



Situating foodways and foodscapes

Dalla tavola al terreno

a cura di
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4

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A Osvaldo Raggio (1951-2022)

TABLE OF CONTENTS

Foreward. The inextricably intertwining among gastronomy, landscape, and heritage <i>Andrea Pieroni</i>	11
‘Situating foodways and foodscapes’. An introduction <i>Roberta Cevasco, Valentina Pescini, Robert Hearn</i>	13
Invito a nozze. Condivisione e competizione <i>Oswaldo Raggio</i>	25
The characterization of local gastronomic heritage: why Environmental Archaeology matters <i>Valentina Pescini, Diego Moreno</i>	45
Wine and the vine in ancient Italy: an archaeological approach <i>Emlyn Dodd</i>	71
Localizzare il cibo tra produzione e consumo: breve itinerario nelle fonti italiane tra basso Medioevo e prima Età moderna <i>Antonella Campanini</i>	107
Foodway certosino? Appunti per un caso di studio dalla Riviera ligure di Ponente <i>Giacomo Nervi</i>	131
Terraced chestnut and hazelnut groves in the Sturla Valley: historical patterns of local management <i>Claudia Vaccarezza, Anna Maria Stagno, Caterina Piu</i>	167
The mathematician and the beans. Food productions, map production and the struggle for water in the 18 th Century Val Bisagno (Genova, Italy) <i>Nicola Gabellieri, Daniele Tinterri</i>	203

Topographical art, travel accounts and the landscape history of viticulture in 18 th and 19 th -century Italy	237
<i>Pietro Piana, Ross Balzaretti, Charles Watkins</i>	
The evolution of beekeeping practices and their landscapes in the northwest Apennines	261
<i>Rebekka Dossche</i>	
Placing Watercress in 19 th -century England: a shifting scene of purity, poverty and pleasure	275
<i>Rebecca Ford</i>	
Contadini d'acqua. La mitilicoltura nel Golfo della Spezia	311
<i>Carlo A. Gemignani, Luisa Rossi</i>	
'Wild' food plants in the Ligurian ancient grasslands: situating the 'prebugiun' gathering practices	335
<i>Roberta Cevasco, Raffaella Bruzzone</i>	
Activation practices: effects of the traditional collection of wild herbs and historical ecology of the site (Arbora – T. Recco Valley – Eastern Liguria) 19 th -20 th centuries	361
<i>Giuseppina Poggi</i>	
Ligurian peasant cooking in English travel books c. 1840 to c. 1914	371
<i>Ross Balzaretti</i>	
A Moveable [f/b]east: « <i>apros vel porcos silvestres</i> » in the Alta Val di Vara, NW Italy	407
<i>Robert Hearn</i>	
Per una storia dell'alimentazione nella Terra di Varese Ligure	433
<i>Sandro Lagomarsini</i>	
Afterword. Local foodways and foodscapes: back to materiality	441
<i>Diego Moreno</i>	

**The mathematician and the beans.
Food productions, map production and the struggle
for water in the 18th Century Val Bisagno
(Genova, Italy)**
*Nicola Gabellieri, Daniele Tinterri**

1. Introduction

This paper aims to assess possibilities and limits of geo-historical sources in the reconstruction of local food production systems of the past. For this purpose, we start from some resource conflicts related to the possession of water, originated by the construction of the Genoese aqueduct in the Bisagno Valley (Genoa, Italy) during the 18th century, as they are registered in cartographical and documentary sources kept in local archives. Thereby, we want to underline the fundamental importance of geo-historical research in describing the evolution of food production in local contexts. In fact, in recent times great attention has been devoted to historical aspects of agricultural or rural production in our country, inducing as a consequence a relevant demand for historical analysis¹. Nonetheless, the studies originating from this wide

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¹ A wide debate has taken place in Italy in the last years about the possibility of defining features of historical environments and agro-silvo-pastoral productions through the application of concepts issued from studies of historical geography and ecology. Among others, see M. Agnoletti (ed.), *Paesaggi rurali storici. Per*

demand lack frequently the necessary in-depth and critical analysis of historical sources and, in many cases, they even completely disregard a diachronical approach, which is on the contrary unavoidable when tracing an analysis of a food production system.

In the following pages, we will trace an overview of the local food production systems as they can be depicted in the Bisagno Valley by means of the documents of the *Padri del Comune*, *i.e.* through the historical sources occasioned by the conflicts for the control of the water supply. Bisagno is one of the two main rivers of the Genoese region (Fig. 1). Its drainage basin, the Bisagno Valley, measures approximately 92 km² and cuts transversally the Apennine hills, encircling the historic centre of Genoa to the East side and flowing into the Ligurian Sea in the locality named '*la Foce*'.

On the one hand, this case study allows us to meditate on the possibilities of geo-historical analysis of the sources of conflict to investigate local production systems; on the other, it gives us some insights into the relationships between rural practices and local water management systems, which can be very conflictual as well.

The methodological background for the present research can be traced back to different studies carried out in Liguria to identify individual landscape biographies, as well as for the historical characterisation

un catalogo nazionale, Laterza, Roma-Bari 2010; R. Cevasco, *Sulla "rugosità" del paesaggio*, in «Études de lettres», 1-2 (2013), pp. 323-344; M. Quaini, *A proposito di «storia scippata». Una storia applicata ad ambiente, territorio, paesaggio?*, in «Quaderni storici», 159, 3 (2018), pp. 821-836; V. Ferrario, A. Turato, *Quali politiche per i paesaggi rurali storici in Italia? Riflessioni su alcune recenti iniziative pubbliche, attraverso l'esame di due casi studio*, in «Ri-Vista. Research for landscape architecture», 17, 2 (2019), pp. 78-93; D. Moreno, *Storia ambientale applicata. L'archeologia delle risorse ambientali e l'ecologia storica dei siti*, in «Quaderni storici», 167, 2 (2020), pp. 281-310; N. Gabellieri, A. Gallia, *Patrimonializzazione di vigneti "storici" ed "eroici": riflessioni di geografia storica a margine di un decreto ministeriale*, in «Geostorie», 30, 1-2 (2022), pp. 23-44.

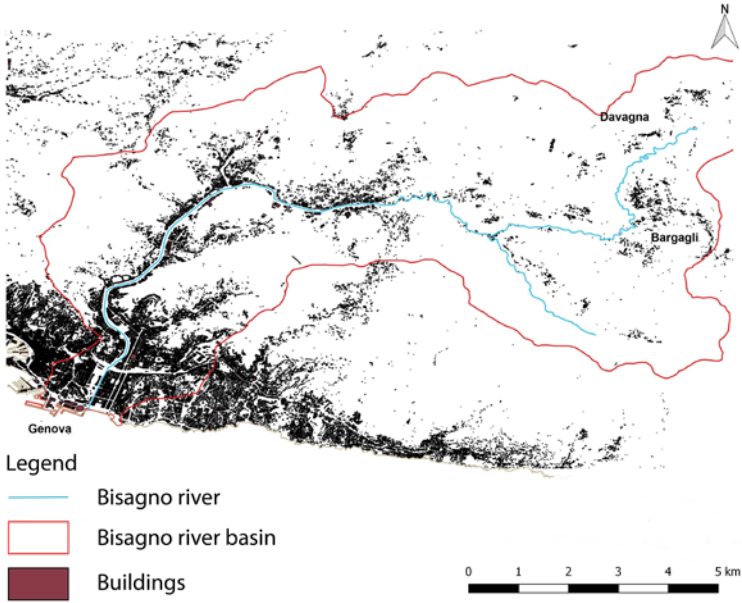


Fig. 1 Bisagno valley, with the indication of the Bisagno river, the hydrographical basin and the built-up areas. The urban plans have been extracted from the *Carta Tecnica Regionale* issued in 2007 by the Regione Liguria

of local productions². The aim of the theoretical and methodological approach of these researches is to read anew, through a regressive approach, the material landscapes as they can be considered in all their complexity

² To mention some examples of local scale research applied to specific Ligurian environments, see R. Cevasco (ed.), *La natura della montagna*, Oltre Edizioni, Sestri Levante 2013, pp. 476-485; N. Gabellieri, V. Pescini (eds.), *Biografia di un paesaggio rurale. Storia, geografia e archeologia ambientale per la riqualificazione di Case Lovara (promontorio del Mesco – La Spezia)*, Oltre Edizioni, Sestri Levante 2015; D. Moreno, M. Quaini, C. Traldi (eds.), *Dal parco “letterario” al parco produttivo. L’eredità culturale di Francesco Biamonti*, Oltre Edizioni, Sestri Levante 2016; for its approach to European landscape biography, see J. Kolen, H. Renes, R. Hermans (eds.), *Landscape biographies. Geographical, historical and archaeological perspectives on the production and transmission of landscapes*, Amsterdam University Press, Amsterdam 2015.

and stratification, and to interpret their social and environmental developments, *i.e.* the processes leading to their definition and characterization. This approach is intended to abandon the traditional opposition between society and environment through the investigation of production systems and local practices that exploit environmental resources over time and thereby forge specific territories and landscapes³.

This work is based on documentary sources which need an accurate critical analysis. This analysis must take into account the context and the motivations presiding the document production and it must clarify both the possibilities and the limits of the sources at our disposal. In methodological terms, giving preference to a local point of view allows a more accurate identification of social players, as well as of local activities and knowledge, *i.e.* the elements which have influenced and, consequently, contributed to define the local environment⁴. Moreover, it should be observed that the documents are frequently produced as a consequence of jurisdictional and economical conflicts, *i.e.* when the struggle for power or resources makes it necessary for some social player to obtain recognition of the legitimacy of his territorial control⁵.

³ D. Moreno *et al.*, *L'approccio storico-archeologico alla copertura vegetale: il contributo dell'archeologia ambientale e dell'ecologia storica*, in G. Caneva (ed.), *La biologia vegetale per i beni culturali*, vol. II, Nardini Editore, Firenze 2005; D. Moreno, C. Montanari, "Más allá de la percepción": *hacia una ecología histórica del paisaje rural en Italia*, in «Cuadernos geográficos», 48 (2008), pp. 29-49.

⁴ Raggio O., *Immagini e verità. Pratiche sociali, fatti giuridici e tecniche cartografiche*, in «Quaderni storici», 108, 3 (2001), pp. 843-865; R. Balzaretti, M. Pearce, C. Watkins, *Ligurian landscapes: microhistory and environmental history*, in Balzaretti R., Pearce M., Watkins C. (eds), *Liguria Landscapes. Studies in archaeology, geography and history*, Accordia Research Institute, University of London, London 2004, pp. 1-6.

⁵ For the concept of 'transcription' and for the pragmatic objective of the written source, see R. Cevasco, V. Tigrino, *Lo spazio geografico: una discussione tra storia politicosociale ed ecologia storica*, in «Quaderni storici», 127, 1 (2008), pp. 207-242; A. Ingold, *Naming and mapping national resources in Italy (19th century)*:

This aspect can be explained also by considering the peculiar political organization of the Republic of Genoa during the Modern Age. Actually, the statal bureaucracy of Genoa lacks monitoring tools by which a constant control and management of the territories under the Genoese jurisdiction could be effectively enforced⁶. In our specific case, the documents taken into account can be regarded as useful tools for imposing territorial control and power⁷.

Therefore, the first paragraph depicts the context in which the documental sources at our disposal were produced, *i.e.* the archive of the *Padri del Comune* of the Republic of Genoa. These documents were issued as a consequence of the conflicts arousing in relation to the water management of the public aqueduct in Genoa. The second paragraph intends to show how these sources can be used to describe the 18th century local food production.

'Foodscapes', *i.e.* the landscapes identified or conditioned in their materiality and perception by food production, distribution and consump-

proposition for a history of categorizing "natural resources", in M. Armiero M. (ed.), *Views from the South. Environmental Stories from the Mediterranean World (19th-20th centuries)*, Consiglio Nazionale delle Ricerche, Istituto di studi sulla Società del Mediterraneo, Napoli 2006, pp. 51-65; A. Ingold, *Écrire la nature. De l'histoire sociale à la question environnementale*, in «Annales», 66, 1 (2011), pp. 11-29, particularly pp. 23-24.

⁶ In this respect, the Genoa case can be distinguished from other Italian states, which are developing monitoring and governance tools during this very period. See for example A. Guarducci, *L'utopia del catasto nella Toscana di Pietro Leopoldo: la questione dell'estimo geometrico-particellare nella seconda metà del Settecento*, All'Insegna del Giglio, Borgo San Lorenzo 2009.

⁷ D. Turnbull, *Cartography and Science in Early Modern Europe: Mapping the Construction of Knowledge Spaces*, in «Imago Mundi», 45 (1996), pp. 5-24; M. Quaini, *Cartographic Activities in the Republic of Genoa, Corsica, and Sardinia during the Renaissance*, in D. Woodward (ed.), *The History of Cartography*, Vol. III, *Cartography in the European Renaissance*, The University of Chicago Press, Chicago and London 2007, pp. 854-873.

tion both in rural and urban areas, have been frequently studied by scholars in geography in the last years⁸. On the contrary, studies devoted to analyzing territories dedicated to food production in past centuries have been lacking. The great tradition of studies in the fields of history and historical geography related to agriculture has been widely disregarded.

Nonetheless, even the studies that show a lack of interest in the diachronical approach have been obliged to ascertain that food production has always conditioned and has in its turn been conditioned by local resources and by the relationship of local communities with them⁹. These relations can be influenced, both nowadays and in the past centuries, by forms of land possessions, availability of and access to environmental resources, local and long-distance patterns of distribution. The relations between urban and rural areas also need to be re-considered, because the role of the latter have been too often dismissed as simple suppliers of the former. According to Carlo Cattaneo, «la città formò col suo territorio un corpo inseparabile»¹⁰. Such interpretation has been adopted by many scholars in order to understand the production relationships between cities and countrysides in Ancient and Modern times, and the rural production systems related to the fulfillment of urban needs¹¹. It has often been stated that rural areas have

⁸ V.J. Del Casino, *Social geography I: Food*, in «Progress in Human Geography», 39, 6 (2014), pp. 800-808; T. Sedelmeier, O. Kuhne, C. Jenal, *Foodscapes*, Springer, Wiesbaden 2022.

⁹ M. Roe, *Editorial: food and landscape*, in «Landscape Research», 41, 7 (2016), pp. 709-713.

¹⁰ C. Cattaneo, *La città considerata come principio ideale delle storie italiane*, Vallecchi, Firenze 1931, p. 53.

¹¹ Sereni E., *Storia del paesaggio agrario italiano*, Roma-Bari, Laterza, 1961; L. Gambi, *Le «regioni» italiane come problema storico*, in «Quaderni storici», 34, 1 (1977), pp. 275-298; C. Visentin, *Le relazioni città-campagna nella Storia del paesaggio agrario italiano di Emilio Sereni*, in M. Quaini (ed.), *Paesaggi Agrari*, Silvana Editoriale, Cinisello Balsamo 2012, pp. 85-95.

adapted their structure in order to comply more efficiently with the needs of urban centres. On the contrary, the present case study allows us to detect highly conflictual relationships with reference to resource management and territorial control on the part of urban magistrates.

Rural practices are thus considered, on the one hand, as a result of the historical and environmental context in which they are situated; on the other, for their direct contribution to the formation of the historical landscape itself. Given that we can consider such a one-to-one correspondence as a postulate of this kind of research, the scholar considering these issues cannot limit his investigation of historical rural practices exclusively to the issue of food production. This aspect presents actually tight connections with many other themes, such as water management, struggles for resources, landscape evolution, land ownership and the role of the city center in the shape of the countryside. Some of these themes constitute the subject of the last paragraph of this article.

2. The *Padri del Comune* and the conflicts around the aqueduct

From the 12th century onwards, the Bisagno river has been acting as the most important water source for the town of Genoa, both by catching underground water and by channelling superficial water from the river. The first building of the aqueduct, involving a water supply point on the left bank of the river near the settlement of Staglieno, is dated back to 1295. The channel, approximately 30 cm wide, ran with a slight gradient down to the neighbourhood of Castelletto, before reaching the ancient harbour of the town (Fig. 2).

As the town population grew, the historical aqueduct was progressively extended, in order to reach for more distant water¹². In 1355 the aqueduct

¹² G. Temporelli, N. Cassinelli, *Gli acquedotti genovesi*, Franco Angeli, Milano 2007, p. 19.

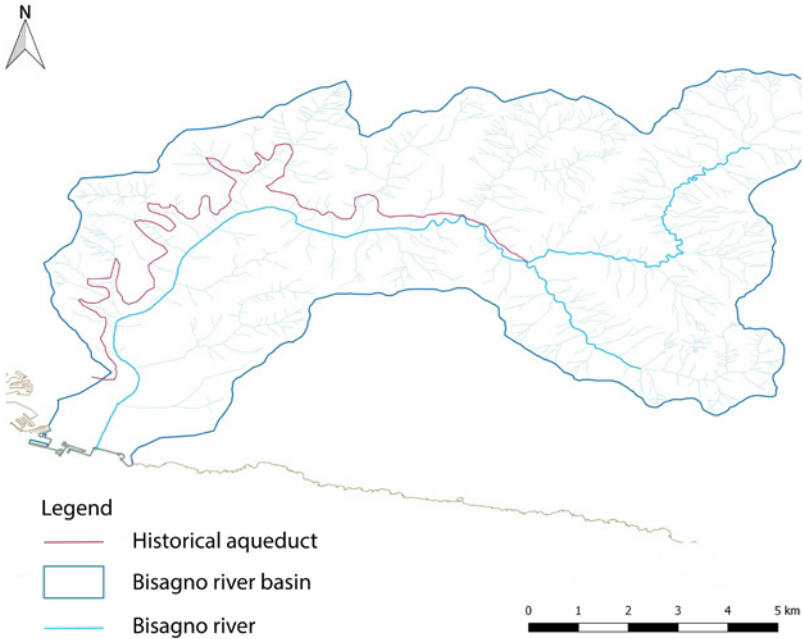


Fig. 2: Bisagno valley, with the indication of the river stream, the hydrographical basin and the itinerary of the ancient aqueduct

was extended in the Bisagno Valley up to Trensasco and, in 1622, up to Cavassolo; in the city, the aqueduct water flow was constantly increased, the infrastructure restored and increased in height. As a testimony of the aqueduct itinerary, many architectural elements still stand nowadays, such as channel, arches and public washhouses. Local toponymy still records the presence of the aqueduct¹³. By 1639 the last section was concluded, reaching Schiena d'Asino, near the locality today called La Presa, where the Bisagno river originates from the confluence of the Bargaglino and Lentro rivers¹⁴.

¹³ P. Stringa, *La strada dell'acqua. L'acquedotto storico di Genova, tecniche ed architettura*, Sagep, Genova 1980.

¹⁴ For a detailed reconstruction of the building phases and the renovations of the aqueduct, based on a vast documentary analysis, see C. Guastoni,

The water was extracted from the river until 1917, when it was finally declared unsuitable for human consumption. Therefore, water supplies began to be obtained beyond the Appennine watershed¹⁵. From the 15th century onwards, the management and maintenance of the aqueduct were entrusted to the *Padri del Comune*. This magistracy, possessing jurisdictional prerogatives, had been instituted during the 13th century and was destined to the harbour management; successively, many other tasks were entrusted to it, such as sewerage surveillance, street cleaning, supervision on doctors and pharmacists and the maintenance of street furnitures, city walls and water supplies. Financially independent, the magistracy derived relevant incomes from fines inflicted to people infringing its regulations and from the aqueduct charges, which were reinvested in important public infrastructures.

The archive of the *Padri del Comune*, which includes documents spanning from 1412 to 1814, has been partially conferred to the Historical Archive of the Municipality of Genova. Documents related to the aqueduct maintenance are numerous and they include account books, inspection reports and correspondence about trials, decisions and regulations, as well as projects for infrastructures such as bridges, canalizations and water supply points, furnished with drawings, plans and cartography.

The water grabbing by the city of Genoa, regardless of the needs of the hinterland, has not gone without conflicts and oppositions. The aqueduct building, with special regard to the last sections until Cavassolo (concluded in 1622) and Schiena d'Asino (concluded by 1639), aroused numerous conflicts in relation to water control and to the plots of land where the aqueduct was built. Already on the 15th of May 1631, the owners of the thirty-two mills located in the Valley were received by the *Collegio dei Padri del Comune*

L'acquedotto civico di Genova: un percorso al futuro, Franco Angeli, Milano 2004, especially pp. 23-56.

¹⁵ R. Rosso, *Bisagno. Il fiume nascosto*, Marsilio, Venezia 2014, p. 70.

to discuss about water distribution¹⁶; the following year, they wrote to the *Collegio* in order to ask for the «rifacimento al danno patito e che tuttavia pattuiscono per esser stati privati dell'acqua, che fu entrodotta nel nuovo acquedotto di Cavassolo»¹⁷. The *Collegio* accepted their requests and accorded a compensation to the mill owners; on June, 3rd the *Deputato all'acquedotto* reached the aqueduct section, making a list of the 32 mills and of their respective owners and drafting an esteem of damages and of the subsequent compensations¹⁸. Lawsuits on these compensations ensued for years and we find petitions issued by the heirs of some of these owners still in 1642¹⁹. But, which is even more important, after this case the *Deputati* began to visit and inspect periodically the aqueduct section in order to draft damage esteems, to plan cleaning and upkeep operations and to control the respect of regulations on the part of the valley inhabitants. Inspection reports contain the list of the observations made, ordered by reference to the localization near the canalization. For instance, «servendo à l'illustrissimo magistrato la visita del pubblico acquedotto cominciando dalla presa di Schiena d'Asino e continuando fino al Luogo di Pino», in 1683 the *Deputato* inspects the water point on the stream, after its partial destruction, lists the bridges in need of maintenance and plans the covering of some aqueduct sections which are particularly exposed to landslides from the hill slopes²⁰. Once the construction of the aque-

¹⁶ Archivio Storico del Comune di Genova [Historical Archive of Genoa Municipality] (ASCG), B. 365 Mugnai del Bisagno (1640-1710), Nota del Collegio dei Padri del Comune, 20 maggio 1631.

¹⁷ «The compensation for the damages that they have suffered and are still suffering because of the lack of water, which has been diverted into the new aqueduct of Cavassolo». ASCG, B. 365 Mugnai del Bisagno (1640-1710), Decisione del Collegio dei Padri del Comune, 25 giugno 1632.

¹⁸ ASCG, B. 365 Mugnai del Bisagno (1640-1710), Visita fatta dall'Illustrissimo Magistrato Gaspare Francone, il 3 giugno 1632.

¹⁹ ASCG, B. 365 Mugnai del Bisagno (1640-1710), Lettera di Giulia Baghino, 1642.

²⁰ ASCG, B. 365 Mugnai del Bisagno (1640-1710), Relazione del 1683; 7 maggio, visita all'acquedotto e lavori da farsi di Giovanni Battista Costanzi.

duct was concluded, the infrastructure was divided in 12 areas, called «*cure*», to be entrusted to 12 local prominent men for surveillance, custody, cleaning and reparation of little damages. Those encharged must have not carried out their duties properly, given that in 1722, when Bartolomeo Lomellini concluded his office as *Deputato all'acquedotto*, he wrote:

Siccome i dodeci custodi, che sono da vostra signoria illustrissima eletti per tener netto e purgato tutto il giro dell'acquedotto [...] senza vedersene un minimo profitto, mentre passano gli anni senza che facciano alcuna denuncia de disordini et inconvenienti, che si commettono al detto acquedotto, anzi se in occasione di qualche pioggia occorre tenerlo netto, e purgato da quelle materie, che si sono introdotte, in vece di compire all'obbligo, per cui sono precisamente eletti, si fanno le spese di tali dispacci con denari della loro casa, e riesce in tal forma quasi inutile la loro cura, perché non concepiscono alla loro obbligazione²¹.

Be this statement true or not, it is a fact that from the third decade of the 18th century inspections by the *Deputati* become more and more frequent. Three are the major problems they have to face: aqueduct reparations, tree cutting and water unlawful appropriations.

²¹ «Given that the twelve watchpersons, which have been chosen by your Excellency to keep neat and clean the aqueduct in all its length [...] without any actual effect up until now, while years pass by with continuous complaints against disorders and inconveniences, which are perpetrated against this aqueduct. On the contrary, when it is necessary, because of the rains, to keep it clean and free from debris which are introduced in it, instead of fulfilling the duty for which they have been chosen, these persons keep spending money from their house for messages and communications, and thereby their job appears to be completely useless, because they don't fulfill their obligations». ASCG, B. 137 Relazione sopra il dispaccio et altri lavori da farsi al pubblico acquedotto, 1721, Relazione dell'Illustrissimo sig. Ansaldo Grimaldo dep. al pubblico acquedotto circa i lavori da farsi.

The reparations of the idraulic structures were frequently made necessary by the progressive decay of the building materials (such as wood, for example) or by the frequent landslides that obstructed the open-air canals. We may cite a peculiar case, that of the inspection made by Ansaldo Grimaldo in 1721 on the damaged bridge of Tassara. In his report to the *deputato*, he states:

si è trovato che un tale pregiudizio è determinato dalla coltura fatta nella parte superiore del detto acquedotto, essendovi stato lavorato, poste vigne, alberi e piantate maschere contigue non solo alla maschetta, ma etiamdio sopra delle medesime [...] suddetto acquedotto non sarebbe stato pregiudicato, se si fosse dalli vicini abitanti lasciato il sito, tanto superiore, come inferiore, senza coltura, come prescrivono le leggi [...] mentre, quando fu fabbricato suddetto acquedotto, tali siti erano del tutto gerbidi, et presentemente essendosi questi lavorati, si è smossa la terra²².

Attached to the report, a topographical sketch in colours shows the bridge encircled by the unlawful cultivations (Fig. 3).

Following this report, the *Collegio* ordered to all the responsible landowners to pay for the restoration of the aqueduct and to remove «*tutti gli alberi, vigne, ed altri impedimenti*»²³. The proximity of trees to

²² «I found out that this problem has been determined by cultivations made in the superior part of the aqueduct, because works have been made, vineyards have been implanted, as well as trees and terraces have been built near the canals, even on top of them [...] this aqueduct wouldn't have been damaged, had the nearby inhabitants kept the site, both in the superior and inferior section, without cultivations, as the law prescribes [...] on the contrary, when this aqueduct was built, these lands were completely bare. Afterwards, because of cultivations, the earth has been turned over and moved».

²³ «Every tree, vineyard and every other obstacle». ASCG, B. 137, Collegio dei Padri del Comune, Letta della relazione dell'Illustrissimo Ansaldo Grimaldo, 30 giugno 1721.



Fig. 3 Illustrative coloured sketch of the Tassara Bridge and nearby cultivations. Source: ASCG, B. 137, Collegio dei Padri del Comune, Letta della relazione dell'Illustrissimo Ansaldo Grimaldo, 30 giugno 1721

the canalizations was perceived as a core problem for the very preservation of the facilities. On the 26th of September 1778 and on the 4th of August 1785, the *cancelliere* Giacomo Agostino Ratto found it expedient to issue two different provisions. The object of these provisions was a law issued in 1532, which was recalled to order that

dovessero togliersi, e sradicarli gli Alberi, e Viti, che trovarsi piantati in vicinanza del pubblico Acquedotto, cioè le Pianta de' Fichi, e Gelse, e la Vigna entro la distanza di palmi quindici, e di palmi dieci le altre Pianta di qualunque forte a tenore della Legge dell'Anno 1532 [...] e sradicate tutte le Pianta Salvatiche²⁴.

²⁴ «Trees and vineyards, which have been planted near the public aqueduct, be removed and eradicated, more specifically fig trees, mulberry trees and

Following these provisions, numerous pleads were presented to the *Collegio dei Padri del Comune*, asking to change a law which «*va a cagione de particolari proprietarij dei fondi adiacenti*»²⁵. These pleads were sometimes subscribed, sometimes presented in the anonymous form of a *biglietto da calice*²⁶. Even the request presented by Domenico Spinola, who owned one of the villas adjoining the canalizations, was rejected²⁷. The *deputato* Giuseppe Durazzo and the *soprastante* Giovanni Storace carried out three inspections between 1785 and 1789, in order to verify that the tree chopping had been executed; in their reports, they give the exact amount of trees cut, as well as their species and owners, divided into *cure*²⁸. The years around 1780 proved to be particularly complicated for the magistracies of the Republic, and high in conflicts over the valley

vineyards at the distance of less than fifteen spans, and other plants of every sort at the distance of less than ten spans, as it is prescribed by the law of the year 1532 [...] and every wild plant be eradicated». ASCG, B. 368, 1585 a 1797 acquedotti e fonti pubblici, Biglietto da Calice, 1786, Supplica sul taglio degli alberi.

²⁵ «damages the private owners of the plots of land lying near the aqueduct». ASCG, B. 368, 1585 a 1797 acquedotti e fonti pubblici, Biglietto da Calice, 1786, Supplica sul taglio degli alberi.

²⁶ About the institution of the *biglietti di calice* and of the *lettere orbe*, which consisted in petitions and anonymous complaints addressed to the *Maggiore* or *Minor Consiglio*, the *Padri del Comune* and the *Supremi Sindicatori*, see C. Bitossi, “*La Repubblica è vecchia*”. *Patriziato e governo a Genova nel secondo Settecento*, Istituto Storico Italiano per l’Età Moderna e Contemporanea, Rome, 1995; E. Grendi, *Lettere Orbe. Anonimato e poteri nel Seicento genovese*, Palermo, Gelka, Palermo, 1989.

²⁷ ASCG, B. 248, Pratiche pubbliche: 17 ottobre 1786, lettera ai Padri del Comune di Stefano Lavagna, in nome dell’Illustrissimo Domenico Spinola.

²⁸ ASCG, B. 249 – 290 – 1, 28 marzo 1789, Perizia ai danni dell’acquedotto e nota alberi presenti sul pubblico acquedotto B. 248, Pratiche pubbliche: 15 ottobre 1785, Giovanni Storace, Promemoria dell’Illustrissimo Deputato al pubblico acquedotto.

resources. During the summers, water scarcity was becoming customary in the town of Genoa. In 1783, the owners of the town mills wrote to the *Collegio dei Padri del Comune*, complaining about the lack of power due to the scarcity of the water flux along the aqueduct²⁹. The following year, the magistrate of the *Padri del Comune* remarks that water is not «*capace a scorrere, ed arrivare alle fontane pubbliche per il bisogno de Poveri, per i quali specialmente è stato fabbricato l'acquedotto*»³⁰. We don't know whether the *Collegio dei Padri del Comune* was actually worried about the needs of lower-class people, or if it was more concerned by the fear of losing high incomes derived from selling drinkable water to the ships moored in the harbour; whatever be the case, the *deputato*, the *soprintendente* and the *cavalieri della camera* carried out numerous inspections along the aqueduct.

A 1548 law, dated June 30th, recalled by a provision of 1664, forbade the use of water derived from the Bisagno Valley canalizations for agricultural purposes during the summer months, from June 1st to September 15th. Already in 1722, the *deputato* Ansaldo Grimaldo contested to the inhabitants of the valley a «*usurpazione d'acqua più di quella, che portano i bronzini permessi, è stato ricavato avessero fatto un tal abuso generale, oltre ogni lecito*». He therefore ordered to the *cavaliere di camera* to remove the unlawful water points³¹. For a second time, in 1784, «*il magistrato de Padri del Comune, essendosi occupato*

²⁹ ASCG, B. 776, Perizia di Gio: Batta: Storace, 1784.

³⁰ «Capable of flowing, so as to reach the public fountains in order to satisfy the needs of poor people, for whom the aqueduct has been specifically designed». ASCG, B. 368, 1585 a 1797, acquedotti e fonti pubblici, Relazione del magistrato del pubblico acquedotto circa li molini di città, 1784.

³¹ «An unlawful appropriation of water, in a quantity superior to the one which is allowed by the water supply points, thereby perpetrating a general abuse, against all law». ASCG, B. 137, Relazione sopra il dispaccio e altri lavori da farsi al pubblico acquedotto: Circa le usurpazioni di acqua e rimozione dei bronzini e rebocchi nella cassa del pubblico acquedotto, 19 ottobre 1722, Ansaldo Grimaldo Deputato al pubblico acquedotto.

ad indagare le cagioni per le quali nella stagione d'estate le pubbliche fontane rimangono asciutte [...] ha riconosciuto, che principalmente ciò procede dall'assorbimento ne fanno li Bronzini de Particolari»³². To tell the truth, in his report the magistrate simply copies complaints and anonymous *biglietti di calice*, where every actor involved discusses his own opinion about the problem. For instance, an anonymous states that water scarcity is the consequence of the large concessions for drawing water, accorded by the *Padri del Comune* to private owners and millers to gather money for the aqueduct construction and maintenance. The magistrate rejects this accusation, stating that

è falso, che l'acqua resti scemata per causa de Molini, essendo certo che dopo aver servito per essi tutta rientra nell'Acquedotto. Ne è credibile che l'acqua stata concessa a Particolari dopo la fabbrica possa non che superare, ma neppur eguagliare la quantità accresciutasi mediante la nuova fabbrica³³.

In the following month, the magistrate inspected the aqueduct itinerary in order to analyze the water supply points. «*N. 118 bronzini, chi più,*

³² «the magistrate of the *Padri del Comune*, after considering the causes which induce the lack of water in the public fountains during the summer season [...] has come to the conclusion that this scarcity is caused by the water absorption of private water supply points». ASCG, B. 368, 1585 a 1797, acquedotti e fonti pubblici, Relazione del magistrato del pubblico acquedotto circa li molini di città, 1784.

³³ «it is false that the lack of water is due to the mill activity, given that mills return all the water into the aqueduct after use. At the same time, it cannot be stated that the water conceded to private owners exceeds, or even equals, the quantity of water which has been gained through the new structures that have been built». ASCG, B. 368, 1585 a 1797, acquedotti e fonti pubblici, Relazione del magistrato del pubblico acquedotto circa li molini di città, 1784.

chi meno eccedenti»³⁴ are recorded. Moreover, these faucets were situated in the tanks in a position inferior to the one allowed by regulations, thus catching more water at a time. Amidst the water points exceeding the dimensions imposed by regulations, the magistrate enumerates those of the Balbi family, of the mill of the *Ospedale degli Incurabili*, of the *Conservatorio delle Figlie del Rifugio*, as well as those of *Villa Ansaldo*. Given the importance and influence of the persons and institutions listed, the inspection wasn't followed by any direct provision.

In 1784, the abbot Leonardo Ximenes was summoned to Genoa. The well-known Jesuit was, at that date, at the utmost of his reputation. After writing numerous essays in the field of mathematics, hydraulic engineering, geography, astronomy and cartography of Tuscany, he had been in charge of the drainage of the Bientina Lake and the Maremma for the Grand Duke of Tuscany from 1757 to 1770. Moreover, he had taught hydraulic engineering at the University of Florence and he had founded and directed the astronomical observatory of San Giovanni³⁵. During the year he spent in Genoa, he compiled three research

³⁴ «A number of 118 water supply points, some providing less water, some more».

³⁵ A vast bibliography is devoted to Leonardo Ximenes (1716-1786) and its activity as mathematician, engineer and astronomer, with particular reference to aspects of territorial management as in the case of land draining and reclaiming in Tuscany. In fact, Ximenes, along with his contemporary Paolo Frisi, can be rightfully listed among those 18th century scientists who, at the same time, dedicated themselves to pure research and applied their studies to solving problems on behalf of State governments. His activities in land draining in the Arno Valley and in Maremma are well known to scholars. The same cannot be said for his short Genoese period, which lacks a careful reconstruction. For the biography and the studies of Ximenes, see D. Barsanti, L. Rombai, *Leonardo Ximenes, uno scienziato nella Toscana lorenese del Settecento*, Edizioni Medicea, Firenze 1987; D. Barsanti, L. Rombai (eds), *Scienziati idraulici e territorialisti nella Toscana dei Medici e dei Lorena*, Centro editoriale toscano, Firenze 1994. To consider the results of his reforms based on Enlightenment ideals and how the large scale landscape operations he

studies on behalf of the *Padri del Comune*, dealing with hydrological regulation and circulation management of the Polcevera Valley, expansion and defensive structures in the town port and expansion and renovation of the aqueduct³⁶.

After analyzing the aqueduct and its issues, Ximenes compiled a vast report, where numerous studies and projects were presented with the aim of increasing the water flux and its declivity, so as to «somministrare alla Città una portata di acqua doppia, e più che doppia, che non ha goduto nel passato [e garantire] nel godimento continuo, e non mai interrotto dell'acqua»³⁷. Besides providing many studies of hydraulic engineering, mathematics and physics, in his report Ximenes spent also a chapter on «fraudolenti dissipazioni delle acquedotti»³⁸, where he writes:

Ho udito con mia grave sorpresa, che taluno dei circonvicini abitatori all'Acquidotto si faccia lecito di derivare le sue acque per innaffiare i loro beni, e giardini, e corre una voce costante, che superiormente alla Presa alle acque a Schiena d'Asino vi siano gli Uomini alla Parrocchia di Meco, i quali si fanno lecito di diramare dette Acque

promoted acted on local customs and practices in Tuscany, see L. Maddaluno, *Forests, Woods, Roads. Agricultural Landscapes as Instruments for the Material Administration of an Eighteenth-Century Tuscan Periphery*, in C. Tazzara, P. Findlen, J. Soll (eds), *Florence after the Medici. Tuscan Enlightenment, 1737-1790*, Routledge, New York 2019, pp. 199-224.

³⁶ P. Allegrini, *Manifesto ragionato dell'editore sulla nuova raccolta delle perizie ed opuscoli idraulici del Signor Abate Leonardo Ximenes*, Firenze 1785, p. XVII.

³⁷ «provide the town with the double, or even more the double, of the water flux that it already enjoyed in the past and to ensure a continuous and uninterrupted supply of water». ASCG, B. 738, Ximenes L., *Relazione sull'acquidotto di Genova contenente i suoi difetti, e gli opportuni rimedj per rendere stabile, e sicura l'opera di detto acquidotto*, [1784], art. X.

³⁸ «unlawful wastes of water».

verso i loro Campi, consumandone così una buona quantità. [...] defraudato nelle sue medesime sorgenti per l'ingordigia biasimevole di pochi villani. [da risolversi con] un articolo, non già d'idraulica, ma di pubblica polizia³⁹.

After this report, a new social player comes to the scene, *i.e.* the «villains» living on the hills, who join the owner of villas in the lower valley. In 1788, the new *deputato all'acquedotto* Francesco Negrone, together with the *soprastante* Storace and the *cavalieri di camera*, carries out a new inspection in the valley above the water point of Schiena d'Asino, in the direction of the sources of the Bisagno and Bargagli rivers. By his inspections, he demonstrates that «li contadini, esistenti in suddetta situazioni, si servono delle vivagne e Sorgenti proveniente dai suddetti Pubblici Sorgenti per adaquare i loro campi, per cui la

³⁹ «I've heard, with my great disappointment, that some people residing in the area of the aqueduct derive water from it against every regulations, in order to irrigate their properties and gardens. Moreover, many claim that people of the parish church of Meco pick up water from the valley above the water point at *Schienna d'Asino* in order to provide water for their fields, thus consuming a great amount of water [...] [The aqueduct] is thereby deprived of water in its very sources for the reprehensible greed of a few villains. [This issue can be resolved] with an article of public policy, more than with an hydrological study». *Ibidem*, art. V. The echo produced by Ximenes studies among Genoese contemporary scholars must have been vast, since the *Collegio dei Padri del Comune* was asked some years later to introduce researchers and teachers in Genoa in order to improve the knowledge of trigonometry, mathematics, optics, with the aim of introducing in the town a profession that could be of great advantage to the city. Moreover, the petitioners asked to buy some instruments that had been used by Ximenes, such as a case with compasses, set squares, a pantograph to copy plans and so on. ASCG, B. 247-26, 15/7/84, strumenti di idraulica e idrostatica: relazioni ai Collegi sulla necessità di introdurre materie per migliorare l'arte del "ben livellare" come fu fatto di recente dall'Abate Ximenes, Lettera di Pier Agostino del 9 agosto 1784 ai Padri del Comune.

Città, ne presenti tempi di gran siccità, ne resta quasi totalmente priva»⁴⁰ (Fig. 4).

The results of Negrone and Storace's inspection were illustrated not only by a written record, but also by an adequate cartographical presentation⁴¹. In the same days, a *biglietto di calice* read like this:

⁴⁰ «the villagers living in this district use water derived from public sources in order to irrigate their fields, thereby depriving almost completely the town of its water during the drought periods». This statement is expressed in the cartography elaborated by Storace, entitled «*Tipo che dimostra le situazioni, ove ne' Tempi Estivi, gli Contadini, da qualche Anni in qua, si fanno lecito di tratenere le Acque Vivagne e Sorgenti per adacquare i Loro Campi, provenienti dalli Publici Fossati, che anno il suo Principio, dalla Montagna della Scofferra, e dall'ingù. Le quali Vivagne Discendono, Racolte, ad introdursi nelle Due Prese, a piedi della Montagna detta di Schiena d'Asino, et indi nel Pubblico Acquedotto. Per causa delle quali adaquazioni, la Città in detti Tempi, ne resta quasi priva Totalmente, come si è provato nell'Anno 1784, per cui si fece parimente dall'Infrascritto un simile Dissegno che fu presentato ai Serenissimi Collegi dall'ora Magistrato Luca De Fornari all'ora Deputato al Pubblico Acquedotto mentre vi era il Matematico Ximenes che questo si dà l'onore di rinnovarlo, Claudio Storace, 27 settembre 1788*» (map demonstrating the situations where farmers, during summer months in the last years, collect water from sources to irrigate their fields, taking it from public furrows originating from the Scofferra pass. Said water sources flow into two water canalizations at the bottom of the mountain called Schiena d'Asino, hence into the public aqueduct. Because of these irrigations, the town during these months lacks almost completely water, as it happened in 1784. Consequently, a similar sketch has been presented to the *Serenissimi Collegi* by the magistrate Luca de Fornari, at the time *deputato al pubblico acquedotto*, when the mathematician Ximenes was here. I have here the honour to renovate this study. Claudio Storace, September 27th, 1788). Archivio di Stato di Genova, Fondo Cartografico, C.02.28.0926-Genova-[B.7.331]. See also C. Barlettaro, O. Garbarino, *La raccolta cartografica dell'Archivio di Stato di Genova*, Tilgher, Genova 1986.

⁴¹ For further inquiries about topographical representations, see N. Gabellieri, *Conflitti per le risorse ambientali e produzione cartografica: la cartografia storica settecentesca dell'acquedotto di Genova*, in «Geotema», 58 (2018), pp. 95-102.



Fig. 4 «Tipo che dimostra le situazioni, ove ne' Tempi Estivi, gli Contadini, da qualche Anni in qua, si fanno lecito di tratenere le Acque Vivagne e Sorgenti per adacquare i Loro Campi, provenienti dalli Publici Fossati, che anno il suo Principio, dalla Montagna della Scofferra, e dall'ingiu. Le quali Vivagne Discendono, Racolte, ad introdursi nelle Due Prese, a piedi della Montagna detta di Schiena d'Asino, et indi nel Publico Acquedotto. Per causa delle quali adaquazioni, la Città in detti Tempi, ne resta quasi priva Totalmente, come si è provato nell'Anno 1784, per cui si fece parimente dall'Infrascritto un simile Dissegno che fu presentato ai Serenissimi Collegi dall'ora Magistrato Luca De Fornari all'ora Deputato al Pubblico Acquedotto mentre vi era il Matematico Ximenes che questo si dà l'onore di rinnovarlo, Claudio Storace, 27 settembre 1788». Source: Archivio di Stato di Genova, Fondo Cartografico, C.02.28.0926-Genova-[B.7.331]

La città è da più mesi senz'acqua con grande incomodo di tutti. Non si dica provenire dalle poche piogge, la vera causa proviene perché l'acqua del Condotta è divertita da molti particolari per uso delle alberature delle Ville, e di qualche fontana. Dal 1785 a questa parte va sempre dal mese di maggio mancando l'acqua per tutta l'estate [...] Si fece la spesa di far venire il Qimenez, quale è restata vana, poiché non si è parlato più del suo progetto, benché il Magistrato lo avesse approvato, ed anche pensato ai mezzi d'eseguirlo [Ximenes] ha inteso dire che ciò sia provenuto da che in Montoggio molti terreni che prima erano zerbidi ora sieno stati coltivati e seminativi. Egli non esamina il punto se ciò sia lecito a farsi, ma dice che quando anche ciò sia lecito non dovrebbero coltivare detti siti, e non permettere che la città penuriasse d'acqua⁴².

3. Local food production in the sources

The landscape of contemporary Val Bisagno results from evolutions which have taken place in Liguria since the end of the 19th century onwards. The lower part of the valley is now part of the urbanistic pattern of the town of Genoa and is occupied by the neighbourhood of Foce,

⁴² «Since many months by now, the supply of water to the town is very scarce, which causes great inconvenience to everybody. This is not due to scarce rainfall. The true reason is that water is derived from the aqueduct by many private persons, who use it to water trees in their villas and for their own fountains. From 1785 onwards, there's lack of water from May till the end of summer. [...] Money has been spent to summon Qimenez, but this expense has been useless, since his project hasn't been mentioned anymore, notwithstanding the approval of the magistrate, and nobody has debated how to apply it. [Ximenez] has heard that this lack of water derives from the fact that, in Montoggio, many lands once uncropped, are now cultivated. He doesn't specify whether this goes against the law or not, but he states that in any case these plots of land should not be cultivated, in order not to leave the town without water». ASCG, B. 249-241, Copia di biglietto di Calici, 17 ottobre 1788.

Albaro, Brignole, Marassi and Staglieno. While the lower part of the valley is nowadays densely inhabited, the upper sector has been almost deserted and largely reforested during the 20th century⁴³. Phenomena such as urban development in the plains and the abandonment of agricultural practices on slopes are largely represented in many Italian regions. Nonetheless, this trend has reached such a peak in the Bisagno valley, so as to make this valley a highly significant case study. At the same time, in the last years the Bisagno Valley has become sadly famous for the numerous floods that have taken place in its territory, in 1970, 1992, 2010, 2011 and 2014.

Nonetheless, this valley is still remembered by elderly people as one of the principal food production areas of the whole Liguria⁴⁴.

As early as the 13th century, in order to meet the needs of the city markets, the Bisagno district began to be organized on a pattern of terraces and rural settlements called *ville*. The importance of this trend can be understood by considering how Genoese legislation focused its attention on it since the beginning, in order to hinder the illegal appropriation of land by privates and to avoid the fragmentation of the rural landscape. A decree issued by the *Padri del*

⁴³ R. Cevasco, D. Moreno, *Pendici liguri: riscoprire le relazioni tra suoli e copertura vegetale*, in P. Cesaretti, R. Ferlinghetti (eds.), *Uomini e ambienti. Dalla storia al futuro*, Bolis Edizioni, Bergamo 2014, pp. 46-67.

⁴⁴ In Genoese dialect, the expression *besagnin*, i.e. inhabitants of the Bisagno valley, is still used to indicate greengrocers, since fruits and vegetables were carried from the nearby Bisagno valley into the city. See, for example, G. Casaccia, *Dizionario genovese-italiano*, vol. I, Guido Mondani Editore, Genova 1876, p. 75: «*Bezagninn-a s.f. Erbajuola, erbajola, erbarola e volg. Cavolaja: colei che vende o rivende ortaggi, come cavoli, carciofi, rape, sedano, ecc.; nome derivato del torrente del Bisagno, presso il quale sono orti, ove si coltivano esclusivamente civaje ed erbaggi*», i.e. «*Bezagninn-a s.f. Grocer, the woman who sells vegetables such as cabbages, artichokes, turnips, celeries, etc. the noun derives from the Bisagno river, where many vegetable gardens and orchards are installed, in which cabbages and vegetables are exclusively produced*».

Comune in 1561 reiterate the provisions against field enclosures in the Bisagno valley, «*quominus cives spaciandi gratia ad recreandum animum libere possint per hortos ipsos vagare et pertransire*»⁴⁵. Anyway, the *villa* landscape becomes stable and, from the 14th century onwards, noble and merchant families frequently spend the summertime out of the city, in rural districts rich in vineyards and orchards⁴⁶. This organization is known as *agricoltura di villa*, i.e. villas' agricultural system: around the nobiliar estates, cultivated gardens were irrigated by a dense pattern of little furrows⁴⁷. The tenure system was characterized by vast estates, where the plots of land encircling the *villa* were rented to peasants⁴⁸. For instance, the properties of the Brignole-Sale family, which have been studied by Repetto, were constituted by numerous plots of land spread all along the Bisagno river course: wine was produced (wine of better quality was attributed to landowners, while second choice wine was given to tenants or destined to be sold in taverns)⁴⁹, as well as wheat

⁴⁵ «in order to allow citizens to stroll around freely in gardens and orchards, so as to relax and enjoy the landscape». M. Quaini, *Per la storia del paesaggio agrario in Liguria. Note di geografia storica sulle strutture agrarie della Liguria medievale e moderna*, Camera di Commercio Industria Artigianato e Agricoltura, Savona 1973, pp. 69-70.

⁴⁶ *Le ville del Genovesato*, vol. I, *Caratteri generali. Il Centro*, Valenti Editore, Genova 1985.

⁴⁷ E. De Negri *et al.*, *Catalogo delle Ville Genovesi*, Italia Nostra, Genova 1967, p. 20.

⁴⁸ Quaini, *Per la storia del paesaggio agrario in Liguria* cit.

⁴⁹ Bartolomeo Paschetti, a physician from Verona, in his essay *Del conservare la sanità e del vivere de' Genovesi*, Genova 1602, pp. 337-342, cited in Quaini 1973, p. 112, thus describes wine coming from areas adjoining Genoa «[...] gli vini piccoli tutti sono generalmente asperi e acerbi più o meno secondo l'uve e i luoghi dove sono situate, più o manco caldi, più o manco esposti al sole [...] Tali sono i vini delle vostre ville, tali quelli di Bisagno e Pozzevera parlando in generale, che in alcuni luoghi si fanno maturi e mediocrement grandi, come nella Valle di Pozzevera

and a small amount of oil; with regard to farm animals, a small amount of sheeps and cows can be recorded, whereas swines were more abundant in the upper part of the valley⁵⁰.

Still by 1840, in his general description of the regions forming the Kingdom of Sardinia, Casalis writes that «nella coltura degli orti sono a ragione lodati i contadini di Finale, di Savona, del Borghetto (Albenga), del Geriale, del Bisagno e di Chiavari [...] non pochi macelli sul Bisagno introducono di soppiatto molta carne in città»⁵¹.

Written sources produced by the magistrate for the aqueduct allow us to describe this food production system more fully. For instance,

sono i vini della Costa di Rivarolo e di Coronata, nella valle di Bisagno quelli di Siro di Stroppa e di Montecignano [...]» (wines of lesser quality are in general sour and bitter, depending on the grapes and the place where vineyards are situated, whether they are more or less hot or more or less exposed to the sun. [...] Of such quality are the wines of your villas, for example those of the Bisagno and the Polcevera. In some places, these wines ripen and they become of better quality, as it happens in the Polcevera valley with wines from the Costa di Rivarolo and Coronata, in the Bisagno valley with wines from Siro di Stroppa and Montecignano). Moreover, as it is stated by Girolamo Gnecco in his essay *Riflessioni sopra l'agricoltura del Genovesato co' mezzi propri a migliorarla e a toglierne gli abusi e vizi inveterati*, Genova 1770, p. 358, cited in Quaini 1973, p. 115, the only way to improve the output of the lands of the Polcevera and Bisagno valley is to implant vineyards, in order to supply the town, which lacks 170.000 *mezzarole* of wine, representing the equivalent of 5 million liras.

⁵⁰ M. Repetto, *La società contadina tra XVIII e XIX secolo. Le proprietà della famiglia Brignole-Sale nei territori della Val Bisagno e della Val Polcevera*, Libro Più, Genova 2002, pp. 28-31.

⁵¹ «farmers from Finale, Savona, Borghetto (Albenga), Geriale, Bisagno and Chiavari are rightly praised [...] many slaughterhouses on the Bisagno river bring furtively great amounts of meat inside the town»; G. Casalis, *Dizionario geografico storico-statistico-commerciale degli stati di S. M. il Re di Sardegna*, 28 vv., Torino, 1833-1856, 1840, p. 304 e 401.

we know that, when the aqueduct was built, at least 32 watermills were present in the upper Bisagno valley: this is not a great amount but it has nonetheless some relevance, especially if we think that they ground exclusively wheat produced in the Bisagno valley. In addition to wheat production, the importance of fruit and vegetable production can be confirmed if we consider the frequent complaints made against the landowners along the Bisagno for illegal water withdrawal, as well as the resistance opposed by these same landowners to cutting down trees along the canals. Storace compiles a list of the trees he ordered to chop down during his visit in 1785, thus giving us a good sample of tree species present in the orchards. Going north, Storace mentions mulberries, downy oaks, figs, apples, peaches, cherries, hornbeams and plum trees. When he reaches the village of Cicala, chestnut trees and vineyards take the orchards' place⁵².

⁵² As we read in Storace's report, in Stefano Musso's sector a big mulberry tree has been chopped down, as well as a tree in Domenico Spinola's wood. In Berto Oneto's wood a tree and many durmasts have been chopped down. In Raffaele Stresino's villa he found out that a fig tree and an apple tree had been cut. In Carlo Radi's villa many canes, a fig tree and 7 mulberry trees have been cut, while in Giacomo Gentile's villa 11 mulberry trees, 2 trees and 5 durmasts have been chopped down. In Domenico Spinola's house he found out that 5 fig trees, 3 apple trees, 6 mulberry trees, 18 peach trees, 1 plum tree and 1 cherry tree had been cut down. Under the surveillance of Antonio Camojrone in Gio Batta Pietropiano's villa he recorded many canes, 8 mulberry trees, 5 fig trees and 4 cherry trees. In Tupino Giuseppe's villa 3 fig trees and 8 hornbeams have been cut down. In Alberto Tupino's villa 4 fig trees and 10 hornbeams have been chopped down. In Gotterdo's section, in Tapino's villa 4 fig trees and a mulberry tree have been cut down. In Agostino da Pino's villa 3 fig trees have been chopped down. In Andrea Ansaldo's villa a fig tree and 3 plum trees have been cut down. Near Cicala mills 6 mulberry trees and 40 palms of vineyard have been cut down. In addition to this, near Montaldo mills 7 mulberry trees have been cut down. B. 248, Pratiche pubbliche, Giovanni Storace, 15 ottobre 1785, promemoria della visita al Pubblico Acquedotto.

The existence of two different production systems, the one characterizing the lower part of the Bisagno valley and the other the higher one, can also be detected in the description made by Casalis: «Entrando nella parte orientale della provincia, si mostra la Valle del Bisagno, che ha due mandamenti, Albaro e Staglieno. Verso le foci è larga discretamente, ed ornata di palazzi magnifici e ville dilette. Ma ben presto si restringe, e queste strettezze, e le molte curve del Bisagno, ed i monti in alcune parti nudi di piante, le danno un aspetto poco lieto»⁵³. In fact, during the inspections near the bridge of Tassara, pastures are mentioned, alternating with cultivations on terraces⁵⁴.

To depict this second landscape, far less known than the villas cultivations in the plain, Negrone and Storace's inspection of 1788 proves very useful, along with the map produced by the latter. Reporting about his visit, Storace specifies that the water of the streams flowing into the Bisagno are taken by some local inhabitants, *i.e.* Francesco Dongo, Giovanni Vignè and the Cevasco brothers. The

⁵³ «When you enter the eastern part of the district, you find the Bisagno valley, which is divided in two districts, Albaro and Staglieno. Near to the river mouth, the valley is large enough and sprinkled with magnificent palaces and charming villas. Soon after, the valley becomes narrower, and these narrow places, the frequent Bisagno meanders and the hills, which are often bare, give to the valley an unpleasant look». G. Casalis, *Dizionario geografico storico-statistico-commerciale* cit., 1840, p. 316.

⁵⁴ «Si è trovato che un tale pregiudizio è determinato dalla coltura fatta nella parte superiore del detto acquedotto, essendovi stato lavorato, poste vigne, alberi e piantate mascere contigue [...] mentre, quando fu fabbricato suddetto acquedotto, tali siti erano del tutto gerbidi» (we found out that this damage has been produced by cultivations in the upper part of the aqueduct, where land has been cultivated, vineyard implanted, as well as trees and terraces [...] on the contrary, when this aqueduct was built, these lands were totally bare). ASCG, B. 137: Relazione sopra il dispaccio et altri lavori da farsi al pubblico acquedotto, 1721, Relazione dell'illustrissimo sig. Ansaldo Grimaldo Dep. al pubblico acquedotto circa i lavori da farsi.

water, led into an irrigation system made up of wooden canals, was used for the mills and for land irrigation, particularly for chestnut trees and terraces cultivated with beans. This habit is accused of depriving the town of its water⁵⁵.

⁵⁵ «Nel fossato della Parochia di Traxo, si è ritrovato un canale di legno, che dà acqua fresca con troglio, ed un solco nel terreno, che tramanda l'acqua ne Boschi per adaquare le castagne, ed una villa, il quale Bosco e Villa lo conduce Giovanni Vignè. Segue dall'insù col molino del Magnifico Francesco Dongo, dove è il prato, che primi adaquavano, ove vi era ed è un canale fatto nel scoglio, che prima serviva per dar l'acqua al molino del suddetto Magnifico Francesco Dongo. In seguito dell'insù altro vivagno d'acqua, che viene dal Fossato della Pieve di Bargagli, detto Leo, ossia Leco, in cui vi è una presa, che raccoglie una vivagna abbondante la quale serve per far girare due molini, cioè uno doppio l'altro, essendosi ritrovato al disotto della chiusa diverse fasce piene di faggioli secchi, con n. 10 aperture, che si aprono e chiudono da contadini con zerbi, alla sponda di detta chiusa, la quale passando l'acqua ne solchi del terreno, servono per adaquare suddette fasce, le quali sono condotte da Michele e Antonio Fratelli Cevasco, molinari di detto luogo. In seguito all'insù nel luogo della Parrocchia di Traxo, dice vi sia una sorgente d'acqua grossa, ossia vivagna, della quale acqua se ne servono per adaquare i Boschi, che esistono in giro al medesimo fossato, come le fasce di faggioli, e detta acqua suddetti molinari che stanno dall'ingìù hanno detto di dividerla solamente nel tempo d'inverno, e di estate essere trattenuta per adaquare suddetti boschi o fasce. Altra vivagna all'insù, che passa in una chiusa, che conduce l'acqua ad altri due molini si è ritrovato due campi di faggioli al di sotto di suddetta chiusa, condotte da Francesco e Giovan Battista Cevasco fratelli, ne quali vi sono n. 7 aperture, che si aprono e chiudono con zerbi, i quali servono per adaquare suddetti campi. In altra fascia ossia campo, che conduce Filippo Cevasco, vi sono due altre aperture, alla sponda della suddetta chiusa, che si aprono e chiudono le quali servono per adacquare detta fascia piena di faggioli, che è quanto. Ed il tutto come più chiaramente si può riconoscere dal presente Tipo». (In the ditch of the parish of Traxo, I found a wooden canalization, which carries fresh water to the woods in order to irrigate the chestnuts trees, and a villa, which are both managed by Giovanni Vignè. Above that, there is a mill owned by the excellent Francesco Dongo with a meadow, watered by a canal cut into the rock, that was used before to carry water to the mill of the above mentioned

Beans and chestnuts were the main products of this sector, under the jurisdiction of Bargagli: simple food, very different from the rich orchards down in the plains⁵⁶. Nonetheless, these cultivations needed a complex terracing and irrigation system. Irrigated cultivation of chestnut trees and vegetable gardens, in connection with the aqueduct, are evoked in adjacent areas, such as the Sturla valley, at least from the 17th century onwards: these agricultural systems have even been included in the *Catalogo Nazionale dei Paesaggi Rurali Storici*, i.e. National Catalogue of Historical Rural Landscapes⁵⁷.

Francesco Dongo. Above that, another water source, coming from the ditch of the Pieve di Bargagli, known as Leo, or Leco, where there is a water supply point, gathering water from an abundant source to carry it to two mills, turning one after the other. Beneath the sluice, many terraces filled with dry beans, with ten openings, opened and closed by peasants with turfs on the side of this sluice, thus letting water pass in the furrows to irrigate the terraces cultivated by Michele and Antonio Cevasco, brothers and millers in that site. Above that, in the parish of Traxo, an abundant water source gives water to irrigate woods adjacent to that furrow, as well as bean terraces. The millers living nearby say that they share water only in winter months, keeping it during the summer to water woods and terraces. Another water source is present up in the valley. It is led into a sluice, carrying water to two more mills. Beneath this sluice, I found two bean fields, cultivated by the brothers Francesco and Giovan Battista Cevasco, with 7 openings, which may be opened and closed with turfs to water the fields. In another terrace, cultivated by Filippo Cevasco, there are two more openings on the side of the sluice, to water a terrace filled with beans. And that's it. All the above can be clearly seen in the present map). Claudio Storace, *Tipo che dimostra le situazioni...*, 27 settembre 1788. Archivio di Stato di Genova, Fondo Cartografico, C.02.28.0926-Genova-[B.7.331].

⁵⁶ From Casalis' essay, Bargagli and the two parish churches of Traso and Viganego appear to abound in good pastures. Moreover, they produce wheat, corn, beans, potatoes, peas, chestnuts and grapes (G. Casalis, *Dizionario geografico storico-statistico-commerciale* cit., 1840, p. 146).

⁵⁷ A.M. Stagno, C. Molinari, *Orti e castagneti irrigui terrazzati dell'Alta Valle Sturla*, in M. Agnoletti (ed.), *Paesaggi rurali storici. Per un catalogo nazionale*,

To conclude, written sources record strong differences between the lower and upper Bisagno valley. In the plain, a complex food production system made up of villas and gardens; on the hills, an equally complex system comprehending agriculture, forestry and pastures, in which the land is exploited by alternating pastures, forests, chestnut trees and terraces. The former system is dedicated to wheat and fruit cultivation and is oriented to the town market, while the latter combines a town-oriented production (cattle breeding) with local products destined to rural population, such as chestnuts and beans. Both systems are nowadays completely unrecognizable because of the deep socio-economical changes which have modified the above-described landscape. During the last decades, beside the vast urban development in the plains, an extensive reforestation can be recorded, an aspect less present in the public debate, but no less dangerous for the environmental stability. Fig. 5 shows the present location of the site described by Storace in 1788 as *«fagioli in fasce annaquate»*, i.e. beans in irrigated terraces: this place is nowadays completely covered by a forest, as the orthophotograph shows.

4. Remarks and further developments

This study doesn't pretend to be complete and exhaustive. New research threads will be opened, both by investigating historical sources, and possibly through field investigations that may confirm or, far more interestingly, refute what the written sources tell. Nonetheless, this brief presentation shows the possible contribution that geo-historical sources can give in the field of historical description of local food production and individual rural landscapes. Storace's map marks the climax of a long controversy between the magistrates for the aqueduct and other social

Laterza, Roma-Bari 2010, pp. 189-191; A.M. Stagno, *Orti e castagneti terrazzati irrigui a Perlezzi e in Alta Valle Sturla*, in R. Cevasco (ed.), *La natura della montagna*, Oltre Edizioni, Sestri Levante 2013, pp. 476-485.



Fig. 5 A detail of the territory of Traso in comparison between the «*Tipo che dimostra le situazioni*» by Claudio Storace (1788; above) and the aerial photo of 2006 (Geoportale Nazionale)

players throughout the 18th century. This source has been found in the *Fondo Cartografico* of the State Archive of Genoa; as it frequently happens, it has been separated from its original context of production, *i.e.* the fund of the *Padri del Comune*. Following the traces leading from the document to its production context allows us to show how the writ-

ten source doesn't give a neutral representation of reality, but is on the contrary the result of different strategies implemented by various social players. These strategies often derive from conflicts which, despite their local range, may assume such importance as to implicate one of the most illustrious engineers of the time, Leonardo Ximenes. His study and project stress the point of the conflicts existing between the interventions on the part of urban authorities and the customary agricultural practices put into being by the communities of the inner valleys.

Thanks to the cartographer's activity, inspections take a further step forward: Storace provides some evidence to prove that the hydric crisis is to be mostly attributed to water catchments above the aqueduct, thus allowing the town of Genoa to exercise its jurisdiction over the hill inhabitants. Therefore, his work not only describes reality, but also contributes to the construction of jurisdiction⁵⁸.

Given the purpose of this study, to argue whether the hydric crisis could be the consequence of inappropriate water withdrawal by farmers living in Traso or not, is not a matter of interest; instead, it is essential to show how documents are produced in an effort to tackle the above described social conflicts and how to extract references to local products from this kind of files. Cartography can therefore be considered as a major tool of embezzlement and transformation, produced in specific contexts by players having administrative and jurisdictional purposes, besides of the scientific ones.

These references allowed us to show the extreme complexity of the Bisagno valley, the presence of various landscape and rural contexts, some oriented to town consumption, some conceived for local con-

⁵⁸ Similar cases are attested in different areas of Liguria. For the conflict on private or community exploitation of water in the adjacent Sturla valley and for the resulting cartography, see A.M. Stagno, V. Tigrino, *Cartografia pre-geodetica, conflitti sulle risorse idriche e politiche territoriali. Un caso di studio nell'Appennino Ligure (XVIII-XXI s.)*, in «Semestrale di studi e ricerche di geografia», 22, 2 (2010), pp. 267-279.

sumption; to individuate the species of fruit trees spread in villas and orchards; to demonstrate the importance of terracing and irrigation systems for forest and land management in a territory which is nowadays completely abandoned and reforested.

For a long time, historiography has generally agreed about the central role played by urban settlements in shaping the Italian agrarian and rural landscape. More recently, such subaltern role of rural spaces has been rediscussed⁵⁹. The case study of Bisagno valley shows that the rural areas close to the urban ones are contested and conflictual spaces, with disputes between valley and mountain communities; at the end of the Ancient Regime, one of the most important cities of the Mediterranean negotiated with the inner communities for food and water supply. However, written sources report information only from the perspective of urban magistrates.

Sources do not only highlight the abandonment of Genoese periurban agriculture during Modern Age. They also show how these rural activities were made possible thanks to a complex irrigation system: an intricate net of canals and furrows to carry water to mills, to irrigate chestnut woods and terraces, to water orchards and vegetable gardens. This study thereby demonstrates how water management was a consequence of the technical solutions adopted for the water exploitation and of the conflicts aroused by issues such as the control and possession of water. Therefore, the water management system cannot be considered as a result of a «natural» hydrographic net, but is on the contrary produced by a socio-economical organization. This water management system disappears along with the abandonment of rural practices, but the effects of this abandonment for the management of hydrogeological risks in such a vulnerable valley cannot be ignored and are still to be studied.

⁵⁹ D. Moreno, O. Raggio, *Dalla storia del paesaggio agrario alla storia rurale. L'irrinunciabile eredità scientifica di Emilio Sereni*, in «Quaderni storici», 100, 1 (1999), pp. 89-104.

This study is not concluded; on the contrary, it aims to present a geo-historical research methodology on a local scale which can be applied to every 'individual landscape' of our country, as well as to raise questions about how to use written sources in order to investigate traces left by past production systems, which are nowadays completely lost.