abstract considerations. Responding to this view, Denis Cosgrove claimed that cultural geography "has itself tended to subvert their expressive authority, distracting attention from the integrity of the image itself towards the condition of its production, circulation and reception and potentially reducing it to a mere expression of truth that lies elsewhere than on its surface."[37] The implication of his argument is that we should direct our attention both to the context and to the visible aspects of a map.

In this study, my attention to composition and formal structure is meant to help develop this kind of methodology in relation to cartography, where attention to such art-historical concerns is still rare. Maps are generally analysed in terms of their scale, spatial organisation, and content. The ways in which maps are framed, the importance of viewpoints, format, size, and the relative significance of each element have largely been ignored. Studies on cartography tend to consider composition as an aspect beyond question, as decreed by external factors.[38] To the contrary, I suggest that the visible aspects of maps – composition, colours, viewpoints – give partial access to rhetorical and metaphorical meanings.

I add to the formal analysis a communicative model based on format, content, and viewer. The application of this model along with a notions of liminality will enrich the theoretical framework developed in this thesis.

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[36] James Elkins, "On some limits of materiality in art history," *Das Magazin des Instituts für Theorie* 31, no 12 (2008): 25–30.

[37] Denis Cosgrove, *Geography and vision: Seeing, imagining, representing the world* (New York: Turis, 2008), 4.

[38] For further considerations see John Stanley Keates, *Understanding maps* (London: Routledge, 1996), 246.

Specifically, I interrogate how maps represent and re-represent borders across different media and formats. In attending to the visual transition of the same object from one medium or format to another, I try to understand the oscillation between materiality and sign systems. With this aim, changes in formats and media find their particular justification in the condition and aims of border inspections and visits. Addressing such questions in turn sheds light on the practices and mode of visits and inspections, including the destination and aim of each document. In light of these considerations, I shall treat maps, in their diverse formats, both as historical sources and as material objects that provide descriptive insights; this is where I draw in particular on the tradition of phenomenology. In this way, starting from the physical nature of the object, my thesis will investigate the multiple ways in which viewers might engage with topographical accounts and maps through their supports, media, and scientific ambitions.

In sum, I hope to develop a methodology that emphasises how material forms give a direct access to otherwise invisible dimensions of cartographic representation. At the same time, this thesis shows how this hidden depth is embodied in the map surfaces in distinctive ways.

CHAPTER I

State, Cartography and Territory between Bologna and Modena: the border seen through state agreements

> A thing cannot be understood or even talked about independently of the relations it has with other things. For example resources can be defined only in relationship to the mode of production which seeks to make use of them and simultaneously "produces" them through both the physical and mental activity of the users. There is, therefore, no such a thing as a resource in abstract or a resource which exists as a thing in itself.
>
> David Harvey[1]

This chapter investigates the historical and political processes that characterised a particular border area between Modena and Bologna, one which ran along two main watercourses, the Panaro River and the Muzza canal. The discussion ranges from the late Middle Ages to the eighteenth century. Through an analysis of maps produced on the occasion of a final agreement signed in 1790, I introduce the geographical boundaries under consideration. The region runs from Vignola to Castelfranco, which was a complex territory with a dynamic interaction of land and water (figs.15-16). The border followed the Bologna Apennine and the hills, but then near Vignola and Savignano it started to coincide with the Panaro River. From the village of Sant'Anna the border moved away from the course of the Panaro to follow the path of the Muzza canal and other canals — Canal Torbido and Bisentolo — for twenty-one kilometres, when it re-joined the Panaro close to Castelfranco and the Via Emilia. Thus the extremities of this border were the Vignola territory on one side and Castelfranco with the Via Emilia on the other, close to the Pass of Sant'Ambrogio (fig.1).

In several cases, the political and legal boundaries between Bologna and Modena coincided with waterways, whose changing positions led to constant redefinitions of the border. Before analysing questions raised by the border, in the first

[1] David Harvey, "Population, resources and the ideology of science," *Economic Geography* 50, no.3 (Jul., 1974): 256-277.

part of the chapter I underline the importance of water in the economy of the two states. With the consolidation of early modern states, border issues became closely related to water management, a relationship which is evident in cartography produced with a strong emphasis on the description of watercourses. For example, one manuscript map, dated to the second half of the sixteenth century and preserved in the Archive of Modena, exaggerates the bodies of water (fig.9). By showing places and watercourses in this particular manner, this map proposes a particular vision of the territory, one in which maintenance of control over the water sources was deemed to be essential.

The territorial management and organisation of water for the economy of the two states was the main cause of harsh conflicts, whose seriousness led to the opening of public offices aimed at water management. In both states, these offices were the administrative authority for whom the maps under discussion were produced. The relations between state offices depended on the nature of the problems, ranging from issues of internal jurisdiction to more important disputes between the two states. It is important to make a clear distinction between disputes that emerged at the local level and at the state level. On that basis, it becomes possible to identify clearly the dynamics of power and the processes of negotiation. Thus, in what follows, I focus on the main characteristics of water governance, drawing out the fundamental differences between Modena and Bologna from the late sixteenth century until the second half of the seventeenth. By showing the spatial development of one distinct border configuration and the consequent disputes, I also wish to highlight that the study of borders and that of state administration and territoriality are inseparable.

In the second part of the chapter I provide a detailed account of the history of the conflict from the Middle Ages up to the eighteenth century. I begin when the conflicts were played out by opposite factionst — the Guelfs and Ghibellines — then continue to examine their development through the analysis of state agreements until 1790, when a

final agreement was signed by both parties.

Exploring the state agreement signed by the two sides, I emphasise conflicting interests throughout the early modern period. I address the crucial role that cartography played in the emergence of the early modern state, when boundaries needed to be measured and mapped. From the Middle Ages to the eighteenth century, the region between Modena and Bologna was characterised by debates about the location of distinct borders (*linea di vero confine*).[2] However, there was a shift in the nature of disputes marked by the rise of a new idea of sovereignty, fundamentally related to the exertion of power over territory and thus over water sources. In the case studies in this chapter, this historical shift is documented by an intense production of cartographic images. Thus I highlight the role played by official cartography in the definition of state limits and in asserting control over the territory and natural resources. From the fifteenth century, with the rise of a central state power and the need to define boundaries and frontiers, conflicts became increasingly focused on the use of territorial resources.

The comparison of the final maps from 1790 and the agreement attached to them allows us to analyse the political and territorial consequences that disputes had on the border configuration and, at the same time, to look at changes in the mode of representation. In the eighteenth century, new ideas were introduced for describing space and borders; a more technical and geometric language was adopted and representations of the landscape and its features became less and less personal or expressive. This mode of representation is in striking contrast to the pictorial maps produced in the late sixteenth and early seventeenth century, the period where most of my research has been concentrated.

The documentation that I present in this chapter comes mainly from the

[2] "Linea del vero confine" (Line of true border) is a recurring expression in the maps and textual documents explored in this chapter.

collections of the Archivio di Stato di Modena and the Archivio di Stato di Bologna. The comparative analysis of the archival sources along with relevant cartographic documents and other primary sources allows me to outline the major historical events that characterised the border area. This analysis will help to generate a solidly historical understanding of the sources on which to build a more in-depth study of the specific disputes that will be explained at a later stage in this dissertation.

PART I

Hydro-landscape, state and water management

In this first part of the chapter, I begin with the geographical, political and social contexts in which the sources were produced. In order to analyse the cartographic sources it is necessary to address:

1. The importance of water for Bologna and Modena;
2. The competences and activities of the two main offices concerned with the management of water and polity borders;
3. The political and administrative organisation of the Modena and Bologna polities.

These points help to set the ground for engaging, in the second part of the chapter, with the history of the border and the agreements between Modena and Bologna which have been reworked and reiterated over the centuries. The following sections in this first part of the chapter are particularly important in order to understand why each source was produced and its practical purpose in relation to the authorities involved in the commission of maps.

1.1 Water for Bologna and Modena: the Este Map 175

Since antiquity, water had been the primary resource for agriculture, social progress and cultural and civic life in the territories of Modena and Bologna. Many historical studies

have provided a reasonably exhaustive list of the relevant issues.[3] The two cities, located at the confluence of important rivers and in the Apennine valley respectively, attributed to water both strategic and economic functions, according to the morphology of the territory crossed by its course. Water coming from hills and mountains gave power to mills and other industrial activities. Once it reached the plain and lost part of its kinetic energy, water had other, equally important uses. On the one hand, it fed the canal network which linked the cities to the Po River, ensuring the mobility of goods and people. On the other hand, it was used to irrigate the dry fields and grasslands of the plain.

For both cities, each of which had a rich canal network, water was important in terms of military defence, as well as for productive and civil uses. In Bologna, most of the water coming from the Reno and Savena rivers fed the biggest canal of the city, the Canale Navile, which linked Bologna to Venice. The dense hydraulic network that crossed the city was intended for the energetic and productive use of water. In his *Itinerario d'Italia,* Franciscus Schottus (1600) suggested as much when he described the strategic geographical position of Bologna, emphasising the abundance of water sources and the prosperity of the countryside:

[3] For a general overview on the relationship between Bologna and water, see Filippo Raffaelli, *Bologna e l'acqua tra storia e leggenda* (Villa Aria-Marzabotto: Inedita, 1995); Paola Bonora, ed., *Memorie d'acque. Agenda storica di Bologna* (Rimini: P. Capitani, 1996); Daniela Sinigalliesi, *Vie d'acqua. Segni presenti segni immaginati* (Bologna: Soprintendenza per i Beni Ambientali e Architettonici dell'Emilia, 1997); Angelo Zanotti, *Il sistema delle acque a Bologna dal XIII al XIX. secolo* (Bologna: Compositori, 2000); Tiziano Costa, *Il grande libro dei canali di Bologna* (Bologna: Costa, 2005); Marco Poli, ed., *Le acque a Bologna* (Bologna: Compositori, 2005); Franco Bergonzoni, "Storie bolognesi di acque e di mura. Torrenti, canali e opere di difesa della città nei suoi ventidue secoli di vita," in *L'Archiginnasio*, 100 (2005): 31-126; Martina Mari, *Bologna citta d'acqua nella storia. Il sistema delle acque a Bologna dal XII secolo ai giorni nostri* (Bologna: Fondazione del Monte, 2008). On the relationship between Modena and water: Paolo Valcavi, *Il Canale di San Pietro. Storia, legislazione* (Modena: Società Tipografica, 1889); Tommaso Sandonnini, *Cenni storici sopra i canali e le acque di Secchia* (Modena: Società Tipografica,1864); Giovanni Galvani, *Relazione sui canali modenesi* (Modena: Tipografia Sociale, 1868); Orianna Baracchi and Antonella Manicardi, *Modena quando c'erano i canali* (Modena: Poligrafico Artioli, 1985); Giuseppe Adani et al., *Vie d'acqua nei ducati Estensi* (Reggio Emilia: Amilvare Pizzi, 1990); Franco Serafini, ed., Il *sistema fluviale Scoltenna-Panaro: Storie d'acque e di uomini* (Bologna: Zanini, 1990); Antonella Manicardi and Andrea Onofri, *Mulini ad acqua della provincia di Modena* (Modena: Coptip Industrie Grafiche, 1990).

> The city is situated in the middle of the Via Emilia at the roots of the Apennines to the south, Romagna to the east, Ferrara to the north, and Modena to the west […] a branch of the small river Reno passes through Bologna in the form of a canal, which provides motion for diverse mills. Another small river, Savena, passes near the same city. The surrounding country is thus abundant, from this the proverbial *Bologna la grassa*; here are gathered all sorts of fruits, grains, cultivation of the vine, which are quite fertile.[4]

Because of its position, Bologna was the centre of communications between the mountains and the plain. Water, through a vast system of canals, gave power to more than one hundred silk mills, grinders and other activities, favouring the city's strong agricultural and industrial development. Water was crucial for a number of other production processes, ranging from laundries and tanneries to urban gardens. Water sources were also essential for Modena's commerce and agricultural prosperity. By the Middle Ages, Modena already was a unique confluence of commerce, production and trade. Besides being the primary source for irrigation and farming, water also enabled navigation, transport of goods and the flushing of urban sewers.[5]

A map from the Modena Archive provides an interesting starting point for understanding the importance of water for this territory (fig.9).[6] Likely created in the second half of the sixteenth century, a date I base on the presence of Castelfranco, surrounded by walls, the map documents the abundance of water in the border belt between Modena and Bologna better than any other early modern example of which I am aware. It is in a good state of conservation; it comprises the territory between Modena, Ferrara and Bologna running between the rivers of Samoggia and Panaro. It

[4] My translation unless noted otherwise. See, Franciscus Schottus, *Itinerario d'Italia* (Rome: A. de Rossi, 1737), 134. In 1600 Franciscus Schott (1552-1629) published the *Itinerarii Italiae* with Johannes Moretus in Antwerp. The aim of this publication was to provide its readers practical information and observations of Italy.

[5] In relation to the use of water for public hygiene, it is relevant to clarify that, since the fourteenth century, canals that derived water from the Panaro and Secchia rivers and reached the hydraulic network of Modena had been used for washing the urban sewers. Even today, the Municipality of Modena uses the waters of the San Pietro canal for this purpose, as it happened during the hot summer of 2003, when the water course cleaned the sewers and flushed out the bad smell.

[6] ASMO, Mappario Estense, Territori, n.175. Late 16th century (ink and watercolours on paper, 76 x 46 cm): Map representing the Panaro with the water springs located in the high plain of Modena.

measures 76 by 46 cm, oriented to the south at the top of the map, whilst north is at the bottom to fit with the flow of the watercourses. It represents the fundamental hydrographic and road network of the valley between the Panaro and the Samoggia rivers, shown on the right and on the left respectively. Being the border between Modena and Bologna, the Muzza canal runs parallel to the Panaro, at the centre of the composition (fig.9a). The canal is rendered with a vertical line that divides most of the represented territory. This borderline is interrupted, however, at the Zenarella bridge. It continues from the road 'Muzza Spiana' or 'Muzza che segue per strada', turning sharply to the right, to the east, to avoid the marsh land of Crevalcore on the left or west (fig.9b).[7]

The map in question has been realised in ink and watercolours, brown being predominant. Light brown is used for depicting roads, town and villages, whereas dark brown is used for showing and naming watercourses, towns and canals. The contrast between these two tones results in a balanced composition. The use of ink and pen delineates the outline of roads, watercourses, buildings and other topographic details, thus allowing considerable understanding of the subject matter. The map does not include a scale, but the spatial relationship between towns and rivers seems plausible.

In its whole there is a remarkable vivacity. The depiction of rivers, marshes, the funnel and embankment works, especially those realised by land reclamation in 1564, is realised with great attention to detail. The visible traces of this work document the lengthy process that had started in the second half of the sixteenth century and had transformed this marshy land into a fertile place. In general, the representation of the single features has much in common with landscape painting. There is a careful balancing between the use of colour and the delineation of geographic objects such as

[7] Part of this information is included in the brochure of the exhibition "Segni sulle terre. Confini di pianura tra Modena e Bologna," which has been recently organised by the Archive of Modena.

villas, towns, villages, towers, mountains and a little forest. These are represented in profile, whereas watercourses and roads are seen directly from above. The valley is the only feature marked with dashed signs, showing that some level of geometric symbolism had already become widespread at the end of the sixteenth century. The map is therefore a complex combination of different points of view and different categories of representation.

There is also a pictorial evocation of journeying. The Samoggia and Panaro rivers flowing from the Apennine meander along a sinuous path through the valley until they reach the plain. In the map, the path of the Panaro from its source is clearly marked, its course to be followed across the length of the rectangular sheet. The river rises from the Apennine Mountains, which are represented in the upper right corner of the map, as they appear from Modena. They are depicted in profile with a great level of detail, again as in a landscape painting. A pile of cones in light and dark brown gives emphasis to the orographic design of the mountain. The pictorial variability makes it plausible that the actual profile of the mountain is depicted by reproducing the morphological peculiarities of some particular features. The town of Savignano is outlined at the foot of the Apennine Mountains (fig.9c). Following a downhill path, the viewer meets villages, castles, towers and fortresses, always represented from a ground-level point of view.

Starting from the Apennine Mountains and following the path of the Panaro River towards the dense plain full of villages and hamlets, the first town that one meets is Vignola, and then a little bit further there is Spilamberto: these were two important fortified cities in the sixteenth century (fig.9d). Along the river course, the Pass of Sant'Ambrogio with the Modenese control tower located on the riverbed clearly indicates that this was the border between Modena and Bologna. Modena is represented with its main monuments and the beginning of the Via Emilia, which links the city to

Bologna (fig.9e). Following this road towards Bologna, one comes across Castelfranco, which appears surrounded by walls, and confirms a date for the map prior to their destruction which occurred when Forte Urbano was constructed in 1626. Castelfranco had a strategic role in defending the border of the Papal States, once the fortress commissioned by Pope Urbano VIII had been completed there in 1634. Its strategic importance is underlined in the map by showing Castelfranco as if it were almost of the same size of Modena. The mosaic of the territory is formed by various villages and towns. Modena, Cento and, further down, Finale are the largest towns represented, along with other little villages scattered across the hill and plain of Modena. On the plain below the hill, the presence of fortresses or defensive structures is sparser and mostly concentrated around the three main towns: S. Agata, Crevalcore and Persiceto.

Besides the remarkable description of the villages and towns in relation to their location, the focus remains on the watercourses, represented out of scale in relation to other cartographic features. There is a great emphasis on the representation of spring waters (the natural surfacing of underground water), which were and still are a fundamental element of the hydraulic landscape in this area (fig.9f). These are mostly located to the south of Via Emilia, and it was from here that the minor canals originated, such as those at San Giovanni in Persiceto, Sant'Agata, Nonantola, Crevalcore, the Ravanello and Zenarella. The spring water shaped the agricultural territory, both from a hydrogeological point of view in the high and low plains, and from an agricultural perspective, connected to the proper functioning of irrigation ditches.

The map evokes a territorial identity characterised by the abundance of the water and its exploitation. In fact, the concentration of mills between these two rivers illustrates the importance of the industrial and productive use of water (fig.9g). The Panaro and Samoggia rivers were used as trade routes, as well as important water

supplies for mills.[8] Since the Middle Ages, mills had provided a great contribution to the economy of this territory, driving mechanical processes such as flour and textile production.[9]

This area was one of the greatest examples of interaction between technical, scientific, social and cultural activities, all somehow related to the peculiarity of the territory. Along with the Po plain, it thus provided a perfect opportunity for experimentation by engineers, cartographers, technicians and mathematicians. Together, they had to solve problems of military defence and hydraulics relating to great projects of land reclamation that started in the second half of the sixteenth century.

As we have seen, water was not only a border or an element of state identity, but, above all, a vital resource for the economies of the two neighbouring states. Before analysing the documentation and exploring the border conflict as it played out from the Middle Ages to the eighteenth century, it is important to discuss the management of water and clarify the administrative structure of early modern states. In the process of regional state formation, water was also crucial as the trigger of complex political and institutional changes.

1.2 The management of water between Bologna and Modena in the early modern period

The rise of the early modern state system implied the need to set up administrative, technical and legislative bodies capable of exerting control and management of the

[8] For a first analysis of mills located between Samoggia and Panaro rivers, see Giovanni Maria Sperandini, *Mulini ad acqua tra Samoggia e Panaro* (Nonantola: Centro Studi Nonantolani, 1994); Valeria Lenzi, "Antichi mulini di Monteveglio," in *Architettura e paesaggio: forme, spazi e fruizione. L'abbazia di Monteveglio e il territorio al confine tra Bologna e Modena*, ed. Domenico Cerami (Bologna: Associazione Amici dell'Abbazia di Monteveglio, 2002), 183-214.

[9] On the hydraulic structure of Panaro, see Franco Serafini and Antonella Manicardi, eds., *Il sistema fluviale Scoltenna/Panaro: Storie d'acqua e di uomini* (Nonantola: Centro Studi Nonantolani, 1988).

territory.[10] In the late Middle Ages, despite the presence of the Magistratures and *statuti* that were entrusted with the legislative and administrative activities, there were no offices specifically devoted to the management of water.[11] The abundance of water in the area between Modena and Bologna, as well as the substantial hydraulic renovations of the sixteenth century, required a radical reorganisation of the structures aimed at the management of water. In such a context, an apparatus of laws had to regulate the activities related to water sources.

In the Este State, the Magistrature of Water and Roads was established in 1601 under the authority of Duke Cesare D'Este.[12] Two years had passed since Modena had become the capital of the Este State, after the annexation of Ferrara by the Papal States. When the Magistrature was established, its authority was limited within the district of Modena; only in 1704 was its authority extended to the entire Este State. The aim of the Magistrature was to manage territorial resources, supervise hydraulic works and maintenance of roads, bridges and waterways. It examined and dealt with all controversies related to the maintenance of public rivers, canals,[13] and streams, whilst an ordinary court resolved disputes concerning private watercourses. The administration of water was divided into two subsidiary jurisdictions. Each of them had its own area of competence according to the type of water: high water (south of the Via Emilia) and

[10] On the specific history of the Magistratures of Modena and Bologna, see Gianna Dotti Messori, *Magistrato di Acque e Strade. Inventario* (Carpi: Tip. Nuovagrafica, 1992).

[11] On strategies of water management in the early medieval Italy, see Paolo Squatriti, *Water and society in early medieval Italy, AD 400-1000* (Cambridge: Cambridge University Press, 1998); Rossella Rinaldi, "La disciplina delle acque nell'alto medioevo," in *Acque di frontiera. Principi, comunità e governo del territorio nelle terre basse tra Enza e Reno* (sec. XIII-XVIII), ed. Franco Cazzola (Turin: Lavis, 2000). On the Magistratures in late Middle Ages even if concerning other cities: Giovanni Fantoni, *L'acqua a Milano, Uso e gestione nel basso medioevo 1385-1535* (Bologna: Cappelli, 1990).

[12] Odoardo Rombaldi, "Il duca Cesare e il governo delle acque modenesi," in *Atti e Memorie della Deputazione di Storia Patria per le antiche provincie modenesi*, ed. Giorgio Montecchi, vol.10 (Modena: Aedes Muratoriana, 1988), 177-195.

[13] For a history of the canals of Modena, see Orianna Baracchi and Antonella Manicardi, *Modena: quando c'erano i canali* (Modena: Artioli, 1985).

plain water (low plain).[14]

All committees and offices relating to water affairs fell under the authority of the Magistrature of Water and Roads, including those that regulated themselves according their own statutes.[15] In the Este state there was a water authority representing the jurisdiction, with a direct consultant employed by the Magistrature. Before the Magistrature was established, small communities with their own statutes were responsible for managing water affairs. Even after that, municipal responsibilities were maintained and conflicts among jurisdictions continued to exist but documents convey the impression that the system was well-ordered.

In Bologna, in contrast, the management of water remained a serious problem; continuous conflicts were generated by attempts to combine public management with the private interests of influential noble families. Here, a regular office of water and borders was established in 1589. Its main goal was to monitor the state of waterways and the maintenance of bridges and banks. The office was also concerned with the control and solution of conflicts over the border between the provinces of Bologna and its neighbouring states, or other provinces close to the Papal States. After 1598, the office controlled all the watercourses located in the border areas with the Duchy of Modena, the Legacy of Ferrara and the Grand Duchy of Tuscany, coordinating the interests of the Bolognese state with those of single noble families or groups of

[14] The *giudicatura* of high water included: San Pietro, Sant'Agnese, Baggiovara, San Faustino, Saliceta, San Giuliano, San Donnino, Collegara, Portile, Ramo, Ganaceto, Villanova di là, San Cataldo, San Silvestro or Santa Caterina, Ganaceto, San Giacomo, Baggiovara, Cittanova, Collegarola, Mugnano, San Pancrazio, Saliceto Buzzalino, San Madro or San Marone, Cognento, Marzaglia, Nizzola, Freto San Salvator, Lesignana and Panzano. The *giudicatura* of low water included: Villanova di Qua, Albareto with part of Bastiglia, Solara with Campagnola, Roncaglio di sotto with Staggia and Villafranca, Cavezzo, Camurana with Malcatone, Galeazza and Bruino, Saliceto Panaro, Sorbara with part of Bastiglia, Casare with Motta and Disvetro, Camposanto with Gorzano and Cadecoppi, Sozzigalli, Villavara, Sam Martino di Secchia, Roncaglio di Sopra, with Verdeta and San Prospero and Medolla. See Franco Cazzola, "Acque di frontiera. Il governo idraulico nella bassa pianura padana in età moderna," in *Archivi, territori e poteri in area estense (sec. XVI-XVIII)*, ed. Euride Fregni (Rome: Bulzoni Editore, 1999), 184.

[15] When the Magistratures were established, six subsidiary groups were subjected to the Office of Water and Roads: Reggio, Mirandola, Finale, Correggio, Carpi and Novellara. See Dotti Messori, *Magistrato di Acque e Strade. Inventario*, 10.

landowners.

Before the Office of Water and Roads was established, issues relating to water were managed by 'speciales officiales' or 'commissarii' who intervened only in extraordinary situations. Fragmentation resulting from this piecemeal management of water was particularly critical in Bologna, where landowners had formed several factions around specific watercourses. This fragmentation of powers weakened the role of Bologna when dealing with neighbouring states. For instance, in Ferrara landowners came together in one large and compact association,[16] and this had a stronger role, when compared to Bologna, in the regulation and management of watercourses. In general, the costs of maintenance, including draining and embankments, were split among the members of the relevant groups according to the benefits likely to be received by each member. This fragmented system caused disputes and even fights among jurisdictions, communities and landowners. The interests of one party were often detrimental to those of the other.

After 1715, water and border affairs in Bologna were separated into two distinct offices. The Office of Water now had specific functions, such as dealing with important political and diplomatic matters over watercourses, like the unresolved issue between the Bolognesi and the Ferraresi about diverting water from the Reno River to the Po. The administrative structures of the Magistratures or Offices dedicated to water management contributed to the development of knowledge, ideas and techniques concerning the art of hydraulic governance.[17] Manuscripts and specially printed books,

[16] Werther Angelini, "Economia e governo a Ferrara nel secondo Settecento," *Il Legato Barni e i lavorieri,* 41 (1967): 883-923.

[17] On Renaissance hydraulic engines in general: Bertrand Gille, *Engineers of the Renaissance* (Cambridge: University Press, 1966); Paolo Galluzzi, ed., *Mechanical marvels. Invention in the age of Leonardo* (Florence: Giunti, 1996); Marcus Popplow, "Hydraulic engines in Renaissance privileges for inventions," in *Arte e scienza della acque nel Rinascimento,* ed. Alessandra Fiocca, Daniela Lamberini, and Cesare Maffioli (Venice: Marsilio, 2003).

including textbooks, were produced for the training of all those who had some degree of responsibility for water control.

1.3 Relations and political identities between Bologna and Modena

In order to understand how disputes over borders were managed and resolved, it is crucial to examine some of the relationships between the various authorities belonging to different political powers. After Bologna became part of the Papal States in 1506, it was governed by a legation intended to enforce and preserve papal authority.[18] The legation was composed of cardinals (legates) who served as full papal plenipotentiaries, and *governatori* (governors). The latter were less powerful since they did not work as closely with the Pope. Legates could also be substituted by vice-legates in order to guarantee constant papal representation in Bologna. Governors, legates and vice-legates were considered as political *superiori*, state officials, with both civil and religious authority. Their decisions could not be opposed.

Among the main objectives of the *superiori* were the maintenance of public order, the control of subsidiary municipal authorities and the preservation of the local economy. They oversaw the import and export of goods, the regulation of hydraulic networks and the definition of border areas. Their contact with the Este State was articulated on different levels, depending on the nature of the issue and on the state of political relations at that precise moment. Generally, *superiori* could not have direct contact with the communities or ducal officials of the neighbouring state. In other words, there should not be any relations between the subjects of one jurisdiction and the sovereign rulers of the other. Nevertheless, this might still happen, in the case of urgent problems like epidemics or after obtaining prior ducal or papal authorisation. In

[18] On papal influence in Bologna, see Peter Partner, *The land of St. Peter. The Papal States in the Middle Ages and the Early Renaissance* (Berkeley & Los Angeles: University of California Press, 1972).

practice, a legate and a principal of a jurisdiction were both delegates of sovereignty. Therefore they could redefine the borders of a state, as Giovan Battista Aleotti (1546-1636) explains: "so nobody can change the border except princes granted jurisdictions and others, because they have the authority to restrict and enlarge territories."[19]

In spite of their authority, such principals could not take over the powers of the Pope or the Duke, especially in important disputes that required large-scale redefinition of political boundaries. Such conflicts were overseen directly by the papal court, or on occasion by special delegates authorised by the Pope. This means that a legate could come from Rome to find a solution together with a magistrate from each one of the factions, along with their technicians and surveyors. After reaching an agreement, they signed a formal notarial deed accompanied by either a sketch or a detailed map of each disputed site.

In practice, contacts between Bologna and the Este State were frequent, not only for border issues and the ownership and control of water, but also for all that concerned the food trade. In fact, Bologna had based its economy on the silk trade for more than five centuries and was therefore partly dependent on food supplies from the Este State, which was a producer of cereals. In addition, within the Este State laid the road system connecting Bologna to the rest of northern Italy. In this political and economic context, *superiori* were frequently in close contact with the authorities of each state to solve all types of problems arising from different jurisdictions. Furthermore, the Este duke could use delegates, ambassadors and close collaborators in his dealings with the papal government in Bologna or deal directly with Rome.

The frequency of correspondence and visits depended on the urgency of the problem. Between 1565 and 1591, around sixty delegates representing the Este State

[19] Massimo Rossi, ed., *Della Scienze e dell'Arte di ben regolare le acque di Gio. Battista Aleotti detto l'Argenta architetto del Papa et del publico ne la città di Ferrara* (Modena: Panini, 2000), 848.

visited the legates in Bologna to solve problems regarding water conflicts and juridical issues. Also, the abundance of letters between the Duke and the legate highlight the importance of these matters.[20]

The case analysed in detail at the end of this chapter, about the flooding of the Muzza canal, was documented in letters between principals of different jurisdictions. The dispute arose between local people belonging to different jurisdictions. In this case, one possible solution to flooding was the construction of embankments, openings or dams. Then the costs had to be borne by one jurisdiction or the other. In such circumstances, as representatives, the *superiori* would ensure the indirect presence of the Pope. Considering the complexity of the problems that could emerge in both states, the role of the legates could be enhanced or reduced according to the problem in hand. When it was essential to redefine the political border, the degree of involvement of the *superiori* could be limited to basic applications to the Pope, simply communicating relevant information to Rome and trying to deal with the Duke in terms of planned hydraulic works for the control of the waterflow.[21]

As far as the Este State was concerned, there was a certain fragmentation of rules and powers. The Duke had established good relationships with a variety of groups, but the information they supplied was often imprecise or unreliable. Although the Duke engaged with noble families of the Modenese and neighbour states, this did not mean that he had complete control over the territory. Therefore, for practical reasons, the Duke had to have a collaborative relationship with his subjects, rather than a coercive one.[22]

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[20] Andrea Gardi, "Legati di Bologna e poteri signorili dell'area estense all'epoca di Alfonso II," in *Archivi territori e poteri*, ed. Euride Fregni (Bologna: Bulzoni Editore, 1999), 325.

[21] Ibid., 30.

[22] Marco Folin "Officiali e feudatari nel sistema politico estense (secoli XV-XVII)," in *Poteri signorili, patriziati e centri urbani minori nell'area estense in antico regime*, ed. Euride Fregni (Rome: Bulzoni,

To make this collaboration possible, the Duke offered to individuals or single groups the opportunity to connect with the higher authorities of neighbouring states and to benefit from the management of finances in the ducal territory, in particular the collection of tax and duties that the Duke was not able to manage directly. However, the administration of the state was generally entrusted to the *podestà* or state officials. As Marco Folin has pointed out, the lack of documentation together with a fluidity of rules, makes it impossible to establish definitively the relationship between the Duke and his subjects in the Este State.[23]

In short, in the political division of the two states, the *superiori*, the *podestà* and state officials had multiple duties and they were able to negotiate with different political authorities. Certainly, their role of mediation between the central power and its subjects produced a continuous exchange and circulation of information in what was a fragmentary and complex polity. The different tasks and degrees of authority depend on the seriousness of any given situation. In spite of social and political fragmentation, and the opposition of different jurisdictions belonging to the two states, public water management contributed to the expansion and reinforcement of political relationships amongst neighbour states. Clearly, the watery boundary was one of productive exchange as well as a marker of difference.

1.4 Cartography

The juridical and administrative activity over the territory of Bologna and Modena carried out by the Magistrature of Water and Borders was supported by a vast and

1999), 95; "Gli Estensi e Ferrara nel quadro di un sistema politico composito, 1452-1598," in *Storia di Ferrara*, ed. Angela Prosperi, vol.4 (Ferrara: Corbo, 2000), 21-76.

[23] Ibid., 75.

heterogeneous body of cartographic documentation.[24] This includes large-scale regional chorographies, topographies, drawings and pictures focusing on individual watercourses, dams, ditches and other topographical details. The maps that were aimed at the management, control and acquisition of territorial resources were generally drawn by experts after on-site inspections. Disputes concerning public waterways and roads were solved by the Magistratures and realised by technicians employed by these offices.

In the case of disputes that arose between private individuals, documentation was instead produced on behalf of the contending parties. If the problem was not solved in the first place, the Magistratures took charge by producing further documentation on behalf of the private individual or individuals who had raised the issue. Competing cartographic accounts were a common practice when disputes arose between private citizens and monastic orders. The two contending parties presented their own maps and documentation to the official body with authority to rule on the question. The coexistence of two different maps concerning the same problem and covering the same area makes it possible to compare contending interests and gain different perspectives on the problem at stake. The multiple levels of authorities, actors and institutions that could be involved in a dispute contributed to the production of a large quantity of maps, which attests to their important role in territorial management and, more broadly, in local political life.

Before focusing on specific documents, it is important to highlight some of the

[24] On the relationship between cartography and state governance more generally in this period:
Richard L. Kagan and Benjamin Schmidt, "Maps and the early modern state: Official cartography," in *The history of cartography*, ed. John B. Harley and Woodward David, vol.3 (Chicago: The University of Chicago Press, 1987), 661-679; Roger J.P. Klain, "Maps and rural management in the early modern Europe," in *The history of cartography*, ed. John B. Harley and David Woodward, vol.3 (Chicago: The University of Chicago Press, 1987), 705-718; Emanuela Casti, "State, cartography, and territory in Renaissance Veneto and Lombardy," in *The history of cartography*, ed., John B. Harley and David Woodward, vol.3 (Chicago: The University of Chicago Press, 1987), 874-908; Leonardo Rombai, "Cartography in the central Italian States from 1480 to 1680," in *The history of cartography*, John B. Harley and David Woodward, vol.3 (Chicago: The University of Chicago Press, 1987), 909-938; Christian Jacob, *The sovereign map: Theoretical approaches in cartography through history*; Margaret Moore, *States, nations and borders: The ethics of making boundaries* (Cambridge: University Press, 2003).

characteristics of these administrative maps, a topic already partly outlined in my introduction. First of all, they circulated in manuscript form and were always accompanied by written texts. The interdependency between map and written text is a fundamental characteristic of these administrative maps. In some cases, the map could contain letters and numbers that found full explanation in the text. In others, the absence of textual reference reinforces the explanatory function of the map. In either case, it is necessary to consult the two documents together. The function of the attached text varied from communicating what was already stated in the map to providing further clarification of the names and letters shown in the cartographic documents. As Emanuela Casti has pointed out, the combination of maps and written text was necessary to improve the administrator's knowledge about specific facts and to report new information collected on site.[25]

Second, the administrative maps also present a heterogeneity of scales and formats, ranging from the representation of a single property or a topographic element to the depiction of an entire region. This variety allows for a detailed and multi-perspectival portrayal of the territory, in which it is possible to recognise territorial morphology, with vegetation, settlements, roads and hydraulic systems. Such maps would remain in manuscript form and were not intended to be fully public. Despite the variety of style and format, these maps reveal the existence of a certain standard for the communication and circulation of documents within administrative circles and public bodies. An analysis of the state agreement later on in this chapter will shed light on such modes and standards of communication.

[25] Casti, "State, cartography and territory in Renaissance Veneto and Lombardy," 881.

1.4.1 Maps of borders

The border between the Este and Papal States was marked for many kilometres by waterways. This dissertation, as already stated, focuses on a relatively small area which comprises the territory from Vignola to Castelfranco, where the border was mainly demarcated by the Panaro River and the Muzza canal. The extensive documentation preserved in the State Archives of Modena and Bologna comprises hundreds of maps focusing on the survey and description of the border between the two states. The enormous number of maps testifies to the intense activity of the Magistratures in controlling and defending the territorial limits from the second half of the sixteenth century onwards. The main purpose of border maps was to deal with the continual disputes arisen from the instability of waterways and the difficulty of their division.

One of the main factors in river dynamics was climate change. It is difficult to assess the effect of climate change on the dynamics of the Panaro River and Muzza canal in the sixteenth and seventeenth centuries. However, we know that a decrease in temperatures and an increase in rainfall affected this area from c. 1550 to c. 1650 causing floods, bursting of banks and consequently water expansion onto dry land. Therefore, works on the drainage system were necessary due to a significant rise in water level.[26]

Interaction between climate changes and an increase in human settlements led to a growing instability of the hydraulic system. A rapid change resulted in serious flooding, while the increased transport of fluvial material produced deposits along the banks and even created new land. This was the context in which hydraulic engineers,

[26] One of the main contributions on the historical climatology in early modern Europe are: Thomas M. L. Wigley, Michael J. Ingram and Graham Farmer, eds., *Climate and history. Studies in past climate and their impact on man* (Cambridge: University Press, 1981); Paola Sereno, "Crisi climatiche e crisi di sussistenza: Qualche considerazione sulle interazioni tra ambiente geografico e agricoltura nelle economie di antico regime," in *Agricoltura, ambiente e sviluppo economico nella storia europea*, ed. Luciano Segre (Milan: Franco Angeli, 1993).

architects and experts of the territory worked for the Magistratures. Aside from the disputes caused by difficulties in establishing a border under these conditions, conflicts also arose from the control of natural resources, together with other problems related to their management. Waterways were important for fishing and for the mills located along the canals derived from the Panaro River. A natural modification of the river courses or one caused by human activity (construction of dams, ditches and so forth) could have a huge impact on the economy of a specific area.

A good example of such economic problems is the dispute begun in 1462 between the community of Crevalcore and Sant'Agata. The community of Crevalcore, in accord with the community of Castelfranco, rented for ten years the water of the *Limido* to Baldassare Guidoni (the term 'limido' ─ from limite, limit ─ indicated that rights to its use were held in common between the Bolognesi and the Modenesi). After powering the mills of Pioppa and Recovato, this canal flowed towards the Zena canal in the community of Roncadelli. The plan of the Crevalcore community was then to divert the *Limido* towards their castle, taking its water completely away from the inhabitants of Sant'Agata, who obviously opposed the agreement firmly.[27] After a few years a solution was reached when the Magistratures of Bologna issued a decree in favour of Sant'Agata. However, sentences or official agreements were not always able to end controversies related to the competitive use of the natural resources.

Generally, the documentation produced on the occasion of an agreement gave way to ambiguities and misinterpretations, some of them wilful. In turn, this was often a good strategy for coping with the continuous changes in rivers and wetlands caused by environmental, economic and demographic factors. Moreover, the necessity for

[27] Giovanni Maria Sperandini, *Mulini ad acqua tra Samoggia e Panaro* (Nonantola: Centro studi nonantolani, 1994), 57; "I mulini ad acqua di Nonantola," in *Nonantola. La storia dietro casa,* ed. Giorgio Malaguti and Giovanni Maria Sperandini (Modena: Centro Studi Storici Nonantolani, 1999); "Normativa in materia di mulini ad acqua, privative e conduzioni aziendali tra Bologna e Modena," in *Acque di frontiera. Principi, comunità e governo del territorio nelle terre basse tra Enza e Reno (sec. XIII-XVIII),* ed. Franco Cazzola (Turin: Lavis, 2000).

controlling rivers and wetlands included water flow regulation. The consolidation of riverbanks to protect land from floods and inundations, the maintenance of drainage systems and the straightening of river courses were other factors that lead to disputes. The fragile balance that could be reached in the management of waterways was easily upset by any modification to the hydraulic system.

Defining the limit between the territory of Modena and Bologna through the water of the Panaro River meant forming an ideal line which in reality created an ambiguous space, due to the impossibility of tracing or laying down a visible mark. It was not possible to stick boundary stones on water or on the adjacent land since they would disappear with each new flood. Ideally, the presence of an island might have worked as the only physical and visible point of reference for demarcating the division. In reality, islands did not make the division and control of the border any easier, because even they were not stable: they could change in size and shape, or new islands could emerge as a consequence of the accumulation of fluvial deposits. The formation of new islands could imply new fertile land that might consequently be claimed for cultivation by any of the interested parties, thus becoming a new cause of disputes. In short, the dynamic interaction between land and water made it difficult to describe and draw the border once and for all.

Among all the maps aimed at outlining problems for dispute and intended to circulate in administrative circles, there are a number drawn for the Este court and the Pope whose main purpose was the general description of the territory.[28] Since the second half of the sixteenth century the Po valley and the Veneto had been subjected to intense and complex hydraulic transformation – drainage of marshland, consolidation of

[28] Another outstanding example of a descriptive map is the seventeenth-century map of the Comacchio Valley preserved in the Archive of Modena, which represents the agreement between the Este family and the Pope about the contentious ownership over the valley, see Achille Lodovisi, *Il transunto della pianta delle Valli di Comacchio. La storia travagliata di un monumento cartografico* (Ferrara: Ed. Immagini, 2007).

rivers and road systems – which had renewed interest in and drawn attention to the representation and measurement of sources. In order to carry out these impressive hydraulic works, it was necessary to plan them, which gave impetus to new and extensive cartographic production. Among the maps drawn for the Este court, there are those realised by Marco Antonio Pasi, a mathematician and hydraulic engineer in the service of the Este State. In 1580 he made a series of maps for the Este court, describing the entire duchy on a scale of 1:65.000 and documenting the reclamation works supported by Alfonso D'Este II, started in 1570 and concluded in 1580 (fig.10).[29]

After the annexation of Ferrara to the Papal States in 1598, another outstanding map was completed by Giovan Battista Aleotti, a hydraulic engineer working for the Duchy. His *Corografia dello stato di Ferrara* was published in Ferrara in 1603 (figs.11-11a). This map, together with the other manuscript maps and drawings made in the same period, exemplify well both accurateness of survey and refined artistic rendition.[30] All these chorographies are pictorial, with mountains, towns and settlements portrayed three-dimensionally. The naturalistic effects are the results of decades of surveys and meticulous measurements undertaken in the depicted region.

In the following section, we will begin to understand how the indeterminacy and fluidity of the border was elaborated in the sources. From the next section onwards, I will provide an extensive and chronological account on the historical events that characterised this area, starting from the analysis of manuscript sources. The following section will help us to sketch out the complex dynamics that existed between the two states over their shared frontier.

[29] Further information on this manuscript map, see Luigi Federzoni, "La Carta degli stati estensi di Marco Antonio Pasi. Il ritratto dell'utopia," in *Alla scoperta del mondo: L'arte della cartografia da Tolomeo a Mercatore*, ed. Francesco Sicilia (Modena: Il Bulino, 2002), 241-285.

[30] Battista Aleotti, *Corographia dello Stato di Ferrara con le vicine parti delli altri Stati che lo circondano* (Ferrara: Vittorio Baldini Stampator Camerale, 1603).

PART II

From the Middle Ages to 1790: the border seen through state agreements

In this second section, I will describe the conflicts from the Middle Ages to the eighteenth century by considering the state agreements in which long-term strategies for a clarification and definition of state borders are explained, together with a clear outline of the problems. Such agreements focus on two particular areas: the Pass of Sant'Ambrogio on the Panaro River and the area on the Muzza canal.

The Pass of Sant'Ambrogio had been subject to intense conflict since the fifteenth century, mainly due to the presence of the Via Emilia with its strategic importance for trade and defence. On the other hand, along the Muzza, the conflict was about its tributaries and related issues of control over watercourses.

An outline of the early history of this conflict clarifies the foundation of papal power in the region, while also exemplifying how diplomatic relationships between the two states and the interests behind them were played out in the field of cartography. I will also examine the state agreements produced in the early modern period along with the maps that accompanied the final agreements signed in 1613 and in 1790 (figs.15-16). They also helpfully show changes in how space was measured and how other types of information were recorded by the late eighteenth century.

1.5 The conflict in the Middle Ages

After the fall of the Roman Empire, the Panaro River represented the border between the Exarchate of Ravenna and Longboards.[31] Despite this clear definition, the border

[31] According to Paolo Diacono, the Longboards descended from a small tribe called the *Winnili*. They were a heterogeneous ethnic group which migrated into different territories, merging with different populations. After a long migration route, they established themselves in the North of Italy in 568. Here they imposed a new set of rules on their conquered territories, assigning dukedoms to official authorities. Paolo Diacono, "Historia Langobardorum," in *Monumenta Germaniae Historica. Scriptores rerum Langobardicarum et Italicarum saec. VI–IX* , ed. Georg Waitz (Hannover: Impensis Bibliopolii, 1878),

itself between these two entities was difficult to identify. The eastern part of the Panaro River, which includes the Muzza canal, summarily represented the division between these two opposite polities. The Bolognese territory was governed by Byzantium through the Exarchate of Ravenna, while the Longboards had invaded the north of Italy in 568 AD, establishing their capital in Pavia.[32] Different sources document that between 574 and 584 AD the Longboards conquered Piacenza, Parma, Modena and Reggio, but the Byzantines reconquered these cities at a later date, before losing Parma and Piacenza again around 601-2 AD.

It was on the old course of the Muzza that in 643 AD the Longboard campaign against the Byzantines ended in victory. From then on, Modena became part of the Longboards' possessions and for almost a century the wide course of the Panaro constituted the border between the Longboards and the Byzantines. It was a penetrable and open border area, characterised by enclaves in which exchanges and cross-border cooperation occurred. Eventually, the Longboards started their campaign of conquest again and set up alliances with the Byzantine Papacy. Meanwhile, the Church of Rome wanted to extend its power over the lands of the Exarchate, allying itself with the Franks. On the other hand, the Church of Ravenna wanted to continue to exercise its dominion over the entire Exarchate. Then, in 756 the Franks defeated the Longboards and Pope Stephen II claimed the Exarchate for himself. In the same year, the King of the Franks Pepin the Short obliged by donating the conquered lands of the former exarchate to the Papacy. This donation, which was confirmed by his son Charlemagne

12–219; Italian translation: Lidia Capo, ed., *Storia dei Longobardi di Paolo Diacono* (Milan: Lorenzo Valla/Mondadori, 1992).

[32] To this first phase of the invasion is dated the permanent settlement discovered in Modena. Archaeological excavations have revealed the existence in Spilamberto of a military outpost of the second half of the sixth century consisting of a group of warriors with their families. It was a strategic point of control between the high plains and the offshoots of the Apennines, not far from the Byzantine settlements. The presence of the Longobards on the Panaro River is testified by the recent discovery of the necropolis of Spilamberto and its grave treasury, on which an exhibition has been recently organised with the title: 'The Treasure of Spilamberto. Longobards lords at the border'. See http://www.comune.spilamberto.mo.it/il_tesoro_di_spilamberto_signori_longobardi_alla_frontiera/.

in 774, marked the beginning of the temporal power of the Papacy, the coming into being of the entity known as the Patrimony of St Peter or, more commonly, as the Papal States.[33]

Before the formation of the communes of Modena and Bologna, the territory was very fragmented, divided into fiefdoms ruled by the bishops as both civil and religious authorities. However, the Nonantola abbey had a strong political influence, free from episcopal authority. It covered a vast territory along the Muzza (from Panzano to Castelvetro), which was further extended when Duchess Matilda of Canossa annexed to it the church of San Cesario with an act that clearly identified the Muzza canal as the parish border.[34]

After the death of Duchess Matilda, the first crisis of the feudal system arose from the pressure of the emerging communes of Modena and Bologna, as both were expanding their territories and, in the process, absorbing rural jurisdictions. In the area between Modena and Bologna, only Nonantola had the characteristics required to become a free commune, but the presence of the powerful abbey made it difficult. In this specific area, water became the centre of political conflict.

The canal of San Pietro, whose waters derived from the Panaro, was very important for agriculture as it flowed down a slope with a very slight gradient, thus remaining at a higher level than the river itself. This allowed the canal to serve both for drainage and for collecting water for irrigation through a network of ditches ─ as it still does. The interests of Modena and Bologna over this territory caused several conflicts ─ the *guerre nonantolane* ─ that ended in 1183 with the Peace of Constance, when the annexation of Nonantola by Bologna was declared. And yet the town surrendered back

[33] On the birth of Papal State, see Thomas Noble, *The Republic of Saint Peter: The birth of the Papal State, 680-825* (Philadelphia: University of Pennsylvania Press, 1984).

[34] The scholar Alfred Overmann examined all the documentations regarding the Duchess Matilde di Canossa, see Alfred Overmann, *La contessa Matilde di Canossa: Sue proprietà territoriali, storia delle terre matildiche dal 1115 al 1230, i regesti matildici* (Rome: Ed. Multigrafica, 1980).

to Modena in 1201. This was followed by a period of peace, allowing the communes to strengthen and prosperity to grow in both Modena and Bologna. But the beginning of the thirteenth century was once again tumultuous and the border conflict was revived.

The first attempt to define the border was in 1204, when Umberto Visconti, podestà of Bologna, promulgated an official act that defined the border of the Modenese territory as the Muzza canal. This decision certainly favoured the Bolognesi, the Muzza being far from Bologna and very close to Modena. Girolamo Tiraboschi in his *Dizionario Topografico-Storico degli Stati Estensi* rightly states that "the decision at that time was unjust and harmful to Modenesi who would have never acclaimed it."[35] Thus the conflict broke out again. In 1226 Emperor Fredrick II, who backed the Ghibellines against the supporters of the Pope, the Guelphs, abrogated Umberto Visconti's act.[36] The conflicts continued, culminating in the occupation of Piumazzo by the Modenesi. The Bolognesi responded by destroying the fortress of San Cesario.

The conflict was not confined to the area between Vignola and San Cesario, but extended towards the Pass of Sant'Ambrogio. In this period the Modenesi built the fortress of Castelleone, to the east of the Panaro River. In the same years, the Bolognesi had reinforced their own fortress of Castelfranco in north-south direction, in order to ensure the safety of their border. Obviously, both wished to gain control of the Panaro to control the pass of Sant'Ambrogio on the Via Emilia. A battle ensued in this part of the territory, and Castelleone was destroyed by the Bolognesi. Even so, the result of the numerous military battles was always indecisive.

During the thirteenth century many castles, fortifications and defensive towers were built or reinforced by both parties with the aim of redefining the border. The

[35] Girolamo Tiraboschi, *Dizionario topografico-storico degli Stati Estensi* vol.1 (Modena: Tipografia Camerale, 1824), 110-111.

[36] The text of this act is contained in Ludovico Antonio Muratori, *Antiquitates Italicae medii aevi* vol.4 (Milan: Società Palatina, 1738), 42.

Modenesi and Bolognesi fortified the pass of Sant'Ambrogio with towers on each side of the Panaro. These buildings and other castles, including the fortress of Vignola, were theatres of harsh conflict in the following years. The most famous battles were those of Fossalta in 1249 and Zappolino in 1325. With the battle of Fossalta, the Bolognesi (Guelphs) triumphed everywhere, even in Modena. However, the conflicts generated by these two factions never stopped; on the contrary, they were stirred up by the act of Pope Boniface VIII through which the Savignano and Bazzano territories (until then Modenesi) were assigned to Bologna. With this act, the Pope intended to reinforce his power over the Guelphs against the Ghibellines, at the time allied with Emperor Fredrick II; the embroilment of Bologna and Modena in this larger conflict was perhaps the main obstacle in solving the old issue of the borders. After the battle of Zappolino, the Bolognesi consolidated the border on the Muzza, which remained unchanged for centuries except for a minor redefinition in favour of the Bolognesi on the Pass of the Panaro.[37]

The Battle of Zappolino was one of the bloodiest of the Middle Ages, famous for the episode of *The Stolen Bucket* (La secchia rapita) which inspired the mock-heroic poem by Alessandro Tassoni, first published in 1624.[38] During this battle, the Modenesi destroyed many castles and fortresses (such as Castelfranco and Piumazzo) and the dam of the Reno River in proximity of Casalecchio, which allowed, as it does now, its water to flow towards Bologna.

[37] Tiraboschi, *Dizionario topografico-storico degli Stati Estensi* vol.2, 110; Ronaldo Bussi, ed., *Bonifacio Morano - Giovanni da Bassano, Cronaca di Modena 1109-1347* (Modena: Publi Paolini, 2013).

[38] The mock-heroic poem in twelve cantos was inspired by an episode that took place during the battle. The Modenesi came to the Bologna gate, destroying the castles of Crespellano, Zola, Samoggia Anzola, Castelfranco, Piumazzo and the dam on the Reno River which allowed the diversion of the water towards Bologna. They did not enter Bologna but returned to Modena with a trophy, a bucket stolen from a well. See Ottavio Besomi, ed., *La secchia rapita II, Redazione Definitiva* (Padua: Antenore, 1990).

The constant warring between Guelphs and Ghibellines brought about a decrease of population of both cities. It was only after the battle of Zappolino that a first peace treaty was signed.

From the peace treaty signed in 1326 and maintained until 1457 there were no significant battles. The rise of the Signorie contributed to relative political stabilisation in both states, with the Este family in Modena remaining in power for five centuries. In Bologna, political life was dominated by the Pepoli family first and then the Bentivoglio, who governed throughout the entire fifteenth century. They established a semi-independent government over which the Pope continued to hold supreme if mostly nominal authority.[39]At the beginning of the sixteenth century, after Giovanni Bentivoglio was exiled, the Pope again became the political sovereign of Bologna. That presence, ensured by delegations of representatives from Rome, ushered in a period of political stability and endured for centuries.

With the stabilisation of the state central power, the characteristics of border concerns changed. During the Middle Ages, the unstable political and social climate was dominated by conflicting factions. The main result of the medieval political conditions for borders was that territorial demarcations were extremely fragmented and discontinuous. As we have already seen, the area under consideration was characterised by the typical interpenetration of jurisdictions of medieval polities, in which kings, lords and clergy had autonomous judicial authority in the same territory.

In the Middle Ages, the border conflict was fundamentally rooted in the rivalry among different political factions and was not associated with any real idea of territoriality. As Richard Kagan and Benjamin Schmidt have explained, the sense of territory grew simultaneously in conjunction with the idea of state sovereignty "as a

[39] Adriano Cappelli, *Cronologia, cronografia e calendario perpetuo*, 7th ed. (Milan: Hoepli, 2012), 38.

precisely defined and delimited geopolitical unit."[40] However, this does not mean that the concept of territoriality was completely unknown in the Middle Ages, nor that the growing sense of territoriality was a linear and unchanging process. The coming of a concept of territory was gradual and accompanied by different processes that took place in the later Middle Ages, such as the institutionalisation of administration and justice to approve taxes and legislation, and the idea of a political border. The rediscovery of Ptolemy's *Geography* thanks to its translation from Greek to Latin (ca.1406-1410) contributed to this growing notion of territory by circulating the idea that it could be measured and described in mathematical terms. [41]

In the Middle Ages, territoriality was based on a fragmentation of land into rural districts, each having a castle, *castrum*, which was also a dependent juridical space.[42] This fragmentary and territorialised vision of sovereignty persisted in the early modern state. In Modena and Bologna, although the sovereign was in control of a larger territory, due to the proliferation of jurisdictions power was still fragmented and exerted over small communities through a network of state representatives. In reality, the unchanged presence of different authorities and powers ─ princes, cities, states, monasteries, nobles ─ each one with their different perception of authority, inevitably had an impact on the complex apparatus of jurisdictions, sometimes characterised by *enclaves* and discontinuities that complicated the formation of a stable sense of territoriality.

[40] Richard L. Kagan and Benjamin Schmidt, "Maps and the early modern state: Official cartography," in *The history of cartography*, ed. John B. Harley and David Woodward, vol.3 (Chicago: The University of Chicago Press, 1987), 662.

[41] Ibid., 663

[42] On the concept of territoriality also see Andrea Gamberini "La territorialità nel Basso Medioevo: Un problema chiuso? Osservazioni a margine della vicenda di Reggio," *Reti Medievali* 5, no 1 (2004):1-26.

Hence, from the fifteenth century, with the rise of a new concept of landholding that resulted in a reorganisation of territorial power, an increase in land investments and hydraulic engineering, and improvements in roads and urban planning, the nature of border conflict changed significantly, becoming linked to control over natural resources.[43] Defining state borders and ensuring their control and management was fundamental in establishing state identity. In this sense, cartography made a significant contribution to the development of the very idea of the modern state.

The idea of territorial sovereignty, especially as it applied to borders, started with survey campaigns aimed at measuring, recording and mapping information on the disputed sites. These preliminary acts of research anticipated the drafting of official agreements.

1.6 The conflict in the early modern period

The definition of 'composite monarchies' used by John Elliott to refer to the large national monarchies of early modern Europe,[44] is also well-suited to small Italian states. In the sixteenth and seventeenth centuries we still should consider early modern states in Italy as an assemblage of different powers, as a territory composed by small states characterised by administrative, political and juridical fragmentation. Certainly, both Bologna and Modena were divided into subsidiary jurisdictions, each of which occupied

[43] For an analysis of the relationship between territorial boundaries and state sovereignty, see Emanuela Casti, "State, cartography, and territory in Renaissance Veneto and Lombardy," in *The history of cartography*, ed. John B. Harley and David Woodward, vol.3 (Chicago: The University of Chicago Press, 1987), 875; Lucien Febvre, "Frontiere: The word and the concept," in *A new kind of history: From the writings of Febvre,* ed. Peter Burke (New York: Harper and Row, 1973), 208-18; Thomas Baldwin, "Territoriality," in *Jurisprudence: Cambridge Essays*, ed. Henry Gross and Robert Harrison (Oxford: University Press, 1992), 207-30; Jordan Branch, "Mapping the sovereign State: Technology, authority, and systemic change," *International Organization* 65, no.1 (2011): 1-36. On the role of cartography in the consolidation of modern state system, see Jeppe Strandsbjerg, "The cartographic production of territorial space: Mapping and state formation in early modern Denmark," *Geopolitics* 13, no 2 (2008): 335–58; Michael Biggs, "Putting the state on the map: Cartography, territory, and European state formation," *Comparative Studies in Society and History* 41, no.2 (1999): 374– 405.

[44] John Huxtable Elliott, "A Europe of composite monarchies," *Past and Present* 137 (1992): 48-71.

a precise territory with its own limited legal influence. In official and juridical documents, and in Tiraboschi's *Dictionary*,[45] the Este possessions were named 'states', which suggests the relative autonomy that each jurisdiction maintained from the central government. The plural is still used in the chorographies compiled in the late eighteenth century.[46]

This terminology highlights the institutional and administrative fragmentation of the Duchy of Modena, which was situated at the geographical centre of a larger political network that included the Papal States, Milan, Venice, Florence and Naples. It was an area of passage between different territories and political entities. Rather than a state, it was a plurality of municipalities kept together in a loose dynastic union by the reigning Duke.[47] In the second half of the sixteenth century, the seven jurisdictions in the Duchy of Modena included Modena itself, Carpi, Finale, Montefiorino, Nonantola, San Felice as well as 24 further minor Magistratures.[48]

The State of Bologna, surrounded by the Apennine hills, the legation of Romagna and the Este territory, was similarly politically and administratively heterogeneous. Especially on the borders, the various territories were divided into fiefdoms ruled by noble families and their representatives. These families benefited from tax exemptions and they had different levels of political and administrative autonomy from the central government. Also, there were ecclesiastical possessions, abbeys, monasteries, charities and institutes of assistance with similar privileges.

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[45] Tiraboschi, *Dizionario topografico-storico degli Stati Estensi* vol.1.

[46] Lodovico Ricci, *Corografia dei territori di Modena, Reggio, e degli altri Stati appartenenti alla Casa d'Este* (Modena: per gli eredi di Bartolomeo Solian, 1788).

[47] Huxtable, "A Europe of composite monarchies,"65.

[48] In 1619 the Este State was split into three administrative sections, which corresponded to the states under the Este family's sovereignty: the Duchy of Modena, the Duchy of Reggio and a third part including Carpi, Frigrano and Garfagnana. On the history and composition of the Este State, see Giovanni Santini, "Strutture castellane, plebane e curtensi della Val di Secchia e zone adiacenti," *Rassegna Frignanese* 25 (1985-86):131-154; Lino Marini, "Lo Stato Estense," in *Storia d'Italia*, ed. Giuseppe Galasso, vol.17 (Turin: Utet 1979).

As I have demonstrated above, water was a fundamental resource for the two states as well as a partition between them. From the fifteenth century, the political stabilisation of the state and the general reorganisation of the territory as a whole led to a new phase in border conflict, more focused on the territory itself and its natural resources. This shift is visually expressed in the map already discussed (fig.9). There is no indication of the border that defined the territory of Modena and Bologna. On the contrary, the emphasis is on the waterways, almost as if the problem under consideration was the management of watercourses rather than borders. Indeed, the successful management of water became increasingly important for any central political power.

Water acquired a symbolic significance, becoming a key element in the representation of authority.[49] By ensuring the water supply, protecting the territory from floods and carrying out hydraulic works, the political authorities asserted their control. Moreover, the government had to ensure the health of their country and subjects, since marshes and moors were considered seedbeds of disease. In addition, rivers required straightening in order to make or keep them navigable, and canals were needed for commercial and agricultural purposes. Watercourses and canals had also to be directed towards areas of production, but when this was not possible mills and factories were placed along them. Thus, the political and technical control over nature showed that the powers that be could dominate natural resources according to different needs. Such works could also be interpreted as diplomatic overtures towards the resolution of conflicts.

For example, on the 25th February 1457 the Duke Borso D'Este issued a decree

[49] On the relationship between water and authority in the early modern period, see Suzanne B. Butters, "Princely waters: An elemental look at the Medici Dukes," in *La civiltà delle acque tra Medioevo e Rinascimento*, ed. Arturo Calzona and Daniela Lamberini, vol.1 (Bologna: Ingenium, 2010), 389 – 411; Christer Bruun and Ari Saastamoinen, eds, *Technology, ideology, water: From Frontinus to the Renaissance and beyond* (Rome: Institutum Romanum Finlandiae, 2003).

in favour of the Bolognesi that allowed the widening of the Savignano canal[50] (later indicated as *canal Torbido* in the maps because of its cloudy water, the result of several widening efforts carried out in the sixteenth and seventeenth centuries).[51] This canal derived its water from the Panaro on the Modenese side, and brought water to two mills (mulini dei Poeti) in the Bolognese territory, nearby the border of Savignano, where it flowed into the Muzza canal. The Duke's decision not only made it possible to iron out several of the border issues, moving towards a stable agreement, but it was also a signal of the strength of central state power. This diplomatic act was a demonstration that the central authorities had the right and the ability to concede water management to an opposing territory if deemed appropriate. It reflected a political strategy, the goal of which was to foster good relationships with the Papacy. Consequently, in 1562 the mills were conceded to the Bolognesi Marquises Tanara, with the permission to extract water from the Panaro River (figs.12-12a).

The political process of centralisation that occurred in these two states from the end of the fifteenth century onwards involved the arrangement of overall surveys for measuring and mapping of the border between them. The representation of disputed sites became a focus not only for the solution of border controversies, but also for military purposes and institutional organisation. The data collection undertaken on site was conducted by committees and assisted by cartographers who played an increasingly important role.

It is in this framework that Duke Borso D'Este drafted a first agreement aimed at

[50] ASMO, Vol. di decreti del Duca Borso d'Este 1454-1460, f.1457: Decreto di Borso D'Este (1457, February 21).

[51] The canal Torbido originated from the Panaro precisely from the canal of Savignano. From here, it flowed into the Commune of Bazzano and Castelfranco Emilia in Bolognese territory, then enters Modenese territory in the Commune of San Cesario, returns to Castelfranco and enters again into the Modenese in the Commune of Nonantola, where it finishes in the Commune of Crevalcore. See Bruno Luglio, "Il canale Torbido," in *Con la forza dell'acqua. Storie d'acque, di opifici, di lavoro e di uomini sul canale di Murano, di San Pietro, del Diamante, sul Canalino Castellano, sul Torbido*, ed. Giampaolo Grandi (Modena: Mezaluna, 2010), 329-342.

overcoming resentments and defining the territorial borders between the two states, on the basis of a previous agreement completed in 1457. It became official in 1474 thanks to the intervention of the Duke of Milan and the Prince of Sicily. However, in reality, these high-level diplomatic activities resulted in very short-lived agreements, because disputes soon flared up once more. The main causes were competition over water control and the objective difficulty in materialising the borders into stable and durable forms. The powers of rulers like Borso D'Este were mainly diplomatic and legal rather than truly practical.

1.6.1 The Pass of Sant'Ambrogio

In the stretch of the Panaro between Vignola and Spilamberto there were numerous passes, but the Pass of Sant'Ambrogio was the most disputed, due to the presence of the Via Emilia which, in turn, facilitated trade with the rest of the peninsula. Here, the official border coincided with the Panaro, which at this point was characterised by many gorges (*berlede*). On each side of the river there was a tower, Bolognese and Modenese respectively. Both towers, as already mentioned, were built and destroyed many times over the centuries. There may have been a wooden bridge over this pass but, if so, it was probably destroyed and rebuilt many times over the centuries too.

What we know with certainty from several early seventeenth-century maps and drawings is that this bridge was eventually replaced by a ferry (see for example figs.1c, 17b). The Pass of Sant'Ambrogio with the Modenese control tower can clearly be seen in front of a fortified building. The Via Emilia is located on the wide floodplain that runs straight to Castelfranco. The town is surrounded by walls, confirming their presence before they were destroyed to make way for the Forte Urbano in 1630. Parallel to the Via Emilia is the Fossa Traversagna (this is a spillway discharge canal which brings back excess water from the Panaro into the Muzza) that delineated the border

between Bologna and Modena; it was also linked to the Muzza. The towns of San Cesario and Spilamberto, Sant'Agata and Nonantola are visible in the Modenese area (figs.9-9a).

Political disputes regarding the Pass of Sant'Ambrogio created many conflicts that constantly led to border re-definition. The agreement of 1474 established that the Bolognese border had to be 320 perches away (one Bolognese perch was equal to 3.80 meters) from Modena. However, fixing the relationship of the border to the river course and identifying physical and visible points of demarcation on the ground was fundamental for regulating the division. But there still remained a high level of ambiguity due to changes in the watercourse. Each agreement states the need of identifying 'il vero andamento del fiume' (the true river course) before deciding where landmarks had to be placed. The changing position of the river was a real problem, as it was particularly frequent in this flat and wet area with strong seasonal variations.

A century later, in 1579, there was another attempt at fixing the state limits in this area. A notarial deed signed by Cornelio Berti and Tommaso Barbieri on behalf of the Duke of Ferrara and the Pope clarified many customs and border issues. The most intense dispute still concerned the Pass of Sant'Ambrogio. Although the agreement of 1474 had established the distance of the Bolognese border from Modena, it had not defined the exact point (*termini*) from which it had to be calculated. Point 5 of the agreement reads:

> A boundary mark has to be placed on a house called Casa dei Parenti, which is located at a closer point to the banks than the others. It is on the Strada Maestra and we believe it was an old pilgrimage tavern, as the painted arms of Pope Nicholas V and other crests are still visible under the plaster. The territory of Bologna is meant to measure 300 perches from this house to the bush. From this point on the main road to the tower the territory remains the property of Modena. Everything beyond the 300 perches and a boundary mark should be placed where the distance of 300

> perches ends. A boundary stone should be fixed at the Casa dei Parenti and another one at the end of the same distance.[52]

This agreement expressed for the first time the need to identify precisely the areas close to the river where landmarks could be located. According to the text, a first boundary mark had to be fixed at the Casa dei Parenti and a second one at a distance of 300 perches from here on the bush, hardly a stable landmark in itself. This rough description of the location of the *termini*, together with the decision to reduce the distance to 300 perches, suggests that the riverbed had moved towards Bologna. Hence this decision probably stemmed from the need to redefine the border after a flood that had caused a change in the river course, creating a new riverbed. In spite of all efforts to identify fixed points on the ground, these signs were never able to resist the mobility of the border.

The border redefinition is confirmed by a map preserved in the State Archive of Bologna titled *Drawing of differences between Modenesi and Bolognesi at the Pass of Sant'Ambrogio*. The map is not dated, but from its content we can assume that it refers to a dispute arising after the flood of 1520, which caused a redefinition of the border. In the legend, the terms of an agreement are expressed as follows:

> A-B line of the road from Bologna to Modena, 300 perches long, which starts from the straight west angle of the Casa dei Parenti and ends at point B over a gravel where you can easily fix as many landmarks as you wish.
> C-D line of the Fossa Traversagna, 300 perches long and parallel to the above mentioned line, starting from the straight west angle of the Casa dei Parenti in the middle of the Fossa Traversagna (point C) and running through to point D up to a forest (*berleda*) where you could fix as many landmarks as required.
> E- Old riverbed of the Panaro River which passed between the two towers, one of the Bolognesi and the other of the Modenesi. The Modenese tower still stands but the Bolognese is a ruin. As we can see from the ruin, the two towers were placed at a distance of 20 perches apart, this being the width of the Panaro River at that time. As a consequence, the black line marked between B and G, which starts from the SS Ambrosino and Popes (?) is not in the right place, because it was intended to be parallel with the old Modenese river bed. A measurement of 65-66 perches for the

[52] ASBO, Senato-Instrumenti, f. 13 serie B: Official document, Notarial act signed by Cornelio Berti and Tommaso Barbieri on behalf of the Duke of Ferrara and the Pope, 1579.

> riverbed was not accurate, because by this time the towers were no longer there. Even if this distance is significant, this condition is due to the confluence of several other rivers and streams, particularly a big river called the Gherro which comes into the pit of Sassuolo and then in Secchia.
> The Gherro River flooded in 1520 from the mountains to the House of Albinelli, then joined the Panaro River and changed its course considerably.[53]

This report is testimony of a border dispute regarding the riverbed at the Pass of Sant'Ambrogio. The issue concerns the change of the main river flow and, as a consequence, of the border. According to this text, the borderline B-G had to be only 20 perches long instead of 65-66 perches (250 meters). It had to be equal to the riverbed width occupied by the ordinary mainstream river that ran between the two fortified towers. This problem was caused by the change of the ordinary watercourse, which had moved to the eastern bank and formed a new riverbed.

The documentation collected here demonstrates the fundamental mechanisms activated in response to natural events, such as floods, that could alter a riverbed and consequently the border. The fixing of physical landmarks in the ground, which were based on periodic surveys of border areas, did not have long-term results. The landmarks were simply insufficient to resolve differences of opinion. No definitive solution was found even when the border was translated into lines that acquired an objective dimension through cartography, or when lines were materialised in representations of space and formal agreements were duly signed by both parties.

Evidently maps could not prevent conflicts and disputes, and new negotiations were constantly required. Furthermore, the border was not recognised by means of what was recorded on the map, but from written sources, memories of local people and tracks left on the territory. These tracks were constantly watched by those who used the land

[53] ASBO, Serie delle Ambascerie a Roma, f.1601: Drawing of differences between Modenesi and Bolognesi at the Pass of Sant'Ambrogio.

and were subject to annual visits, inspections and surveys.[54] The border was mainly a matter of nature and custom yet increasingly subjected to cartographic, legal and diplomatic redefinition.

Dealing with water continuously required considerable organisational, technological and financial efforts. Constant attention and repair works were necessary to ensure that rivers and streams kept the same, precise and fixed beds. In regard to this, the agreement of 1613 (that anticipated the final one) contains clear dispositions:

> In the area stretching from the Pass of Sant'Ambrogio along the Strada Maestra towards the Modenesi tower, the Bolognesi are allowed to make all sorts of works intended to restore, little by little, the previous course of the Panaro River, but in accordance with the *Instrumento* of 1474. For this purpose, the Bolognesi have the permission to take gravel, sand and stones, and to pass through this water as many times as they wish in order to complete their work and maintain the river in its old bed regardless of the old Modenese banks. His Highness the Duke hereby promises not to undertake any measures that could prevent the Bolognesi from working in this territory, but only to keep the river in its banks without any damage to the old Modenesi banks. In this place the Bolognesi are allowed to get gravel, sand and stone from this river for public and private use.[55]

The fundamental concern of these dispositions was that the border should remain undetermined and vague, exactly so that it could be re-negotiated continuously on site due to the competitive use of natural resources. Thus, the control of watercourses

[54] The sources are clear in this sense; inspections might occur every year, or even more often, depending on the area. In some cases in the reports there is clear reference to dates and names of the authorities who undertook the visit. See for example, ASMO, Acque e strade, Mulino Redù, f.171. 1611.

[55] This agreement confirmed all the dispositions contained in the previous agreements, the one signed in 1474 and the other of 1579. The entire dispositions are confirmed for what concerns the Pass of Sant'Ambrogio with a new clause. The full text reads as follows:
"sia lecito a ss. Bolognesi al passo di Sant'Ambrogio addirittura della Strada Maestra verso la torre dei modenesi, farne ogni sorta di lavoro opportuno per respingere l'acqua del detto fiume di Panaro, di mano in mano, al suo pristino corso, in conformità però della detta Transazione del 1474, con pigliare ivi, a detto effetto: ghiaia, sabbia et sassi et con l'entrare anco nella detta acqua et tante volte quanto li pareva di tempo in tempo, acciò possano dare tal forma al lavoro che basti all'effetto suddetto et conservare il fiume nel suo alveo vecchio senza offesa però alla ripa vecchia del modenese, et il sign. Duca se ne contenta et promette di non fare contro lavoro che possa impedire ai signori bolognesi nel suolo suddetto ma solo lavorare per assicurarne la sua ripa at argini sicché in un medesimo tempo non si impedisca il lavoro ai bolognesi né si roda o ponga in pericolo e sconcerto la detta ripa vecchia dei modenesi di modo che se fosse impossibile o molto difficile il mantenerla ove è ora e anco sia lecito ai signori bolognesi nel suddetto luogo valersi per uso pubblico e privato della ghiaia, sabbia e sassi detto fiume." ASBO, Senato - Instrumenti, f. 1613-1614: Official Agreement of the 1613, p.16.

became the way in which either state established its symbolic power in mastering the forces of the nature.

1.6.2 The Muzza Valley

In the Muzza valley the border followed a tortuous path. As discussed above, the decision of Borso d'Este to widen the canal of Savignano to bring water to the Mulini dei poeti in the Bolognese territory moved the border from the Panaro to the Muzza canal. Along this canal, nearby S. Cesario, the border coincided with other small waterways such as the Bisentolo, a small canal derived from the Muzza (figs.1-1d; 12a). During the early modern period, the disputes on this side of the border concerned the damages caused by inundations affecting the area around Nonantola, Sant'Agata and Crevalcore. As proof of this, a series of early seventeenth-century drawings attached to textual reports presents a hydraulic problem concerning a system of openings in the Muzza canal (figs.13-14).

The dispute in question arose between communities belonging to two different jurisdictions, Sant'Agata and Nonantola, in the Bolognese and Modenese territory respectively. The problem, as interpreted by the Modenesi, related to an opening built by the Bolognesi, which was intended to divert the canal's water towards the mill of S. Agata in the Bolognese territory. In the first relevant drawing, made for the Modenesi, the water current heads towards the main opening with an indication of waves running parallel to the paper, stressing the exact position of the hydraulic problem (figs.14).[56] Through the opening, located before the bridge with the Casa dei Galletti at the top, the Muzza water running to the canal is shown with a faint sketch of waterflow as if it were about to flood the surrounding land in the Modenese territory (fig.14a). Despite the

[56] ASMO, Acque e strade, Mulino Redù, f.171. 1611 (ink on paper, 38.83 x 29.21 cm): drawing showing a hydraulic problem on the Muzza.

reduced level of detail, the water is handled with considerable sensitivity and interest, enabling the viewer to follow a continuous band of the river. The attached report indicates that the technicians employed by the Modenesi had found two solutions: building strong and high banks, and closing the opening made by the Bolognesi after the bridge in order to stop the flooding.[57]

Examining the problem from the Bolognese point of view is more difficult; I was only able to find one drawing pertaining to the dispute and not the attached report (fig.13).[58] In this map, the opening, which the Modenesi saw as the cause of floods, is marked with the letter 'E' with a reference note that reads, with pithy clarity: "this is the opening that the Modenesi want to alter which could cause many problems."[59](figs.13a-13b)

The difference of emphasis in the representations of the opening and the accompanying interpretations of the problem reveal the interests of each party. These maps interpret the territory from different perspectives. From the Modenese point of view, closing that opening meant not only avoiding the flooding of land, but also reducing the amount of water that reached the Bolognesi mills. The Bolognesi, in their interpretation of the problem, acknowledge the risk of flooding by showing their awareness that not closing the opening could cause damage to their neighbours. Clearly the Bolognesi wanted to maintain the opening since it brought more water to their mills. The alternative approaches to the problem in the drawings are also indicative of how water ─ through openings, canals and collection points ─ could be directed and organised into the shape of an efficient engine.

[57] Report attached to the drawing showing a hydraulic problem on the Muzza Canal, 1611, ink on paper, 38.83 x 29.21 cm. Archivio di Stato di Modena, Acque e strade, Mulino Redù, f.171.

[58] ASBO, Assunteria di Confini ed Acque, vol.4 n.20. 17th century (ink on paper, 19 x 15 cm): Drawing showing a hydraulic problem on the Muzza Canal.

[59] Ibid., 22

After many disputes arising between communities about the problem of the constant inundation of the Muzza, an important agreement was promulgated by Duke Cesare D'Este in 1613. The agreement is preserved in both the Archives of Modena and Bologna. It is interesting to see that in chapter 6, it laid the foundations for an equally shared solution to the problems of maintaining the canals and bridges located on the Muzza:

> [...] That at the same time the Muzza has to be dug, one half by the people of Sant'Agata and the other half by those of Nonantola, and the soil should be banked upon both sides in equal proportion, in order to form two banks of the same size and height. A proper width corresponds to 15 feet at the top and 5 feet at the bottom and 7 feet in depth from the top of the bank. Every four years, the canal has to be dug and the soil distributed on each bank, so that they will remain of equal height on both sides and at the top. In case such banks are not high enough to keep the water in its bed, it is permissible for both parties to raise them, notifying this change to the other party three days in advance according to the instructions stated in chapter 5, in order to raise them equally.
> 7. The cost for the maintenance of the wooden bridges on the Muzza has to be split equally. The Bolognesi have to take care of the Galletti Bridge and the bridge of San Giovanni, while the remaining are to be maintained by the people of Nonantola, although remaining of common use. The Bolognesi have to keep the Muzza dug from the Galletti bridge to Castelfranco.[60]

It is stated that the owners of the Recovato mill were permitted to use the waters of the canal Torbido for four months every year. Finally, it was agreed to raise a roadway along the Muzza, running parallel to the river, up to the height of the bank to keep it dry at all times. Yet it was not to go beyond them as this would form a new bank. The text is followed by careful dispositions for the maintenance of ditches and water intake in order to avoid the risk of flooding.

One of the conclusions we can draw from the above analysis of this dispute that arose between two different jurisdictions, is that the political space between Bologna and Modena was still composed of local, partly internal boundaries in the seventeenth century. The durability of these borders depended directly on the frequency of flooding

[60] Ibid., 21.

and also on the daily use of the territory. Moreover, practices and habits of local communities who lived in the territory played an important role in preserving the state border. Conversely, a dispute arising at local level, if prolonged over many years, could have a larger impact and become a subject of state negotiations.

1.7 The final agreement: the maps

Until the eighteenth century in the Italian context, techniques for representing borders were not sufficient for establishing firm state borders on the ground and in maps. Intriguingly, texts and drawings that accompanied cartographic representations were means, in part, of compensating for technical limitations. Here it is helpful to consider certain considerations expressed by Agnolo Nicolini, the first Medici governor of Siena. He believed that in order to solve border conflicts, direct knowledge of the disputed territory was still preferable. In fact, he had been involved for a few years in complex diplomatic negotiations for the delineation of Presidios in Maremma, and in a letter addressed to Duke Cosimo I he stated: "I would have liked to accompany the information with a few drawings of the places but I was unable to, even though I do know that it is difficult to make a decision by just looking at the maps and not at the territory itself."[61] These words convey the importance of providing maps with drawings that could offer a more detailed account of the topographical representation of any given territory, but they also demonstrate that a map was not considered sufficient to get a complete overview.

As will be discussed in further detail in later chapters, the map of a disputed area was often accompanied by heterogeneous cartographic representations produced by contending parties to settle internal disputes. These could arise between states,

[61] ASF, Mediceo del Principato Collection: Letter by Agnolo Nicolini (1560, March 29).

communities or internal lines of jurisdiction as well as private estates. In all these cases, the existence of multiple forms of cartographic material, ranging from charts to drawings, provided different points of view, thereby achieving a multi-dimensional effect. On the contrary, state agreements were generally complemented by a single visual document that the contending parties signed off in the presence of legal authorities and technicians. This map's chief purpose was to give visual form to and hence help secure the written agreement.

The maps together with the relevant agreement represent the final point in a long and complicated history of border conflict between the Modenesi and the Bolognesi, a conflict that had lasted more than twelve centuries (figs.15-16).[62] This agreement was signed in 1790 in the presence of Pope Pio VI and the Duke of Modena Ercole d'Este III, and it can still be found in current municipal limits excepting Castelfranco. Two maps were drawn for the Duke of Modena and the Legation of Bologna as the result of mutual negotiations aimed at finally establishing linear and fixed borders between the two states. The border zone under consideration here is partly described in these maps. The Muzza canal flows from a source in Montebudello, then after crossing a small valley runs almost straight up to Castelfranco for 21 kilometres and finally turns to flow into the Panaro. This formation is the result of human changes over the centuries.[63] The Panaro River derives its water from the northern Apennine Mountains and it runs as far as Castelfranco, crossing the Via Emilia. These maps, which cover an area from S. Cesario to Nonantola, where the border was historically demarcated by the Muzza canal

[62] ASMO, Mappario Estense, Grandi mappe, n. 145/a. 1789 (ink and watercolours on paper, 217 x 632 cm): Map of the border between the Church States and the Este State with the representation of the communities of Castelfranco, Panzano, e Gaggio di Piano in the territory of Bologna and S. Cesario in the Este State; ASMO, Mappario Estense, Grandi mappe, n. 100/a. Late 18th century (ink and watercolours on paper, 220 x 100 cm): Map representing all those lands, with their borders and extensions, which one state ceded to the other as a consequence of the border redefinition.

[63] For the morphology and evolution of the Panaro, see Franco Serafini and Antonella Manicardi, ed. *Il sistema fluiviale Scoltenna/Panaro: Storie d'acque e di uomini*- Convegno di studi, ed. (Nonantola: Amministrazione comunale, 1988), 115-119.

and other waterways such as the Canal Torbido and the Bisentolo, demonstrate that uncertainty about the border continued until the end of the eighteenth century.

Map n.145 representing the border between the Church States and Este Modena describes the new boundary line and the roads, ditches and drains along it (fig.15). In the lower right-hand corner is the date, October 26th, 1789, with the names of the engineers and their respective states: Giambattista Vandelli for Modena and Gian Giacomo Dotti for Bologna (fig.15a). The other map, n.100, covers the same area but represents all those tracts of land, with their borders and extensions that one state would cede to the other as a consequence of this border redefinition (fig.16). This principal aim governs both the overall effect of the maps and their semantic system. In both maps, the cartographic signs are few and concentrated along the border.

The border is delineated at the centre of the composition, dividing the sheet in two parts, with the territories defined on each side. Compiled on the basis of on-site inspections, these maps are rooted in the meticulous measurements taken during surveys that lasted over ten years, an exhaustive gathering of information that contributed to the location of each boundary mark.[64] The large horizontal formats allows for the display of the entire border zone but with a marked concentration on the features along the river. Both maps have details to further their legibility. The compass rose is positioned centrally above the canal of S. Peter, orienting the maps with north towards Modena. The different scales, given in Bolognese and Modenese perches, are set out at the bottom. Evidently, even the system of conversion between the two had to be agreed upon and made visible.

These two maps show considerable changes in the mode of representation from those analysed above. The cartographic rendering of information evinces that a number

[64] On the methods and techniques of land surveys, see Uta Lindgren, "Land surveys, instruments, and practitioners in the Renaissance," in *The history of cartography*, ed. John. B. Harley and David Woodward, vol.3 (Chicago: The University of Chicago Press, 1987), 477-508.

of innovations had emerged during the eighteenth century. This was a period of important reforms that contributed to the rise of scientific methodologies of measurements. The chief of these were the reform of land registers and the standardisation of weights and measures in the Este State. These were promoted by Giovanni Battista Venturi, who worked for the Magistrature of Water and Roads and had great experience in the careful measurement of the territory.[65] Hence, with the consolidation of the modern state, more refined techniques were applied to the definition of borders, based on principles of geometric cartography on the page.

In other words, the border was now to become the result of strict and careful measurements and geometric calculations conducted on a map considered as the only way of producing a true representation of territory. In this regard, map n.145 is particularly striking as it shows the positions of landmarks (*termini*) and the distance between them, together with the indication of angles formed where they intersect with borderlines (fig.15b). This map exemplifies how cartography in the eighteenth century introduced the geometrisation of the border. The border is mainly the result of calculations conducted on a map rather than arising from features in the territory itself.

The geometrisation of borders was completed in the nineteenth century. The date 1802 is an important one for the transformation of cartography, as it marks the moment in which a French Committee established a set of standard models and rules for rendering cartographic signs. The use of a mixed projection systems ─ vertical and horizontal ─ which characterised early modern cartography was now substituted by the adoption of unique vertical projection.[66] Moreover, rather than being figurative,

[65] Giovan Battista Venturi (1746-1822) was a scientist, physicist, man of letters and scientific historian. He taught geometry and philosophy at the University of Modena, and he also worked for the Duke as a mathematician and engineer. He was an attentive scholar of Leonardo Da Vinci's works, to whom he dedicated a booklet, *Essai sur les ouvrages physico-mathématiques de Léonard de Vinci.*

[66] Francois de Deinville, *Le language des geographes: Termes, signes, couleurs des cartes anciennes, 1500-1800* (Paris: A. et J. Picard, 1964).

cartographic symbols would now follow pre-established graphic conventions, with the consequent loss of any mimetic reference to reality.

The relationship between map and territorial delimitation changed completely during the eighteenth century, with the rise of the military survey. Borders started to be delimitated in the first place through cartography, and maps to be used in the process of border construction: as a consequence, the border became linear and abstract.[67] During the sixteenth and seventeenth centuries, maps were not mentioned in the official process of boundary demarcations. They were only designed to represent visually what had been formally established at a previous stage, whether orally or textually. In the early modern period, maps were secondary supports in describing a border. Only once a border was diplomatically established could it be represented through cartography. This point becomes particularly significant in relation to two contrasting examples of how water as a border might be depicted. In the seventeenth-century map representing the flood of the Muzza canal, water as a border is an element of territorial identity that crosses and irrigates lands (fig.9). Water is displayed in its full complexity, as an element completely integrated in the landscape, as a means of transport which enables the circulation of goods and people, as a frontier, and as a source of power for mills and wheels (figs.9g-19e). In eighteenth-century examples like the maps n.145 and n.100, the river becomes more general and abstract (figs.15-16). Its fluidity is ignored; the focus is instead on its spatial location and its characterisation is limited to its banks and course, evoking a wholly unrealistic fixity.

Compared with older examples, what is also striking in the eighteenth-century maps is how the page is organised. In previous examples the text interfered with the map, while here it occupies a well-defined, separate area. The legend is enclosed in a

[67] Pastore, ed., *Confini e frontiere nell'età moderna n confronto fra discipline*, 63.

framed space with precise borders located at the right-hand side, and it lists the landmarks and the distances between them in Bolognese and Modenese perches.[68] A symbiosis between text and map may still be seen in the presence of names next to various topographical features: land properties, roads, settlements, hydrographical network and paths. In particular map n.100 is an independent document with respect to the agreement to which it was attached (fig.16). It can be read without using the complementary text, as its function of naming and identification is not largely entrusted to a textual document. These maps with their own graphic signs and legends can stand alone: even though the map is accompanied by the text of the agreement, it is to all intents and purposes an autonomous document, able to communicate and describe by itself the new border configuration.

Another consideration is the conventions for rendering territorial features with standard symbols for settlements, trees and vegetation. The depiction of settlements together with the rivers and lands are conventional, thus distant from the figurative language and naturalism used for sixteenth- and early seventeenth-century maps. Here, every feature portrayed features of the landscape as they were perceived through experience. In map 145, produced in 1789, trees and houses are drawn schematically, and land is simply rendered by nuanced shades of brown and green (fig.15). With regard to the border configuration, map n.145 introduced several changes. In order to stress the new geometrical rigour and putative accuracy of the border, the map marks the position of each *termine* with a red Roman number. Visual progression along the length of the border is outlined by the *termini*.

Starting from the beginning, on the extreme left-hand side, the first *termine* is located in the direction of a new road section (fig.15b). This represents a remarkable

[68] Angelo Martini, *Manuale di metrologia, ossia misure, pesi e monete in uso attualmente e anticamente presso tutti i popoli* (Turin: Loescher, 1883).

change if we think that at this point in older maps, the *Bisentolo* ─ a little canal that derived its water from the Muzza ─ marked the border between the two territories. From here, the border runs along this new road section until the second *termine* placed on the side of the same road. From II to III, the border runs along a little public street and then falls at the centre of the *Canal Torbido* that marks the border up to *termine* X. In case of bends, the *termini* are positioned on the side of the canal. The map also clearly shows that *termini* IX and X are located one at the end of the canal and the other at the beginning of a ditch called 'fossalone', which coincides with the border until *termine* XIV (fig.15c). This *fossalone* or Fossa Traversagna dei Confini was indicated as a border between the two states in older maps, too. From here, the border runs along a road until it meets the new section of the Via Emilia running parallel to the river, along which *termini* XV to XX are placed. On the occasion of the construction of a bridge on the Panaro, a new section of the Via Emilia was built and it was decided that the border had to lie along it (fig.15d). Before then, a ferry on the Panaro River allowed the passage between the two states. Here, the perceived need to fix the border once and for all actually triggered topographical interventions in order to set the border apart from the ever-shifting and essentially unmappable watercourse.

From the end of this road to the final *termine*, the border is marked by little public roads. It is interesting to observe that one *termine* is fixed between Castelfranco and Nonantola, at the point where the border has been moved from the river to the hinterland. Map 100 completes the record of all changes made in the border area after 1790 (fig.16). It is very detailed, showing all the possessions ─ generally private estates ─ that with the new configuration of the border passed from one state to another. They are represented in planimetric perspective. The boundary of each plot of land is clearly drawn, and the number and colour assigned to it refers to the list of owners included in the agreement (fig.16a). In both maps the end result is the same. They exemplify the

increasing linearity that came to be seen as an appropriate way of setting out territorial boundaries between states. Borders were now depicted in an increasingly abstracted manner that reflects the shift towards the more rigid notion of territoriality that characterises modern states.

1.8 The final agreement: the text

The legal text of the final agreement is divided into fourteen chapters, each of which describes the obligations and rights for both parties, such as the cost of maintenance for roads, bridges and riverbanks, including the cost of the landmarks, which according to chapter six had to be shared equally. This agreement derived from the perceived need to give a new and firmer definition of the border, after the Bolognese had commissioned a survey and established that the *saldini* ─ the wetlands beyond the river and its banks which became seasonally flooded ─ on the Panaro were in fact part of their territory.

After a long exchange of letters in which the Modenesi insisted on claiming it as their possession, it was decided to proceed with a new border definition that would focus particularly on the area along the Panaro River from San Cesario to Nonantola. This decision was also caused by the agreement to construct a bridge on the Panaro "in order to facilitate the trade between the two states."[69] The Bolognese claims were supported by the previous official agreements ratified in 1474, 1579 and 1613, which stated that the Bolognese territory had to be extended by 300 perches towards the river, starting from the *Casa dei Parenti*. This measurement had to be valid even if the annexed territory ended on water or was crossed by the river. In the articulation of its

[69] BCA: *Instrumento di permuta del territorio e nuova confinazione fra la prov. Di Bologna stato pontificio e il duc. Di Modena per qual tratto che comincia ove il condotto degli Olmetti entra nel Muzzadello e va fino al di sotto del palazzo Bagnesi in poca distanza del fiume Panaro dividendo la comunità di Gaggio di Piano in Bolognese al comune di S. Cesario in Modenese stipulato il 10 giugno 1790. A rogito dei notari ser Angelo Michele Bacialli e su Ettore Poppi* (Bologna: Istituto delle Scienze, 1791), 2.

fourteen chapters, the agreement also refers constantly to previous official concords, each one putting emphasis on specific disputed areas. Together with the main cartographic documents, the text was meant to enumerate forensically the territorial influence exercised by the two states over disputed sites. It is a catalogue of protracted historical wrangles.

In the long history of the border, the Panaro River in proximity to the Pass of Sant'Ambrogio was one of the most disputed sites. This was due to the strategic role played by the Via Emilia, the important Roman road cited earlier that gave access to the plains of the Emilia region, to the Adriatic Sea and to Milan, and made it possible to reorganise the territory for agricultural production. Given that in this area the border coincided with the Panaro River and this important road, it was crucial for both states to retain control of the Pass of Sant'Ambrogio for commercial, political and economic reasons.

Chapter nine of the agreement of 1790 seems to be crucial in giving final resolution to centuries of conflict over this area. Since water movement was unpredictable, this agreement eventually declares that in whatever direction the river course moved, it would always remain Modenese:

> Consistently with what was declared in this regard in the above-mentioned transaction of the year 1474, which is accurately transcribed here, the river and water of the Panaro will forever remain a property of the Modenesi Government and of his Most Serene Highness Duke of Modena and his heirs. This is valid even in case river erosion causes an alteration of the line marked in the map especially made on the occasion of this exchange. [70]

[70] The full text reads as follows:
"Coerentemente a quanto fu espresso in questo proposito nella sopra citata transazione dell'anno 1474, che qui si vuole replicato, e non mai in modo diverso, dovrà sempre, ed in perpetuo rimanere, ed essere del Governo Modonese, e così di sua Altezza Serenissima il Signor Duca di Modona, e suoi Serenissimi Successori il Fiume, ed acqua del Panaro, ancorché per le corrosioni, che col tratto del tempo potessero accadere, il mentovato Fiume venisse ad oltrepassare la linea di confine siffatta in mappa in circostanza della presente permuta, e resterà, e sempre apparterrà al Territorio Bolognese tuttociò, che dalla parte orientale del Panaro stesso, e alla fronte del Suddetto territorio formerà Ripa, Saldino, Berleta, alluvione, e qualunque altra porzione di terreno in qualsivoglia tempo, ed in qualsivoglia modo non occupato dalle acque del corso ordinario del fiume, e nelle escrescenze, e piene ordinarie del medesimo." Ibid., 11.

Until this moment, the disputes between the two states over the centuries had resulted from changes of the river course (due to floods, inundations, burst banks, silting), which required continual adjustments of boundaries and, as a consequence, led to a constant need for new agreements. Using the riverbed or its banks as a border to define a physical space in a given moment meant accepting that the line is mobile for natural reasons and due to human activity. Boundary marks could not resist natural wear and tear, acts of sabotage or opposing interpretations regarding their position after a flood.

Hence, after centuries of disputes due to the instability of waterways, it became increasingly important to recognise the indeterminacy of the river and accept the impossibility of it demarcating a fixed border with precision. By specifying not only that the Panaro River but also its water defined the border, the two states acknowledged that it was subjected to natural movement and therefore, it was fundamental to maintain its independence from constraints established by measurements. According to this agreement, the border always needed to follow the ordinary river course in its movements and changes. With this resolution, the final agreement shows an extreme practicality in dealing with an aquatic border. At this point in the text, it becomes clear that, due to the nature of the border itself, it was not worth insisting on making minute and scrupulous border demarcations or undertaking hard work to ensure that the river kept the same, precise and fixed course. To accept the river water and its changes as a border meant to declare that all that is located to the east of the river, including any growth left by fluvial deposit and erosions dug out by its flow, is Bolognese:

> The following territory as described will remain Bolognese: all that is located on the eastern side of the Panaro and in the front of the aforesaid territory creating Ripa, Saldino, Berleta, flood, and any other portion of land at any time and in any way not occupied by the waters of the ordinary course of the river, even in case of growths and floods of the same (above named river).[71]

[71] Ibid.

However, this agreement seems paradoxical. On the one hand, it seems completely to accept the changing nature of the river and the dynamism between land and water, without bending the river to human need. On the other hand, the attempt to come up with a convincing statement ─ "the river remains Modenese in whatever direction it moves" ─ gives way to an ambiguity later in the text. In fact, page 15 provides details about the exact location of landmarks for an accurate definition of the new boundary line (*andamento del nuovo confine*). This information expresses in words what the attached map n.158 renders into visual form, as already discussed.

As I have already stated, the river was not only an important waterway, but also an important source of food and power for mills. Therefore, the changing positions of watercourses often had profound economic implications. Conflicts between parties over the control and ownership of water, mills and other topographical details were very frequent. Also, a river in all its manifestations could create extensive damage with consequent disputes over the costs of repairs, a pertinent issue for the local population.

As is documented by the 1790 settlement, with its lengthy references to and reiterations of previous agreements, these issues had forced governments to renegotiate the border continually, and many disputes arising from political tensions between the two territories reignited. In fact, we can observe that state relations were particularly critical at specific historical moments. As archival documents and primary sources demonstrate, throughout the Middle Ages, the nature of the border conflict was mostly political. It concerned the crisis of the feudal system and the rise of the communes. Indeed Bologna, which was on the side of the Guelphs, and Modena, on the opposing side of the Ghibellines, had fought over this territory for the entire twelfth, thirteenth and fourteenth centuries. Then, with the stabilisation of the Signorie and the centralisation of power, the nature of the conflict changed. With the rise of the central

power for each state, along with the Magistratures overseeing these matters, the focus narrowed more and more on the control and management of watercourses.

After 1790, the resentments were largely overcome and the Panaro River and the Muzza canal were no longer places for serious conflict. To symbolise the end of this, the construction of a bridge on the Panaro was started in 1789 under the supervision of Giuseppe Maria Soli.[72] The structure was inaugurated by the Duke Ercole d'Este after three years of work on the 27th of March, 1792, and it featured four towers and arches, now lost due to bombardment during the Second World War. The construction of this bridge can be considered a symbol of reconciliation after the countless fights, disputes, wars and redefinitions over an area that had been the core of conflict between the Bolognesi and Modenesi for centuries. Moreover, in a border marked by waterways, the bridge represented the only material and tangible evidence of the attainment of a definitive agreement: a crossing-over, an act of mutual faith.

[72] He was an architect and painter (Vignola 1747 - Modena 1822). He was trained at the Academy of Bologna, and then he went to Rome (1770-83), where he was influenced by the classicism and the paintings by Pompeo Batoni. Finally, in Modena, he directed the academy and taught architecture, and he became court architect in 1789. He also worked in Venice where he completed the Duke Palace. See Francesco De Boni, *Biografia degli artisti ovvero Dizionario della vita e delle opere dei pittori, degli scultori, degli intagliatori, dei tipografi e dei musici di ogni nazione che fiorirono da' tempi più remoti sino a' giorni nostri* (Venice: Il Gondoliere, 1840).

Conclusion

What I have hoped to demonstrate in this chapter is that the ambiguity constructed by the various official agreements, signed over the centuries, was partly intentional. It allowed to renegotiate the border according to their changing interests. These agreements often consisted of easy compromises and, as a consequence, they quickly gave way to subsequent complaints and recriminations. Despite official agreements coming into force, every time the resolution remained only theoretical. Even when boundary lines were drawn on maps and signed off by the opposing litigants, such documentation was always insufficient to resolve differences.

The analysis of the content of state agreements has allowed us to reconstruct an historical framework concerning the question of borders and to clarify the aims of these juridical texts. The need to solve border conflicts nearly always resulted in an official agreement. Disputes could emerge between communities belonging to the same or different jurisdictions, within the same or different states.

At the beginning of this chapter I outlined a distinction between ‘local’ and ‘central’ disputes. Although this distinction is important, one should not apply it with too much rigidity. With the analysis of the dispute about the flooding of the Muzza, it became clear that when a dispute arose at community level and lasted for several decades, under the distracted supervision of governments, in the end it could have an impact at state level, involving important political authorities and becoming an object of state agreements.

With my brief analysis of the maps produced for the final agreement in 1789, I aimed to draw attention to the turning point of representational changes that occurred in cartography in the eighteenth century. I have been looking at what remains consistent in the transformation of maps and exploring the manifest need to define and organise the border which always refuses to be in a determined and stable condition.

Looking at how these documents produce and re-produce boundaries, my emphasis is on opening up new and different interpretations of borders. In the next chapter I shall consider one of the main challenges for border studies: developing a form of analysis that both emphasises and interrogates this gap.

CHAPTER II

Representation and the border: maps of the Panaro River and the Muzza canal

The mythology may change back into a state of flux,
The river bed of thoughts may shift.
But I distinguish between the movement of the waters on the riverbed
and the shift of the bed itself; though there is not a sharp division of
the one from the other.

Ludwig Wittgenstein[1]

One of the most important guidebooks of the sixteenth century, the *Itinerario d'Italia*, has a chapter dedicated to Bologna and its territory. As one would expect, it describes the Panaro River as a border between two states: "Along the via Emilia, three miles from Modena, flows the Panaro River: the border between the Modenesi and Bolognesi."[2] A more detailed manuscript map informs us about the border zone between the two states (fig.17).[3] In this map, the Panaro River on the left (west) and the Muzza canal on the right (east) are represented vertically along the edges of the sheet. The town of Nonantola is in the top centre of the map and the Pass of Navicello on the Panaro gives a precise location for the border line (fig.17a). Here, the presence of a little boat with passengers on the Panaro recalls the river's dual function as border and passageway between the two states (fig.17b). The geometric measurement of each section of land contrasts with the movement of the waterways, rendered through curves and subtle irregularities. The pictorial emphasis on the movement and fluidity of the waterways stresses the ambiguous nature of the border (fig.17e).

[1] Ludwig Wittgenstein, *On certainty* (New York: Harper & Row, 1969), §97.

[2] Andrea Scoto, *Itinerario d'Italia overo nova descrittione de' viaggi principali d'Italia: nella quale si hà piena notitia di tutte le cose più notabili, & degne d'esser vedute* (Padua: Francesco Bolzetta Libraro, 1615), 74.

[3] ASMO, Mappario Estense, Topografia dei terreni, f. 37/1. Early 17th century (ink and green watercolours on paper, 60 x 52 cm): Map of border between the Modenese and the Bolognese territory on the side of Navicello and Nonantola, showing the profile view of Nonantola and the wood.

When we think about borders in general, there is a sense of stability.[4] However, in our case, this clarity is challenged by the instability of water. What are the implications of this fluidity, and how is it depicted? How is the paradox of delimitation and flow expressed in pictorial terms? In the previous chapter, I examined the mobility of the border from a socio-historical perspective. My aim here is to approach this paradox by means of a close pictorial analysis of three maps showing the territory between the Panaro and the Muzza Valley. In this chapter, I am concerned less with a map's cultural, historical, and political meanings, and more with *how* it represents something and how that representation addresses its viewers. The maps suggest that its makers had a clear concern for describing the borders, coupled with efforts to give consistency to water, which carries within it an unpredictable strength.

In seeking to understand how these different cartographic materials work visually, the three sections of this chapter focus on the possibilities and frustrations of establishing and representing a border. In the first part, I will explore the complex pictorial forms used to describe borders between places, considering the visual role played by water. This part covers three examples of maps that show the contradictions inherent in trying to depict borders defined by water (figs.1-17-19). By paying attention to composition, lines, and colour, and attendant questions regarding mutability, I will explore how image-makers tackled the paradox of a border marked by water.[5] I seek to understand how each map engages with the daily challenge of manmade and natural changes to the river. In the second part, I will consider a geometrical map dated in 1609,

[4] Angus Cameron, "Ground zero - the semiotics of the boundary line," *Social Semiotics* 21, no.3 (2011): 419.

[5] Regarding the maps analysed in this section, I could not find their attached report, and therefore I could only focus on their surface and visual appearance.

which reveals different attempts to provide an exact description of the border (fig.20).[6] In the third part, I consider the process of re-mapping the border by looking at how the same place was represented at different times. The chapter as a whole draws attention to the early modern dynamics of a struggle with water, as an attempt to both control its flow and to manage its representation.

In the paradox of a fluid border, I argue, lie the two sides of cartographic representation: the constant oscillation between opposites, between certainty/uncertainty, visibility/invisibility, opacity/transparency. My focus moves in between these opposites where instability, conversion, and uncertainty acquire a certain methodological status. Thus, this chapter turns from historical and formal analysis towards a more theoretical approach, towards an investigation of the nature of representation in general.

PART I

Border and fluidity: an introduction to a paradox

In this first section, I will focus on three maps all dated to the early seventeenth century. Starting from the visual elements ─ composition, colours, lines and points of view ─ I will explore the ways in which they represent borders. I emphasise shared mapping and pictorial practices together with the active and creative role these played in shaping and representing the territory between Modena and Bologna.

Each of the three maps shows a different area of the Muzza, each map provides a detailed illustration of the landscape features. The first map to be discussed, the Panaro River and the Muzza canal map, shows the woodland between the Pass of Navicello and the bridge on the Muzza (probably the current bridge of Losco, on the Bolognese border

[6] ASBO, Assunteria Confini ed Acque, Mappe, Vol. 4, n.32. 1609 (ink on paper): Official map of declaration of border between Modena and Bologna at the Pass of Sant'Ambrogio, nov 1609, in the presence of the surveyors Floriano Ambrosini e Pasio Pasi.

with Sant'Agata), separate sections indicating each state (fig.17c).[7] The second example, the Muzza Valley map, shows my area of analysis, giving a general overview of the condition of the Muzza canal and the Panaro River in the area between Vignola and Castelfranco (fig.1).[8] The third map, the Muzza canal flooding map, focuses on an area subject to flooding conditions of a specific section of the Muzza canal between Nonantola and Ravarino, Sant'Agata Bolognese, and Crevalcore (fig.19).[9] The attention paid to rendering the fluidity of the border in these maps is particularly striking. My analysis of them emphasises that their forms enable us to access not only what each map might say or explain about the territory, but also what it evokes by representing it. I will consider the tension between what can be represented and what escapes description, that which remains problematic, contingent. and self-contradictory.

2.1 Composition

Although the border between Modena and Bologna was generally identified by rivers, the actual territorial and political situation was more complex. As discussed in the first chapter of this thesis, in the sixteenth and seventeenth centuries the states of Bologna and Modena were characterised by administrative, political, and juridical divisions within each state.

These divisions and the presence of internal borders are evident in a map from the Modena Archive, probably made during the first half of the seventeenth century. It presents a system of roads that divides the land into six sections, each with an indication

[7] ASMO, Mappario Estense, Topografia dei terreni, f. 37/1. Early 17th century (ink and green watercolours on paper, 60 x 52 cm): Map of border between the Modenese and the Bolognese territory on the side of Navicello and Nonantola, showing the profile view of Nonantola and the wood.

[8] ASBO, Assunteria Confini ed Acque, vol. 4, n. 38. Early 17th century (ink and watercolours on paper, 130 x 50 cm): Map of border between the Bolognese and the Modenese territory with the representation of the Panaro River and the Muzza canal.

[9] ASMO, Archivio Segreto Estense, Cancelleria, Confini dello Stato, f. 52 /4. Early 17th century (ink and watercolours, 60 x 43 cm): Map of the Muzza Canal between Nonantola in the State of Modena, S. Agata and Crevalcore in the State of Bologna.

of state affiliation (fig.17c). The map covers the area between the Muzza canal and the Panaro River with the town of Nonantola at the top and the representation of the Pass of Navicello on the right side. In the attempt to convey the idea of the Panaro and the Muzza as a border between the two states, the draughtsman located the two watercourses at the edges of the map. Thus, their function as a border is affirmed twice: the rivers represent the actual limit of each state whilst, at the same time, they form the edge or frame of the composition (fig.17).

The above identified map of the Panaro River and Muzza canal measures 60 by 52 cm, with the damage it has sustained indicating it was twice folded in a particular sequence. Holes in the paper appear horizontally along the final external fold. The horizontal and vertical folds running along the surface suggest that the map was folded four times ─ a pocket size of 11 square centimetres ─ when it was stored. Although it is a well-used map, its folding has contributed to a remarkable conservation of its colours.

While we do not possess any supplementary information about the function of this map, its pictorial richness makes it unlikely that it was used during border inspections. Instead, it appears to be the final result of a complex series of negotiations of a kind that usually anticipated the process of land division.[10] The area represented was and still is part of the 'partecipanza agraria', one of the medieval forms of common property often found in lowland areas.[11] Currently the Partecipanza Agraria extends over 769 hectares to the north-east of Nonantola, which borders with Ravarino

[10] In the same folder, there is a drawing showing the land division of the woodland of Nonantola, containing the measures of each field parcels. ASMO, Mappario Estense, Topografia dei Terreni, f.37/2. 1675. (pen on paper, 60 x 52 cm): Drawing showing the system of division characterised by six main sections and subsections called 'tagli'.

[11] Carlo Berselli, "Natura giuridica dell'Abbazia di Nonantola," in *Atti e memorie delle Deputazioni di Storia Patria per le province modenesi* 8, no.5 (1953): 238-243; Renato Bernardi, *La Partecipanza Agraria di Nonantola* (Modena: STEM-Mucchi, 1977); Rossana Venturoli, *La Partecipanza Agraria di Nonantola* (Nonantola: Centro studi storici nonantolani, 1988).

(Modenese) and Sant'Agata (Bolognese).[12]

In the Middle Ages, the history of the *partecipanza* is very complicated due to the intricate relationships between the local community and the Nonantola monastery and later between the Commune and the abbey. The area depicted in the map was part of the Nonantola abbey; then in the sixteenth century it was conceded to the Communes of Modena and Bologna.

In 1507, after many disputes, the woodland of Nonantola was divided among local communities in order to simplify its administration and to ensure the equal distribution of its natural resources. The Panaro River and Muzza canal map, shows the division of another valuable natural resource, the woodland, situated between the two communities. As we can see, the woodland is divided into six main plots each of which is equally assigned to the Bolognese and Modenese. The functional use of the territory is further attested by the network of roads crossing the woodland and the hydraulic system consisting of the Panaro River and the Muzza canal. The map clearly conveys that roads, canals and rivers constituted not only the division of the woodland, thus allowing for its crossing and exploitation, but also facilitated the movement of people and goods.[13] The network of roads that crosses the woodland and the hydraulic system

[12] See http://www.partecipanzanonantola.it

[13] Numerous studies address the importance of canals and waterways for the transport of goods and for navigation. On Modena see Elia Lombardini, *Delle condizioni idrauliche della pianura subappenninica fra l'Enza e il Panaro* (Milan: Tip. Lit. ingegneri, 1865); Mauro Calzonari, "Navigazione interna, porti e navi nella pianura reggiana e modenese (sec. XI-XIII)," in *Viabilità antica e medioevale nel territorio modenese e reggiano* (Modena: Aedes Muratoriana, 1983); Manicardi and Baracchi, *Modena: quando c'erano i canali*; *Vie d'acqua nei ducati estensi*. Also a considerable number of documents preserved in the State Archive of Bologna concerns specific problems and individual objects related to the establishment of an institution called *Gabella Grossa*, which managed the duties on imported goods entering the city and the countryside, or on goods which were exported from here by water. Duties coming from the trade passing through the Naviglio canal, which linked Bologna to the Po of Primaro, were in part destined to pay for works of renovation or reconstruction, but especially to maintain works of this basic waterway. The collection of documents on the establishment of Gabella Grossa is rich in topographical documentation ─ chorographies, profiles of river beds, plans of industrial buildings or adjustments of the canal. The documentation dating from the beginning of the sixteenth century to the 1796 allows one to reconstruct the history of the canal, its condition and its furnishings. It also shows the process through which the complex hydrography and flooding of adjacent lands were studied in detail and redefined at several points in those three centuries. On the working of *Gabella Grossa* and its

is characterised by a series of ditches running along canals as integral parts of the natural waterway network. The ditches allow water drainage which in turn contributes to the maintenance of an equilibrium in the complex hydrological system.

Also, the presence of settlements on the map is clearly meant to evoke a reality characterised by the intense exploitation of natural resources. In this part of the lowland territory, the system of roads, which represented territorial boundaries between lands, could include cultivated and uncultivated areas of woodland, marshes and moorlands.

From the Middle Ages to the eighteenth century, there was a close relationship between wood and communities for the maintenance of the local economy, as shown in the abundant documentation preserved in the Archive of Modena and Bologna. [14]

The exploitation of the woodland is also confirmed by a drawing dated in 1675 contained in the same folder of the Muzza canal and Panaro River map (fig.18).[15] This drawing accurately identifies the system of division characterised by six main sections and subsections called 'tagli' (fig.18a). The woods that were meant to be cut down to ensure quick and luxuriant growth were identified by these so-called 'tagli'. Precise rules regulated the activities relating to the 'taglio', essential for the equilibrium of the woodland as whole.

The difficulty of representing the borders between the tagli is apparent in the compositional structure of the map of the Muzza canal and Panaro River (fig.17). None of the sections of the woodland is the same shape. This irregularity is the result of natural morphology and the recurrent conflict between communities for control over the

management, which was entrusted to the Colleges of Bolognese Studio, see Mario Carboni, "La finanza pubblica a Bologna in età moderna," in *Storia di Bologna*, ed. Adriano Prosperi, vol.3 (Bologna: Bononia University Press, 2008), 736-737.

[14] Elisabetta Arioti, Euride Fregni and Stefano Torresani, eds., *Le partecipanze agrarie emiliane: La storia, le fonti, il rapporto col territorio* (Nonantola: Ministero per i beni culturali e ambientali, Soprintendenza archivistica per l'Emilia-Romagna, 1990), 50.

[15] ASMO, Mappario Estense, Topografia dei Terreni, f.37/2. 1675. (pencil on paper, 60 x 52 cm): Drawing showing the system of division characterised by six main sections and subsections called 'tagli'.

land. Each boundary has been interrogated and negotiated. Further, the irregular shape of each plot is outlined by roads that define its perimeters.

This sense of instability is also evoked by the fact that the two watercourses go beyond the limits of the page. They appear as a flowing force that continues its journey beyond the space of representation. Thus, the image functions internally, within its own space, but also interacts with what is positioned beyond its frame, most notably: the viewer.

There is a significant level of distortion in the rendering of landscape features in the map. For example, the exaggerated scale of the trees is not casual, but likely intended to showcase the importance of this specific tract of woodland for the Nonantola economy. Emphasis on the trees attests to the significant resource of the woodland for this community, which was preserved until the late nineteenth century when it was deforested. This environment offered a wide range of products: wood for building and heating, grass, seeds and leaves for feeding livestock, and fruits of all kinds. The woodland area also provided ample opportunities for hunting and fishing. All these activities were fundamental for the larger community, especially in periods of crises or food shortage.

Importantly, however, the scale of the trees was not only intended to convey the value of the wood for the local economies. The visibility of both the woodland and its system of land division also testifies to the realisation of a particular social order after centuries of disputes between communities.[16] The presence of other maps and documents in the archive concerning the Nonantola woods indicates that the area had been the subject of ongoing conflict. Among the documents is a volume, the ‘libro delle

[16] On the symbolic and material significance of the woodland and trees in the early modern Europe see Stephen Daniels, “The political iconography of woodland in later Georgian England," in *The iconography of landscape*, ed. Denis Cosgrove and Stephen Daniels (Cambridge: Cambridge University Press, 1988), 43; Douglas Davies, “The evocative symbolism of trees,” in *The iconography of landscape*, ed. Denis Cosgrove and Stephen Daniels (Cambridge: Cambridge University Press, 1988), 32.

denunzie del bosco', which records the sales of products derived from the woodland.

Another distinctive feature of this map is the architecture; the detailed and precise treatment of the town contrasts with the few little houses scattered across the land. The latter are only sketched in black ink, as are the little figures and boats, all of which are rougher and less finished than the woodland (fig.17c). Their incompleteness is another element that suggests a challenge faced by the draughtsman when seeking to represent the landscape in a useful and coherent way.

Yet the fluid brushwork visible on the surface of the map reinforces the imprecise rendering of the architectural and land features. If we look at the representation of Nonantola, a sense of scale is achieved: the towers stand out above the lower buildings. The city itself appears in profile. It is shaped and presented in relief for our viewing and its colours, shapes and textures are combined to make it recognisable as a three-dimensional form even if it is on a flat surface. The attempt to render depth in a two-dimensional composition is also visible in other elements. Even the trees and the four men walking along country roads are seen in profile and are completely out of scale with the buildings that comprise the town. The simultaneous engagement with and resistance to the two-dimensional representation is not only expressed through deformation or distortion but is intrinsic to the map as a whole.

The omission of the canal that flows towards Nonantola is noteworthy. A large-scale map could have easily accommodated a more detailed representation of the water network. Instead, the illustrator has focused on the country roads that define the land belonging to each state between the two main watercourses. These roads, which are not visible in other maps showing the same area (for example, see fig.9), highlight the fragmented nature of the territory divided into smaller portions of land and private properties. Thus, even though the map simplifies a more complex reality involving political authorities and private interests, it registers the complicated border system that

existed between the Panaro and Muzza canals. These two watercourses are also compositional elements that constitute an inter-place that is characterised literally and figuratively ─ as we have seen ─ by fluidity and instability.

I introduced this thesis by discussing the functional role played by water in the configuration of an early seventeenth-century manuscript map from the Bologna Archive (fig.1). In effect, this map is a portrait of the Muzza valley with indications of property boundaries, roads, mills, and fortresses, as well as a detailed survey of the main watercourses. It also shows an attempt to determine the routes of the Panaro River and Muzza canal after a dry season. The mouth of the Muzza canal is clearly represented, as are the mills along its main course. The waterway referred to in the map as 'canale per addacuare' (lat. Adaquare ─ to water) is the only one without mills along its length because it was used to irrigate the surrounding land (fig.1e). On the right is a representation of the *Traversagna.* This is a spillway discharge canal that brings back excess water from the Panaro into the Muzza. The canal is represented as completely dry, stressing that an insufficient amount of water is flowing into the Bolognese territory (fig.1f).

This map makes visible the spatial and political ideology of the authority that commissioned it as a way of reaffirming its own territorial power. It represents the interests of the Bolognese side by illustrating the terms of the main controversies with the Modenesi. A dam is the focal point of the composition, suggesting the aim behind the map (fig.1g). It seems to draw attention to the subtraction of water from the Bolognese territory by this large dam, built by the Modenesi on the Muzza. It diverts water towards the canal of S. Cesario and its namesake mill, represented unrealistically larger than the fortress of S. Cesario, and then onwards to Nononatola in the Modenese territory. The unstable and hybrid character of the border is thus well expressed here.

The reconstruction of the political and territorial statement of the map through

the interpretation of its visual components confirms, yet again, that the early modern idea of a border was closely linked to the territory and its daily use. As explored in chapter 1, the border was challenged by the habits and daily practices of communities and individuals who lived around watercourses and used its natural resources. Yet, the actual use of water, the construction of canals or dams according to ever-changing needs of local inhabitants, transformed the watercourses and consequently, disrupted the huge efforts made by the central governments to define the border somehow.

In such a context characterised by immense challenges at different levels ─ local and institutional ─ mapmakers sensed the complexities of depicting the border as fixed and impenetrable lines. This resulted in complex images that combined geometry and anti-geometry, science and art. These maps are organised by geometry and a pictorial synthesis in which colours and lines both play fundamental roles.

2.2 Colours and Lines

Administrative cartography operated according to chorographic techniques up until the end of the seventeenth century. Pictorial techniques were combined with geometry as is clearly exemplified in the map of the Panaro River and the Muzza canal (fig.17). This map presents an extremely sophisticated representation of the border area in watercolour.

The pictorial variability together with spatial distortion create a sense of instability in the image. The aquatic movement of the waterways is conveyed by the fluidity of the watercolours rendered through circular brush strokes that generate a sense of motion across the whole sheet (fig.17e). By rendering the movement of water with this fluid rhythm, the draughtsman suggested its abundant flow as well as its potential to turn into an uncontrollable flood. The mixture of watercolours, ink, and pen emphasises the tonal relationship between the objects represented. Our attention is focused on the

contrasts between the light colours that define the watercourses and roads, the brown shades of the town, and the intense green of the land. Areas of the white paper are left unpainted to distinguish the roads and the watercourses are marked by a lighter tone. Such variations between dark and light are important for creating an effect of three-dimensionality. Pen and ink lines outline forms, indicating the shapes of trees, towers, windows and walls together with the contours of roads, all of which are delineated carefully and in great detail. Horizontal brushstrokes in watercolour are used to paint the green land. When one looks closely at the map, the web of brushstrokes that generate different shades of green seem to be random. But once viewed from a distance, the brushstrokes become visually understandable. The final homogeneous effect of the strokes is a painterly device called 'colorito' which was used, especially but not exclusively, in sixteenth-century Venice.[17] In keeping with this pictorial tradition, in the map colour is modulated to render the forms and spaces between different features. When perused closely, one can see that this is achieved by a juxtaposition of strokes of light and dark to suggest the texture of objects and surfaces.

As in a landscape painting, colours and effects of light and shade are used to construct a naturalistic representation. Light green falls between the trees, creating depth in the composition (fig.17d). Dark green defines the shade under the trees and the contours of the foliage, while the use of chiaroscuro contributes to creating three-dimensionality. Distinctions between the many shades of green invite viewers to distinguish between fertile and infertile lands and forests. There is a complex relationship created by variations between the land and other cartographic objects, not

[17] For a brief history of visible brushstrokes in painting, especially in Venetian artists see Philip Sohm, *Pittoresco: Marco Boschini, his critics, and their critiques of painterly brushwork in seventeenth and eighteenth-century Italy* (Cambridge: Cambridge University Press, 1991). In this contribution, Sohm argues that Marco Boschini in his book 'Carta del navegar pitoresco' (1660) redefined the term painterly (pittoresco) as a certain use of paint seen most commonly in Venetian artists and a few others including Parmigianino and Dosso Dossi whose common characteristic is the emphasis on colorito and visible brushstrokes.

all of which are painted in symbolic or conventional ways. Whilst there are no botanical distinctions between the trees, the level of detail in their textures draws attention to the individual forms, emphasising the important material and metaphorical role that they play in conveying the map's chief subject matter. Thus, trees are not just symbolic features for indicating fertile land; they also endow a sense of space and balance between the different elements of the map: roads, watercourses, and figures. At first glance, this arrangement makes the composition more coherent, giving a sense of order and resolution to its subject. However, looking more carefully at the layout of the whole picture, we can see that almost every line and shape has been allowed to interfere and bleed into another: distinct features of the landscape are linked together by the fluidity of the brushwork and the inked lines.

It is difficult to distinguish between aqueous and terrestrial borders. The linear presence of the two watercourses is interrupted by a set of lines. In fact, at first, these lines would seem to be little canals that derive water from the two main watercourses, represented by the same colour. But the presence of tiny spheres of individual life in action, such as men walking along, tells us that they must be roads. The roads are crossed by different individuals; it is possible to recognise a wanderer with a stick, a farmer with sickle on his shoulders, and maybe a soldier with a sword (figs.17f-17g-17h).

In the process of mapping complex territories combining fertile land, rivers, buildings, boats, and people, the draughtsman has created a profound and variable representation in which every element is depicted in a different way.

In the Muzza Valley map, the function and effect of colour is equally remarkable (fig.1). It is a good example of the complex pictorial style that provides an elaborate, detailed, and accurate view of mills, settlements, bridges, towns, fortress and waterways. Careful visual rendition is particularly evident in the towns and mills shown

in profile (figs.1h-1i). These topographical features are landmarks for understanding the relationships between everything else in the composition. Precise lines define the smallest details of the buildings, which are also rendered with fine variations in colour and shading. Numbers and names alongside the colour coding illustrate the importance of the dynamic water system. The water and the plains are represented by nuanced shades of blue and green in contrast with the colour used for woodlands. As linear features they are conventionally represented as lines. However, the schematisation and figurative synthesis of rendering this network of waterways and roads as two-dimensional lines does not exclude an expressive and pictorial characterisation of the environment as a whole.

As a representational drawing, lines can develop determined forms, dimensions and colours. The brown ink defines all of the architectural details and, as in painting, lines outline shapes and surfaces.[18] By establishing a high level of detail, the map consolidates its relationship with reality, through its progression from simple outlines and contours to naturalism (fig.1). In both maps, the affinity with landscape painting is striking, as is the attempt to transfer the variable landforms with their heights and depths onto the flat surface (figs.1-17).[19]

[18] On the use of lines in cartography see John Stanley Keates, *Understanding maps* (London: Routledge, 1996), 227; Tim Ingold, *Lines: A brief history* (London: Routledge, 2007).

[19] On the relationship between cartography and landscape painting, and more generally between the history of art and the history of cartography: Max J. Friedlander, *Landscape, portrait, still life* (New York: Schocken Books, 1963); Richard A. Turner, *The vision of landscape in Renaissance Italy* (New Jersey: Princeton University Press, 1966); Kenneth Clark, *Landscape into art* (Harmondsworth: Penguin Books, 1966); David Woodward, *Five centuries of map printing* (Chicago: University of Chicago Press, 1975); Juergen Schulz, "Jacopo de' Barbari's view of Venice: Map making, city views, and moralized geography before the year 1500," *Art Bulletin* 60 (1978): 425-474; Ronald Reed, "Historical link between cartography and art," *Geographical Review* 70, no.1 (1980): 60-78; Svetlana Alpers, *The art of describing: Dutch art in the seventeenth century* (Chicago: University of Chicago Press, 1980); Cosgrove, Denis E. "Prospect, perspective and the evolution of the landscape Idea," *Transactions of the institute of British Geographers*, New Series 10, no.1 (1985): 45-62; David Woodward, ed., *Art and cartography: six historical essays* (Chicago: Chicago University Press, 1987); Catherine Delano Smith, "Maps as art and science: Maps in sixteenth-century Bibles," *Imago Mundi* 42 (1990): 65-83; Edward S. Casey, "Mapping the earth in works of art," in *Rethinking nature: Essays in environmental philosophy*, ed. Bruce Foltz and Robert Frodeman (Bloomington: Indiana University Press, 2004), 260-269; *Representing place, Landscape painting and maps* (Minneapolis: University of Minnesota Press, 2002). For a comparison of a

The way in which content is shown also relies on a heterogeneity of methods and techniques. These maps are the result of calculations conducted on site using triangulation or other survey techniques for determining distances between objects, profile elevations, and gradients of terrain.[20] However the process of collecting data on the ground and then transferring it onto paper was not mechanical. The topographical and geometrical quality generated by these survey methods is accompanied by creative pictorial effects that were not limited to standardised systems of measurement and topographical knowledge.[21] Once the essential elements, such as roads, waterways, and settlements, were arranged according to the topographic survey produced by ground observation and mathematical calculations, then colour and lines could be deployed with flexibility to complete and elaborate the design of the map. The arrangement of colours, use of chiaroscuro and often inventive and evocative visual forms indicates that the mapmakers were aware of the graphic effects offered by the different media used.

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painting and a map, see Samuel Y. Edgerton, *The Renaissance rediscovery of linear perspective* (New York: Basic Books, 1975), 96-97. On the link between art and cartography in modern time see, Denis Cosgrove, "Maps, mapping, modernity: Art and cartography in the twentieth century," *Imago Mundi* 57, no.1 (2005): 35-54.

[20] Richard Edes Harrison, "Art and common sense in cartography," *Surveying and Mapping* 19, no.1 (1959): 27-38; Anna Maria Capoferro Cencetti, "I periti agrimensori in Emilia tra il XV e il XVIII secolo," in *Fonti per lo studio del paesaggio agrario,* ed. Antonio Martinelli and Lucia Nuti (Lucca: Centro internazionale per lo studio delle cerchia urbane, 1981), 405-411; Daniele Trento, "Cartografi e periti nella campagna bolognese," in *Paesaggio: immagine e realtà* (Milan: Electa, 1981), 23-30; Roberto Camaiora, "Forme della centuriazione: suddivisioni interne delle centurie," in *Misurare la terra: centuriazione e coloni nel mondo romano* (Modena: Panini, 1984), 88-93.

[21] In the sixteenth and seventeenth centuries, no centralised and uniform system of measurement and topographical survey existed. Usually triangulation was the method employed by surveyors, as in the first system of geometric land survey described by Leon Battista Alberti, which consisted in measuring distances by means of trigonometric procedures. Triangulation allowed one to establish the spatial matrix of a plan but not to define the contours of urban streets. In his treatise entitled *Libellus de locorum describendorum ratione*, Gemma Frisius (1508-1555) proposed to use this method to map long distances. The geographical positions of objects were identified the points of intersection between lines and, as Frisius pointed out, it was sufficient to measure the real distance of one point to fix the scale of the map. Triangulation was developed further in treatises by Cosimo Bartoli, *Del modo di misurare le distanze* (1564), Silvio Belli, *Libro del misurar con la vista* (1569), Egnazio Danti *Del radio latino* (1586) and Giovanni Antonio Magini *De Planis triangulis liber unicus* (1592). All these treatises were written at a short interval from one another and competed in studying the procedures for trigonometric surveys of land, with the common purpose of understanding the most appropriate methods to translate theory into practice. See Ronald Edward Zupko, *Revolution in measurement, western european weights and measures since the age of science* (Philadelphia: American Philosophical Society, 1990).

Uniting two- and three-dimensional features through the combination of oblique and vertical viewpoints, the map meant to provide a complex representation where scientific and pictorial knowledge co-exist. The territory that lies a few kilometres on either side of the Muzza canal and the Panaro River is described through minutely portrayed network of roads, vegetation, woods, bridges, settlements, lakes, and spring water.

The map is an assemblage of different methods and types of knowledge. Architecture, vegetation, and the different typology of settlements are shown pictorially whilst linear features such as waterways, banks, walls and roads are shown planimetrically, from a vertical viewpoint. These two aspects are interchangeable so that it is not possible to separate and completely distinguish between pictorial representational and geometric surface. In this way, the surface of the map is the location of an animated interplay, which provides the viewer with multiple ways of looking at a specific area. To this, letters, numbers, and textual notes are added to make clearer the ultimate objective of the proposed intervention, dispute or human activity. This assemblage of oblique and vertical viewpoints, pictorial and planimetric features, visual and textual description is perhaps the most fitting way of presenting a territory in constant change.

2.3 Points of view

The maps analysed so far provide good examples of how cartography in the sixteenth century was expected to represent a detailed landscape using varied points of view and projections.[22]

In the Muzza Valley map (fig.1), a view of the region from above is combined

[22] On projection in regional maps see John P. Snyder, "Map projections in the Renaissance," in The *history of cartography*, ed. John B. Harley and David Woodward, vol.3 (Chicago: The University of Chicago Press, 1987), 378.

with profile views. The map-makers included measurements of plain terrain and the calculation of distances according to fixed reference points, and projected the landforms and waterways from above. On the other hand, features of the landscape are immersed in it as miniatures, and represented naturalistically. The combination of two-dimensional landforms and three-dimensional landscape features results in a representation that adopts and, at the same time, challenges geometry. The lack of homogeneity is evident in the different orientations offered for single features. The common element is the use of a combination of projections: the bird's-eye views consist of various geometric patterns to denote cultivated space, hydraulic networks, and rivers. The profile view is applied to the representation of buildings, villages and towns, possibly to make them more recognisable. This corresponds with the recommendations of Cristoforo Sorte in his *Osservazioni sulla pittura*, published in Venice in 1580, where he describes the combining of different projection systems with reference to a chorographic map of Verona:

> I made this chorography with the right sizes and distances in the map, but the buildings such as cities, castles and villas with mountains and hills I drew in relief [...].
> I satisfied the need to make sites recognisable, therefore having represented them in this way, you can see all the rivers, the cities, the castles and villas between the mountains and some sites designed so that people familiar with the surroundings can recognise places without reading their names.[23]

In this passage, the pictorial devices Sorte offers are the same that Georg Braun and Franz Hogenberg, authors of *Civitates orbis terrarum*, the first collection of European images of the city, called *ratio geometrica* and *ratio perspettica*. According to Braun, the perspectival representation of a city by means of *ratio geometrica* allows for an accurate image in relief, one that presents the overall shape and the internal proportion

[23] My translation unless noted otherwise. ASBO Cristoforo Sorte, "Osservazioni sulla pittura," in *Trattati d'arte del Cinquecento fra Manierismo e Controriforma*, ed. Paola Barocchi, vol.1 (Bari: Laterza 1960), 282-283.

between full and empty spaces established by the grid of roads. In contrast, *ratio perspettica* enables us to see with depth of vision, as if in elevation.[24]

These rules were aimed at creating a cartographic system that would faithfully portray reality, complete with its characteristic traits. The ambition to represent the truth and totality of a landscape was pursued through the combination of different conventions: vertical projection, oblique projection, and a horizontal profile. In the maps analysed in this section, the combination of different points of view blends together to represent a territory in which the figurative, the architectural and the naturalistic mingle into the patent unreality of the whole.

At the same time, administrative maps were the result of a series of calculations intended to construct an image seen from above ─ a geometric projection instead of a bird's-eye view. In the attempt to render a space as real as possible the mapmaker does not respect the rules of vision. Thus, paradoxically, the attempt at veracity generates an image combining two and three-dimensional projections, narrative and figurative landscape features and abstract patterns generated from surveying activity.

In this sense the Panaro River and the Muzza canal map analysed at the beginning of this section is particularly striking (fig.17). The position of the Muzza canal and the Panaro River gives a west-east orientation to the map. According to this vantage point, Nonantola and the trees ought to be tilted in the same direction. Instead they are vertically disposed and orientated towards the viewer as well as the little figures sketched walking along the map's roads. The map thus offers a vertical orientation both for the reader and for the wayfarers inserted in the representation.

Perceptions of urban space are similar; they require a combination of solutions that exceed the limits of vision from only one point of view. The image of Nonantola multiplies the perspective fragments and thickens the flat shape of the cityscape. But at

[24] Ibid.,7

the same time it deploys a low point of view, and this affects the perception of the city as a totality, denying the viewer an opportunity to move through it visually.

In terms of visual rendering, this map is mixed, with vertical and axonometric elements both present to better define the object of representation. While for Nonantola trees and houses have a point of view anchored to the ground, roads and water systems are depicted from a high vantage point, directly above. Instead of a single vanishing point that determines the position of the viewer, the map presents multiple points of view and uses different scales and distances.

Differently, the level of distortion in the Muzza Valley map makes the space extremely condensed, with the direction of waterways intersecting each other, and scattered objects standing out against the flat and lighter land (fig.1). The movement between horizontal and vertical lines accentuates the mobility of viewpoints, and there is also a gradual straightening of lines and stylising of shapes. Deformation and distortion can be useful for understanding the reason and the conditions for the controversies over these tracts of land. According to various representational needs, the cartographer adjusted the different elements on the surface of the sheet in order to create a more realistic visual representation. Rendering hydrography, with distances and proportions in relation to urban settlements is the most crucial process. The course of the Muzza and Panaro in the map seems more accurate but the lines of the border ─ whose presence should be a priority for defining the two territories ─ are rendered in an approximate way. This is inevitable considering the unstable nature of the border.

The two maps examined so far introduce us to the ambiguous and contradictory nature of sixteenth- and seventeenth-century cartography. It is a mode of representation in-between rigorous planimetric description, profile and perspective bird's eye view, conventional and abstract signs combined with a figurative mode of representation of the settlements. Nevertheless, the combination of different perspectives, geometries, and

projection systems in the same cartographic document resulted in a rich and seemingly accurate large-scale representation. Quite simply, the perspectives of the features change according to the mapmaker's needs and the map's purposes. The final result is an artefact pursuing the goal of a 'total vision'. [25] What we see is an image made with the ambition to capture the 'totality of real'.[26] In the cases just cited, we witness the tension between geometry and non-geometry, theory and practice. It is precisely in this tension that we access the depth, the invisible dimension of representation. [27]

2.4 Transparency and opacity

On another seventeenth-century map representing a different section of the Muzza canal ─ between Nonantola and Ravarino at the top and S. Agata and Crevalcore at the bottom ─ there is a distinctive and controlled rendition of waterways (fig.19). The map is oriented to the east. The main canal, the Muzza, lies at the centre of the composition, with other derived canals flowing in different directions.[28]

Compared with the previous maps (figs.1-17), here the immediate impression is a sense of order and control in the essential components of its design. The cultivated lands, vegetation, waterways, and towns are signs of secular exploitation based on control over water sources. All of the efforts and management techniques taken to prevent flooding, to drain stagnant water, and to direct and normalise the main flow of

[25] Nuti, *L'immagine della città europea nel Rinascimento*, 22. Some other important works that trace the ambition towards a "totality of vision" are: Charles W. J. Withers, "Art, science, cartography, and the eye of the beholder," *Journal of Interdisciplinary History* 42 (2012): 429-437; Stephen Daniels, "Putting maps in place," *Journal of Historical Geography* 36 (2010), 473–480. Richard Helgerson, "The Land speaks: Cartography, chorography, and subversion in Renaissance England," *Representations* 16 (1986): 50-85. Rosie Dias, "'A world of pictures': Pall Mall and the topography of display," in *Georgian geographies: Essays on space, place and landscape in the eighteenth century*, ed. Miles Ogborn and Charles W. J. Withers (Manchester: University Press, 2004), 92–113.

[26] Ibid.

[27] Jacob, *The sovereign map: Theoretical approaches in cartography through history*, 22.

[28] This map is summarily described in the brochure of the exhibition recently organised by the Modena Archive "Segni sulle terre. Confini di pianura tra Modena e Bologna" (21 February – 18 December 2015).

water are well indicated. The map records the various strategies designed to defend the fields from destructive flooding through the marking of dams, embankments and draining systems, demonstrating that floods were frequent in this particular part of the Muzza.[29]

A certain anxiety about directing the water in one direction pervades the image. Lines flow across the surface creating a sense of movement. The straight and continuous trajectory of the waterways splits the surface into different parts and at the same time organises these into a unified structure. Each waterway has a relationship to another in a space where colours identify the different fields and villages, again seen in profile.

A straight red line running along the centre of the Muzza is identified by a label as the 'line of true border' (figs.19a-19b). But how can any such border be a line? As long as the border follows a bank there is no ambiguity, but when its movement is no longer defined by a structure, its fluid nature is revealed. The representation of the Muzza's broken banks contrasts with the sense of control and division that otherwise characterises the view. Along the course of the Muzza and at the top where we see the two banks of the 'Canale del Mulino di Ravarino' (in other maps denominated 'Canale di Nonantola'), the devastating force with which the water gushes into the countryside is clearly shown. Twenty-six broken openings (bocche di rotta) are rendered with disordered brush strokes of watercolour (figs.19a-19b). There is a confrontation between the one-directional flow that dominates the entire composition and the representation of the flooding.

The border is made visible but at the same time the map betrays its invisibility, the impossibility of determining its exact position and thus the imaginary status of the border as a line. Both stability and instability are manifested in the representation. Rigid and fixed lines of direction in the waterway and the shifting and multiple directions of

[29] Kain, "Maps and rural land management in the early modern Europe," 706.

the flow create a paradox.

I believe that the paradox shown in this map cuts to the very nature of representation. The border is articulated by a geometric and fixed line running along the Muzza with an attached annotation *line of true border* (linea del vero confine). However, the depiction of the Muzza overflowing creates a paradox. It reveals the immateriality of the border and calls to the invisible. In other words, the map establishes a border, while simultaneously stating its incomplete and complex nature.[30] As such, the map invites to a constant and continuous process of re-interpretation and opens horizons for potential relationships with what is not represented.

In order to unfold the relationship between visibility and invisibility, we can refer to the question of representation as addressed by Ludwig Wittgenstein in his *Philosophical Investigations*. According to Wittgenstein, representation is characterised by the coexistence of transparency and opacity.[31] A representation presents its content and at the same time it calls itself into question. In doing this, it brings out its inexpressible dimension, which is opacity. However, this opacity cannot be fully revealed because there is always something that cannot be disclosed, which must remain outside representation.

In a map, the lines, words and colours constitute only one of the meanings of the representation. This multiplicity means that in seeking to understand the map, we always face a non-understanding, an opacity which is inseparable from that which is visible. In this way, representation should always be thought of in conjunction with its opacity, as Giuseppe Di Giacomo explains:

[30] In this specific case, this map moves in between a discourse and an anti-discourse: a separation between what the map expresses through lines and colours, and what it expresses through words. On the problem of the relationship between representation and inscription see Michael Foucault, *This is not a pipe*, trans. James Harkness (Berkeley: University of California Press, 1973).

[31] Ludwig Wittgenstein, *Philosophical Investigations*, 4th ed. (Blackwell: Oxford, 2009).

> Consequently, denying this dimension of opacity in the image – i.e. denying the invisible – as if the image were totally transparent would make the image an empty simulacrum, unable to speak of the world. In Wittgenstein it is doubtless that the question of representation is linked with the question of thought: representing is indeed thinking […][32]

In the process of mapmaking, one is conceptualising and modelling the world. Accordingly, representing is related to thinking, both processes being selective and located. In the very partial materialisation of thought processes, a representation can only engage with the invisible without ever fully expressing it. Consequently, the gap between representation and reality can never be bridged.

In the paradox of a fluid border, the map presents us with the impossibility of filling the gap between the invisible and the visible. In the drawing of the Muzza with its linear banks (fig.19), the flow of water cannot be represented, in spite of the depiction of flooding. The confrontation between the constraints of the bank and the rupture created by the force of water shows the failure of the canal to maintain the border as a line, thereby revealing its indefinable nature. It is within this confrontation between opacity and transparency, where the mark is and where the mark could be, that the double nature of representation is defined. A constant oscillation between depth and surface, visibility and invisibility.[33]

Water with its varying states of aggregation and mobility challenges the notion

[32] Giuseppe di Giacomo, "Art and perspicuous vision in Wittgenstein's philosophical reflection," *Aesthesis: Pratiche, Linguaggi e Saperi dell'Estetico* 6, no.1 (2013): 171.

[33] One of the greatest efforts in modern philosophy and in art has been dedicated to defining the limits of this contrast on which the nature of representation is based. The enigma of representation, which underpins our understanding of art, is precisely in the relation as defined by Nietzsche in the *Birth of Tragedy* between Apollo and Dionysius*:* "Thus then the intricate relation of the Apollonian and the Dionysian in tragedy must really be symbolised by a fraternal union of the two deities: Dionysus speaks the language of Apollo; Apollo, however, finally speaks the language of Dionysus; and so the highest goal of tragedy and of art in general is attained." According to Nietzsche the greatest achievement of the ancient Greek tragedy is to combine Apollo and Dionysius which are the aesthetic equivalent of the opposition between logos and pathos, representable and unrepresentable, visible and invisible, surface and depth. The artistic idea that he defines as tragic is in the interpenetration between these two deities where the Apollonian art is no longer a mere surface but through the Dionysian acquires intensity and depth. In turn the Dionysian is released in Apollonian images. Thus, we can recognise the unrepresentable (Dionysious) only thanks to the form, the representable. See Friedrich Nietzsche, *The birth of tragedy*, trans. Douglas Smith (Oxford: University Press, 2008), 174.

of a border, becoming a direct metaphor of the invisible or as Gaston Bachelard argues "the language of water is a direct poetic reality."[34] With this Bachelard refers to water as an element that brings us directly to the issue of difference (and the 'between'), to what is flux and cannot be fully contained into visibility.[35] It signifies that which is excluded from representation and which, nevertheless, offers itself only through the representation and because of it. The uniqueness of the image makes us wonder, as if we were seeing it for the first time. As Ludwig Wittgenstein wrote: "Don't take it as matter of course, but as remarkable fact, that pictures and fictitious narratives give us pleasure, occupy our minds. ('Don't take it as matter of course' means find it surprising as you do some things which disturb you […])."[36] Here, Wittgenstein is referring to the unpredictable nature of representation, the opacity of which reproduces itself, always in a new form.

This thought can be applied to the large-scale chorographical maps described so far, with their heterogeneity of viewpoints. Because they were not made for a general audience but for an administrative circle, the form of communication is standardised, especially in the texts attached to them.[37] As described above, these examples also preserve a close relationship with landscape painting. They communicate how territory was perceived and experienced according to a symbolic, figurative and natural

[34] Gaston Bachelard, *Water and dreams: An essay on the imagination of matter*, trans. Edith R. Farrell (Dallas: Pegasus Foundation, 1983), 7.

[35] On the distinction and relation between edges and the in between, see Edward S. Casey, "Edges and the in-between," *PhaenEx: Journal for Existential and Phenomenological Theory and Culture* 3, no.2 (2008): 1-13. He dedicated other significant works to the philosophical reflection of the edge. See Edward S. Casey, "Looking around the edge of the world: Contending with the continuist principle and the plenarist Passion," *Chora* 5 (2007): 151-178; "Borders and boundaries: Edging into the environment," in *Merleau-Ponty and environmental philosophy: Dwelling on the landscapes of thought*, ed. Suzanne L. Cataldi and William S. Hamrick (Albany: Suny Press, 2007); "Keeping art to its edge," in *Rethinking Facticity*, ed. Francois Raffoul and Eric S. Nelson (Albany: Suny Press, 2008); On the relations between time and edge see "Taking Bachelard from the instant to the edge," *Philosophy Today* 33 (2008):1-16.

[36] Wittgenstein, *Philosophical Investigation*, § 524.

[37] Casti, *State, cartography and territory in Renaissance Veneto and Lombardy*, 881.

languages.

With the rise of Euclidean geometry in the eighteenth century, cartographic language eventually became characterised by rigorous homogeneity in which a map's elemental signs follow the same projection system and correspond to a conventional system. Each sign is translated into a symbol and each symbol corresponds to a precise meaning.[38] The point of course is not that cartography became more accurate in describing reality.[39] Contrarily, the process of description, especially in the early modern period, is closely connected to a wide range of overlapping traditions and forms of knowledge. Scholars have demonstrated that cartographic imagery from all historical periods is imperfect, partial and ideological. [40] This discourse is particularly relevant for early modern mapping where it is impossible to identify a clear line of progression from inaccuracy and opacity towards accuracy and transparency.

In the process of describing reality, in general, early modern maps present features of territory that come from direct observation together with a level of freedom in conceptualisation.[41] Similarly, administrative maps combine a type of description that

[38] On the changing of the cartographic signs and roles attributed to representation see Achille Lodovisi and Stefano Torresani, *Storia della cartografia* (Bologna: Patron, 1996).

[39] Postmodern historians of cartography have questioned the linear historical evolution of cartography as discipline which produced progressively a better description of reality. Harley and Wood argue that cartography "cannot be understood in terms of neat linear progression or seen as slow accreditation of cartographic knowledge and practice" see John Brian Harley and David Woodward "Concluding remarks," in *The history of cartography*, ed. John B. Harley and David Woodward, vol.1 (Chicago: The University of Chicago Press, 1987), 504. See also Denis Cosgrove's introduction to *Mapping* (London: Reaktion Books, 1999); Denis Wood, *Rethinking the power of maps* (New York and London: Guilford Press, 2010), 126 and Alessandro Scafi, *Mapping paradise: A history of heaven on earth* (Chicago: University of Chicago Press, 2006), 77.

[40] In particular Harley has strongly criticised the idea of maps as reflections of reality, arguing that "cartography is a form of political discourse concerned with the acquisition and maintenance of power" see John B. Harley, "Silences and secrecy, the hidden agenda of cartography in early modern Europe," 57. This idea is also discussed in David Turnbull, *Maps are territories: Science is an atlas* (Chicago: University of Chicago Press, 1993); "Cartography and science in early modern Europe: The construction of knowledge spaces," *Imago Mundi* 48, no.1 (1998): 5-24; Denis Wood, "How maps work," *Cartographica* 29, no.3-4 (1992): 66-74; Michael Blakemore and John B. Harley, "Concepts in the history of cartography: A review and perspective," *Cartographica* 17, no.26 (1980): 144.

[41] Emanuela Casti, "Towards a theory of interpretation: Cartographic semiosis,"*Cartographica* 40, no.3 (2005): 187-199.

adheres simultaneously to mimesis of the natural world and a more abstracted use of textual and visual languages.

The specific cartographic documents under consideration in this thesis display a strongly heterogeneous range of styles, systems of mapmaking, projections and locations. With regard to the map representing the inundation of the Muzza canal, the rural houses, mills and the border tower (probably the *Terrozzo dei Sertori*) are depicted naturalistically. But each of the towns ─ Nonantola, Reverino, Sant'Agata and Crevalcore ─ is represented as an imaginary medieval fortress (figs.19c-19d). The combination of realism and the imaginary, pictorial language and symbols, attests to the existence of representational conventions. These administrative maps are not to be understood merely as rational and coherent images produced by institutional authorities for clear, practical purposes. They are not homogeneous and rational documents which reduce differences and pluralities into transparent documents that can be easily grasped and understood.

Two important conclusions can therefore be drawn about the efforts manifested in the cartographic materials under discussion. First, all three maps reveal the problems, processes, and results entailed in making information visible by means of a heterogeneous language in which the abstract and the figurative, realism and the imaginary coexist.

Each of the maps discussed in this section use a pictorial language partly borrowed from allegorical maps and from landscape painting (for instance see detail 19e). They also anticipate a language consistently found in later seventeenth-century maps, where local features are indicated by abstract symbols. Early modern mapping is a multi-directional process that looks both backwards and forwards. By framing early modern mapping as linear, we impose inappropriate conceptual boundaries. The high

level of experimentation, strongly present in the maps discussed here, evinces an ambitious attempt to fix and to represent something that is in constant process.

Second, in their heterogeneous forms these maps do not stand as transparent images. Their opacity is reinforced by the difficulty of fixing in representational forms something that is indeterminate and unstable. Therefore, what maps represent through lines and colours exceeds visibility.[42]

How does something exceed the visible even whilst presenting itself as an object with a definitive dimension? Answering this question in relation to these maps means interrogating the discursive means that make them legible: their scale, projection, viewpoints, colours, and lines. Exploring the invisible does not mean a disavowal of the surface because it is manifested in the work. But this must not be confused with the artist's intention or with the artist's state of mind in any way. We must look at these maps in order to see not what they say but what they show.

To move in that direction, I turn to early modern discussions on borders and liquidity, beginning with the map attached to an agreement reached by Modena and Bologna in 1613.

PART II

Defining Borders: debates and conventions

Although maps clarify boundaries by making them visible, this does not necessitate that the border becomes tangible as well. Since the early modern period, it is through the presence of actual marks on the territory that a border is made completely visible. But, in our case, such visibility was impossible due to the liquid and elusive nature of the

[42] Many scholars have addressed the ambiguous nature of representation and the complex relationship between visibility and invisibility. See, for example, Louis Marin, *On representation* (Stanford: Stanford University Press, 2001); Gilles Deleuze, "The actual and the virtual," in *Dialogues II*, ed. Gilles Deleuze and Claire Parnet (NYC: Columbia University Press, 1977), 148-153; Maurice Merleau-Ponty, *The visible and invisible*, trans. Alfonso Lingis (Evenston: Northwestern University Press, 1968).

border. On what basis then was the border drawn on these maps? What criteria and calculations were used to define a border located in the middle of a river? Answering these questions calls for an analysis of a considerable number of early modern texts. Together, this body of work shows that the relationship between borders and waters was discussed in many different contexts.

In this section, I take as a starting point the map produced in 1609, which was only a few years before an important agreement was reached by Modena and Bologna over the area between Sant'Ambrogio and Castelfranco (fig.20).[43] This map will be analysed in relation to the treatise written by Bartolo da Sassoferrato, *De fluminibus Tiberiadis,* in which addresses juridical matters concerning property rights over water.[44] In his treatise, Bartolo also deals with the issue of land division in the instance of flooding. This was a topic also addressed by many of his followers, including Giovan Battista Aimo[45] and Giovan Battista Aleotti in his important hydraulic treatise *Della Scienza e Arte dell'Acque*.[46] The chapter entitled *Del modo di ben regolare le confine* is particularly interesting, because it is a clear intervention in the early modern discussions on the appropriate rules and methods for tracking a border along rivers and wetlands.

[43] ASBO, Assunteria confini ed Acque, Mappe, Vol. 4, n.32. 1609 (ink on paper): Official map of declaration of border between Modena and Bologna at the Pass of Sant'Ambrogio, nov 1609, in the presence of the surveyors Floriano Ambrosini e Pasio Pasi.

[44] Guido Astuti, ed., *Tractatus de fliminibus seu Tyberiadis by Bartolo da Sassoferrato* (Torino: Bottega d'Erasmo, 1964). On Aleotti and his works on hydraulics see Alessandra Fiocca, ed., *Giambattista Aleotti (1546-1636) e gli ingegneri del Rinascimento* (Florence: Olschki, 1998), 47-101.

[45] Baptista Aymo, *Tractatus de fluviorum allovionibus, deque iis que ex alluvione nascuntur commodis et incommodes* (Venice: apud Franciscum Zilettum,1581).

[46] Giovan Battista Aleotti detto l'Argenta (Argenta 1546-Ferrara 1636) was an architect and a hydraulic engineer in the service of the Este Family and then the Pope. He was the author of the treatise *Della scienza e arte di ben regolare le acque* and also of a printed maps, such as a chorography of the territory of Ferrara, published in Ferrara in 1613. This chorography has a great emphasis on the representation of hydraulic networks and highlights the works undertaken to facilitate water drainage. See Massimo Rossi, ed., *De la scienza et dell'arte del ben regolare le acque di Gio. Battista Aleotti detto l'Argenta architetto del Papa, et del pubblico ne la città di Ferrara* (Ferrara: Franco Cosimo Panini, 2000). On his activity as a hydraulic engineer for the Este family, see Franco Cazzola, "Il governo delle acque come pratica: Giovan Battista Aleotti e la crisi idraulica del Basso Po tra XVI and XVII sec," in *Giambattista Aleotti e gli ingegneri del Rinascimento,* ed. Alessandra Fiocca (Florence: Olschki, 1998), 23-46.

In this section, I analyse some of the passages included in the works by Bartolo and Aleotti. These contributed to elaborate a set of principles and rules which could help to identify a border in presence of a river and as a consequence to solve border controversies. In the background of these solutions to the necessity of marking territorial limits, there does not seem to be any political interest but instead, again, an indefinite perception of borders as being in a constant tension between order and disorder, stability and instability.

2.5 Lines of border: a map of the official agreement of 1613

The attempt to define the border is also seen in geometric and schematic representations, with a system for dividing space that involves a series of lines and fixed points marked by letters and numbers. In these representations geometrical lines pass through the river, defining shapes and lengths to describe in detail the border.

The topographical design of water management maps was not only meant to solve hydraulic problems and/or set out any other works intended to provide new territorial structures. In general, the representation of a border on a map was the first step in a process leading to a resolution of a problem. However, the investigation of the border and its translation into a map did not mean that what was presented by the map corresponded to reality. Maps were never a simple inventory of what was placed on the ground, but were, as Angelantonio Spagnoletti has observed, " a real program of what power wanted in that territory."[47]

In order to account for how the waterways were mapped out, it is important to consider two maps from the Bologna Archive, exemplifying an agreement between the two parties about the border area between Sant'Ambrogio and Castelfranco. This

[47] Angelantonio Spagnoletti, *Il mondo moderno* (Bologna: Il Mulino, 2005), 16.

agreement was officialised through a juridical text few years later in 1613. One of the maps shows what was established in the presence of surveyors Floriano Ambrosini and Pasio Pasi, representing the two states respectively. This map evidently replaces a second map, presumably an earlier version as it appears annulled (fig.21).[48] Strikingly, there is no substantial difference in terms of content. The two maps represent the border and testify to a specific juridical controversy between the Modenesi and the Bolognesi. It is a visual demonstration that the recognisance of the border is filtered through the measurement of space, as a way of determining the size and shape of the area under controversy.

In both cases, the space is divided into sections. The length of each section is marked out in 'perches'. The map that appears to have been rescinded is characterised by different shades of colour, which distinguish the river and the areas belonging to the Modena and Bologna territories respectively (fig.21). In contrast, the approved map expresses the system for dividing space in a geometric and schematic way (fig.20). This operation involved highly positioned authorities because it concerned a large scale definition of political boundaries.

Even in geometric representations like this, one may still see the difficulty of tracking a border in the middle of a river. The border, even when it was drawn, could be unstable, being subject to constant revisions.

In a geometric and schematic way, the map of the official agreement from 1613 shows the system for dividing space with a series of lines and fixed points marked by letters and numbers (fig.20a). The map has a scale at the bottom; the compass rose is high in the centre, thus indicating that the map can be rotated. Almost the entire right-hand border is devoted to a dedication that reads 'in name of God', and the date and

[48] ASBO, Assunteria Confini ed Acque, Mappe, Vol. 4, n.33. 1609 (ink on paper): Official map of declaration of border between Modena and Bologna at the Pass of Sant'Ambrogio, nov 1609, in the presence of the surveyors Floriano Ambrosini e Pasio Pasi.

title, followed by a textual legend. This, however, does not present a summary or key for understanding the content of the map. Instead, by providing information about the meanings of the letters that appear on the map, it explains the criteria adopted for tracking the border (fig.20b). Thus in the legend, the viewer is instructed to follow the perpendicular, horizontal and vertical lines through which the border is made visible. On this basis, it is possible to gain a complete outline of the position of various landmarks. This is what the legend states:

> A line is tracked starting from point A going towards the river passing through the *fossa traversagna*. Point B is chosen as the first fixed *termine*. From this point a straight line passing through the river reaches the other side of it, fixing the *termine* C. D is placed on the river but it is not considered a *termine,* since it was not possible to mark the position of a *termine* with a boundary stone. A-C-D create the geometric figure of a parallel rectangle. Point E falls on the river; together with point F it will create a right angle with the line of the road. F and not E will be considered another *termine.* The point G (followed by the point H) will be another *termine*. The other points I and L go toward the road, the last *termine* is placed after the tower of the pass of Sant'Ambrogio opposite the starting point A.[49]

From this we can assume that, in order to define the border between Modena and Bologna, the surveyors tracked a series of lines passing across the river. The *termini* are not placed on the river, but on the land overlooking it. It is clear that the border in this case is not the river, but the middle line of its flow.

Looking at the general schema of the geometric drawing, it seems to refer to Bartolo da Sassoferrato's dispositions in his *Tiberiadis*, where he presented innovative and original contributions to track a border in presence of a river and wetlands in terms of method and content. For instance, he suggested the introduction of Euclidean geometry to solve problems raised by the river increasing or the riverbed shifting, and that in turn could be used to resolve juridical problems between different Magistratures and their management of water mills. The fact that Sassoferato's principles were clearly

[49] Assunteria Confini ed Acque, Mappe, Vol. 4, n.33. 1609 (ink on paper): Legend on the official map of declaration of border between Modena and Bologna at the Pass of Sant'Ambrogio, nov 1609, in the presence of the surveyors Floriano Ambrosini e Pasio Pasi.

applied in practice in the agreement of 1613 shows how influential his work was in the early modern period.

2.6 Tracking the border on a map: Bartolo, Aimo and Aleotti

In his treatise, Bartolo discussed how to divide the flood surges which could cause a shifting of riverbeds. Bartolo's treatise represents a starting point from which other authors would later address same problem. Among these were authors like Giovan Battista Aimo who wrote a treatise which can partially be seen as an interpretation of Bartolo's dispositions.[50] As Osvaldo Cavallar pointed out there are many points of disagreements between Bartolo and Giovan Battista Aimo.[51] By applying geometry to nature, Bartolo proposes different ways of establishing a new border after a flood increase in order to ensure that the different owners of the land by the river could have access to it.[52] The criteria identified by Bartolo start from the assumption that the area in question has to be that in between the old and new riverbed. Moreover, he specifies that all geometric calculations have to start from the old riverbed. He proposes three main examples.[53]

In the *sixth figure*, Bartolo shows a case where the old river has the form of a straight line. In such a case, Bartolo proposes to draw a perpendicular line from the current river to the point of the border between Titius's and Seius's lands, Seius and Mevious on the old river: a perpendicular line and its parallel (fig.22). In this way,

[50] Baptista Aymo, *Tractatus de fluviorum allovionibus, deque iis que ex alluvione nascuntur commodis et incommodes* (Venice: Franciscum Zilettum, 1581).

[51] Osvaldo Cavallar, "Quod de tibere dicetur: Fiumi, incrementi fluviali, mulini ad acqua e giuristi," in *Arte e scienza delle acque nel Rinascimento*, ed. Alessandra Fiocca, Daniela Lamberini, and Cesare Maffioli (Venice: Marsilio, 2003), 102.

[52] Astuti, ed., *Tractatus de fliminibus seu Tyberiadis by Bartolo da Sassoferrato,* 85.

[53] The three examples are compared and discussed in detail by Osvaldo Cavallar in his article: "Quod de tibere dicetur: Fiumi, incrementi fluviali, mulini ad acqua e giuristi," 91-120. Here I have proposed a summary.

access to the current river and the proportionality to the land latitude were preserved. In this case, Aimo does not contradict Bartolo but he underlines that the dividing lines have to join the two rivers and that the latitude of the land to calculate has to be the one nearby the old river.

In the *seventh figure*, Bartolo presents the case of an old river with a form of a curved line (fig.23). As in the previous case, Bartolo proposes to track a perpendicular line from the old river ending at the point of the border between the lands of the three different owners, Lucius, Titius, and Caius. Aimo states that Bartolo does not respect the proportionality to the latitude of land, questioning his criteria for tracking the perpendicular line. The line from which Bartolo has tracked the perpendicular line was oblique in relation to the new river course. Thus, Aimo proposes to track the perpendicular line starting from a line straight and parallel to the new river course, resulting from the projection of the old one.

The disagreements between the two become crucial in the *eighth figure*, when the old river assumes the form of an obtuse angle and in its vortex falls the line of the border between the two lands (fig.24). Considering the area between the current river course and the old river, Bartolo proposes dividing it into two. The criterion for dividing the area between the line *gd* and the old river course is to track the bisector of the obtuse angle created by the old river until it meets the line *gd*. The criterion for dividing the area in between the old river course and the line *gd* parallel to the current river course is to draw a perpendicular to point *f*, the point in which *bf* intersects *gd*. All that there is on the left to the line *kfb* belongs to Titius, everything on the right belongs to Lucius. In relation to this figure, Aimo claims that Bartolo does not consider the proportionality of latitude of the lands and he improperly introduces the line *gd*. In contrast, Aimo

proposes only to track the perpendicular parallel to the new river passing through the vertex of the obtuse angle.[54]

To sum up Bartolo's indications, we can make two observations. First, the boundary lines have to be extended from the old river until they meet the current river ─ they cannot meet before. Second, the latitude of the land to be considered is the one which surrounds the old river.

If we look at the map of the agreement in relation to Bartolo's and Aimo's dispositions, first we notice that these authors state that all calculations are to be made starting from the old river course. The reason for this was that the river in its old position represented the recognised limit or border established and tracked by a superior, princeps, or censores. The current river course only represents the end point of lines drawn starting from the old river. Obviously after a river shifts, the extent of the land which surrounds it changes.

On the basis of the old river shape, geometrical calculations were applied in order to equally divide the river access or possible fluvial increases between the owners of the land adjacent to the river. The objections made by Aimo show a good comprehension and interpretation of Bartolo's dispositions as he became a new model for solving border controversies caused by the unexpected shifting of a riverbed. As we have already stated, the map of the official agreement was produced after the flood of 1520 which caused considerable change in the riverbed by creating a new one. The extent of land between the old and new riverbeds was considerable. The map shows horizontal and vertical lines of direction which start from the old river, indicated in the map as 'ripa vecchia del modenese' (fig.20c). The old river was a curved line, refering to the *seventh figure* illustrated by Bartolo. However, the map does not seem to follow

[54] Baptista Aymo, *Tractatus de fluviorum allovionibus, deque iis que ex alluvione nascuntur commodis et incommodes*, 293-295.

Bartolo's indications since the perpendicular lines to the border points pass through a straight and parallel line, not an oblique line as recommended by Bartolo (fig.20c). The course of the old river resulting in a curved line is projected onto a straight line. From here, perpendicular lines are tracked to the points of the border that according to the agreement of the 1613 had to be placed in three points: Casa dei Parenti, the bush and the tower (see chap.1 p. 69). In short, there is a line that intersects with another line to form right angles.

In the early modern period, Giovan Battista Aleotti also had a considerable influence in the legal discipline concerning water and more precisely on the method of division after a flood surge. Starting from discussing Bartolo's rules on division in the event of a flood, Aleotti identifies a general method which takes account of the unpredictable forms these could assume:

> But since the river flow increases sometimes in such a peculiar and uncommon way that one could hardly believe if one did not see it, I would propose as a general rule that all the partitions were carefully and thoroughly mapped. These maps should be so large-scale that it should be possible to distinguish not only perches, but also feet and inches, and they should include the names of the neighbouring landowners and the width of their respective portion of the river bank […]. At this point, the length or width of the river bank should be measured and, once a common unit of measure is established, it should be divided into as many parts as there are plots of land. Thereafter, each one of the landowners should be assigned a part of the bank, one after another according to their disposition on the river; in this manner we would be able to respect the size of each plot and of each portion of the river bank, but at the same time we would give to all landowners the possibility of accessing the river as they please without leaving their property, no matter if the boundaries become straight, curved or winding.[55]

[55] The full text reads as follows "Ma perchè le figure delle alluvioni sono tallora così stravaganti e così fuori delle forme regolari che non sarebbe quasi possibile il crederlo a chi non le volesse, io lodarei per regola generale che delle dividende se ne facessero le piante con tutta l'estrema diligenza possibile, riducendole in carta mediante una scalla tanto grande che di essa se ne potessero havere non solo le pertiche, ma i piedi e le oncie; notando in essa la misura delle larghezze delle fronti co' i nomi dei confinanti […]. Indi misurate la larghezza o la lunghezza della ripa del fiume e riportata una comune misura delle larghezze delle fronti e divisa la lunghezza della ripa in altre tante parti quante della ritrovata commune misura capiscono in tutte le fronti, e di questa assegnatane la sua parte a ciascheduno, l'uno doppo l'altro col medesimo ordine col quale stanno lungo la ripa, se assegneremo a ciascheduno la sua portione servati i termini e della larghezza delle fronti e delle loro portioni della ripa del fiume, facendo in modo che per il suo ciascheduno possa andarsene a suo beneplacido al fiume, diventino le linee divisorie e rette o curve , o flessuose." Massimo Rossi, ed., *De la scienza et dell'arte del ben regolare le acque di Gio. Battista Aleotti detto l'Argenta architetto del Papa, et del pubblico ne la città di Ferrara*, 853.

Aleotti adopts a simple method based on the application of geometry to nature. He proposes to map the river and track the border along the riverbanks, respecting the *termini* and the width of the banks in order to assign each parcel of land to different owners. Contrary to Bartolo, Aleotti does not reduce the forms of nature to Euclidean geometric figures. Aleotti aims to identify a method which respects the variety and irregular forms of floods (*le forme stravaganti delle alluvioni*) and makes their measurement easier. The theoretical assumption in his treaties is based on the insight that the flood increase cannot be predicted as the result of a perpetual cycle of water. The attempt to control water and define precise borders does not end with a technical question. Instead, Aleotti concludes the nineteenth chapter, entitled "how to regulate a border," by reminding the reader that the flood increase is something invisible to naked eye which humans cannot control:

> The river flow increases with a latent movement that evolves little by little, but in such a way that it is impossible for us to predict the moment in which it may increase because of the faulty nature of our sight, just as we are not able to perceive the pumpkins grow, even though we see them.[56]

These words show an awareness of the impossibility of preventing changes in water levels and courses, but obviously engineers and technicians had to deal with them and apply their knowledge and skills to controlling them. At the basis of all the hydraulic treatises discussed here, there is the constant attempt to understand the basic principles of water motion in order to control flood and inundation.

Early modern engineers and technicians also dedicated many specialised studies to the topic of water motion and flood causes. Don Benedetto Castelli (1578-1643) famously published his treatise *Della misura delle acque correnti* in 1628. [57] He was a

[56] Ibid., 854.

[57] Benedetto Castelli, *On the measurement of running water: A facsimile edition of Della misura delle acque correnti of Dom Benedetto Castelli,* trans. Deane R. Blackman (Florence: Olschki, 2012).

hydraulic engineer who studied with Galileo Galilei and was particularly active in Rome. He was a precursor of hydrodynamic studies and a model for other early modern engineers such as Zendrini Bernardino. Bernardino worked in Venice (1679-1747) and was the author of a treatise addressing a multitude of problems relating to the regulation and use of running water.[58]

In his refined study, Benedetto Castelli examines the flow rate of a river from which he deduced considerations about water motion and its consequent rising. His aim was to understand why a river might overflow. In the opening sentence of his treatise, Castelli states: "Sections of the same river may carry an equal quantity of water in equal times although these sections are unequal."[59] Again in the text he relates corollaries from which he developed secondary assumptions, taking into consideration two variables: climatic conditions and the presence of tributaries. In order to establish a theory of water movement, Castelli addresses the point of speed as well, identifying a series of principles on water movement. He concludes that "water changes its *misura* (measure) when the velocity changes, that is the flow area increases when the velocity decreases and the *misura* decreases when the velocity increases."[60] Movement is at the basis of all water changes, therefore understanding its principles was considered fundamental for the elaboration of strategies for control.

As a follower of Galileo, Castelli considers science to be the direct observation of phenomena, the possible causes of which have to be inserted into a general world system where each cause intertwines with another. The water speed and quantity are the

[58] Bernardino Zendrini, *Alcune considerazioni sopra la scienza delle acque correnti, e sopra la storia naturale del Po, per servire di lume nella controversia, che verte fra le città di Ferrara, e di Bologna* (Ferrara: Eredi di Bernardino Pomatelli, 1717).

[59] Benedetto Castelli, *On the Measurement of running water: A Facsimile Edition of Della misura delle acque correnti of Dom Benedetto Castelli,* trans. Deane R. Blackman (Florence: Olschki, 2012), 48.

[60] Ibid., 54.

direct causes of water increases, each of which is co-dependent. As this suggests, hydraulic projects in the early modern period were based on empirical knowledge rather than on precise calculations or scientific theories. Rather, scientific theories merely simplified and concentrated experiences derived from a direct observation of reality.

In Galileo's wake, Castelli was aware that science had to be limited to that which one could observe and explain by practical means. In this context, Galileo's criticism of his colleagues who could not accept powerlessness in front of the inexplicable is quite provocative: "I fear that our attempt to measure the whole with our own poor means leads us into strange fantasies, and that our particular hatred of death makes fragility hateful to us."[61] In Galileo's words, there is the awareness of impossibility to fully control nature. However, measuring and describing the border through cartography was still a necessary way to claim knowledge of a specific territory and thus make the political and social order of a community possible. It was a fundamental step in order to relate, negotiate, and balance the claims made by the different parties and their sometimes mutual and at other times conflicting interests. In such a perpetually shifting scenario, the only way to access the border was by describing it through cartography every time a physical change occurred. In this process of re-mapping, the map itself becomes a surface of conversions, where visual and discursive forms, different media, and knowledge overlap with different political and territorial identities.

PART III

Re-mapping the border

The abundance of materials in the Archives of Bologna and Modena concerning the Muzza canal ─ drawings, maps, notes, chronicles ─ demonstrates that this part of the

[61] Sara Bonechi "How they make me suffer...a short biography by Galileo Galilei," trans. Anna Tetcher (Florence: Institute and Museum of the History of Science, 2008), 46.

territory was subjected to constant inspections. The three drawings with attached reports, which I am going to analyse in this next section, were evidently drawn up for the central and provincial authorities of Modena. These documents were the result of on-site inspections and measurements on border areas characterised by constant flooding.

The production of documentation which often concerned the same area and the same problem over time is a further confirmation of how important it was to define and describe this particular border, precisely because it was so unstable. Here again, the focus of my discussion is the visual and textual analyses of these texts looking at the process of reinterpretation and renegotiation of the border. These maps in their process of re-mapping exhibit the impossibility of expressing the fluidity of the border in complete and definitive forms.

In exploring the correspondence between the drawings and their attached reports, it is fundamental to draw attention to the relationship between image and text, if and how they complement or contrast each other, and what gaps might exist.[62] In comparison with the maps analysed in the previous section, these drawings combine writing and images, figures and notes, reinforcing our understanding of border as both a visual process and a textual negotiation.

2.7 Flowing lines and flowing texts

The documents explored in this section bear the dates 1595, 1598 and 1611 respectively. They were designed to show the changing flow of the Muzza, especially during its periodic increases which caused the flooding of the Modenese countryside. The three drawings with their attached reports show an attempt to capture time before

[62] On the relationship between text and map see Tom Conley, "Early modern literature: an overview" in *The history of cartography,* ed. John B. Harley and David Woodward, vol.3 (Chicago: The University of Chicago Press, 1987), 403; Maritano, "Paesaggi scritti e paesaggi rappresentati," 281-314.

and after a flood, or any other natural event that led to a change in the state of the border. The production of such images attest to a need for constantly reinterpreting and renegotiating the border.

The organisation of the page and the text within it seems to depend largely on the conditions of production. The extensive use of notes suggests that the three drawings were produced on site, as the text often seeks to compensate for a lack of accuracy in the spatial plotting. Like the reports, all drawings are in brown ink. Other colours are not involved; the act of communication mostly occurs through the combination of names, numbers, figures, and texts.

The first drawing is explicitly dated 1595 and is inserted in a report addressed to the Duke (fig.25).[63] The drawing covers a specific part of the Muzza from the bridge of Tanarella to that of Galletti. This was the part of the Muzza most subjected to overflow due to the presence of other watercourses derived from it or otherwise related to it. In fact, it illustrates a hydraulic problem on this section of the Muzza canal with all its systems of openings, settlements, and roads. The Muzza is extended horizontally across the page, presenting the entire problem of the management of such watercourses. Although it is not immediately apparent, the drawing actually provides a precise outline of the problem and a proposed solution, based on several inspections of the territory.

There is an interchangeable use of lines and words. What the lines cannot show words express or re-affirm, without any obvious hierarchy between the two. The words fill the space between lines and are set at a variety of angles to denote precise features and points of dispute. However, there is a subtle balance between text and figures. Although this version of reality may appear distorted, we cannot lose sight of what the author is trying to achieve. The result of his observations shows a deep understanding of

[63] ASMO, Acque e Strade, f. 171. 1595 (ink on paper, 30.15 x 20.92 cm): Drawing showing a hydraulic problem on the Muzza Canal.

how to convey reality on a flat surface.

By looking at the drawing and reading the attached place-names, it is possible to understand the problem at stake and the solution proposed. Lines and words are actually working together to express natural forms in an extraordinary way.

First, a dense hatching identifies the Muzza banks whose continuity is interrupted by the opening, breaks in an otherwise continuous line. The course of the Muzza is indicated using dotted lines only at the points where water flow becomes problematic. Letters indicate key points or features for understanding the problem. The opening marked with an A is that which caused the flooding. The double openings marked with B have a central position; they lead part of Muzza's water into a narrow canal, with C indicating the point where the banks are not strong enough to contain the volume of water. This is further emphasised by a note proximate to this area: "from this point to the crossing of Redù canal we reinforced the banks and thanks to this we preserved this part from flooding." The words literally flow around the bend of the canal's banks and visually address their meaning to that bend, setting up a seemingly immediate contact with reality (fig.25a). The textual form is attached to the figurative elements, thus overcoming its nature to participate in shaping the landscape and, in this process, re-enforcing our sense of the object of representation. One might say that the fluid use of the text in the document is a visible metaphor of fluidity.

Every single topographical object (roads, mills, houses, the river etc.) is accompanied by its respective name and the indication of the problem is sustained by a brief text. Words and image are physically linked to each other and do not occupy distinct sections in the map. Words are enclosed between lines or simply suspended. The graphic sign contributes to the construction of borders, to the inclusion and exclusion of other elements. In this specific example, even the legend, which reports the meanings of the letters, does not occupy a clear or distinct section within the map

(fig.25b).

Everything expressed here visually is also confirmed in the report addressed to the Duke of Ferrara. The report was written by Pier Paolo Caula, responsible for the security of Nonantola. It is a further explanation of what is already described in the drawing, both of which are essential for a full understanding of the map (fig.26).[64] The report informs us that the problem was related to an opening created on the Muzza next to the Ponte dei Galletti which caused the flooding of the Modenese countryside and, more specifically, of the Via dell'Argine. Moreover, on the point where water was led into the canal through the two openings marked B, the banks were not high enough to contain water:

> While assessing the effects of the last flood of the Muzza, I observed that the stream created another outflow near the boundaries of the Bologna territory towards Nonantola, just above the Galletti bridge. It is through this new outflow, more than the two distributaries feeding the canal further downstream, that the Muzza spills over our area, its embankments so flat that one could hardly see where the original watercourse was. When the flow increases, the canal swells and runs all the way back to the crossroads of Redù, where it splits into two and then flows along the Via di Redù and throughout our area. But this new outflow, which pours water downwards in a straight line, will not only supply water to the canal but will also inundate the whole Via dell'Argine, on whose border many drains and roads start, with much damage to the best parts of our countryside. [65]

With regards to the format of this map, it becomes clear that the composition is wholly constructed according to content. Content determines the format and not the other way around. This principle is not valid for printed maps where the content was almost always adjusted to the format of copperplate, following precise conventions as well as

[64] ASMO, Acque e strade, Ispezione Muzza, f.171. 1595 (ink on paper, 30.15 x 20.92 cm): Letter by Pier Paolo Caula to the Duke of Ferrara on a hydraulic problem on the Muzza.

[65] The full text reads as follows: "Rivedendo gli effetti della Muzza per la passata piena trovo che ella sa' principiato una bocca sulle confini del Bolognese ma verso Nonantola in loco di sopra il ponte de Galletti, per la qual bocca e due altre che piu' a basso scolano nel canale, tutta la Muzza si riversa addosso a noi piu' che sotto le due bocche vecchie e talmente atterrato l'alveo di essa che a pena si scorge ove egli e' stato. E quando ingrossa l'acqua il canale gonfia e ritorna indietro sino al crosare di Redu' ove egli si parte e poi si volge per la via di Redu' su questo terreno ma questa nova bocca calando giu' a retta linea mandera l'acqua non solo al crosare ma per tutta la via dell'Argine che e' sul confine nella quale principiano molti condotti e vie con danno delle migliori parti di questo contando." Ibid, 1.

the requirements of clients.[66] But in almost all manuscript maps discussed here, what seems crucial is the elongation of the format on the basis of the content, setting up a close relation between the two.

This way of using the figures, words, and format together suggests that the act of making the map was not a mechanical process but a visual and embodied one. In the absence of cartographic conventions based on pre-established forms of description and symbolism, the written notes in part compensate for the lack of a precise model for describing space. The picturesque details are reduced to a minimum, while the notes along the figures encourage the viewer to reflect upon the need to control water flow in order to preserve the 'best parts' of the land.

The following year, a different situation was reported in a drawing showing approximately the same area and again an attached report addressed to the Duke of Ferrara (fig.27).[67] As in the previous drawing, this depicts the Muzza River seen from the west. The course is well represented at two crucial points. The first is the *Boccazzo*, the inlet from which, thanks to the supply water of the *Limido* in Nonantola, starts the canal of Sant'Agata and which flows into the Bolognese. The second point is where the Muzza ends, at the bridge of 'Zenarella', flowing to mix its waters with two other Modenese canals, the 'Fossa del Bosco' and the 'Fossa del Sorgo'. At that point all three are joined together in the Bolognese territory, forming the 'Zenarella' (the border between Crevalcore and Sant'Agata). On the left-hand side one sees the winding stretch of the old course of the Muzza, now a road, still preserving its tortuous path: 'via detta la Muzza Vecchia' (fig.27a).[68] Further down, there is the Ravarino Canal (or Canal of

[66] Michael Bury, *The print in Italy 1550-1620* (London: British Museum Press, 2001).

[67] ASMO, Acque e strade, f. 171. 1596. (ink on paper, 42.16 x 28.02 cm): Drawing showing a hydraulic problem on the Muzza Canal.

[68] I came to this conclusion by comparing this drawing with an eighteenth-century one which covers exactly the same area and shows the name of the road 'Via della Muzza Vecchia'. On the top right (=

Nonantola) and the 'Torrozzo del Signor Sertorio' (fig.27b).

The opening on the Muzza which was of concern for the Modenesi appears in this drawing with a note: "this opening has been recently closed by the Bolognesi." (fig.27c). The map thus provides more context and a good sense of the complete set of canals and roads derived from the Muzza. The map also represents bridges, roads dams, and mills. The indication of sections of the Panaro River at the edges of the sheet places the Muzza at the centre of a dense network of roads and canals with mills and settlements scattered throughout the area. Dashed lines define the watercourses' banks, the interval between lines functioning to indicate the condition of the banks. The drawing also shows the old riverbed of the Muzza marked with a letter G and H. The first reads "this is known to be the old riverbed of the Muzza," letter H indicates the old riverbed of the Muzza according to the Bolognesi (fig.27d). The drawing presents the hydraulic system with information about daily use, evoking the importance of maintaining the bridges and banks which were crucial for the rural communities living in that territory. This implies that what was at stake in the boundary disputes was fundamental for an equal use of the available resources.

The information provided by the drawing seems to come directly from the *prattici del paese* (engl. conversants on the territory). Indeed, during an inspection, magistrates with their technicians would visit the relevant places and interrogate the 'prattici del paese', members of the local communities who knew about the customs and practices that had developed over time. Therefore, these drawings document the successive visits to the border area to prepare the ground for future solutions, to be agreed between diplomatic representatives of their respective states.

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east) another segment of the course "The Muzzonchie " is shown. It is now called Muzza Vecchia (Old Muzza). Nearby during the Middle Ages a branch of the "Scoltenna" flowed. This was the ancient Panaro. The drawing in question is in ASMO, Archivio Segreto Estense, Cancelleria, Confini dello Stato f.52 IX, (ink on paper, 60 x 43 cm).

Like the first drawing discussed, that from 1596 is an excellent example of the interchangeable functions of words and images. In the process of selecting and translating reality into graphic signs, the words play an important part, assuming different functions according to the position they occupy within the document. Language is in no way isolated from the figures. Instead, the map combines words and figures and at first glance their arrangement within the sheet may even seem accidental.

However, writing and graphic signs are in concert, they both share common problems and goals. There is a mutual contamination between the graphic and the linguistic; words are not subordinate to the images. Each single pictorial feature does not have significance outside the textual parts. The purpose of the map is conveyed by a legend with letters and names alongside the representational elements, so the combination and juxtaposition of them is smoothly integrated. Notes are located within and outside internal cartographic features. Each main canal and road presents its description with an attached note along the length of the banks, instead each settlement is associated with a name or a descriptive expression noting its importance in relation to the area and the problem at stake. Therefore, there is a coherent unity between words and images which specify and complete each other. Even if the drawing is schematic and sketched, it is an effective act of communication, with different pictograms showing some degree of convention and resemblance. Roads and rivers tend to be more conventional and less pictorial compared to the mills and settlements. Yet both need a textual description for the purpose of orientation and knowledge. The indication of the water flow with dense dashed lines is stressed only in the points in which the Muzza cannot flow regularly, causing problems of flooding.

After fifteen years, another hydraulic problem is presented as a result of a further inspection on site. The drawing with the attached report was written by Pietro Moro and

addressed to the Duke of Modena.[69] Moro, responsible for the security of Nonantola, represents exactly the same section of the Muzza (fig.14). It runs horizontally and then flows down through the canal until it meets the *Limido* road which runs horizontally, parallel to the Muzza. The drawing is less concerned with giving detailed information. It offers a more essential picture of the territory, without an extensive use of notes. This allows for a much clearer configuration, less elaborate and characterised by a visual synthesis. Conversely, the fluidity is much more accentuated with disordered waves of lines in brown ink that lead out towards the main openings. This drawing, contrary to what the first report states, testifies to the fact that closing the opening next to the *Ponte dei Galletti* was not enough to solve the problem of flooding of the Modenese countryside. The canal which leads to Mulino Redù cannot contain the flow so it still inundates the Via dell'Argine and its surroundings (fig.14a).

In contrast to the previous drawings, the edge of the sheet does not contain the length of the canals (figs.27-14). Rather, the canal extends straight beyond the edge of the sheet. This creates a sense of a lack of containment; there seems to be less anxiety about control. The fluidity of the water is expressed through broken lines; notes are attached to the essential figures.

Although there is certain control evident in the definition of the lines that define the stream of water, these do not appear to be ordered in any particular way: water flows through the openings following a predetermined direction but, at the same time, escapes it. The effect of simultaneously rendering the movement of flow in one direction and in a counter-direction, together with the coexistence of opposite forces, allows the viewer a certain sharing of the process – that of capturing fluidity. The cartographic drawings, along with the texts, over time testify to the instability of this territory, which required

[69] ASMO, Acque e strade, Mulino Redù, f.171. 1611 (ink on paper, 38.83 x 29.21 cm): Letter by Pietro Moro to the Duke of Modena, 1611. ASMO, Acque e strade, Mulino Redù, f.171. 1611 (ink on paper, 38.83 x 29.21 cm): drawing showing a hydraulic problem on the Muzza.

continuous work to regulate watercourses. Together, they suggest a sense of anxiety about controlling nature and the precarious sense of every human achievement.

The three drawings discussed show exactly the same area; they present something which one can hardly measure, precisely because of its transient and changeable nature. In their process of re-mapping, the drawings openly exhibit their incomplete state, the impossibility of expressing the fluidity of the border in complete and definitive forms. In pictorial terms, the consequence of this was the adaptation of an essentially pragmatic mode of representation, combining different visual and textual strategies so as to cope with the fluidity of the actual boundary.

In the act of re-mapping the border, these three drawings seem to dissolve the unity of the actual tract of landscape into a multiplicity of possible representations. As viewer, in front of a dimension in a *state of becoming* the practice of continuous re-interpretation becomes the only way to access representation (the in-between) and the multiplicity of networks that it generates. As a river in flux, representation flows in multiple and variable ways and becomes incalculable, it continuously opens the possibility for something to happen. As a form of thinking, it continuously shifts, no matter how solid the bedrock of our certainties may seem.

Conclusion

Looking at the ways in which mapmakers have addressed the paradox of representing a fluid border allows me to also question pre-conceived ideas about representation. I have discussed diverse kind of maps and their distinctive modes of depicting fluidity. The formal elements in the maps analysed in this chapter seem to invite a type of enquiry that has to move beyond depiction and towards fundamental questions about the relationship between thought and representation.

Here, representation is not only about realism and figuration. Instead, its power is in the combination of its limits: visibility and invisibility, depth and surface. To bring some historical reflections to bear on this problem, one might fruitfully consider the examples of Leon Battista Alberti and Cennino Cennini. They give an opposite role to art. Alberti assigned to painting the goal of depicting things that we can see "It is a task of the painter to delimit and depict with lines and colours on a surface any assigned bodies to such a point that … painted things that you see appear, prominent and very much the assigned bodies."[70] By contrast, Cennini basically argued the opposite, for example that the role of painting is to reveal something hidden that we cannot see: "the art of eliciting unseen things hidden in the shadow of natural ones ... and serving to demonstrate as real the things that are not."[71] In some ways they anticipated what Paul Klee would later assert in his Creative Confession: "Art does not reproduce the visible; rather, it makes visible,"[72] referring to the ability of the image to manifest, from within itself, the dimension of the invisible.

What remains consistent in the range of maps we have examined in this chapter is that mapping is considered as a way of representing problems concerning the definition of the border; the map remains a visible image of the political and legislative dynamics at stake. Contrarily, the river can always become a new place, which separates the two territories in a different way. As such, it consistently represents a sense of possibility, an internal border in continuous movement. In this perspective, the practice of a continuous re-interpretation and re-mapping becomes the only way to grasp the border. Therefore, the fluid border is figured as a form of engagement that continuously

[70] Leon Battista Alberti, *On painting. A new translation and critical edition*, trans. Rocco Sinisgalli (Cambridge: University Press, 2013), 74.

[71] Cennino Cennini, *The craftsman's handbook - Il libro dell'arte*, trans. Daniel V. Thompson (New York: Dover Publications Inc, 1954), 8.

[72] Paul Klee, *Creative confession and other writings* (London: Tate publishing, 2014), 7.

opens itself up to a new understanding of the structure and meanings of the object of knowledge. As Angela Vanhaelen and Bronwen Wilson have pointed out in relation to early Dutch paintings, as beholders we are invited to re-think constantly our role "to look and to look again, the erotic charge of these pictures and their ambiguity urges viewers continuously to reposition themselves and to keep on engaging, moving and thinking."[73]

The second section of this chapter demonstrated that the border's indefiniteness influenced the language of law. The three cases elaborated by Bartolo on how to track a border after a riverbed shifting, their acquisition and discussion centuries later by Aimo, showed how different disciplines and criteria were applied to this topic. A more detailed and deeper analysis in the legal literature would have almost certainly yielded an uncountable number of juridical debates about defining a border in the presence of a river. This would also have showed how conflicts were negotiated, how juridical acts influenced practice, and how practice and custom influenced the law. Hence, water becomes in the form of a river a place where different disciplines meet.

The third section provided the context for a detailed consideration of the graphic representation of the Muzza and the Panaro River. Looking at the combination of text and figures, we can conclude that ─ in the process of mapping out places to make them recognisable, a visual alphabet and a code for identification was developed to communicate the problem in question. In this context, the text or the attached report compensated for the lack of precise measurements. Therefore, text and image play an interchangeable role in mapping. Despite the effort to render the map as clear as possible through the combination of visual and textual description, a map does in itself capture the shifting of the border, stating further the pictorial impossibility of defining a

[73] Angela Vanhaelen and Bronwen Wilson, "The erotics of looking: Materiality, solicitation and Netherlandish visual culture," *Art History* 35, no.5 (2012).

border with a line.

Although sixteenth-century mapmakers had a language through which they expressed ideas, we struggle to define it as an abstract and fixed system of precise rules. In this chapter I have argued that these maps, as works of art, manifest and perform a movement between opposites, in between what can be expressed and what escapes the frame of language. The paradox of a border in flux is a key to reflect upon the limits of representation. It is through experiencing these limits that we can readdress the question: What is representation? The complexity of the cartographic language I have discussed does not imply a correct interpretation of maps. In this way, my interpretation and understanding provides for one possibility rather than a definitive message, a contribution to a stream of meanings never fully determined and never fully defined.

CHAPTER III

From the body of the cartographer to the body of the traveller: experiencing and representing borders

In Lessing's Lacoon, on which we squandered study time when we were young,
much fuss is made about the difference between temporal and spatial art.
Yet looking into the matter more closely, we find all this is but a scholastic delusion.
For space, too, is a temporal concept.

Paul Klee[1]

Among many reports and letters preserved in folder 171 in the Modena Archive, there is a fine drawing dated 1622: water fills the entire view, enabling the spectator to follow its course that gradually vanishes in the distance (fig.29).[2] Here the draughtsman explores ways of simultaneously conveying the river's surface as well as its movement and force. This optical effect of aquatic movement reinforces the idea that the water had been diverted from its natural course. The drawing shows in profile the exact point on the Muzza canal where the Bolognesi had built a dam to divert water towards the mill of Sant'Agata in their own territory. The motion of the water is reproduced in a very realistic way as the spectator is able to follow the linear flow first, and then the curving waves that lead to the water diversion before fading away into infinity. The view is offered to the spectator's eyes with a single centralised viewpoint from the bank across the river to the canal moving into the background. The viewpoint in question is central and rather low, thus allowing a careful delineation of the dam and the wall. It would seem that all this information comes from direct observation. It is hard not to imagine the draughtsman standing on the Modenese bank, just beyond the waterflow, focusing on his drawing.

[1] Paul Klee, "Creative Credo (1920)," in *Theories of modern art: A source book for Artists*, ed. Herschel B. Chipp (Berkeley and Los Angeles: California Studies in the History of Art, 1968), 184. Originally published in *Schöpferische Konfession*, ed. Kasimir Edschmid. (Berlin: E. Reiss, 1920).

[2] ASMO, Acque e Strade, confini col Bolognese, f.171. 1622 (ink on paper, 19.68 x 21.84 cm): Pasio Pasi, drawing showing the wall and the dam built by the Bolognesi.

This drawing opens the present chapter because it documents some of the social processes and spatial practices which occurred in the border area better than any other sources analysed so far.[3]

In the previous chapter I explored the material and physical dimensions of borders and how these are expressed in visual forms. I emphasised the pictorial expressiveness of the chorographical maps and their ability to convey metaphors and ideas about the nature of cartographic representation. This chapter centres on experience, on the social and spatial practices which characterised the process of territorial description in the early modern period.

The way in which the world is experienced is fundamentally rooted in the notion of the body and its movement. Focusing on visual and written sources collected from on-site inspections, this chapter sheds light on how the area in question was experienced and described. In other words, this chapter diverts the analysis from the physical and material dimension of borders as expressed in maps to explore the spatial and social practices that occurred in the territory in question. [4]

It is precisely because of attempts to control watercourses and affirm political authory over a place that an intense variety of documentation was produced; this proliferation is testament to the activity and practices of people engaging with the territory. My purpose is to emphasise the multiple ways in which the border between

[3] Spatial Practice is a term that has been introduced by Henri Lefebvre in *The Production of Space*. He discusses different practices that challenge any pre-determined configuration of space, identifying the possibilities of a multivalent interpretation of space. Henri Lefebvre, *The production of space* (London: Basil Blackwell, 1991), 38.

[4] The idea that understanding a place comes from the experience of space was supported by John Brinckerhoff Jackson, who has introduced the term hodology (from Greek hodos which means path, roads, journey) into the vocabulary of landscape theory. Hodology can be defined as lived space, experienced space as opposite to the measurable and rational cartographic space based on Euclidean rules. It is related to the experience of walking, to the direct observation of phenomena. Simply put, hodology is knowledge based on experience, on senses rather than on geometrical and constructive rules. John Brinckerhoff Jackson, *A sense of place, a sense of time* (Yale University Press: New Heaven, 1994), 190.

Modena and Bologna may be visually constructed and experienced, and how these are given form in cartography.

PART I

The body of the cartographer

In the first part of this chapter I take into consideration the drawing mentioned above together with a second drawing dated 1598 and preserved in the same folder, which presents similar problems (figs.29-30).[5] Both drawings were created by official authorities employed by the Este State during an on-site inspection and document a dispute concerning the construction of a dam and a wall by the Bolognesi on the Muzza. These sources are accompanied by reports in the form of letters sent back and forth by respective authorities; thus the documents furnish a comprehensive account of the disputes as well as many details about their causes and implications. Through close analysis of this set of documents, it is possible to understand how the relationships between individuals and place were described in a variety of forms of representation, both textual and visual.

As a whole, the documentation provides a clear outline of the problem and indicates the fundamental social dynamics which arose from the dispute. It introduces the concrete practices of local communities in dealing with a fluid border, delineating at the same time the various attempts to take control over water or to alter its flow strategically. In both cases, one might conclude that the border was the result of a labour process meant to ensure that rivers and streams kept the same, exact, definite and fixed beds. This process of trying to control the flow of water sheds light on how materials and skills, forms and practices, reveal their limits and possibilities.

[5] ASMO, Acque e Strade, f.171. 1622 (ink on paper, 19.68 x 21.84 cm): Pasio Pasi, drawing showing the wall and the dam built by the Bolognesi; ASMO, Acque e strade, f.171. 1598 (ink on paper, 21.14 x 29.77 cm): Drawing showing the dam.

The two drawings which show the same area from different viewpoints both give a seemingly three-dimensional representation of the entire site. Moreover, the drawings together with their attached reports provide a complete picture of the dispute at stake and the interests of each party. Nevertheless, and in part for clarity of argumentation, I will explore the visual and textual documents separately to analyse the material in its formal complexity. By means of a comparative analysis between the drawings and their attached reports, I draw attention to the relations between pictorial form and textual narratives, and to how they compensate and combine with each other. It is through the consideration of different viewpoints and narratives that the body's movement is revealed, by its imaginative projection into the mapped and painted landscape.

The documents studied in this chapter not only define boundaries as constructed places but also envision them as places which generate a web of relations and encounters. The narratives are about how people engage with a shifting border, thereby giving emphasis to their practices and actions by linking stories to the landscape. Such narratives introduce the idea of experiencing space by representating it, and of moving through space, which is something particularly crucial in itineraries.

In the following section, through Gilles Deleuze and Felix Guattari's concept of the nomad, I will highlight some philosophical considerations that will help to reconsider the historical material in question.

3.1 Into the dispute: territoriality, authority and mobility

A dispute could arise from a minor act which constituted a violation of the border, or sometimes from illegal activities such as the abuse of pastures or the felling of parts of a

forest.[6] In the case under analysis here it was the construction of a dam.

Folder 171 in the Modena Archive includes a wide range of documents, among which are reports, in the form of letters, produced after inspections of a particularly contested area of the Muzza called *Boccatio or Boccazzo* (from *bocca*, mouth – an opening in the canal). The clash concerns a dam and a large wall that the Bolognesi had built on a precise point of the Muzza for diverting its waters towards Sant'Agata in the Bolognese territory. Since the Muzza was considered a public waterway common to the two states, changing its flow for private interests constituted a violation. Generally, building a dam would have had consequences for existing watercourse rights, such as pertained to farming, shipping and milling. In particular, other complementary canals were derived from the Muzza (e.g. Bisentolo canal) which provided water for agricultural needs and power for mills.[7] The dam and wall would have compromised their flow.

All the reports in the folder attempt to counter the abuse carried out by the Bolognesi in what was meant to be a common area. There are also several letters addressed to various authorities of the two states as well as a fine drawing by Pasio Pasi, a cartographer in the service of the Magistrate of Modena (fig.29). All the letters are the result of on-site inspections conducted by different authorities from the two states. All the documentation in the file was written from April to October 1622 and some pieces are clearly the result of on-site inspections conducted by different authorities from the two states. As a body, the documentation allows us to track the evolution of the dispute throughout six months and thus garner a sense of the different dynamics that set this

[6] Andrea Zagli, "Acque contese: questioni di frontiera nelle zone umide della Toscana (XVI-XVIII)," in *Frontiere di terra, frontiere di mare. La Toscana moderna nello spazio mediterraneo,* ed. Elena Fasano Guarini and Paola Volpini (Milan: Franco Angeli, 2008), 149.

[7] On the presence of mills and their relevance on the economy between Modena and Bologna, see Sperandini, *Mulini ad acqua tra Samoggia e Panaro*. For a general overview on the importance of mills for the economy of the Bolognese territory, see Paola Galetti and Bruno Andreoli, eds., *Mulini, canali e comunità della pianura Bolognese tra Medioevo e Ottocento* (Bologna: Clueb, 2009).

type of controversy in motion. Usually a dispute like this was first acknowledged by a site visit, followed by the production of visual and textual documentation. Then there was an exchange of letters between important members of the two states. If the dispute persisted then the highest authorities, the Duke of Modena and the papal legate at Bologna respectively, had to settle the question. There are numerous instances of disputes concerning the Muzza canal, and they continue until the end of the eighteenth century. Together they suggest that control of the properties around the area and the regulation of their rights drove and shaped the process of dam-building around this area.

An in-depth analysis of this dispute and of the narratives created around it is essential for the purposes of the present argument. It helps us to understand how knowledge about a specific location may be acquired, divulgated and transmitted over time. The first report in the file is dated 12th of April, 1622. Augusto Bellencini, ducal secretary at the time, writes to inform the Duke of Modena about what he has witnessed during his visit to the *Boccatio*. As already noted, this location on the Muzza was particularly vexing since the watercourse has been diverted into another canal, now driving mills in the Bolognese region. The report provides very detailed information about the appearance and impact of a dam which was damaging the Modenese territory. Bellencini concludes the letter by stating that he has also informed the Senate officer Angelo Cesi in a letter sent on 7th of April[8]:

> I have recently been to the Muccia to see the new works the Bolognesi have made at the end of the canal, which used to mark the boundaries between Your Highness' state and the state of Bologna. In the site named Boccatio, I have found out that the Bolognesi have built a dam with sticks, twigs and soil, which is about ten Bologna feet high, outside of our agreements and without prior authorisation. Such a sluice gate is a hindrance obstructing the normal flow of water and, in addition, it is impairing the canal banks on Your Highness' side, while on the Bologna side there is a large and strong wall that does not easily suffer damage. Furthermore, according to what I saw and to the reports of Your Highness' subjects, the

[8] ASMO, Acque e Strade, f.171: Letter by Augusto Bellencini to the Duke of Modena (1622, April 12, Modena).

> Bolognesi trespassed on our state to steal the soil and wood they needed to build the dam, which ensures a stronger water flow to their mill of Sant'Agata. But I believe it is important for Your Highness to know that this canal is badly dug, and in the surroundings of the so-called Bocchazzo there are at least three areas where the riverbed is too high. In order to avoid damages to Your Highness' possessions, the Bolognesi should be required to remove some of the soil.[9]

This report shows how important it was for administrative authorities ─ surveyors, technicians, engineers ─ to make frequent on-site visits to monitor the dynamics between land and water, and to defend borders from any possible damage caused by natural and human changes. In addition, the report conveys something of the fact that a border zone is a place of conflicts but also of labour, transport, journeys, encounters, exchanges and relations. Borders, as Henri Lefebvre argues, are configured as social space, that is, "space as directly lived through its associated images and symbols, and hence the space of 'inhabitants' and users."[10] In this way boundaries becomes an expression of spatial and mobile practices and experiences.

The engagement with specific places was fundamental to guarantee the state of the waterways. Any authority overseeing this type of domain had to ensure that people who lived close to the rivers did not use water illegally, that they kept the river beds and shores clean and that they were not responsible for the often unpredictable, irregular and, most importantly, man-made changes of the water flow.[11] The idea of the border

[9] My translation unless noted otherwise. The full text reads as follows: "Io sono stato alla Muccia a vedere la novità essere stata dalli Bolognesi fatta, e ho ritrovato, ch'essi detto cavo il quale fu confine tra lo stato Vostra Altezza, et quello di Bologna, li detti Bolognesi nel luogo detto il Boccatio, hanno fatto una Chiusa con Pali, sterpi, et terra la quale è circa dieci piedi di Bologna alta, fatto veramente contrario alle capitolazioni, et che è di molto impedimento allo scolo delle acqua alta e che è di gran impedimento al scolo delle acque oltre che d'impedimento agli argini di detto cavo, dalla banda nel stato di vostra altezza, perché dalla banda di bologna di contro, vi è una muraglia grossa et forte, la quale non può patire et per di più perché li contrassegni veduti manifesti, e per relazione avuto da sudditi di vostra altezza con vicini, quanti hanno fatto la detta chiusa sono passati sullo Stato di VA e hanno pigliato la terra e li legni da fabbricarla. Passano forti alle acque, di avere fatto di detta chiusa, per crescere l'acqua al loro molino di Sant'Agata, però stimo emminente avvisarla che il loro Canale et di poco e male cavato c'ha stare sul livello del fondo detto *Bocchazzo* vi sono circa tre punti di terra alta la quale deve essere da loro levata senza fare contravezione et danno tale allo stato VA." Ibid.p.1-2.

[10] Henri Lefebvre, *The production of space* (London: Basil Blackwell, 1991), 39.

[11] For a list of references on the relationship between state and cartography, see chapter 1, footnote 24.

that emerges in the report is of a place of mobility where the need to use water resources implies regular crossing over.

As all this shows, borders were places of institutional control and, at the same time, sites where limits were continuously challenged by everyday activities and constantly changing needs.[12] The sheer amount of paper in the file in the Modena Archive is in itself clear evidence of the enduring and complicated dynamics around the communication and maintenance of early modern boundaries. Even the minor Boccatio dispute generated a vast and heterogenous amount of documentation ─ letters, reports, drawings and maps.

In their complexity in terms of form and content, these historical sources are only not concerned with ownership, but they expressed a set of actions carried out on the territory. In contrast to the large scale chorographies and drawings examined in the previous chapter, in the documentation in question the point is not to provide a new description of the border, but to document the contingency of conflicting actions.

Leafing through the file, the many letters and reports from the Modenese side subsequent to Bellicini's warning makes it clear that the Bolognesi did not remove the dam as requested. Even before Bellencini's letter, the Duke of Modena had been informed of the problem by Pasio Pasi, his official cartographer, who drew the place he visited (this drawing will be analysed in more detail later in this chapter). The relevant drawing is accompanied by a letter addressed to the Duke in which Pasi specifies the situation of the place he visited:

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[12] Some exemplary works that consider the link between borders and social/spatial relations: Ansii Paasi, *Territories, boundaries and consciousness; The changing geographies of the Finnish-Russian border* (Chichester: John Wiley & Sons, 1996); Saskia Sassen, *Territory, authority, rights: From medieval to global assemblages* (New York: Princeton University Press, 2006); Ulf Hannerz, "Borders," *International Social Science Journal* 154 (1996): 537–548; Anderson et al., "Why study borders now?," 1-12; Philip E. Steinberg, "Sovereignty, territory, and the mapping of mobility: A view from outside," *Annual of Associations of American Geographers* 99, no.3 (2009): 467-495.

> In accordance with Your Highness' orders, I visited the boundaries of Bologna near Nonantola, where I was able to compare such places to my drawings. In fact, I found out that the Bolognesi have built a stone bridge outside our agreements, while abandoning the existing bridge near the border without renovating it. Furthermore, thanks to the information I obtained from the people living in the surroundings, I discovered that the canals of Redù and Lampergola often overflow their banks in winter, when the water flow is overabundant, thus inundating the surrounding fields and the boundary road, with much damage to those who live nearby. In order to avoid this inconvenience, it would be good if Your Highness would request an order from His Lordship the legate of Bologna, so as to repair the damages. This problem should be easy to solve, since it is only necessary to raise and increase the strength of the banks which keep the water in the canal beds. For the moment, this is all I can report to Your Highness after my visit.[13]

Pasi's letter confirms what is contained in the previous letters. In particular, it includes further details about the canal dug by the Bolognesi, whose riverbed was not dug deep enough and caused floods in the surrounding countryside. On this point, it is worth mentioning that the poor state of such a canal might have effects on the productivity of mills. Therefore, it was very important to keep canals and banks in good condition. This textual evidence supports the thesis that the problem of flooding was caused by the bad condition of the canals of Redu and Lampergola (see chap.2, p. 131-132). Pasi also notes that the Bolognesi built another bridge rather than using and renovating the bridge already there.

Among the letters contained in the file, there is only one response from the Bolognese side. It is a letter written by Angelo Cesi ─ vice legate of Bologna ─ to the Duke of Modena.[14] In this short letter, he assures the Duke that they will carry out all the work requested once the soil has dried out. In October of the same year, another letter signed by Bellencini and addressed to a member of the Bolognese senate, Andrea

[13] ASMO, Acque e strade, f. 171: Letter by Pasio Pasi to the Duke of Modena, (no date, 1622).

[14] ASMO, Acque e Strade, f.171: Letter by Angelo Cesi ─ vice legate of Bologna ─ to the Duke of Modena (1622, April 7, Modena).

Colebò, reports the same problem. Apparently, after six months, the issue had still not been resolved, despite the letter sent in April to senate officer Cesi.[15]

As evinced by the documents in the folder, the multiple levels of intervention, as many as the authorities involved, made the management and control of territorial resources very difficult. Clearly, in the early modern period, divisions of jurisdiction and the consequent fragmentation of power complicated the exercise of sovereignty and hindered good territorial management.

The daily needs of local communities often clashed with what was established by official documents. Borders were particularly ambiguous also because they were subjected to daily relations and needs. Therefore, the situation depicted by official narratives did not fit well with a reality composed of unofficial borders and produced by the daily practices of local communities who actually lived on the territory and worked its resources. Moreover, as I have pointed out in the first chapter of this thesis, the early modern territorial organisation of Modena and Bologna was characterised by internal borders, and each one of these was organised according to multiple forms of privilege and ownership.

In this precarious political context, the competing narratives are particularly interesting. They show who carried responsibility for dealing with infringements as well as the political dynamics among different levels of authority. Although the dispute in question was caused by a minor act concerning a public watercourse which defined the border between two polities, it involved the highest authorities of the Duchy of Modena, even the Duke himself. Disputes like this could remain unresolved for a long time. Usually a mutual compromise could be found between the two parties by using the resources at hand in the complex dynamics of relations and interests between the two

[15] ASMO, Acque e Strade, f.171: Letter by Augusto Bellencini to Andrea Colebò (1622, October 22, Modena).

parties. Similar cases continuously recur in the documentation. If a compromise was reached, it was often based on fragile negotiations bound to become complicated in the daily use of natural resources.

All the documentation in the file shows that the magistrates who carried out inspections built up a narrative of such problems, along with the visual and cartographical representation of them, in order to provide a detailed account for the authorities. For example, by means of reports and drawings, it is not possible to get a precise idea of how large the dam and the wall were. Instead, those dimensions had to be described explicitly in an attached note. This presents their measurements in Bolognese feet: "the wall is 41 Bolognese feet long and over 15 deep. The dam is 13 long and 1.5 high and 3 deep. The distance from the wall to the boardwalk is 5."[16]

In short, in combination the textual and pictorial evidence were meant to serve as instruments of territorial control by conveying how the border was established and experienced. It is through the ritual of inspections and the creation of textual, spatial and visual representations documenting these inspections that the border was constituted, legitimised and acknowledged.

The narrative evidence is important because it shows clearly that the border was conceived as a set of practices.[17] The reports record the dynamics in a contested

[16] ASMO, Acque e Strade, f.171. 1622 (ink on paper, 19.68 x 21.84 cm): Pasio Pasi, drawing showing the wall and the dam built by the Bolognesi.

[17] Michel de Certeau's definition of narrative is important for understanding its relationship to borders. He argues that narrative is fundamentally related to action. It is able to generate a theatre of actions: 'the story's first function is to authorize, or more exactly, to found'. De Certeau sees in narratives the role of connecting space and place. Narratives play an important role in future actions undertaken in territories and have a significant impact on the local communities and their use of local resources.In the administrative documents, the combination of texts and maps creates a narrative which overcomes fixity, rendering movement and time effectively. In doing so, as de Certeau suggests, narration posits an ambiguous overturning of frontier since it transforms a liminal space into an experience: "The story privileges a 'logic of ambiguity' through its account of interaction. It turns the frontier into a crossing, and the river into a bridge. It recounts inversions and displacements: the door that closes is precisely what may be opened; the river is what makes passage possible; the tree is what marks the stages of advance […]." Michel De Certeau, *The practice of everyday life* (Berkeley: University of California Press, 1988), 128.

territory between people and water, involving relations among different political authorities according to the problem at stake. Following the textual accounts produced by different authorities after or during an inspection, I suggest that these narratives were instruments with which to acknowledge and to define daily engagement and interaction within a territory.

Deleuze and Guattari's discussion of the nomad shows how the structure of a territory is the interrelation of many milleux that interact in a certain place.[18] The milleu is defined not as a singular phenomenon but as a series of phenomena partly generated by the process of engagement with territory existing outside the forms of inclusion and exclusion imposed by organisational State.[19] While the concept of territory is more stable, the series of actions and habits which take place on the territory are in constant change over time. Thus, while territory indicates a jurisdictional and administrative unity, it is characterised by a series of nomadic actions which effectively challenge the controlling institutions of the state. It is at this point that the idea of the nomad leads to a consideration of the processes of territorialisation, deterritorialisation and reterritorialisation. Deleuze's and Guattari's theoretical framework facilitates a reassessment of the historical material in question beyond the traditional considersations of maps as expressions of authority and ownership.

Thus, I would like to pursue a different aspect of the administrative maps explored above. Although the maps in question attempt to establish the ownership and identity of a territory by defining its boundaries, they also suggest a series of contigent

[18] Gilles Deleuze and Félix Guattari, "1440: The smooth and the striated," in *A thousand plateaus: Capitalism and schizophrenia* (Minneapolis: University of Minnesota Press, 1998), 474-500. See also Bruce B. Janz, "The territory is not the map. Place, Deleuze and Guattari, and African Philosophy," *Philosophy Today*, Winter (2001): 392-404.

[19] Like Deleuze and Guattari, de Certeau is attentive to interactions between the imposition of discourses, beliefs, and disciplines and the creative practices that can subvert or remake what is imposed. Michel de Certeau, "Walking in the city" and "Spatial stories," in *The practice of everyday life*, trans. Steven Randall (Berkeley: University of California Press, 1984), 91-130.

actions. These administrative sources should not be interpreted simply as a record of establishing ownership of a place. The alternative explored here is to consider the cross-border flow of people and information implied in the sources as evidence of the constant process of transformation of the territory. Insofar as the documents produced on the occasion of a dispute aim at describing what was perceived and was useful for political recognition of a territorial space, they give voice to actions and practices that occurred there. Territorialisation, deteritorialisation and reterritorialisation are results of the official and nomadic actions and practices that continuously challenged and reasserted borders.

3.2 Into the dispute: the drawing by Pasio Pasi

The drawing attached to the reports examined above presents a profile view of the dam and the wall built by the Bolognesi on the Muzza canal (fig.29). Compiled from on-site inspections and surveys of the area's hydrography, this profile view gives a finely grained impression of the problem already carefully described in the reports. As with many of his chorographies, Pasio Pasi carefully drew the landscape and its features. His drawing represents a specific area of the Muzza: the water fills the entire view, enabling the viewer to follow its course which gradually recedes into the distance.

The Muzza canal is depicted horizontally on the page.[20] It divides two portions of land, each of which is indicated as *territorio Bolognese* and *territorio Modenese*. With such a central presence, the water as the border between two lands creates an 'interplace' in the drawing, encouraging the viewer to follow the water flow. The drawing ─ realised in pen with brown ink ─ with its juxtaposition of horizontal and vertical lines invites visual participation. On the bottom of the sheet, two horizontal lines which flow from left to right define the two sides of the Muzza canal, which fills

[20] The page of the letters and drawing measures 63.757 x 61.864 cm.

the foreground. Horizontal lines define the banks of the river. The first line in the foreground is like a stage, introducing the viewer to the scene. The viewer is encouraged to follow the water flow which at some point is forced to change direction because of an obstacle in its way. The wall stands in front of us as a major object, which, together with the dam, diverts water to the Bolognese, which is the chief reason for the dispute and the drawing. The drawing allows us to get into the open scenery where the river gradually disappears into the distance.

The *pedagno* (from pedana, boardwalk), which allows walkers to cross from one side to the other, is one of the elements that defines the border as a place of passage and transition. In this way, the depiction of the water-flow, which might at first seem to divide the image, is actually used to connect with elements of the landscape, such as the trees with their 'hydraulic' branches.

Water seems to be materialised in various forms of the landscape. For example, the trees display a pronounced graphic quality, shown as complex mazes of lines that evoke hydraulic networks. The trees play an important function in terms of space and communication between the foreground and the background. Those in the foreground are painted in greater detail than those in the background, which are blurred and create a sense of perspectival recession. The effect is to guide our gaze away from the active foreground towards the river that recedes in depth. This momentum encourages reflection upon the diversion of the natural course of the water. Recession is intensified further by the contrast between the foreground, which is filled with landscape elements (trees, plants and rocks), and the river in the background depicted as an object isolated in an empty space.

The contrast between a multiplicity of elements in the foreground and the emptiness of the background focuses our attention on the water's movement in which one of the many ambiguities inherent in this image is embedded. The change of water-

flow makes us aware that water can be controlled and directed by canals, dams and cisterns. At the same time, in the general pictorial framework, water is much more than an element to be dominated and controlled. The naturalistic depiction in the image, which emphasises flow, reminds us that water is the manifold element characterised by randomness and disorder.

Views in profile like the drawing in question are not very common in maps produced for administrative authorities. Administrative maps, such as those produced in the Tuscan and Papal States, and the Po Valley, tend to present an elevated viewpoint over waterways and settlements. For example, another drawing from the same folder dated 1598 vertically portrays the same problem described in the profile view of the Muzza and the dam (fig.30).[21] The problem documented by the report that accompanied this drawing was exactly the same: a wall and a dam diverting the Muzza's water to the Sant'Agata mill in the Bolognese. Moreover, being badly dug, the canal caused the flooding of Modenese land. However, here the profile view is substituted by a vertical viewpoint of the Muzza with an indication of the point where the dam diverted the water flowing through the canal 'che va verso Sant'Agata' ('which goes towards Sant'Agata'). (fig.30a)

As a whole, the body of cartographic documentation concerning the Muzza canal demonstrates a multiplicity of forms and representations related to a single dispute, which suggests that there was something of a struggle to represent such situations adequately. The relevant documentation might include plans which could offer a general overview of a certain territory, as well as drawings and pictures of a single canal and its related problems. This detailed description allows for greater clarity in relation to natural details, as is particularly striking in the profile drawing of the Muzza and the dam discussed above. The evocation of landscape in this drawing is far

[21] ASMO, Acque e strade f.171. 1598 (ink on paper, 21.14 x 29.77 cm): Drawing showing the dam.

greater than in other examples analysed so far. In what follows, I shall engage with this notion of landscape by focusing on the distinction between cartography and chorography.

3.2.1 Beyond definition: Cartography and Chorography

In 1561 Giacomo Ruscelli published a new translation of Ptolemy's *Geography* in Venice.[22] This included a definition of chorography as a branch of geography devoted to the description of territory. The pages dedicated to chorography in the book identify the ability to draw and paint as fundamental instruments for geographic knowledge:

> Chorography divides an area into different parts and analyses them separately, each one with its own characteristics; but at the same time it describes the whole area [...] with its ports, villas, population, river tributaries and so on. Furthermore, chorographies are more focused on the quality of a place than on its quantity or dimensions [...] In order to make this kind of map, it is necessary to have a drawing or painting of the analysed area; for this reason no-one can be a chorographer without knowing how to draw or paint.[23]

Following Ruscelli's words it is clear that chorography requires a 'dipintura dei luoghi'.[24] In other words, it aims at describing the shapes of a territory in such a way as to appear as lifelike as possible. The concepts of 'lifelikeness' and 'truthfulness'[25] were

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[23] Giacomo Ruscelli, *La geografia di Claudio Tolomeo Alessandrino nuovamente tradotta in Greco in italiano* (Venice: G. Ziletti, 1561), 2.

[24] In his Geography published in Bologna in 1477, Ptolemy argued that geography was a practice for mathematicians, whereas chorography was for artists. However, in the attempt to compare mathematics and chorography, he concludes that both deal with the representation of space, since their aim is the representation of geographical information with the right proportion of the various spatial elements, see Berggren J. Lennart and Jones Alexander, eds., *Ptolemy's geography: An annotated translation of the theoretical chapters* (Princeton: University Press, 2000).

[25] These concepts refer to the cartographic claim to mirror reality, which applies in particular to topographic views. It is not a coincidence that the word 'truth' is found in the titles of printed city views. One example is the map made by Duchet in 1582 entitled " Vero ritratto dela città de Bologna…como al presente si ritrova" and many others proclaim, including named engraved maps and perspective views. This concern with truth recrus in some city views in the urban atlas by Georg Braun and Franz Hogenberg. Another example is Gabriele Paleotti, who, in his speech to artists of his diocese, stresses the importance of respect for 'true likeness' in geographical representations, see Gabriele Paleotti, "Discorso sopra le immagini sacre e profane," in *Trattati d'arte del Cinquecento fra Manierismo e Controriforma* vol II, ed. Paola Barocchi (Bari: Laterza 1971), 177; Ricci, *Città murata e illusione olografica*, 282.

fundamental in cartography of the sixteenth and seventeenth centuries, as maps were intended to give exhaustive knowledge about any given place. With this purpose, cartography was closely related to landscape painting.[26]

As I have already mentioned, it is significant that the first systematic reflection on the issue of landscape in cartography appears in the treatise by Cristoforo Sorte in *Osservazioni sulla pittura*, published in Venice in 1580.[27] In this work, Sorte conceives of a map as the combination of diverse projections with the prospective depiction of landscape features. Hence, cartography and chorography were intertwined, with the aim of producing an exhaustive representation of territory. The goal is to capture the entirety of a prospect and to transfer into a single image the entire space which has been observed.[28]

The ideas discussed in Sorte's study on one-point perspective and landscape representation find full application in the maps of the territory by Marco Antonio Pasi, architect and hydraulic engineer in the service of the Este State.[29] Between 1560 and 1580, he made a series of maps documenting the reclamation works carried out in the Este state by Alfonso II (fig.10).[30] The maps show a remarkable vitality in the section

[26] In the early modern period cartography and landscape painting were connected practices performed by the same individuals and sharing the same principles: projecting space on a flat surface. In relation to this interdependency, painting helped cartography in the attempt to provide accurate representations of space. For further discussion on the relationship between mapping and painting see Edward S. Casey, *Earth-mapping: Artists reshaping landscape* (Minneapolis: University of Minnesota Press, 2005); Stephen Daniels, "Re-visioning Britain: Mapping and landscape painting, 1750-1820," in *Glorious nature: British landscape painting, 1750-1850*, ed. Katharine. Baetyer (New York: Hudson Hills Press,1993); Malcom Andrews, *Landscape and western art* (Oxford: Oxford University Press), chapter 4; Tom Conley, *The self made map* (Minneapolis: University of Minnesota Press, 2010). For further references see also chap 2, footnote 19.

[27] Sorte, *Osservazioni sulla pittura*, 265.

[28] Lucia Nuti has addressed in many studies the ambition to convey a totality of vision in cartography, for references see intro, footnote 4.

[29] Federzoni, "La carta degli Stati Estensi di Marco Antonio Pasi. Il ritratto dell'utopia," 245.

[30] Marco Antonio Pasi, Carta dei Ducati Estensi, 1580, ink and watercolours on paper. Biblioteca Estense di Modena.

on the plains; the grassland areas appear cultivated; there are rows of trees and centralised and scattered settlements.

The whole composition, with hydraulic and drainage systems, settlements and mountains seen in profile creates a framework where the landscape effects are combined with a mathematically rooted survey. Even in the mountainous area the representation is particularly rich in the number of locations and variety of drawings, with each feature rendered distinctly from the others. Significantly, the towns, castles and villas are the same as those that we find in the manuscript recently attributed by Giancarlo Roversi to Egnazio Danti (figs.28-28a).[31] In this manuscript, there are about three hundred drawings, one hundred villas, thirty castles, two hundred churches, many bridges and many other places (figs.28b-28c). This is a visual census of the lowlands and hills of Bologna which records every possible architectural structure. The manuscript both records and posits a new order of the countryside, with symbols of a new class system and a new urban economy that restructured the relationship between the city and its suburbs in the sixteenth century.

This mode of representation also has its roots in the detailed topography of Venetian territory created by Sorte in 1585-1586. [32] His maps also combine cartography and topography, the mixed projection along with the prospective views of settlements. There is also the same concern for accuracy in the representation of landscape features ─ waterways, vegetation, mountains, hills ─ as there is for the human settlements.

The concept of topography has been largely tackled by Edward Casey who has identified topography and description as middle terms to define cartographic practice in

[31] Fanti, *Ville, castelli, e chiese bolognesi da un libro di disegni del Cinquecento*.

[32] On Sorte see Roberto Almagià, "Cristoforo Sorte il primo grande cartografo della Repubblica di Venezia," in *Scritti geografici*, ed. Roberto Almagia'(Rome: Edizione Cremonese, 1961), 613-618.

the early modern period.[33] Literally, topography means 'tracing of a place'. On the one hand, it shares with cartography the aim to delineate contours, elevation, shapes and distances. On the other, it is also similar to landscape painting and chorography as it is related to the practice of describing a particular place by rendering its natural characteristics and other landscape features. In short, a topographic image enables one to understand the natural and social characteristics of a place in terms of both quality and quantity. The representation of the land with its natural features, the use of words, and the discursive description with names of places or properties, buildings and natural features are also distinctive of chorography. Clearly, cartography and topography share common concerns with landscape painting and chorography. The complex combination of texts and images together with the various modes of description included in cartographic documentation prompts a question: considering the differences and the similarities between cartographical and chorographical description, which mode of description does the material from folder 171 belong to?

The drawing by Pasio Pasi, representing the Muzza and the dam in profile, emphasises a a single point of view and thus how a particular place is actually perceived and described (fig.29). It depicts various elements of a place that do not necessarily belong to the modes of chorography, cartography, topography or landscape painting. Different again, in the light of the distinction previously drawn between cartography and chorography, is the 1598 drawing, which shows the same problem from a vertical viewpoint and can certainly be considered an example of cartography. It does not represent any qualitative characteristics of the local features. There are only minimal contours and a focus on the sizes and geographical distribution of the different objects (fig.30). This image stresses a linear body of things, unlike chorography which tries to provide a pictorial and more natural description of a certain place. However, in their

[33] Casey, *Representing place*, 158.

different modes of conceptualising the contested area, the two drawings propose two figurative possibilities of representing space. One presents the point from which the landscape was drawn; the other shows a vertical viewpoint right above the contested area.

What I am stating is that if we consider some of these images individually, it is possible to distinguish between a chorographic or topographic mode of description and a purely cartographic one. However, in their complexity and heterogeneous assemblage of text and images, these sources are definitely both cartographic and chorographic. The maps I have analysed so far provide subjective viewpoints, closely related to the original act of looking which preceded them and which they sought to capture. In proposing a state of knowledge about a place in a certain time and from a fixed viewpoint together with the attached text, the various documents divulge the actions and spatial practices by which that knowledge was gained. The two drawings considered here are thus the end result of different spatial and representational practices. In order to describe a border in constant change, mapmakers had to develop visual and narrative strategies to give form to the ambiguities and peculiarities presented by a border in flux.

Considered as heterogeneous representations, in their combination of texts and images, the two drawings represent multiple ways through which knowledge of the territory was conveyed, represented and disseminated.

3.3 Body and mapping

Many academics have explored how people experience the world and how this experience, based on the notion of body and its movement, is translated into cartography. The topic of the body and space has been of special interest for philosophers and architects. For example, Maurice Merleau-Ponty in his

Phenomenology of perception[34] emphasised that the human being is fundamentally related to space. Human existence and our personal subjectivity involve a constant engagement with space; our existence is essentially spatial.

In this direction, Maurice Merleau-Ponty addressed the interplay between space and body and the importance of bodies for understanding and experiencing space. He introduced a new conception of space, according to which space may be reduced to a physical object or container in which experience is located.[35] Merleau-Ponty is among those philosophers who have rejected Cartesian dualism, that is the distinction between lived space on the one hand, and the objective space of geometry and science on the other. This distinction entails a dichotomy between subject and object that reduces the human body to a material, quantifiable and measureable object. By contrast, Merleau-Ponty argues that it is only by challenging this concept of body as a scientific and static object that the concept of space can be properly understood. Instead, the body is the origin of expressive movement, and it is a medium for the perception of the world; it is through the body that the world comes into being:[36]

> But our body is not merely one expressive space among the rest, for that is simply the constituted body. It is the origin of the rest, expressive movement itself, that which causes them to begin to exist as things, under our hands and eyes.[37]

Accordingly, through the observation and study of the body's movement through space, it is possible to reach a better understanding of how we engage with the world around us. In suggesting that the body is the means through which we conceive of space, the author identifies limits and horizons at the basis of spatiality and bodily movement:

[34] Maurice Merleau-Ponty, *Phenomenology of perception*, 2 ed. (London: Routledge Classics, 2002).

[35] Merleau-Ponty, *Phenomenology of perception*, 169.

[36] Ibid.,102

[37] Ibid.

> As far as spatiality is concerned … one's own body is the third term, always tacitly understood, in the figure-background structure, and every figure stands out against the double horizon of external and bodily space. One must therefore reject as an abstraction any analysis of bodily space which takes account only of figures and points, since these can neither be conceived nor be without horizons.[38]

Thus, we can conceive of borders only in relation to our bodily engagement with an environment. It would be reductive to conceive of borders merely as physical lines that define territories; borders are also created by our engagement with space and time. The idea resulting from this assumption is that borders are generated by the body and its movement. Because boundaries are perceived through the practice of bodily mobility, they change according to different perspectives.

What can we gain from this philosophical discussion on embodied mobility? I would like to suggest that the sources under consideration provide the possibility of thinking about the body as a key concept in mapping territory. The consideration of the body and its forms of engagement allows us to get away from the idea of administrative maps as merely documents of territorial management and to consider the different ways people interacted and acted on the territory.

Administrative maps were based on information initially gathered by mapmakers, and their individual experiences of such places. In the act of experiencing and drawing a certain place, the body plays an important role. The mapmakers perceive the landscape and translate their vision into representations, such as the drawing analysed above, that conveys their physical position (fig.29).

Usually triangulation was the method used for on-site topographical surveys, which allowed distances to be measured through trigonometry. The technique of triangulation requires one to walk or move around on horseback over the greater part of

[38] Ibid., 101.

the area to be measured in order to determine the distances from known points.[39] In other cases, as in the drawing by Pasio Pasi discussed earlier, the map was simply the result of direct observations, notes, and basic measurements (fig.30). In either case, the production of large-scale territorial representations was based on bodily engagement with the territory.

In my earlier discussion of Pasio Pasi's drawing, with the Muzza and the dam represented in profile, I mentioned that it evokes the idea of a landscape much more than other sources (fig.29). It is not a mere representation of the disputed section of the Muzza; the mapmaker draws on his visual and cognitive experience and then produces a drawing which establishes a direct link between his body and the landscape around. A refined landscape representation accomplished by a sensitive treatment of natural features, it conveys a lifelike configuration of the vegetation, trees and rocks in relation to the river and its flow. The branches of several trees closely intertwine and the rocks in the foreground contribute to the contextualisation of the river with its own appropriate objects. However, there is something about landscape that is more than just mimetic. The drawing is about representing an experience. Standing a little way off from the river, we can imagine the draughtsman making the scene we are witnessing.

PART II

The body of the traveller

In this second section I study sources whose main function is to enable movement. I consider a drawing representing a route from Bologna to Modena, dated 1631, and also a book of itineraries from the second half of the eighteenth century. By comparing these sources, it is possible to identify their differences: their distinctive histories, their

[39] On topographical survey, see David Buisseret, ed., *Rural images: Estate maps in the old and new worlds* (Chicago: University of Chicago Press, 1996); David Harvey, *The history of topographical maps: Symbols, pictures and surveys* (London: Thames and Hudson, 1980), 84 –103.

combinations of texts and maps, how they express time and movement, and their diverse modes of engaging viewers.

I propose that this kind of material requires an understanding of the bodily participation of the viewer. The structure of these sources is itself mobile. For instance, the purpose of the itineraries was to represent routes with useful information for travellers. In this light, travellers would have folded and unfolded these drawings in order to use them and they would have circulated amongst multiple users. Therefore, I also explore mobility in terms of circulation, distribution and development.

Moreover, the issue of mobility is further investigated in relation to representation. When movement is fixed on a map, mobility is replaced by a static representation. I suggest that the relationship between fixity and mobility is more complex than a contradiction between the political desire to define territory and the impossibility of reaching a stable definition of that territory. The fixity of an image which tries to capture mobility opens another space for analysing concepts and ideas inherent to the representational process. The elements and signs of which each map is composed contribute to establishing and challenging its relationship with its viewers.

3.4 In between a map and an itinerary: a seventeenth-century drawing

In this dissertation, I have discussed how the disputes around the Muzza and the Panaro between the states of Modena and Bologna produced competing narratives. In turn, these sources attest to the need to gain control over watercourses and protect the surrounding land from inundation and floods. Such narratives clearly articulate in different forms the position of boundaries between the two states. In the above discussion of the drawing of the dam and the wall, I introduced the idea that these

narratives do more than just document disputes. They also pave the way for an understanding of spatial practices.

In this sense, another useful example is a drawing from the Modena Archive dated September 1631 showing a route from Bologna to Modena passing through Nonantola and San Giovanni (fig.31).[40] It is titled: 'Drawing of the visit conducted following the road to Bologna, from Modena passing through Nonantola and from Nonantola to San Giovanni and from San Giovanni to Scalla's Inn and then Bologna' (fig.31a). The drawing shows all the plain to the north of the Via Emilia, especially focusing on the border area between Modena and Bologna. Also represented are the watercourses with their relative bridges, the nodal points for travellers, such as the inns, and a detailed visual description of the border that follows the Muzza canal.

The legend occupies the left-hand side of the drawing and informs us about all the works necessary to improve the conditions of the roads and the distances between places, highlighting the points along the route in which it had become necessary to fill the road to allow the drainage of water:

> From Modena to Navicello there are three miles, Navicello is two miles away from Nonantola and the road is so low at some points that it is necessary to fill it in the middle and cobble it with gravel; from Nonantola to the Muzza border there are two miles and the road is very low and needs to be filled in the middle and then cobbled with gravel; from the Muzza to Sant'Agata della Madonna there are two miles, from the Church of San Giovanni three miles and all the road is low and very narrow in some points, so that it needs to be raised by filling it in the middle and cobbling it with gravel. From San Giovanni to the Scalla's Inn, the road is all well gravelled in the manner of the *maestra road* [via Emilia] as which it is also as wide. From here there is eight miles. [41]

[40] ASMO, Confini dello Stato, f.52. 1631 (ink on paper): Drawing of the visit following the road to Bologna, from Modena passing through Nonantola and from Nonantola to San Giovanni and from San Giovanni to the Scalla's inn and then Bologna (1631, September 4).

[41] ASMO, Confini dello Stato, f.52. 1631 (ink on paper): Legend on the drawing of the visit following the road to Bologna, from Modena passing through Nonantola and from Nonantola to San Giovanni and from San Giovanni to the Scalla's inn and then Bologna.

According to the legend, only on the road between San Giovanni in Persiceto and the Scala (Borgo Panicale) is the level of maintenance as good as the 'strada maestra' or Via Emilia. Other roads, it is pointed out, are too 'low' and need to be filled with gravel (fig.31b).

In the combination of text and visual forms, this drawing is the representation of a journey undertaken by the land surveyor Francesco Vacchi that evokes the mapmaker's inspection of the border area as he moved from place to place. The drawing outlines an actual experience but at the same time it represents that movement for whomever will follow the same path. In short, his visual account express his interaction with the landscape in a form that is both map and itinerary. He is articulating in visual forms the state of knowledge about a place as well as the experience through which this knowledge was achieved.

In addition to Bologna and Modena, the drawing represents Nonantola, San Giovanni and Castelfranco, along with its fortress (31c-31d). It is easy to identify the single features as they bear their respective names. The shapes of the cities are clearly represented with an indication of their perimeter walls and all their systems of defence: there is a concern for civic sovereignty. For a traveller following this route, the city frontiers would indeed have had a strong visual impact. Here, the individual elements ─ towns, cities, fortresses and bridges ─ work to arrest the gaze of any viewer who interacts with the map. It combines a bird's-eye view with the cities seen in oblique projection, thus allowing an illusion of a totality of vision. The topographical features are drawn in relief to delineate the main buildings in relation to streets and squares.

The represented route is crossed by a multitude of significant pathways and punctuated by a number of towns. The pathways and the named places suggest physical movement through space, between sites at which one can imagine stopping. The space between Bologna and Modena is marked by a network of connection lines such as

roads, rivers and architectural structures. Bologna and Modena are linked by the Via Emilia which runs straight and is crossed horizontally by roads and watercourses at nodal points. Another important road is the via Maggiore (also called Malova) near Nonantola. This road with its rectilinear path also linked the Po Primaro with San Giovanni in Persiceto, the Via Emilia and the Pass of Sant'Ambrogio. The mapmaker represents only the topographical architectural features ─ houses, fortresses, towns ─ disposed along the main route. Accordingly, secondary roads and watercourses are interrupted in their horizontal displacement except for the largest watercourses ─ the Reno and the Panaro ─ which horizontally cross the entire surface of the drawing.

The minute description of the route with its immediate surroundings, and the inaccuracy of other areas, suggest that the mapmaker made a selection to render just the route through which he passed. In other words, as Ingold argues in relation to sketched maps, they do not aim "to represent a certain territory, or to mark the spatial locations of features included within its frontiers, what matters are the lines, not the space around them."[42] Despite showing a precise trajectory, there are not determined and fixed points to define the route.

The drawing seems to be a network of lines with joints and intersections. The main path describes the succession of civic frontiers, roads and waterways, as it proceeds along the way. The lines in brown ink also alternate with pencil lines that mark secondary country roads intersecting with the main road. At first glance, it is hard to distinguish roads from watercourses since there are not any braided lines to differentiate water currents, as we have seen in other drawings. However, the detailed indication of the gravel along the banks of the watercourses makes the rivers recognisable. The drawing does not represent the watery dynamic of the river and, even

[42] Ingold, *Lines: a brief history*, 84.

though it presents a route, it does not function for wayfinding. The carefully depicted roads and riverbanks suggests that its purpose was to increase strategic knowledge about the conditions of roads and transmit other information gathered from direct physical observation.

3.5 In between points and lines: representing movement

In this second section, I also consider an eighteenth-century book containing fifteen strip and folded itineraries included in a pocket-sized manuscript volume (fig.32).[43] These itineraries, when compared with Vacchi's seventeenth-century drawing discussed above (fig.31), reduce the landscape description both in terms of narrative and the spatial representation.

An itinerary is meant to represent a route, directing the movement of the whole body towards the destination represented in it. It is functional, used by the mobile traveller, and also a representation of the possibilities of movement. In this sense, lines are fundamental to an itinerary, precisely because its core aim is to represent a route with starting points and destinations. Form and colour play a secondary role in an itinerary because the main iconic intent is to determine a route from one place to another. The different features are represented in relation to the main path. Although the seventeenth-century drawing by Vacchi does not seem to be one used by travellers, it has the characteristics of an itinerary as it represents a specific route. It is also important because it supports the argument that territorial management required the collection of lots of information on site (fig.31). In comparison with the drawing by Vacchi, the eighteenth-century volume discussed below presents itineraries as lines created by a

[43] BCA, Sala Manoscritti, f.15. Late 18th century (ink and watercolours on paper, 14.5 x 10 cm): Book, Collection of 15 itineraries with a useful information for travellers.

succession of stops, marked as points. As a result, the itinerary identifies definitive routes (fig.32a).

The seventeenth-century drawing by Vacchi is a completely different source in terms of format and destination, although it also represents a route with an indication of practical distances. However, it is far from a series of connecting fixed-land points that suggests a linear progression. Vacchi's drawing is rather a network of lines with joints and intersections proposing to the user a possible route across the civic frontiers, roads and waterways. There are no stable points of reference or stops spaced out according to a precise direction or rhythm. The experience that emerges from Vacchi's drawing is similar to the one Deleuze and Guattari attribute to the nomad. Instead of moving towards a predetermined destination from one point to another, the nomad traverses a territory in which space is distributed openly and indefinitely.[44] The nomad does not need to orientate by means of fixed points.[45]

Sixteenth- and seventeenth-century itineraries often emphasised different directions that could be taken to a destination through a dynamic combination of text and map. For example, Vacchi's drawing displays two possible routes towards the final destination, rather than a single one. Although one route might take longer, the duration of the journey is not raised as an issue. In contrast, the eighteenth-century itineraries discussed below emphasise movement between determined points of rest. This characteristic was relevant for an itinerary that aimed to measure out the journery through a succession of stopping-off points.

In the next section, I address how movement, temporality and space are translated into physical dimensions through lines. Through understanding the dynamic between points, lines and areas, I aim to show how time and movement are translated

[44] Janz, "The territory is not the map. Place, Deleuze and Guattari, and African Philosophy," 395.

[45] Deleuze and Guattari, *A thousand plateaus: Capitalism and schizophrenia*, 353.

into an eighteenth century pocket-sized manuscript book of itineraries. The post stations identified as points of rest constitute the basic principle of this guide. *Poste* are translated into imagined points on a line suggesting a temporal trajectory; their progression seems to materialise time and movement through succession. At the same time, the itinerary in its function challenges this idea of clock time in favour of an idea of time as embodied.

3.6 Mapping mobility: body, time and movement in an eighteenth-century itinerary

The *Viaggi d'Italia*, unpublished and preserved in Bologna, includes a map of the journey from Florence to Bologna (fig.32a). Compared with other itineraries in the book, it is a relatively small itinerary, and designed to be folded in two. From left to right, a journey is offered to the viewer with subtle curves and irregularities. The cities of Florence and Bologna are terminal points on a linear path marked into intervals by castles, fortresses and watercourses. Beginning with Florence and throughout the itinerary, the *poste*, marked by a little conventional round sign in red, repeatedly divide the entire route into regular units of one and a half miles. The simple act of counting the *poste* gave an idea to travellers about the distances and time needed to go from one point to another.

The overall focus of the volume in question is on routes in the north of Italy. Each map in the volume reads from left to right, presenting a path from one city to another. As the traveller unfolds and folds the maps, he or she follows a different journey through the peninsula. The volume describes what was a familiar itinerary, displaying a journey through the mountain ridge from Bologna to Ancona and then passing on the Adriatic side towards Ancona and Loreto.

All the itineraries present a detailed topographical and morphological description of the territory strengthened by a sense of order and scale along with a standardised use of colour. There are numerous cities, castles and fortresses studding the hills and mountains. Many watercourses interrupt the sequence of these landscape features along the track of each itinerary. They mark changes along the land elevations. None of the itineraries include a scale, the presence of the compass for orienting the map suggests that the aim of these itineraries was to indicate the precise route that travellers were supposed to follow.

The mapmaker uses mixed media, ink and watercolour. The single features are drawn in brown inks and filled with watercolour. There is a limited colour range and subtle shading in the treatment of the single features. The predominant colour is red for buildings and towns and light blue for the waterways. A variation of tone is particularly evident in the treatment of the cities.

The emphasis on rendering borders marked on the map by rivers and canals evinces a need to make travellers aware of the topography and costs of the journey, including transportation, stops and possible practical obstacles. The border between states is firmly marked by a dashed line. It is significant that borders marked by rivers are given more attention in each of these itineraries; this is because the need to cross over rivers affected road travel. In most cases, travellers had to cross by ferries, which were difficult to operate if rivers flooded. Many rivers flooded during the spring thaw, and the autumn rains also caused difficulties.

Rivers, not surprisingly perhaps, are places of territorial transition in the different itineraries. In the slow visual progression of the journey, rivers and canals interrupt the continuity of the landscape. Borders between states are always marked by dashed lines and when intersecting with other features they appear on the map as a maze of lines (fig.32f). In the Bologna-Florence itinerary, the border markings were indicators

for travellers who needed to show documents and pay taxes as they crossed into new territory (fig.32f). For travellers, it was essential to be aware of those places, know regulations, costs and foreign currency exchange rates. Often paths were not marked properly. Yet it was necessary to pass state boundaries, and to deal appropriately with different rules and currencies. As Antoni Maczak has argued, the ability to enter an Italian city depended on showing a health certificate from one's previous place of residence, sometimes along with a letter of recommendation.[46]

The volume as a whole is dated on the first page: 'Forli, 2nd of February 1622'. However, we do not know exactly what the date is referring to, since an exact copy in the Public Library of Orvieto places the book with certainty in the second half of the eighteenth century. The author of this later version was Antonio Giachi, son of Luigi Giachi, who founded a society of cartographers in Florence in the early eighteenth century. Two other small handwritten volumes preserved at the National Library in Florence replicate the precise features found in the volume in Bologna. We can suppose that these volumes were produced in the same workshop and remained in manuscript form with a few copies destined for noble travellers embarking on the Grand Tour or perhaps affluent merchants, who might need to travel frequently. However, the date that appears in the Forlì volume remains ambiguous. It might indicate when the maps were commissioned or we can suppose that the manuscript was started in 1622 and completed with revisions and additions in the second half of the eighteenth century. What we know with certainty is that this guide was used by travellers on the Grand Tour, a point elucidated below.

The itinerary's title describes its contents well: "the most common Italian journeys, particularly for those who travel using those poste, marked by the following

[46] Antoni Mączak and Ursula Phillips, *Travel in early modern Europe* (Cambridge: Polity Press, 1995), 14.

figure" (fig.32b). The author presents this guide with the following statement: "in this booklet are delineated all the Italian roads where the *poste*, and other castles are located with frequency along the same roads, so that travellers, without asking, will be able to know the name of those places which are located on those roads." In accordance with the title, the aim of an itinerary was to free the traveller from having to engage with the locals and with locality in general. It allows for a fictional conception of the travelling upper-class individual as somehow independent from everybody else, having no need for local knowledge or local sociability. The guide shows the formal structure of an itinerary based on spatial criteria with indications of distances involved in reaching certain places. The indication of the *poste* constitutes the basic principle of the guide.

Poste were sorting and mail distribution places where travellers and couriers could stop to organise matters such as the hiring of new horses, either to ride, or simply to pull the coach. Travellers could also feed their animals and rest from the journey. The *posta* was also the unit of measurement by which the length of a journey could be calculated. Obviously, it could change according to the difficulty of a certain route.

Ever since the sixteenth century, travelling through *poste* was common practice and it became even more popular in the eighteenth century with the Grand Tour. The Grand Tourists' journeys could slightly change, but generally they followed the same paths: the *poste* routes ensured that travellers could find assistance throughout their journey. Especially for those travelling without their own transportation, each *posta* would have provided horses that could be changed at the next stop. In this way, the *poste* acted as sorting devices which helped to identify the route and the numbers of changes travellers had to undergo to get to their destination. Moreover, by counting each *posta* it was possible to calculate the duration of the jouney.

Initially the *hosterie* (inn or lodging houses) represented the position of the *poste,* located along pilgrims' and travellers' routes. A proper system based on the *poste*

emerged in the sixteenth century, aiming at regulating the transit of people and goods. By the end of the same century, with the increasing volume of travellers, the publication of guides provided information about *poste* and as a result local duties increased enormously.

In *Avvertimenti a chi intraprende un viaggio in Italia, la Nuovissima Guida del Viaggiatore in Italia* published in 1852, the fundamental characteristics of travel through the *poste* are emphasised:

> In all Italian states this form of transport is cheap and comfortable, especially for those who have limited time because they can know know how much time the trip will take. The easy way is to get *posta* horses along with their own coach, with regard to choosing slight and solid ones so as to get through mountainous regions.[47]

An earlier version of this type of text is the *Itinerary* by Franz Schott (1610), the first guide to the *Viaggio in Italia* that combined descriptions of cities and historical information on monuments with paths to follow and relevant distances. All this was accompanied by a set of maps included in Schott's guide. A similar practical format was used by Carlo Barbieri. One scholar has described Barbieri's guide as a "cartography in tablets, each of which was dedicated to a single post road in order to overcome the problems of maps of the peninsula on too small a scale, awkward and difficult to read."[48] In view of all the obstacles that travellers could encouter on their way, a small guide facilitated journeys with information about the route and services at rest stops.

The portfolio used by all those who undertook *Il giro d'Italia* (London, A. Dury, 1774) and in the Guide for the *Viaggio in posta* (printed in Turin by the brothers Reycends and in Genoa by J. Gravier between 1776 and the end of the century) presented the same format. Alternatively, regional maps and atlases, such as the table of Italy by G.A. Magini and Giacomo Cantelli could be used. These do not present the

[47] Massimo Fabi, *Nuovissima guida del viaggiatore in Italia* (Milano: Guglielmini, 1856), 10.

[48] Carlo Barbieri, *Direzione pe' Viaggiatori in Italia* (Bologna: G. B. Sassi, 1771),18.

practical format of the itinerary being considered above. Essential information concerning the journey, restricted to standard routes, is presented without providing information about the artistic and historical monuments. Intriguingly the earlier schema seems to impose itself on the production of eighteenth-century *posta* guides since these later versions present similar details.

The postal guides appeared in a multiplicity of forms after the seventeenth century. Initially this format was very simple and indicated routes – lists of the *poste* stations and the distances between these. Later examples became enriched with cultural and practical information, historical descriptions of places, along with lists of inns, their costs, and varied practical advice for travellers. They developed into comprehensive guides, offering travellers abundant information and a dynamic text to consult along their journey.

Regardless of the variety of cartographic formats, all the itineraries in the book I am discussing look quite similar in terms of compositional organisation and the ways in which single features are depicted. But these similarities encourage us to reflect on the format of each map. The absence of a complex descriptive text in a bound edition containing only strip maps suggests that our itinerary was designed to be used on the road, with horizontal folding maps which could be easily read throughout the journey.

To understand how this itinerary organises the user's experience, we need to distinguish between two different categories of temporality. Time can be understood as a fixed moment, the instant in which something is shown in a certain state. Time as a precise moment can be established in a map by a date, often located next to a legend, and stating something like 'this is the situation of a place in date xxxx'. As I have pointed out earlier in this chapter, time cannot be understood without space. As W.J.T. Mitchell proposes "the fact is that spatial form is the perceptual basis of our notion of

time that we literally cannot 'tell time' without the mediation of space." [49] In other words, we always translate time in spatial terms, resolving the abstract nature of time by metaphorically mapping it.

Folding the itinerary from Florence to Bologna and turning the page, the journey moves on to itinerary five: from Bologna to Ancona (figs.32d-32e). The different temporal dimensions of these two journeys are conveyed by the format of each map. The itineraries are disposed horizontally, a format giving a sense of a long journey, and therefore the physical act of unfolding them makes the viewer aware of the journey's length.

Itinerary five, from Bologna to Ancona, is the longest in the volume. It is folded four times to make it fit into the volume, whereas the previous one is only folded twice. The shifting between one leaf and another makes the volume as a whole a literal vehicle of movement.[50]

Fifteen and a half *poste* are situated along the itinerary five, from Bologna to Ancona, which stretches across one hundred and thirty-five miles (fig.32d). Counting and marking all the *poste* on an itinerary, one by one, allows one to calculate the duration of the journey as noted above. The itinerary also emphasises the sequence of signs: the succession of the *poste* together with the rhythmical articulation of features ─ castles, fortresses, waterways, cities and towns. In this way, *poste* function as intervals, as a succession of moments. Intervals, as Anthony Grafton and Daniel Rosenberg have defined them are "(literally, 'spaces between'), of 'before' and 'after'–all implicit

[49] William John Thomas Mitchell, "Spatial Form in Literature: Toward a General Theory," in *The Language of Images*, ed. William John Thomas Mitchell (Chicago: University of Chicago Press, 1980), 274.

[50] On this Daniel K. Connolly, "Imagined pilgrimage in the itinerary maps of Matthew Paris," *The Art Bulletin* 81, no.4 (1999): 606.

metaphor that depends upon a mental picture of time as a linear continuum."[51] The itinerary can be understood as a spatial image that represents time and movement.

In order to make stronger this idea of *poste* as intervals through which we are able to comprehend the duration of the journey, it is necessary to consider the concept of movement. Movement can be visualised only through a spatial image and its durational character through a schema of broken lines or a sequence of symbols. In the Bologna-Florence itinerary, the *poste* are the points that transcribe the route and create a sense of time within the image.

Along with the concept of time identified as a precise and fixed moment, we can identify the idea of duration as heterogeneous time as famously defined by Henry Bergson in *Time and Free Will.*[52] The idea of duration is strongly related to the notion of heterogenous time: something immesurable that can only exist in experience. Bergson suggested that time can be represented but as soon as one represents time, it becomes a fixed spatial image.

However, an itinerary giving guidance on how to move through time evokes the experience of time, an embodied time. The succession of *poste*, one after another, suggests time in space, but not in duration, which for Bergson can only be experienced within heterogenous time. In the volume of itineraries *Viaggi d'Italia*, the durational character is conveyed by the interactive structure of the volume, the user's experience of which activates movement in different directions. One can see where one is going and where one has been. The coexistence and the play of the past and the future in a image that is present to the viewer calls to mind different moments of embodied experience.

[51] Anthony Grafton and Daniel Rosenberg, *Cartographies of time: A history of timeline* (New York: Princeton Architectural Press, 2000), 13.

[52] See Henri Bergson, *Time and Free Will: An Essay on the Immediate Data of Consciousness* (Mineola, New York: Dover Publications, 2001).

The compass roses and the grid are further aspects of the itinerary's spatial organisation that work in opposite ways to each other. The compass rose determines the orientation of the map by pointing in one direction (fig.32f). The rectangular grid, which was an element to copy the design into subsequent manuscripts, instead emphasises multiple directions. These graphic signs offer the viewer options for moving between points, lines and areas. Considered together, these conventions convey tensions between linear and multiple trajectories, and between chronology and embodied time. In other words, this itinerary helps us to think about time as it becomes represented in space while also resisting being interpreted as a simple linear trajectory.

What I want to emphasise here is that the journey by *poste* contributed to a standardisation of spatial representation. Travelling by *poste* also anticipated and contributed to the function of repetition in many examples of travel writing. Until the first half of the nineteenth century, most travellers, with few exceptions, went through the same countryside, stayed in the same inns and visited the same places.

The repetitiveness of this path may also be detected in travel narratives beginning in the seventeenth century. At the beginning of the century Franz Schott, describing the journey from Florence to Bologna, highlighted the dangerous way toward Scarperia: "[…] This climb is long, three miles along a narrow and dangerous road, there is a place for resting only at the top of the mountain, from here going down one finds Scarperia."[53] The narrative is punctuated by the *poste* at the top and base of the mountain. Schott fills in the interval between the *poste* with his recollections. Some decades later, John Evelyn described the same route in his diary but in the opposite direction. "[…] the next day [I passed] through Scarperia, mountaing the hills againe,

[53] Giuseppina Valente, ed., *Itinerario d'Italia*, (Cisva Edizioni, 2009), 139. The English version of the Itinerary, published in 1660 by Edmund Warcupp, was based on the Italian edition of 1654. Schott's itinerary was the first guide of Italy in English, see George B. Parks, "The decline and fall of admiration of the English Renaissance admiration of Italy," *Huntington Library* Quarterly 31, (1968): 353.

where the passage is so strait and precipitious towards the right hand, as with much care and danger we climbed them." [54] Both noticed the abundance of the *hosterie* in Pianoro before ending up to Firenzuola, "a fort built among the cliffs and rocks, and defending the confines of the Grand Duke's territories."[55] In both cases, the space between stops is filled with the author's individual experiences.

The function of repetition, represented in the *poste*, and still in use into the nineteenth century, therefore points to efforts to regulate the body and its travels. Schott's and Evelyn's accounts attest to the persistence of the body, the immeasurable, intense, heterogeneous qualities of duration and the impossibility of reducing it into a spatial dimension.

As with travel narratives, an itinerary assembles, selects and organises bits of information in the form of succession. At the same time, it reflects the tension between heterogeneous time (the unfolding of the paper, and movement in multiple directions), and modern time conveyed by the trajectory of the route and the compass. Converting the translation of travel experience into a map is what an itinerary does. In other words, this is a process in which heterogeneous, immeasurable duration turns into a homogeneous and measurable space. However, an experience cannot be reduced to a sequence of points. In other words, there are aspects of the experience which can never be sufficiently translated into a spatial representation. This brings us directly to the 'in-between': what can be represented on a limited surface and what cannot be fully contained in a spatial representation. This tension arises because an itinerary is, in fact, the conversion of a journey into representation. It is in the effort to translate one thing into another that an itinerary becomes an expression of both the embodied experience of travel and the efforts to render space as a form of thinking.

[54] Esmond S. de Beer, ed., *The diary of John Evelyn* (Oxford: Clarendon Press, 1959), 215.

[55] Ibid., 216.

Conclusion

In the first section of this chapter I used two drawings to explore how bodily movement is constitutive of mapping. In the second part, I looked at a drawing showing a route from Modena to Bologna and a volume of itineraries as a way of thinking about bodily movement, and about how users engaged with them.

The two drawings analysed in the first part are both attempts to describe an actual border by emphasising the state of the Muzza (figs.29-30). The different perspectives shown by the drawings, along with their reports and letters, are repositories of the conflicting and changing nature of borders along with the different social and spatial activities that occurred in space and time when a dispute needed to be resolved. Therefore, textual descriptions combined with visual texts represent more than just the actual configuration of a place; they all participate in conveying the movement and displacements of individuals when they act upon a place.

I come to the conclusion that the sources analysed here can be considered to lie in between map and itinerary, as they describe both the state of knowledge about a place and the spatial practices of those who seek to document all the changes that occurred in the border area.

While trying to understand forms of spatial mobility within, across and outside state borders, it becomes apparent that time, body and landscape play a substantial role in determining the border. The conclusion becomes quite clear: borders are created and controlled by the act of mobility and, therefore, territoriality does not just rely on borders but also on movement. I am arguing that borders are not only definitions of space which are created by means of maps and textual sources; they should also be

considered as *creative spaces*.[56] In other words, borders are able to generate fluid encouters, actions and relations. They are places in which social and political relations occurr daily, where people are involved in a multitude of activities that have an impact on a border region.

In the second part of this chapter, I have drawn attention to the complex ways in which time and movement are expressed in sources which thereby mediate the experience of bodily movement across space. The analysis of an unpublished eighteenth-century book of itineraries ─ presenting a tension between seventeenth- and eighteenth-century modes of describing movement and time ─ completes the exploration of how the body is central in the production of these sources. In this respect, I have also examined how users engaged with this material. Accordingly, by looking at itineraries, borders become more than lines drawn on a map; they are also lines which have some kind of projection into the mapped or painted landscape. The analysis of how a bodily experience might be embedded in these itineraries highlights how time and movement are translated into this source and what we may infer about how a territory was experienced in early modern Italy.

[56] The concept of borders as created spaces was first introduced by Benedict Anderson, see Benedict Anderson, *Imagined communities: Reflections on the origin and spread of nationalism* (London: Verso, 1983).

CHAPTER IV

Borders as methodology: *A Landscape with the Flight into Egypt*

A picture is the art of making two geometrically parallel lines meet on a canvas for us to see,
in the reality of a world transposed according to new conditions and prospects.
This world is neither defined nor specified in the work;
it belongs, with all its many variations, to the spectator.

DADA Art Manifesto[1]

I am standing in front of the painting *A Landscape with Flight into Egypt* by the Bolognese painter Annibale Carracci (fig.33), made between 1600 and 1604. My gaze is initially captured by the castle on the hill and then by the three small figures in the foreground where the Virgin Mary, holding the infant Jesus, leads a small procession. Looking back, she watches Joseph as he prods the donkey out of the water (fig.33a). In the foreground, my gaze is drawn along the diagonal course of the river. Following its path between the hills and trees, the river leads me to a castle and several small figures in actions, before drawing me into the mountainous background. While the lines, colours, and shapes set the scene in motion, I am constantly aware of the fact that my eyes are guided by the edges of the painting and its lunette shape.

Even this brief visual analysis emphasises the importance of liminality when looking at an image. Limits articulate, more than other elements, our process of visual engagement and experience so that the content of a picture is correlated to our experience of its borders and *vice versa*. It is in the act of this reciprocity that the interpretative process seems to start.

My aim in this final chapter is to begin to develop a methodology for the study of early modern imagery ─ and visual representation more broadly ─ starting from the

[1] Tristan Tzara, "Dada Manifesto, 23rd March 1918," in *Manifesto: A century of Isms*, ed. Mary Ann Caws (Lincoln and London: University of Nebraska Press, 2001), 297-303.

observation and consideration of liminal spaces. Specifically, my analysis centres on how the relations between the object and subject of experience are problematised by borders. I do not intend 'borders' to serve as an abstract methodology, distant from specific contexts and materials, or for this method to dismiss the relevance of historical, political, and social contexts. Instead, this chapter is meant to offer preliminary strategic concepts for the analysis of pictorial forms. The border as methodology reveals the complexities and ambiguities on which representation depends. In other words, borders allow us to gain general insights relevant to various forms of visual representation.

In what follows, I begin with some reflections on the physical and metaphorical understanding of liminality as a generative, creative, and processional concept, characterised by spatial and temporal qualities. I will also emphasise that the *in between* and *edges* are equally important concepts for understanding liminality. All these concepts can become means for interrogating notions of space, place, and time. But what about landscape? Landscape has been traditionally associated with memory, aesthetic scenery and topographic views. In the last few decades, several essays have been devoted to considering the relationship between place, space, landscape and the body. These publications share a new perspective and a theoretical approach that question our perception of landscape as something fixed in time and space, and not subject to social and cultural changes.[2] Tim Ingold, in particular, defining what he calls the taskscape, has linked it to ideas of landscape: "just as the landscape is an array of related features, so – by analogy – the taskscape is an array of related activities."[3] In

[2] Arjun Appadurai "Place and Voice in Anthropological Theory" *Cultural Anthropology* 3, no. 1 (1988): 16–20; Barbara Bender, *Landscape: politics and perspectives* (Oxford: Berg,1993), Eric Hirsch and Michael O'Hanlon, *The anthropology of landscape: perspectives on place and space* (Oxford: University Press,1995); Steven Feld and Keith H. Basso, eds., *Senses of place* (Santa Fe: School of American Research Press,1996); Peter Atkins, Ian Simmons and Brian Roberts, *People, Land and Time: An Historical Introduction to the Relations Between Landscape, Culture and Environment* (London: Routledge,1998); Daniel Cosgrove and Stephen Daniels, *The iconography of landscape* (Cambridge: Cambridge University Press, 1988).

[3] Ingold, "Temporalities of landscape," 158.

other words, both taskscape and landscape include physical actions and interactions of people, animals, objects and so forth in a territory. Landscape is a process which never ends based on the experiences of different people and groups whose perception of space changes according to their specific practices.

These remarks are important to clarify that the analysis presented in this chapter differs from conventional interpretation of landscape. The visual analysis proposed starts with considerations on liminality, also regarded as a form of engagement with landscape. As such, my discussion initiates a different understanding of visual composition. It gravitates towards the experience of the painting, rather than emphasising the painting's iconography (what the image represents) and its symbolism (what it means).

By focusing in greater detail on Carracci's *A Landscape with the Flight into Egypt*, the second section of this chapter addresses the role that liminality plays in the representation. Analysing what is arguably one of the most influential early modern paintings, I provide a working example of the dynamics of borders as paradoxical structures—something I have been discussing throughout the thesis. From a compositional point of view, this painting has been considered by scholars as the perfect realisation of a harmonic and balanced pictorial arrangement, because the position of each element contributes to a rigorously geometric and precise relationship between figures and landscape features.[4] Accordingly, the decision to concentrate my analysis on this specific painting was based on the belief that liminal space ─ even in compositions as controlled as Carracci's ─ generates a problematic area in which unpredictable processes and ambiguities flourish. In developing my visual analysis, the aim is not to neglect traditional scholarly debates, which have emphasised the aesthetic harmony of

[4] Clark, *Landscape into Art*, 67.

this painting. Instead, these debates constitute my point of departure for highlighting the ambiguities, tensions, and complexities which emerge from observing and experiencing the liminal.

Carracci's painting was made in Rome when the city was at the centre of a political, urban, and religious renovation. Not surprisingly, Gregory XIII, Pope of the Catholic Church from 1572 to 1585, strengthened the political relationship between Bologna and Rome. He sponsored the Jubilee with numerous urban and architectonical works, among which the monumental painted cartographic images of the *Sala Bologna,* first discussed in the introduction to this thesis, were entirely commissioned from Bolognese artists. In addition to the *Sala Bologna*, many other maps were produced according to that specific model.

Agostino Carracci, Annibale's brother, probably had in mind the perspective view of the *Sala Bologna* when he completed his own engraved map of the city dedicated to the Archbishop of Bologna, Cardinal Gabriele Paleotti: *Bononia Docet Mater Studiorum* (fig.3).[5] It is in this context that the Bolognese Annibale Carracci was commissioned by Pietro Aldobrandini to make six paintings to decorate the private chapel of his family.

Throughout this thesis I have considered boundaries in multiple ways: as lines marking features in a map, as limits between words and images, as folds in the cases of travel guides, and, finally, as experiences and as loci for the possibility of engagement. I want to consider these ways of thinking about borders in relation to Carracci's painting. Moreover, borders can also be seen in the foreground and background of specific features in a painting, as vertical and horizontal lines, as margins around its frame, and

[5] The Carracci map has been recently explored in relation to contemporary cartographic representations of the city, such as its monumental representation in the *Sala Bologna* in the Vatican. See Francesco Ceccarelli, "Agostino Carracci's map of Bologna and the construction of the cartographic image of the city" (paper presented at the annual meeting of the RSA Annual Meeting, Grand Hyatt, Washington, DC, March 22-24, 2012).

as the closest and the farthest elements in its composition. Through further examination, I wish to show that this method of understanding of what borders are and how they function in painting enables us to not only challenge canonical understandings of an image but to also establish a new aesthetics of borders.

4.1 Borders in the history of spatiality

Before analysing Carracci's painting, it is important to develop some ideas concerning the significance of borders in relation to a picture. I want to focus on the question of what it is that borders can tell us about a particular material object and how this can help unlock its ambiguities. Here it should be noted that the literature on the concept of liminality in relation to the visual arts is so extensive that an entire thesis would have been insufficient to address it. For the purposes of the present argument, suffice it to say that I consider borders as materially embodied in works. In a map, in a painting or in a text, a border may be configured as a line, or simply as "a sign of qualitative difference between a marked and unmarked space," to use John Frow's definition.[6]

This thesis draws on wide scholarship on the frame, especially the works by Louis Marin, Jacques Derrida, and Victor Stoichita. Also important for this chapter are the broader historical analysis conducted by Jean-Claude Lebenzstejn and Paul Duro's discussion of the non-physical frontiers of an artwork and rhetoric.[7] These critical scholars have all converged on the idea that the importance of a frame in, or of, a painting lies precisely in the ambiguity of its position, as being neither inside nor

[6] John Frow, "The Literary frame," *Journal of Aesthetic Education* 16, no. 2 (1982): 25.

[7] Many works have dealt with formal and generic borders in texts and artworks, contributing to formulate in a semiotic way the complex function of borders and margins within the rhetoric of the frame: Duro, *The rhetoric of the frame: essays on the boundaries of the artwork*; Marin, "The frame of representation and some of its figures," 79-95; Derrida, *The truth in painting*; Stoichita, *L'invenzione del quadro. Arte, artefici e artifici nella pittura europea*; Jean-Claude Lebensztejn, "Starting out from the frame," in *Deconstruction and the visual arts: Art, media, architecture*, ed. Peter Brunette and David Wills (Cambridge: Cambridge University Press, 1994), 118-40.

outside. An earlier argument was made by Meyer Schapiro, who assigned the frame of a painting to the space of the observer, where it acquired significance as a compositional device. In contrast, Derrida argues that the frame does not belong so straightforwardly to the observer's space. In relation to a wall, the frame is part of the painting, while in relation to a painting the frame is part of the wall. In other words "the parergon acts a sort of deconstruction of the space."[8] In addition, the theoretical writings of George Simmel deserve a prominent place as he discusses the role of the frame as an element separating the picture from the external world. He claims that "[the frame] excludes all that surrounds it, and thus the viewer as well, from the work of art, and thereby helps to place it at that distance from which alone it is aesthetically enjoyable."[9]

The frame, exemplified by the lunette format of Carracci's painting, emphasises the boundary that separates the space of representation from its surroundings. Within this ambiguity, it carries with it the notions of margin, limit, and threshold. However, borders do not always coincide with material facts.

In the third chapter of this thesis, I demonstrated specific ways in which borders are not only demarcation lines but also based on human practices and experiences. I have advanced the argument that borders cannot be conceived of as simply being spatial characteristics of an image. Although a border may be portrayed spatially, as a line, a frame or limit between places, it may have an orientation, its existence cannot be separated from time. On the one hand, this interrogation of borders leads us back to contemplating how we conceive of space, place, time, and bodies. And on the other hand, we cannot think of borders without giving them spatial descriptions, much in the

[8] Derrida, *The truth in Painting*, 61.

[9] Georg Simmel, "The picture frame: An aesthetic study," *Theory, Culture and Society* 11 no.1 (1994), 11-1. This reference p.11.

same way that we cannot think of time without space. Therefore, time is always portrayed as something spatial.

Many scholars have noted a distinction between time as chronology and time as lived or experienced. For example, Henri Bergson shows that reflecting on time opens up a series of interrogations of space. He does not neglect space; on the contrary his work represents an attempt to temporalise space.[10] According to Bergson, time cannot be reduced to a fixed and homogeneous dimension. He completely refuses the logic of measured time, which represents moments as points or calendar dates in sequence. Instead Bergson sees time as something immeasurable.[11] He stresses the fact that as long as one attempts to represent time, an idea of space is introduced. This represents the premise for his theory of duration. In duration, it is impossible to distinguish between past and present sensations; all occur in a process which we experience as a whole, as a kind of flow.

As my argument proceeds, I want to make clear that this distinction between clock and heterogeneous time converge into a concept of space and place. We can represent time as a series of points on a line without grasping its flows and heterogeneous dimensions, precisely because time is both in movement and in space. In the same way, borders, being related to bodily movement, inevitably occur in space as well as in time.

The analytic category of spatiality has been addressed in many other studies published in the 1960s and 1970s, through the work of Gaston Bachelard, Michel Foucault, and Henri Lefebvre. Lefebvre's *Production of Space* is one of the most profound analyses of this problem, which contributed greatly to the advance of the

[10] Before Bergson, Heidegger in *Being and Time* (1927) has considered time the dimension from which time and space come from.

[11] Bergson, *Time and free will: An essay on the immediate data of consciousness*, 56.

current thinking on spatiality. Lefebvre has helped to set up a conceptual analysis of spatiality by distinguishing, to use Philip Ethington's words, "between 'spatial practice' (the practical material work carried out spatially in any given society), 'representations of space' (the ways that society represents its own spatiality), and 'spaces of representation' (the arts, architecture, and other environmental texts that society deploys in its self-representation)."[12]

George Simmel, an earlier writer, developed a discourse on critical spatiality. The issue of the boundary is central to Simmel's theory on spatiality, whose main merit is its combination of metaphoric and geometric spatiality into a single conceptual framework. The boundary is conceived as something which follows the fluid and indeterminate position of the subject: "by virtue of the fact that we have boundaries everywhere and always, so accordingly we are boundaries."[13] From this it follows that the boundary is both metaphorically and geometrically spatial.

Adopting these perspectives generates a concept of liminality that is inherent in bodily movement. Further, this concept entails the idea that space is produced and experienced only through bodily movement and that boundaries start within experience, not outside of it.[14] For instance, a common way to experience the space of the city is by walking. By walking in the city we create our own itinerary. According to Marin, the city map represents the production of a discourse about the city as well as the deconstructive analysis of its representation.[15] Since a city map makes visible the

[12] Philip J. Ethington, "Placing the past: 'Groundwork' for a spatial theory of history," *Rethinking History* 11, no. 4 (Dec.2007): 479.

[13] George Simmel, *On individuality and social forms: Selected writings* (Chicago: University of Chicago Press, 1971), 353.

[14] An attempt to describe space starting from the bodily engagement has become a characteristic of contemporary art practice. See Bartolomeo Pietromarchi and Francesco Ventrella, "Esercizi di cartografia vocale. Geografia, mappe e traduzioni narrative nel rapporto tra dimensione sonora e rappresentazione," *Arte e Critica* 14, no. 50 (marzo-maggio 2007): 58-63.

[15] Marin, *On representation*, 52.

ideology on which its discourse is based, in the same way, the practice of walking in a city contributes to describing that city or to formulating a discourse about it. This means that space is only produced when it is practised and known through the experience of walking or other types of movement. It is through our experience of space that we begin to create our own cartography and boundaries.[16]

Collectively, these various arguments demonstrate that borders do not simply coincide with spatial limits; borders are generated by and entail bodily movement. From this it follows that borders are continuous, flowing and not strictly spatial. In Ethington's terms the boundary is a "*creative edge* where time and space join forces."[17] Therefore, a boundary is a region where time and space merge and it is impossible to distinguish between the two.

In the wake of Ethington's and Simmel's theories, Edward Casey has argued that "boundaries are where places happen."[18] Boundaries are places where phenomena, events and meanings are intensified. Casey argues that we see this function of boundaries in different historical examples, from the history of nations defined in terms of territorial edges, to the history of discrimination on the basis of race and gender, and in circumstances of warfare. The association of boundaries with events has "the merit of combining in one expression both a spatial and a temporal aspects."[19]

In this thesis I have considered and developed an approach that provides descriptive insights of cartography derived from our engagement with it. This chapter pushes this argument further, demonstrating that such an approach can just as fruitfully be applied to a picture. In a bodily experience of a painting, this analysis is in part a

[16] De Certeau, "Walking in the city" and "Spatial stories," 117.

[17] Ethington, "Placing the past: 'Groundwork' for a spatial theory of history," 487.

[18] Casey, "Boundary, place and event in the spatiality of history," 509.

[19] Ibid.

negotiation between viewers and elements made visible across the space of the representation. Paul Crowther has noted the importance of this ontological reciprocity, stating: "the ontological structure of the subject and its object of experience are thus reciprocally correlated in key aspects. At the experiential level, each is, in effect, part of the full definition of the other."[20] The equal ontological structure of this relationship challenges approaches that would reduce meanings to a social and historical context, as well as models concerned with the intentionality of the artist.

So how can all this help us to understand landscape painting, and, in particular, one of Carracci's best known works? Building on theories sketched above, and also Tim Ingold's approach in *Landscape of Temporalities*, I propose to re-describe this painting. Re-describing it involves looking at single elements in the painting whilst, at the same time, imagining ourselves within it, as if we were walking through the landscape. In the next sections, in an embodied exploration of the painting, I also wish to undermine the well-established art historical categories of the 'ideal' and the 'real' through which this painting has mainly been discussed.

4.2 *A Landscape with the flight into Egypt*: a perfect balance?

As already mentioned, with the election of Gregory XIII, the relationship between Rome and Bologna was intensified. The new Pope considered his city, Bologna, a model for the spiritual and cultural reformation that he wanted to undertake in Rome. When Bologna became an archdiocese in 1582, Gregory XIII had appointed Gabriele Paleotti as the new archbishop. They shared a commitment towards a spiritual and cultural reformation following Tridentine precepts. Their reforming plan was also based

[20] Crowther, *Phenomenology of the visual art*, 3.

on the involvement of scholars and artists in religious life and on the acknowledgement of the fundamental role that images played in religious contemplation.[21]

Paleotti was profoundly involved in cartography. In 1572 he commissioned three maps of the city and the countryside of Bologna from Cherubino Ghirardacci and exhibited them in his palace. It is likely that these maps inspired the frescos for the *Sala Bologna* commissioned by Gregory XIII.[22] It was during this period of mutual exchange and cooperation between Bologna and Rome, when many artists moved to work in the ecclesiastical capital, that Aldobrandini commissioned Carracci to paint six lunettes. Each was to be of a scene from the life of the Virgin, set within the chapel of his Roman palace, now known as the Palazzo Doria Pamphilj, which he had acquired in 1601. The *Landscape with the Flight into Egypt* is one of these six lunettes. The series also includes *The Deposition, The Assumption of Mary, The Visitation, The Adoration of the Magi* and *the Adoration of the Shepherds.* Although the chapel no longer exists, we know that the six lunettes functioned as if they were large windows of various dimensions, through which it was possible to admire moments of the Virgin's life settled in a beautiful countryside.[23]

The lunettes were not all by Carracci. Scholars generally attribute *The Flight into Egypt* exclusively to him, whereas he collaborated with Domenichino on the *Deposition*. Different artists, including Domenichino, Francesco Albani and Giovanni Lanfranco, worked on the other lunettes. There is general agreement that The *Flight into Egypt* should be dated between 1602-1603, before the beginning Carracci's illness in

[21] On the relationship between Gregory XIII and Bolognese artists see Francesca Fiorani "Da Bologna al mondo: Astronomia, cartografia, giurisprudenza e la chiesa universale di Gregorio XIII," in *La Sala Bologna*, ed. Francesco Ceccarelli and Nadia Aksamija (Venice: Marsilio Editore, 2011), 9-23.

[22] Ibid., 22.

[23] *Annibale Carracci*, edited by Daniele Benati and Eugenio Riccomini (Bologna and Rome 2006-2007), catalogue of an exhibition, Bologna, September 22 - 2006 through January 7- 2007, Rome, January 25 – May 6, 2007.

1604-1605, which meant that his workshop took over, completing the cycle of lunettes.[24]

The style and circumstances in which the lunettes were commissioned has led to the view that the *Flight into Egypt* is the oldest of the cycle. Certainly, the unique intensity of the greens, yellows and blues, coupled with the delicate textures, which intensify the sensation of freedom and light quality of the brushwork, bring to mind a *River Landscape,* painted by Carracci between 1589-1591, now preserved in the National Gallery of Washington (fig.34). In terms of pictorial quality, there are numerous similarities between these two paintings, especially the use of blue, although in the *River Landscape* it is used with even greater variety to illuminate the composition. Light coming from the background flows through the landscape as a whole. The viewer's eye is invited to travel through the strong coppers, greens, and browns of the autumn vegetation before being pulled forward into the blue horizon, composed by the mountains and sky. The painting shows a carefully controlled correspondence between brighter and darker, primary and complementary colours. This gives it a visionary and poetic quality, which intensifies the viewer's experience.

At first glance, in both paintings everything appears to be symmetrical. In the *River Landscape,* the vertical lines of direction are represented by the trees and their branches across the surface of the painting. There is also a strong diagonal, created by a tree, running across the centre. Without this central tree, the composition would have become dominated by the right side, which is characterised by thicker foliage and the strong red of the bush. The diagonal set up by the central tree with the two branches creates a rigorous geometric composition.

[24] For further discussion see the description of the *The flight into Egypt* by Silvia Ginzburg included in the catalogue above. Ibid, 400.

Similarly, *The Flight into Egypt* is a highly controlled composition characterised by a careful balance between vertical and horizontal lines, colours and forms (fig.33). The lines in the painting converge on the broad focal points of the castle and the horizon, which serve to emphasise nature more than the religious figures. Although Carracci does not overemphasise the holy family and leaves the landscape to dominate the composition, the narrative of the painting remains obvious to anyone with a basic grasp of Christian pictorial motifs.

The balance and geometrical structure of the composition have been emphasised by many scholars, including Daniele Benati, who have discussed the geometrical arrangement in detail.[25] In a composition like this, carefully designed by the painter, nothing appears to be random or casual. However, the balance is not rigid or monotonous thanks to the interesting combination between vertical and curved lines that create movement. The snaking river, the curving line of the flock of sheep and the birds all contribute to an equal distribution of colours. Also, the light blue of the river is very important because it functions as an anchor to the whole composition: it illuminates the scene and connects the foreground with the background. Harmony and balance are created by the careful weighing of colours and shadows, and by the nicely judged proportion and correspondence between verticals and horizontals, and between curves and diagonals. In this way, the image embodies stability and harmony, combined with visual tension and mystery. The tension seems mostly to reside in the relationship between the figures and landscape, in between natural and human features that demarcate one particular pictorial space from another.

[25] Other recent publications on Carracci include Andrea Emiliani, *I Carracci. Capolavori giovanili di Ludovico, Agostino e Annibale nel passaggio del Manierismo al Barocco* (Rimini: NFC Edizioni, 2012); Silvia Ginzburg Carignani, *La Galleria Farnese* (Milan: Electa Mondadori, 2008); Clare Robertson, *The invention of Annibale Carracci* (Milan: Silvana Editore, 2008); Silvia Ginzburg Carignani, *Annibale Carracci a Roma: Gli affreschi di Palazzo Farnese* (Rome: Donzelli, 2000).

Discussing the Aldobrandini lunettes, scholars have emphasised the presence of ideal or classical landscape. Accordingly, Donald Posner has argued that at the very end of the sixteenth century "a new kind of landscape, the 'ideal landscape' began to take shape in Carracci's art. It is a landscape whose character and form, whose significance, derives from its harmonious accord with the dramatic activity of its human inhabitants […] it contains a religious and mythological subject."[26] He continues by stating that in the *Flight into Egypt* "the seventeenth-century conception of the ideal landscape was given in its essential form."[27] This idealistic view of Carracci has certainly been influenced by his early biographer, Giovan Pietro Bellori (1613-1696), as part of his series of *Vite,* where the artist was presented as the new Raphael.[28]

Carracci's landscape paintings became a part of a specific category of art critics ─ the 'ideal landscape', that would later include the work of Nicholas Poussin and Claude Lorrain. [29] Scholars have argued that, with *The Flight into Egypt,* Carracci became the pioneer of a new classical category within the genre of Baroque landscape, which often included literary classical references to the pastoral poems of Horace, Ovid and Virgil. As Kenneth Clark argued in the mid-twentieth century in relation to Baroque landscape, "the features of which it is composed must be chosen from nature, as poetic diction is chosen from ordinary speech, for their elegance, their ancient associations,

[26] Donald Posner, *Annibale Carracci: A study in the reform of painting around 1590* vol.1 (London: Phaidon, 1971), 118.

[27] Ibid., 122.

[28] "Così quando la pittura volgevasi al suo fine, si rivolsero gli astri più benigni verso l'Italia, e piacque a Dio che nella città di Bologna di scienze maestra e di studi, sorgesse un elevatissimo ingegno, e che con esso risorgesse l'arte caduta e quasi estinta." Giovan Pietro Bellori, *Le Vite de' Pittori, Scultori e Architetti Moderni*, ed. Evelina Borea (Turin: Giulio Einaudi, 1076), 32. English edition: Giovan Pietro Bellori, *The lives of the modern painters, sculptors and architects. A new translation and critical edition*, eds. Alice Sedwick Wohl, Helmut Wohl and Tommaso Montanari (Cambridge: University Press, 2005).

[29] Some studies that have associated the category of the ideal to Carracci's landscape paintings see Margaretha Rossholm Lagerlof, *Ideal landscapes: Carracci, Poussin and Lorain* (Yale: University Press, 1990); Rudolf Wittkower, *Art and architecture in Italy, 1600-1750* (Harmondsworth, Eng.: Penguin Books, 1958), 70; Clark, *Landscape into art*, 67.

and their faculty of harmonious combination. Ut pictura poesis."[30] Scholars, including Posner, began to question this over intellectualised characterisation of Carracci. Posner introduced a new self-conscious figure who did not possess "the intellectual or spiritual resources that enabled artists like Michelangelo, Poussin, and Caravaggio to respond directly and profoundly to general cultural trends of their times."[31] Posner's assessment of Carracci's lack of intellectual depth was in turn questioned by Charles Dempsey, and more recently challenged by Clare Robertson.[32]

These debates developed around the figure of Carracci and his work all maintain the art historical categories of 'ideal' and 'real' through which this particular painting has mainly been discussed. The analysis presented here aims to challenge these categories, and attempts, by contrast, to emphasise the ambiguities in the painting. In what follows, I focus on five components of the painting in the attempt to grasp the tension and the ambiguity in them. The aim is to reflect on what liminal places can say about representation and vice versa.[33] How is content disposed in relation to the limits of the picture? How can this help to unlock ambiguities? I will try in the following section to answer these questions by looking at single components of the land and water, the figures, the castle, and the trees. I will refer to visual margins – the edges of a form, the lines, and the limits of the painting – not only as compositional elements that encourage the visual experience of the painting, but also as a set of mobile structures, as mobile as the reality they depict. While imagining an immersion in the painting, liminality is also considered as generated by our movement within the landscape.

[30] Clark, *Landscape into art*, 67.

[31] Posner, *Annibale Carracci: A study in the reform of painting around 1590* vol.1, 7.

[32] Charles Dempsey, *Annibale Carracci and the beginnings of Baroque style* (Glueckstadt: J. J. Augustin, 1977); and Robertson, *Invention.*

[33] A crucial contribution on the multiple ways in which sixteenth and seventeenth century paintings address and challenge representation through rhetoric strategies, techniques of display and conventions: Victor I. Stoichita, *The self-aware image: An insight into early modern meta-painting* (Cambridge: University Press, 1996).

4.2.1 Land and water

Water with its central presence functions as an element in- between rocks, hills and vegetation. The river flows from the foreground to the background, diagonally crossing the painting. From the pictorial edge the rivercourse flows until it meets a wall of rocks. Beyond these rocks the space is stretched into a panoramic vista, then a large body of water, mountains and the sky on the horizon.

The composition is layered, with the foreground occupied by the holy family, the river and a strip of land where the figures stand, the hills and the castle, and finally the sky and the mountains. At first, it may seem that there is no continuity between these three levels. This impression is also emphasised by the movement of the boat in the foreground, sliding slowly away after transporting the holy family to the other side of the river (fig.33b). The boat occupies the right-hand side of the painting, just along its limits, and thus it invites us to engage with the scene.

The terrain surrounding the river appears undulating with descending and climbing features. We are standing just in front of the diagonal line of the river, our eyes are directed towards the vanishing point. The undulating characteristic of the land contrasts with the level surface of the river which divides up the composition right in the centre. How does the river as an element *in between* work in the composition? How does it work as an element in relation to the surrounding land?

If the river was not there, we would be completely lost as no further elements direct our gaze across the various planes and toward the horizon. Differently from the river, which functions as a catching element for our bodily participation, the hills mostly function as blocks and strips of space that locate the small figures. In compositional terms, they help to stabilise the diagonal movement of the river and create a middle distance. The hills, emphasised by brown and green shadings of colours, draw the

boundaries of the landscape. Their undulating character creates movement and helps to locate the figures scattered in the landscape.

As we look at the landscape in Carracci's painting, our eyes do not remain fixed; we are transported by the river across the painting. One element that is particularly ambiguous in the composition is the large body of water in the background, which may be a lake, a river or a sea. The large body of water with its glassy surface represents the element on which our eyes can both stop and wander. It is thanks to this tension between controlled and uncontrolled space that we enter the illusion of the painting, and experience a journey.

We are made to feel as if we were part of the landscape through the way in which the river is displayed. The central presence of the river is the element that, more than others, invites us into the painting. It flows from the right-hand side, partly appearing to come out beyond the space of the painting, between us and the picture. The river shapes the landscape and contributes significantly to our experiential engagement.

The river lets us into a world of sensory experience, and it is through our presence, in association with the river's flow, that time unfolds. By using the metaphor of a river flow, Maurice Merleau-Ponty shows how thinking about time presupposes a viewer.[34] It is only by positioning the viewer on the bank – facing in the same direction as the flow, or the opposite – that our perception of time moving can be visualised. Or put in another way, we always conceive time from our own bodily perspective.

Merleau-Ponty provides a metaphor, where time is a landscape through which the viewer moves:

> If the observer sits in a boat and is carried by the current, we may say that he is moving downstream towards his future, but the future lies in the new landscape which awaits him at the estuary, and the course of time is no longer the stream itself: it is the landscape as it rolls by for the moving

[34] Merleau-Ponty, *Phenomenology of Perception*, 477

> observer. Time is, therefore, not a real process, not an actual succession that I am content to record. It arises from *my* relation to things.[35]

When the viewer becomes an active subject immersed in a landscape, time is no longer static but is instead dependent on one's bodily movement in space.[36]

We are suddenly captured by the different figures in action. The human figures are as important as the landscape. We can sense the weight of the child and the tiredness of both Joseph and the donkey. All the poses suggest that being in this landscape is physically tiring, however gentle it may seem. We have to make an effort – metaphorically or mentally, to traverse the landscape physically, just like the boatman in the picture, with his oar rowing against the current.

Most scholars have emphasised the dominance of the landscape in the composition in relation to the small figures immersed in it. Instead, I am arguing that Carracci's large landscape, where water is a central presence, encourages us to reflect upon the inter-relationship between humans and their environment. In other words, it allows us to conceive the landscape as a set of dynamic actions and interactions. The painting enfolds the contingency of lives, and reveals the immediate experience of people involved in their practical activities carried out in isolation. The boat crossing the river draws our attention to the water as that which enables transport and trade. In the same way men guiding their animals – a shepherd with his flock, a cowherd and a horseman in the distance ─ stress the importance of human activities in influencing their environment as well as the high dependency of humans on it. The flowing water and the little figures engaged in daily activities bring forth a state of contingency upon which landscape is founded. Following this line of thought, we can conclude that the

[35] Ibid., 478.

[36] See also Margaret H. Freeman, "Crossing the boundaries of time: Merleau-Ponty's phenomenology and cognitive linguistic theories," in *Linguagem, Cultura e Cognição: Estudos de Linguística Cognitiva*, vol.2, ed. Augusto Soares da Silva, Amadeu Torres and Miguel Gonçalves (Coimbra: Almedina, 2004) 643-655

entwined notions of landscape, body and time can only be explained through their relationship to each other. Each notion incorporates diverse concepts, all fundamentally linked to experience and movement.

4.2.2 Figures

Although the landscape dominates Carracci's painting, the small-scale figures immersed in the spacious landscape panorama play an important part. The cool light in the foreground softens the profile of the mountains and the other natural features, making the figures stand out (fig.33d). The light draws attention to the group of figures, highlighting their mobility and giving the impression of life.

The holy family, in particular, with its central position, can hardly to be ignored. They are quite obviously a social unit; the member of this unit closest to the bottom centre of the painting is the donkey. The boatman in the foreground and shepherds are contained within their own worlds (fig.33b). In performing their particular tasks, the figures do not communicate directly to one another, becoming instead individuals carrying out their activities in isolation.

The figures in the background are involved in a journey. We can recognise three figures climbing the hill with two camels (fig.33d). These animals, the large body of water and the castle are the most ambiguous elements in the painting. The castle seems to be a reinterpretation of Castel Sant'Angelo. The cupola visible may also refer to the Pantheon's dome. However, the presence of the camels suggests a different setting, probably in the Holy Land. The combination of these elements encourages us to imagine different locales, while leaving any specific setting for the narrative a mystery.

Although the figures are animated by their actions, they are not individualised; most of the figures are in shadows, encouraging us to concentrate on the figures' actions and interdependence with the land.

The human and animal figures all seem to occupy liminal spaces in the painting. In relation to the landscape, their bodily positions demarcate each plane, which is composed by small hills that recede into the background. The holy family occupies the shoreline in the foreground, the place in between the water and land (fig.33a). Joseph is seen at the moment he steps onto the land with one foot still in the water. His position emphasises the possibility of crossing different places. The light reflected on the water near the feet of the holy figures emphasises their liminal position.

If we proceed with the description of the figures located at different levels to one another, we will find the shepherd guiding his sheep downhill (fig.33b). The flock forms a line that emulates the curving shape of the hill. Further on, a man is located on the top of another hill demarcating yet another plane in the composition. He is guiding two cows and walking in the opposite direction of the shepherd (fig.33c). The position of the figures within the painting is very important in terms of the composition, since, being in motion at the edges of hills, they highlight the different planes and create a sense of rhythm that encourages us to move forward.

Although the painting shows control and order that carefully directs our visual movement across the landscape, it also prompts us to wander. The latter is mobilised by the fact that all the figures are in motion. Even though the people are seen in isolation, and not in relation to one another ─ each group is self-contained ─ they are always engaged in action, either with their animals or in some kind of journey. This sense of mobility reinforces the idea of landscape as something that is in a constant process of transformation temporally and spatially. We look at the landscape from a slightly elevated point of view, as if seated on a hill, but the organisation of the painting makes us feel that we could step into the space and be guided by its features. It is through the presence of determined paths and tracks that one is left to decide the way; everything becomes a possibility of movement and engagement.

4.2.3 The trees

Trees frame the composition introducing us to the biblical scene: the flight of the holy family and the people undertaking their tasks, their respective quotidian journeys. Two trees are placed in the foreground with the function to balance the composition, the other is in the background. The combination of these trees disposed at different planes creates an effect of depth and width, foreground and distance. Their function, like the river, is to connect different levels and objects. The large tree on the left-hand side is half–lit and features a detailed delineation of foliage, beyond which it is possible to see the stretch of water in the background.

Turning our attention to the physical liminality of the painting, trees play an important role. As noted above, the trees mark off the picture's space, introducing the viewer to the scene. They contribute to the definition of a threshold between us and the picture and simultaneously set up its temporal dimensions.

What I am suggesting is that the trees in the painting are integral elements of what we call composition – lines, planes, figures, objects. But, looking at their liminal position encourages us to observe that the painting was composed according to the lunette shape, within that format. A fascinating feature of Carracci's composition is the lunette. Interestingly, it allows some aspects of the scene to be visible while others remain hidden. On the right-hand side, the limit of the painting cuts off the foliage of the trees from the top and the right bottom, and the river and the piece of land on the left. Similarly, the trees on the left-hand side are cut off at their sides as if we had already encountered it while passing by. This impression is reinforced by the effect of sunlight that illuminates the mountains and the stretch of water in the background leaving the foliage of the trees in shadow.

The invitation to take a visual journey into the image, conveyed by the road and the river, is also emphasised by the format, which, in revealing some points while

concealing others, requires us to actively look and interpret it. The cut-off points are deliberately chosen to increase the sensation that we are part of the composition. Thus, the trees bring us directly to the scene, identifying the beginning of our engagement with it.

But the trees also perform the coincidence of different temporalities. On the one hand, the trees mark a moment in the cyclical change of seasons. They represent a point in the linear conception of time together with the shadow, as signature of the light at a particular time that marks the contingency of a moment in which the scene is revealed. With their presence they make visible the passage of time, marking a precise season and a precise temporal moment. On the other hand, similar to living elements, the trees embody the heterogeneous flow of time. In Ingold's terms a tree also represents a 'living memory'; "it presides immobile over the passage of human generation."[37] If time is conceived as chronology, as a linear succession of moments, the trees in a particular season can mark a specific moment in the seasonal cycle. However, in the flowing of time, the trees embody heterogeneous moments and rhythm given their relations with the environment and the people who can play a significant part in the trees' lives. A tree thus embeds notions of both fixity and mobility, suggesting different ways of thinking about time.

4.2.4 The castle

Constituting the vanishing point of Carracci's painting is the fortress, or castle, which dominates the centre of the composition (fig.33e). Thus one of the first things that catches the viewer's eyes is not the holy family, but rather the castle that is located at a slightly elevated point of view. The points made so far about the trees can also be made

[37] Ingold, "Temporalities of landscape," 168.

for the castle. As with the tree, the castle with its presence constitutes a place, and, as such, it is subjected to the passage of time. In short, as features of the landscape, both the trees and the castle appear as witnesses to the passage of life. They occupy a precise place in the landscape and in some ways they participate in the process of landscape change.

The experience of the landscape is strictly dependent on our bodily movement through space. The physical movement through space is also influenced by the physical display of a building. And what we see in the painting is a rather unfriendly castle: the main opening presented to us is a wall with a waterfall flowing out of it. In these terms, the castle plays a significant role in the production of boundary practices by imposing a boundary in relation to our bodily experience of a place.

Conclusion

In this chapter, I have extended my analysis to a well-known early modern painting, in order to understand whether borders, as physical and metaphorical elements, can constitute a methodology that can be applied to study other kinds of visual materials.

As I have shown in other chapters, in the process of bodily engagement with a work, borders offer critical insights into the nature of representation that we might not have thought about with conventional attention to composition. Considering borders draws attention to ambiguities and may expose our interpretation to paradoxes. By taking into account different elements in the painting and imagining ourselves within it, what initially appears balanced and clear, becomes, through a closer inspection, more complex. This is true of Carracci's trees in relation to the lunette shape which invites the viewer in the painting, meanwhile introducing us to an array of concepts such as those of time and landscape.

Scholars have opposed the real and the ideal in Carracci's painting, contrasting the idealised landscape with the realism of the figures. The colours have similarly been opposed, with scholars contrasting the light of the background to the gloomy foreground.[38] Instead, this chapter demonstrates that the real and the ideal are indistinguishable in Carracci's landscape, and effectively merge into one. Although the painting shows a very rigorous and careful organisation in its composition, there are visual elements that create ambiguities and alter what may appear as stable and harmonic. What is important is not so much that I find incoherence in an apparently carefully planned landscape view, but rather that exploring the liminal activates visual and conceptual interrogation, bringing us to the essence of representation. Representation is not just about visibility. A landscape painting offers a perspective view, reducing the world into the canvas and encouraging us to look and to move within it. Liminality calls into question what is cut off from representation, what is invisible. It is precisely the tension between visibility and invisibility in the painting that its ambiguity is revealed.

[38] Posner, *Annibale Carracci: A study in the reform of painting around 1590* vol.1, 118.

CONCLUSION

It is as if representing the world on a limited surface automatically relegated it to a microcosm, hinting at the idea of a larger world containing it. For this reason a map is often situated on the border between two different kinds of geography, the geography of the part and that of the whole

Italo Calvino[1]

Representation and fluidity (the border)

This thesis is situated at the intersection of several disciplines: cartography, history of art, aesthetics, philosophy, visual culture and border studies. It has examined the uncertainties, contradictions and complexities of representing borders between two distinct early modern polities ─ the Papal States and the Este State ─ and the discourses that accompanied this process. As I conclude this study, I would like to consider three distinct levels of intervention: the management, representation and experience of the border between Bologna and Modena in the early modern period.

The term 'border' has been traditionally associated with notions of territoriality, identity, state formation and national history. My thesis is a contribution to critical approaches to borders that, in the last decade, have instead stressed their dynamic configuration, rather than their function as lines that enclose and define states or nations. My analysis has underscored how their historically contingent and conflicted status intersected with efforts to visualise them. By investigating the representation of borders before, but also as, they were beginning to appear as fixed lines on maps, my thesis brings to border studies the dynamic and relational process of representation. This historical dimension of the study may enrich recent approaches to border studies that

[1] Italo Calvino, "The traveller in the map," in *Collection of sand*, trans. Martin L. McLaughlin (London: Penguin Classics, 1990), 26.

have left behind narrow geographical constraints to assess links between territories and cultures in a fluid way in order to grasp the profound effects of globalisation today. This thesis has problematised the term 'border' by exploring it in relation to concepts of fluidity, ambiguity and exchange. Borders have been seen as physical lines, as texts, as experiences and as loci for the possibility of engagement. In what follows, after summarising the main contributions of this study, I turn to a few reflections on the nature of art and representation.

Chapter 1 provided a detailed account of the legal, political and historical framework of disputes between Bologna and Modena, sovereign states, and also addressed the key role of water in the development of the economy of territories based on agriculture and mobility. The micro-history of this region led to the investigation of the complex structure of early modern governance and the different levels of authority involved in border and water management.

While the state, together with its Magistratures, was the main territorial agent for monitoring and controlling watercourses and borders, there were other institutions that played a role in territorial management and organisation in Bologna. In this context, characterised by multiple boundaries and different levels of authority, it is clear that the early modern system of sovereignty was far from a spatially fixed political unit. Consequently, the fragmentation of power did not facilitate territorial management.

Because of the lack of studies on the archival material presented in this thesis, providing an account of the geographical, political and social context was an essential step. By examining maps and textual descriptions featuring the Panaro and Muzza canals, I emphasised the difficulty of clearly defining the border. This complexity was not limited to the morphological dynamics of waterways, but mostly caused by the enduring presence of diverse institutional agencies, interests and levels of management. As demonstrated, the lack of a homogeneous political and administrative state apparatus

was in part to ensure that a large margin of autonomy remained with the various political groups that characterised the territorial reality. Accordingly, the role of the different authorities involved in the management of water and border disputes was extremely fluid.

One of the main conclusions is that although there were practical difficulties in defining the border, its indeterminacy was also key to the political ambitions of the two states. Politically and economically, fluidity made it possible to redefine territorial limits according to changing interests.

Fluidity is also revealed in the process of mapping and re-mapping. In the act of re-mapping the border, the cartographic material gives visual form to the multiplicity of possible representations and interpretations of the border. This remapping process is evident in the re-interpretation of a region from one format to another and in the translation from one medium into another, in a perpetual negotiation, writing and management of the region. Natural, social and political phenomena reverberate in maps and texts generated by conflicts and agreements between both parties. Contradictory and paradoxical aspects of the sources emerge from the repeated attempts to define the border. The ambiguity and the fluidity of the border therefore contribute to the understanding of the history of early modern territoriality.

The idea of territoriality that emerged in the Este State and Papal States was directly related to physical action on the ground. Massive engineering measures (construction of dams, ditches, embankments etc.) were necessary to reduce the river shifting and resulting consequences. The voluminous production of texts and maps indicates that it was important to describe and to give detailed reports of all problems related to border changes in order to undertake an array of interventions.

Efforts to represent the border attest to the impossibility of accurately determining its position, and thus to the limitations of the line. In most of the maps

considered, the borders are always connected with natural and man-made features, never presented as drawn lines. It is the case of our first example ─ the map of the Muzza Valley ─ which presents a complex articulation of the border coinciding with waterways, canals and roads (fig.1). In this map, borders follow the medieval tradition by taking the form of rivers, forests and mountains. Attached notes name and clarify the spatial location of these territorial boundaries.

The vagueness and ambivalence of water as an element of separation is evinced in textual as well as in cartographic representations. This ambiguity and its expression in cartographic forms is the main focus of Chapter 2. Through close observation of format, composition, line, colour and points of view, I explored how these cartographic sources addressed viewers. The seemingly boundless character of the border led to an investigation of the nature of representation and its power to combine surface and depth, visibility and invisibility. Analysis of cartographic documentation opened up philosophical considerations that are also pertinent to artistic production. It is perhaps useful to see early modern cartography as a body of activities closely related to those of artists; the two were not distinct.

What emerges with particular clarity from the first two chapters is that determining the border between Modena and Bologna was a rather complex task that went far beyond drawing a line on a map. The problems relating to any specific contested area could remain unsolved for centuries, due to the objective difficulty involved in materialising a border in a stable and durable manner. It was also an inevitable consequence of the fragmentation of powers; the authorities involved in the process of border definition generated different sources, which included various perceptions of boundaries. Borders were negotiated on the ground, often defined by military confrontation, made official through treaties and interpreted through daily activities. In this context, the border, when drawn on maps, is never represented as line.

In the uncertain political space between Modena and Bologna, borders were not merely linear; they worked as elements of integration, as areas of transition and places of exchange rather than as limits and elements of distinction. The border in the maps examined here often represents the midpoint of a transition between two territories and positions. This is the case for one map of the Panaro River and Muzza canal that, more than other cartographic documents considered in this thesis, presents liminality as a place of mobility (fig.17). In the Panaro River and Muzza canal map from the Modena Archive, everything seems to be in between places. The map clearly depicts threshold spaces both in land and water. Each space is delineated by borders within which human figures engage in dynamic activities. A boat with a passenger is depicted while crossing the Panaro River and the roads, which delineate the perimeter of each plot of land assigned to one state or the other, are populated by little figures walking along. As such, borders are not configured as inclusive and exclusive barriers.

Borders are drawn as bands ─ contact zones – which correspond to areas of interaction. They divide, but also define, a common area, creating an inside and outside place without being exclusive. In other words, the border was a contact zone where cultural, territorial, political and social cross-border relationships occurred. Boundaries were also created and controlled by acts of mobility, and therefore their existence was not only predicated on what they contained and defined, but also on the forms of mobility that took place across them.[2]

At the same time, the maps under analysis are repositories of social and spatial practices as they deal with a border in constant motion. Chapter 3 has taken into account

[2] Thinking about the relationship between time, mobility and borders, there is a particularly significant photographic project by Valerio Vincenzo, an Italian photographer, which attempts to show the results of a historical change that has taken place over the last few decades in Europe. Ever since the Schengen Agreement was signed in 1985, internal borders between a large number of European countries are gradually disappearing. This project has won the second prize at the Silver Canon Camera in 2016 in the Netherlands and the Prix Louise Weiss in 2013. See http://www.valeriovincenzo.com/Borderline-Frontiers-of-Peace.

sources which are intrinsically dynamic as they document the passage and the movement of people through a territory. As mentioned previously, borders were constituted by forms of engagement and a way of acting on the land.

Considering the sources which document social and spatial practices in the border area between Modena and Bologna, I have focused on the temporal and spatial relationships that come with a notion of liminality. The liminal is configured as a process of engagement with and movement in space. As consequence, it embeds "temporal qualities, marking a beginning as well as an end, but also duration in the unfolding of a spatial-temporal process."[3] In this regard, borders are configured as spatial practices which need to be renegotiated constantly on the ground. Notions of identity and territoriality are transformed into practices of exchange, interactions and cross-cultural encounters. As such, liminality can be regarded as a generative act[4] or, in Philip J. Ethington's sense, a *creative space* in which processes, relations, things and acts are generated and intensified.[5]

From this perspective, the concept of border allows a theoretical shift beyond its strictly territorial context, expanding its significance to a multitude of epistemological, aesthetic and art-historical issues. Thus Chapter 4 pursued these methodological and theoretical implications.

To explore whether borders can constitute a methodology for the analysis of pictorial texts, the final chapter focused on Annibale Carracci's *Flight into Egypt*. Here, I considered borders intended as graphic signs (lines, contours of features), physical limits (limit between central areas and frame of maps/paintings), and as places that can

[3] Di Hazel Andrews and Les Roberts, *Liminal Landscapes: Travel, Experience and Spaces In-between*, (London and New York: Routledge, 2012), 1.

[4] Ibid.

[5] Brambilla, *Borders between essentialization and creativity*, 583.

be experiences (the interaction and effect of the viewer engaging with the text). By using the term border to designate several demarcating functions, I suggested that liminality challenges canonical understandings of early modern visual images, opening them up instead to contradictions and complexities. I argue that border thinking in relation to landscape painting invites a phenomenological experience of the scene, a space that can be navigated in an embodied sense. If one engages closely with Carracci's *Flight into Egypt*, the landscape becomes an image which moves beyond the visual into other sensory experiences. The embodied experience of the landscape through consideration of the liminal offers a challenge to interpretations of Annibale's painting through the familiar opposition between art historical categories of the 'real' and the 'ideal'.

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As the documents studied in this thesis show, the definition of a border by water has produced a body of historical evidence that is extrinsically dynamic and subjected to constant reassessment and representation. These maps are not simply the coherent outcome of government institutions for monitoring the disputes arising over the border. Rather, they represent shifting forces, conditions of conflict and accord, as well as the continuous process of border definition itself. In registering the process of change, the documentation analysed is conceived as an assemblage within which multiple gazes and voices, crossing and challenging modes of description and ways of understanding the territory interlace.

The seventeenth-century drawings which show one hydraulic problem on the Muzza canal provide conflicting interpretation on the cause of the Muzza flooding (figs.13-14). When focusing on one of the two drawings at a time, their contents are not

necessarily contradictory since each sheet indicates possible solutions to the problem of flooding. Comparing the texts of the drawings side by side, however, reveals opposite approaches, interests and strategies that each party would have adopted to solve the problem of the Muzza flood. Although both drawings are very accurate in describing all the measures that had to be undertaken in order to secure the surroundings from flood, they still make manifest the fragmentary and contingent nature of knowledge. The morphological situation of the Panaro River and the Muzza Canal encountered constant transformations, new arrangements and embankments were necessary to stabilise the situation. Accordingly, the process of drawing the border would recur yet again.

Examples of maps which include different hands, media and heterogeneous modes of representing the territory have shown the importance of attending to the fluidity with which early modern visual imagery was used to translate knowledge and phenomena. Paradoxically, a heterogeneity of styles and languages in the maps aimed at creating images that were as accurate and as copious as possible. This claim for accuracy was achieved by using several languages: figurative and abstract, conventional and imaginary. Among the numerous maps analysed throughout the thesis, the Este Map n.175 is a remarkable example of this representational rhetoric (fig.9). Conventional and figurative systems of signs are combined to create a sense of unity. Abstract symbols define forests and marshes, while other topographical features are conveyed in a way that corresponds more closely to physical referents. Towns, castles, mills, mountains are rendered in profile in ways that resemble landscape paintings but waterways and canals are described from above.

With such heterogeneity, the documentation blurs definitions: there is neither purely chorography, nor definitive scientific or figurative representations, nor merely maps. The difficulty of defining the material is also evident in a drawing from the Modena Archive showing a route from Modena to Bologna which presents the

characteristics of both a map and an itinerary. As a map, it records a place with its topographical features, and as an itinerary it includes the spatial experience of the surveyor moving through the territory (fig.31).

The cartographic documents discussed in this thesis attest to multiple possibilities for representing and interpreting reality. The distinctive and often unpredictable combination of conventional and figurative language, textual and visual forms, produces cartographic images which combine past and future modes of description into a creative unity. As unique blends, I suggest that such documents are more than just reflections of the social, spatial and political dimensions of a contested territory; they also embody the controversial and ambiguous, even irresolvable nature of such contestation.

In exploring various notions of fluidity in relation to cartographic forms, this thesis opens up new horizons for philosophical interrogations of the nature of art and representation. As indicated in the introduction, most scholars tend to focus on manuscript administrative maps as documents of management and territorial power, but do not engage with their pictorial, metaphorical and theoretical dimension. Yet these maps embody the ambiguity involved in giving a fixed boundary to a territorial state, revealing a tension between inside and outside, fixity and movement, accord and agreement. It is in this tension that maps, though produced for administrative purposes, reveal unexpected theoretical and poetic forms. A theoretical dimension comes powerfully into play because cartographic material offers an exceptional way to engage with shifting notions of representation.

Given this theoretical potential, the case of a border in flux may function as a symbol of the fraught character of representation itself. One of the most complex elements mapmakers had to deal with in the act of representing the border was water, due to its multiplicity of forms and states. In the maps analysed, water displays the full

range of its forms and functions as a means of transportation and as a source of irrigation and of power for mills. However, in showing water as a line of demarcation, the maps reveal its complexity and paradoxical nature. The compositional structure of these maps, as well as their pictorial attention to rendering the fluidity of a border, leads to approaching cartographic representation as a mediation between visibility and invisibility.

The depiction of flooding and the broken banks in the map of the Muzza canal emphasise the fluidity of the border, which could therefore never be fully represented (fig.19). This map indicates the limits of representation by showing the paradox of a fluid border: it simultaneously reveals a border by showing an imaginary line running through the canal, while declaring its incomplete and problematic nature. Further, the material and physical dimension of the border is questioned by showing the Muzza flood. Thus, the border is viewed as something unstable, which escapes any attempt at representation and yet calls for constant redefinition.

Water could not be fixed into representation and consequently the impossibility of fixing the border into place was made explicit in images that could just show the contingency of a moment. Due to its ever changing nature, the border would have always been partly hidden and submerged from representation, revealing multiple possible conditions and states. The invisible dimension presents ambiguous characteristics that force undertaking a continuous process of reinterpretation. In metaphorical terms, the meaning of an image often goes beyond its visible dimension, like the river breaking the banks that were meant to keep it flowing in one determined direction.

Thus, the maps discussed in this thesis are positioned in an ambiguous place, between the visible and the invisible. There is a sense in which lines try to capture the movement of fluidity while revealing the impossibility of doing so. The border cannot

be identified by a map; it is not reducible to a sign. The border becomes more than a simple expression of identity and power; it is as much a sign of difference and impossibility. One can see it and read it, but at the same time it is hidden from view. In the attempt to depict the border, the map also engages with a not yet existent dimension that can never be fully grasped. Gilles Deleuze and Félix Guattari understand the *in between* not as a place. It is a continuous state of becoming:

> A line of becoming is not defined by the points it connects, or by the points that compose it; on the contrary, it passes between points, it comes up through the middle, it runs … transversally to the localizable relation to distant or contiguous points. A point is always a point of origin. But a line of becoming has neither beginning nor end … [It] has only a middle … A becoming is always in the middle: one can only get it by the middle. A becoming is neither one nor two, nor the relation of the two; it is the in-between, the … line of flight … running perpendicular to both.[6]

This passage suggests that the *in between* position of the cartographic material makes the map an open concept, which renders a multiplicity of realities. The *in between* cannot be conceived as a separation and nor can it be represented. The in between is what exceeds representation and becomes infinite.

The relationship between fluidity and representation not only suggests that something escapes and flows away from the process of representing. According to Deleuze and Guattari this relationship is at the very base of philosophy "the problem of philosophy is to acquire a consistency without losing the infinite into which thought plunges".[7] In other words, the aim of philosophy is to order what is not ordered, projecting what is characterised by chaos in a logical and coherent structure. However, at the same time, philosophy should not detach itself from infinity and instability. This problem is reflected in cartography: maps represent the (infinite) world on a limited surface, confining it into a unified and ordered place while simultaneously calling to

[6] Deleuze and Guattari, *A thousand plateaus: Capitalism and schizophrenia,* 323.

that larger, boundless world. A map materialises multiplicity into unity, but the final result remains something that is neither multiple nor unique. In between one state and the other, never bounded and fixed, representation flows while the interpretative moment will always flow in a different way.

Thus, the map itself is situated on the border between the visible and the invisible, partiality and entirety, determinacy and indeterminacy. The map, in its border position, offers multiple entrances. It manifests its visible condition and conceals invisible ones. Although a map is characterised by visible elements, there will be always something inherent that goes beyond its obvious confines, contradicting and opening a map to a flow of interpretations. However, no one given interpretation is meant as an ultimate definition of what a map delivers.

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ASBO, Assunteria confini ed Acque, Mappe, Vol. 4, n.32. 1609 (ink on paper): official map of declaration of border between Modena and Bologna at the Pass of Sant'Ambrogio, nov 1609, in the presence of the surveyors Floriano Ambrosini e Pasio Pasi.

ASBO, Assunteria confini ed Acque, Mappe, Vol. 4, n.33. 1609 (ink on paper): official map of declaration of border between Modena and Bologna at the Pass of Sant'Ambrigio, nov 1609, in the presence of the surveyors Floriano Ambrosini e Pasio Pasi.

ASBO, Confini ed Acque, vol.4 n.20. 17th century (ink on paper, 19 x 15 cm): Drawing showing a hydraulic problem on the Muzza Canal.

ASBO, Senato-Instrumenti, b. 13 serie B. 1579: Notarial act signed by Cornelio Berti and Tommaso Barbieri on behalf of Duke of Ferrara and the Pope.

ASBO, Serie delle Ambascerie a Roma collection. 16th century (ink and watercolours on paper): Map, Drawing of differences between Modenesi and Bolognesi at the Pass of Sant'Ambrogio.

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ASF, Mediceo del Principato Collection. 1590: Letter by Agnolo Nicolini (1560, March 29).

ASMO, Mappario Estense, Territori, n.175. Late 16th century (ink and watercolours on paper, 76 x 46 cm): Map representing the Panaro with the water springs located in the high plain of Modena.

ASMO, Mappario Estense, Grandi mappe, n. 100/a. Late 18th century (ink and watercolours on paper, 220 x 100 cm): Map representing all those lands, with their borders and extensions, which one state ceded to the other as a consequence of the border redefinition.

ASMO, Mappario Estense, Grandi mappe, n. 145/a. 1789 (ink and watercolours on paper, 217 x 632 cm): Map of the border between the Church States and the Este State with the representation of the communities of Castelfranco, Panzano, e Gaggio di Piano in the territory of Bologna and S. Cesario in the Este State.

[1] This list also includes all the archival sources, including maps examined in chapter 1-2-3. For a complete list of the cartographic documents considered throughout this thesis, see the list of illustrations in vol. II.

ASMO, Vol. di decreti del Duca Borso d'Este 1454-1460, b.1457: Decreto di Borso D'Este (1457, February 21).

ASMO, Mappario Estense, Topografia dei terreni, f. 37/1. Early 17th century (ink and green watercolours on paper, 60 x 52 cm): Map of border between the Modenese and the Bolognese territory on the side of Navicello and Nonantola, showing the profile view of Nonantola and the wood.

ASMO, Mappario Estense, Topografia dei Terreni, f.37/2. 1675 (pen on paper, 60 x 52 cm): Drawing showing the system of division characterised by six main sections and subsections called 'tagli'.

ASMO, Archivio Segreto Estense, Cancelleria, Confini dello Stato, f. 52 /4. Early 17th century (Ink and watercolours, 60 x 43 cm): Map of the Muzza Canal between Nonantola in the State of Modena, S. Agata and Crevalcore in the State of Bologna.

ASMO, Acque e Strade, f. 171. 1595 (ink on paper, 30.15 x 20.92 cm): Drawing showing a hydraulic problem on the Muzza Canal.

ASMO, Acque e strade, Ispezione Muzza, f.171. 1595 (ink on paper, 30.15 x 20.92 cm): Letter by Pier Paolo Caula to the Duke of Ferrara on a hydraulic problem on the Muzza.

ASMO, Acque e strade, f. 171. 1596 (ink on paper, 42.16 x 28.02 cm): Drawing showing a hydraulic problem on the Muzza Canal.

ASMO, Acque e strade, Mulino Redù, f.171. 1611: Letter by Pietro Moro to the Duke of Modena, 1611.

ASMO, Acque e strade, Mulino Redù, f.171. 1611 (ink on paper, 38.83 x 29.21cm): drawing showing a hydraulic problem on the Muzza.

ASMO, Acque e Strade, confini col Bolognese, f.171. 1622 (ink on paper, 19.68 x 21.84 cm): Pasio Pasi, Drawing showing the wall and the dam built by the Bolognesi.

ASMO, Acque e strade, f.171. 1622: Letter by Augusto Bellencini to Angelo Cesi (1622 April 7, Modena).

ASMO, Acque e Strade, f.171. 1622: Letter by Augusto Bellencini to the Duke of Modena (1622, April 12, Modena).

ASMO, Acque e strade, f. 171. 1622: Letter by Pasio Pasi to the Duke of Modena.

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ASMO, Acque e strade, f.171. 1622 (ink on paper, 19.68 x 21.84 cm): Drawing showing the wall and the dam by Pasio Pasi.

ASMO, Acque e strade f.171. 1598 (ink on paper, 21.14 x 29.77 cm): Drawing showing the dam.

ASMO, Confini dello Stato, f.52. 1631 (ink on paper): Drawing of the visit following the road to Bologna, from Modena passing through Nonantola and from Nonantola to San Giovanni and from San Giovanni to the Scalla's inn and then Bologna (1631, September 4).

BAF, Mappe - serie XIV, n. 41: Giovanni Battista Aleotti, Corographia dello Stato di Ferrara con le vicine parti delli altri Stati che lo circondano, Ferrara, Vittorio Baldini Stampator Camerale, 1603.

BCA, Instrumento di permuta del territorio e nuova confinazione fra la prov. Di Bologna stato pontificio e il duc. Di Modena per qual tratto che comincia ove il condotto degli Olmetti entra nel Muzzadello e va fino al di sotto del palazzo Bagnesi in poca distanza del fiume Panaro dividendo la comunità di Gaggio di Piano in Bolognese al comune di S. Cesario in Modenese stipulato il 10 giugno 1790. A rogito dei notari ser Angelo Michele Bacialli e su Ettore Poppi (Bologna: Istituto delle Scienze, 1791).

BCA, Sala Manoscritti, f.15. Late 18th century (ink and watercolours on paper, 14.5 x 10 cm): Book, Collection of 15 itineraries with a useful information for travelers.

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