



Archaeology and Natural Sciences. Giovanni Antonio Antolini's Unpublished Texts and Drawings

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Abstract

In the years prior to 1818, Giovanni Antonio Antolini (1753-1841) devoted himself to studying the ruins of the ancient Roman settlement of Velleia, which at the time was part of the Duchy of Parma. With regard to the studies he conducted at the site, Antolini left a rare illustrated, handwritten notebook and a collection of original drawings, both of which have been preserved in the *Piancastelli Collection* at the Forlì municipal library and, to the best of our knowledge, are unpublished. The notebook relates to the third and last journey Antolini made to Velleia in the spring of 1818. This paper discusses the documents in the context of the architectural culture and the natural scientific culture at the turn of the nineteenth century. Prior to becoming an architect and an academy professor, Antolini was an engineer, an expert in hydraulics and the use of geodetic instruments. His scientific education took place in Bologna and he later worked in a context modelled on the political and cultural influences of a French culture shaped by the Enlightenment, typical of the Duchy of Parma at that time. In the field of archaeology and that of the observation of nature, Antolini displayed a curiosity for all aspects of the real world and an aptitude for understanding its rationale and finding thorough explanations. He observed and meticulously annotated each phenomenon, drew and measured every detail, making many observations before later reorganising them into a single rational system.

Keywords

Archaeology, Natural Sciences, Enlightenment; Drawing in the Nineteenth Century, Giovanni Antonio Antolini

G. A. Antolini, *Fuochi naturali*. The drawing illustrates the geochemical phenomenon that Antolini described as 'natural fires', a combustion phenomenon caused by the presence of hydrogen in the subsoil. In the annotations the description of the experiments he carried during his on-site investigations. BCFo CR 25/325 346, detail.



Introduction

Following his scientific education and an apprenticeship as a hydraulic engineer, Giovanni Antonio Antolini (Castelbolognese 1753 - Bologna 1841) was drawn to the study of architecture in the Roman cultural context of the early nineteenth century, influenced by an interest in archaeology and his relationships with young architects from the French Academy located at Villa Medici [Antolini 1842; Marziliano 2000; Mezzanotte 1966]. In the years prior to 1819, the year of the publication of *Le rovine di Velleia, misurate e disegnate da Giovanni Antolini* (The ruins of Velleia, surveyed and drawn by Giovanni Antolini), the architect devoted himself to the study of the ruins of the ancient Roman settlement of Velleia (now Velleia, a district in the municipality of Lugagnano Val d'Arda in the province of Piacenza) which at the time was part of the Duchy of Parma and long disputed by Bourbon and Austrian rule (figs. 1, 2). With regard to the studies he conducted at the site, Antolini left, in addition to the renowned printed work, a rare handwritten notebook which is at once a travel diary and a journal of surveys, but also a collection of aide-memoires and notes and, last but not least, a fascinating album of drawings [1] (fig. 3). The contents of the manuscript can also be linked to a collection of miscellaneous drawings kept in the *Piancastelli Collection* at the Forlì municipal library [2] which comprises preparatory studies, eidotypes relating to the series of surveys and tables showing the survey results which were later incorporated into the printed publication. The opportunity to compare the text and the drawings contained in the notebook with the other written and graphic documents contained in the collection, and with the published works, makes it possible to construct a meaningful framework of the methodological approaches and survey practices implemented by Antolini. This makes the manuscript a rare and valuable document that clearly deserves further investigation. The focus of this paper will be confined to a question that connects the study of the history of architectural surveying with the investigation of the relationships between the architectural culture and natural scientific culture at the turn of the nineteenth. Interpreting the role of Antolini in relation to this question makes it possible to obtain a better understanding of his approach to archaeology and his use of drawing as an investigative tool. The research that underlies this text therefore moves across different disciplines and involves many 'transitions' between distant but complementary fields of interest which is a feature of the Enlightenment movement.



Fig. 1. G. A. Antolini, *Vestigi dell'antica città di Velleia* (Vestiges of the ancient city of Velleia). Map of the excavations dated August 5, 1779. CBFo CR 25/325 344.

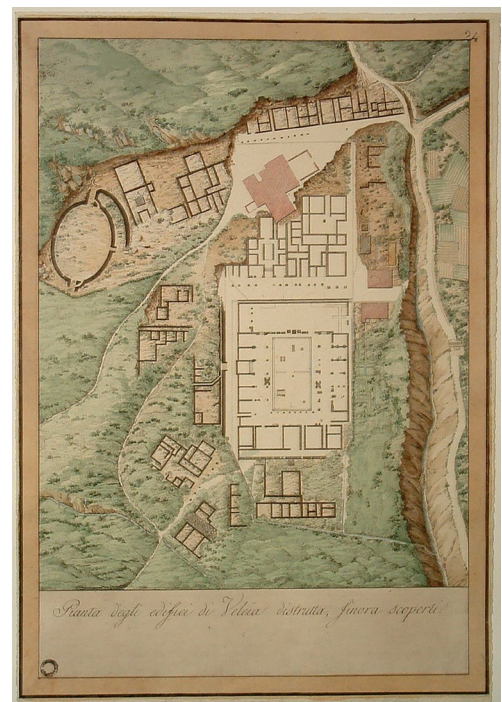


Fig. 2. G. A. Antolini, *Pianta degli edifici di Velleia distrutta finora scoperti* (Plan of the buildings of destroyed Velleia so far discovered). BCFo CR 25/24. The drawing would later appear in the publication devoted to the ruins of Velleia. Antolini 1819, plate IV.

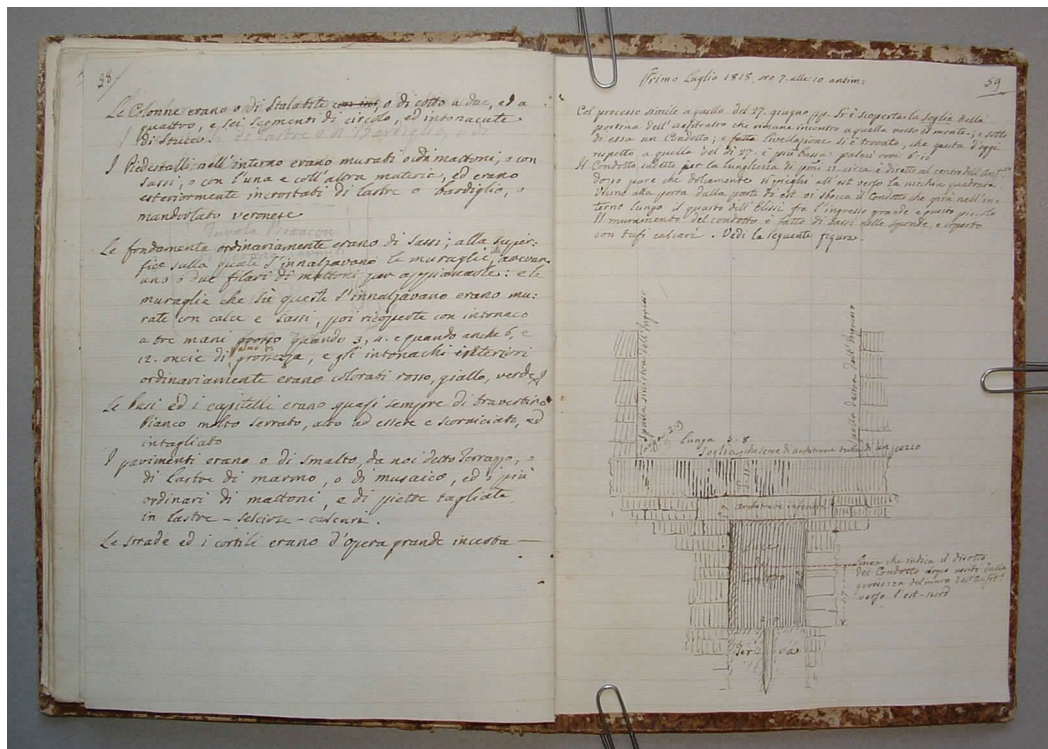


Fig. 3. G. A. Antolini, Double-page notebook with annotations and drawings related to archaeological finds. The text describes the surveys made by Antolini, the drawing depicts the threshold of the amphitheater door placed on the minor axis of the ellipse. BC Fo 25/332, pp. 58-59.

Archaeological investigation based on testing and experimentation

In the handwritten notes and the unpublished drawings, but also within the publications dedicated to Velleia [Antolini 1819; Antolini 1822], Antolini placed great importance on accuracy, clarity, survey validity, reliability and the proper reasoning of his hypotheses. With an archaeologist's passion for documentation, he conducted many checks relating to the position of the objects and revealed his inclination for examining all elements rather than just identifying illustrative examples. He considered each single fragment, interrogated it, meticulously annotated every observation, measured and drew every artefact, no matter how small, and then demonstrated great care in distinguishing the original elements from the more recent works and in making this clear to the readers. The surveys are thorough and often among the annotations in the notebook relating to the operations to be conducted we see a verification of the information acquired previously or that which has been obtained from documentation collected by other surveyors [BC Fo 25/332 pp. 10-11, 12na-13na]. Moreover, the handwritten text reveals a notably systematic approach with regard to observations and measurements. Antolini is not content to identify one example, a model to be reproduced, rather he is alert to the variations, the peculiarities and to the quantitative information. In his survey of the architectural order, which is traditionally characterised by the search for rules, repetition and the use of an example that is chosen as a norm, Antolini demonstrates an eye for detail and an interest in each individual artefact [BC Fo 25/332 pp. 12na, 18na-19na]. Indeed, many observations are devoted to the construction materials and techniques that can be deduced from the artefacts, such as the composition of the stonework and the plaster; the construction materials and their origin and manufacturing process [BC Fo 25/332 pp. 14na-15na, 19na]. As well as matters relating to measurements, even the problem of reconstructing the exact position of the objects is the subject of many meticulous annotations [BC Fo 25/332 pp. 12na, 14na-17na, 52] which try to mitigate the prevailing confusion over the fragments recovered during the excavations carried out from 1760 onwards [Antolini 1819, pp. 8-10; Marini Calvani 1975; Marini Calvani 1984; Marini Calvani 1990]. Antolini would later complain in the printed book about the use of improper excavation techniques on several occasions and, consequently, the inability to verify the information, taking the opportunity to express his hope for a resumption of the works (figs. 4, 5).

Antolini the neoclassical architect and naturalist

Prior to becoming an architect and an academy professor, Antolini was an engineer, an expert in hydraulics and the use of geodetic instruments. His scientific education took place in Bologna and he later worked in a context modelled on the political and cultural influences of the French culture shaped by the Enlightenment, typical of the Duchy of Parma at that time. Like many educated men of his time, he cultivated a deep interest in the sciences. After all, in the context of the Enlightenment, art and science are contiguous and complementary fields for the exploration and comprehension of nature and it is the duty of the arts, in particular those less tied to the imitation of nature, to process and interpret the intelligence of nature and differentiate its signs [Franzini 1995, pp. 119-123]. The interweaving of architecture and natural sciences had taken root in the culture of the French Academy from as early as the seventeenth century. Claude Perrault, the renowned opponent of François Blondel, was in fact a physician. A staunch supporter of the empiricism that descended from John Locke, he belonged to the Academy of Sciences (as did Blondel himself) and took an interest in anatomy, medicine, mechanical engineering and zoology and only came to architecture in later life. It is his denouncement of the inconsistencies that existed in the surveys of ancient monuments that persuaded Colbert to send Antoine Desgodets, a student of Blondel, to Rome for his famous series of surveys [Desgodets 1682; Krufft 1999, pp. 166-71]. Blondel was also teacher to Étienne-Louis Boullée, the "revolutionary architect" – according to Kaufman's disputed definition [Kaufman 1966; Kaufman 1975; Kaufman 1976; Krufft 1999, pp. 200-201] – with whom Antolini is often compared for his projects for Milan. Another naturalist was Milizia, who knew the revolutionary French architects and of whose work *Principi di architettura civile* (Principles of civil architecture) Antolini curated an annotated edition [Antolini 1817; Antolini 1832; Krufft 1999, pp. 272-3; Milizia 1781].

Similarly to his work in archaeology, in his observations of nature Antolini displayed a curiosity for all aspects of the real world and an aptitude for understanding its rationale and finding thorough explanations. The manuscript and the drawings reveal that he observed and meticulously annotated each phenomenon, drew and measured every detail, making many observations, before later reorganising them into a single rational system. Antolini was interested in fossils, delved into explanations about chemistry and optics, dedicated considerable time to geological analysis and did not fail to weave his own reasoning in relation to physical laws: the law of gravity and the equations of motion are concepts he uses to support and verify his own speculations about the destruction of Velleia. The breadth of his scientific interests is also reflected in his publications. Indeed, in *Le rovine di Velleia*, we find reflections relating to the landscape, but also to geomorphology, chemistry and physics that go well beyond travel notes or a curiosity offered to the reader, instead delving into detailed explanations that are always accompanied by tests carried out in person and meticulously reported. The range of subjects touched upon is vast and complex: mountain formations, stratigraphies, land composition, hypotheses on the origin of the morphology of the relief and waterways, descriptions of natural phenomena and their explanation. Even the first seemingly disordered observations contained in the notebook reveal a rigorous process of investigation designed to research the causes of the ruin of the ancient Roman city (fig. 6). The phenomena that attracted the architect's attention over the course of his observations of the surrounding territory included a geochemical phenomenon that he described as '*fuochi naturali*' [natural fires], wrongly called 'volcanoes' by the locals. It is a combustion phenomenon caused by the presence of hydrogen in the subsoil, on which Antolini focused, compiling detailed descriptions and carrying out experiments over the course of several days and which he annotated meticulously. The phenomenon is cited three times in the manuscript: first in a note to remember to survey its location, a second to propose a new investigation in different weather conditions and a third to annotate the investigation carried out and draft a map [BCFo 25/332 pp. 18, 19].

In the manuscript, Antolini refers to a document relating to the river Chero which he calls "*matrice dell'andamento del Chero*" (map of the course of the Chero) [BCFo 25/332 p. 18na]. In the *Piancastelli Collection* there is a map with the same title in which we can observe two

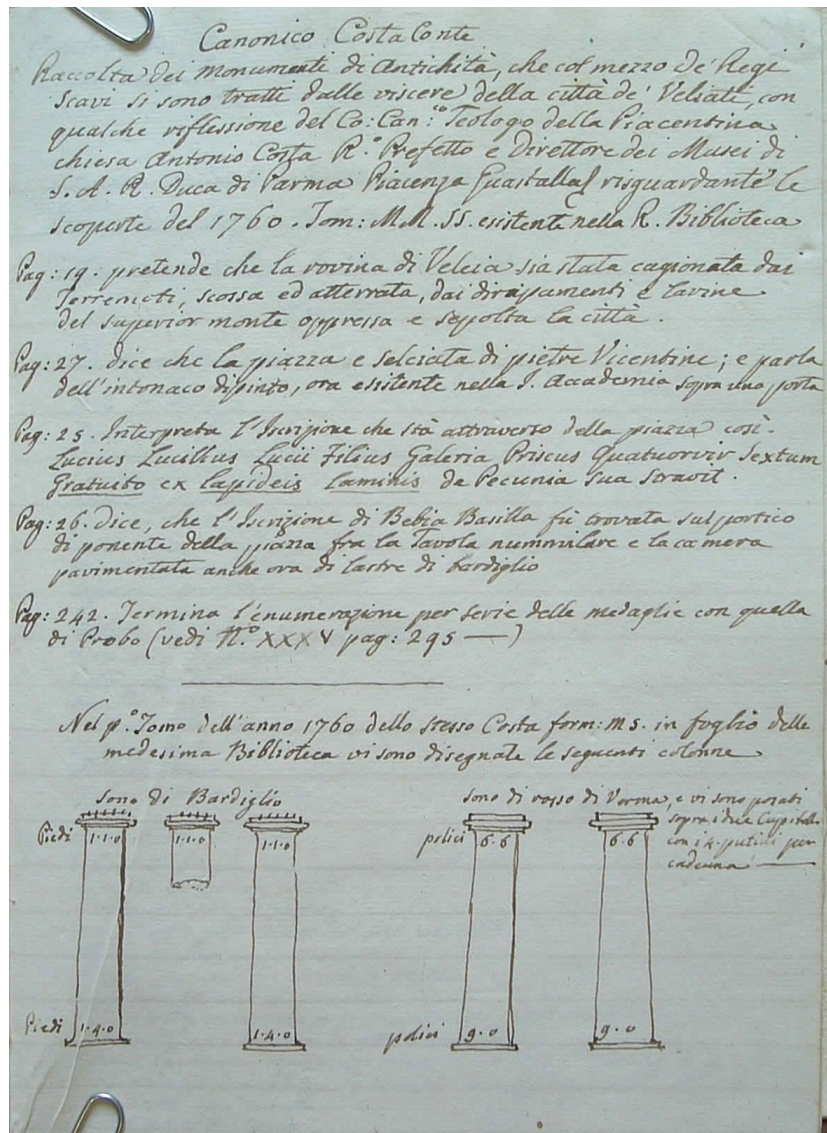


Fig. 4. G. A. Antolini, Notebook page with annotations on Velleia ruin hypothesis and excavations with drawings of finds. BCFO 25/332, p. 33.

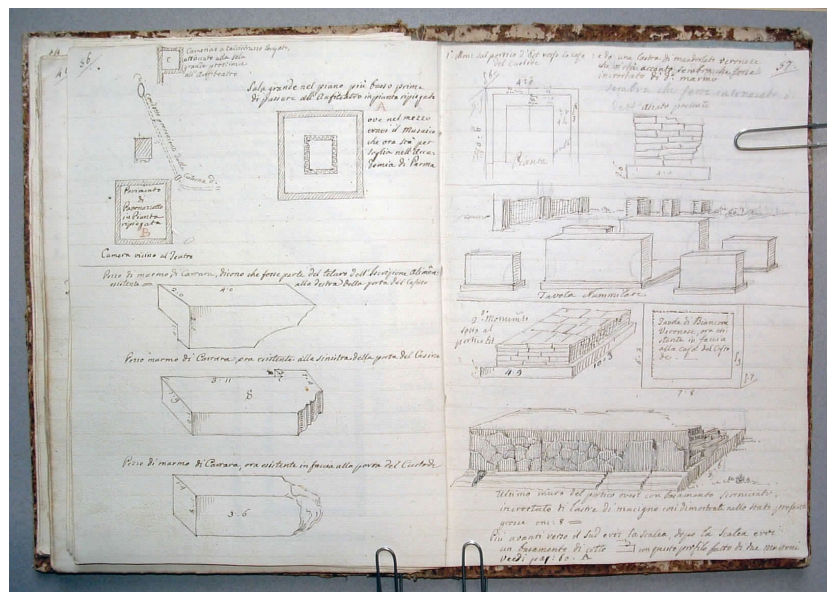


Fig. 5. G. A. Antolini, Double-page notebook with annotations and drawings related to archaeological finds. In the text annotations on the materials of the fragments and speculates on their original location. BCFO 25/332, pp. 56-57.

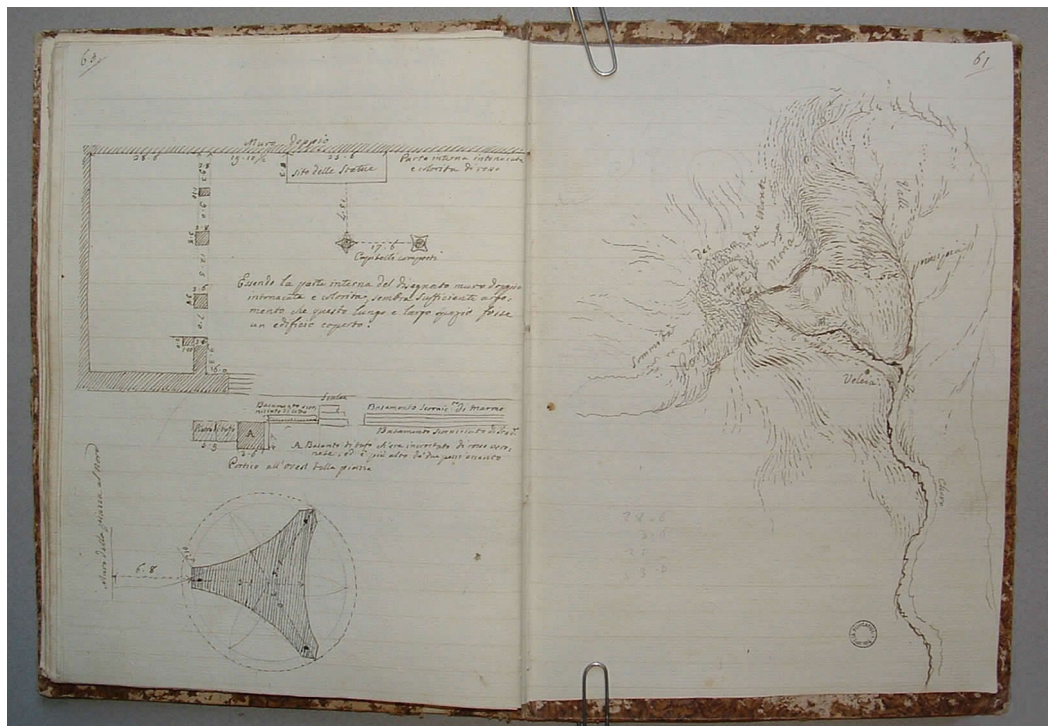


Fig. 6. G. A. Antolini, Double-page notebook with annotations and drawings related to archaeological finds. On the left drawing of capital with notes on the location, materials, and state of preservation of masonry. On the right a study of the orography of the surrounding area. BCFo 25/332, pp. 60-61.

waterways which flow into the river Chero and the location of the two natural fires. Along the waterways notations relating to the relief can be seen. The map corresponds, in its configuration, to table V of the book which is dedicated to the ruins of Velleia [Antolini 1819], of which it could constitute a sort of partial preparatory study (figs. 7, 8).

On the same sheet as the map, we find another drawing in which, in addition to new survey information, there is also a sketch in which the 'fires' are represented according to the strict logic of Monge's double projection, applied to the natural elements (cover image). Beside the drawing the author annotates an experiment carried out: "with fire A being extinguished, the rain having abated on the 23rd, I approached with a lit paper and like lightning the outline of the two small craters lit up with a flame [...] clear and agitated, and the fire extended over the surface of an equilateral triangle, considering the two small craters at the vertex of two angles of said triangle. I then moved to the other [fire] which was larger and situated at a distance of 381 Roman palms from the first, I did the same, and this lit up faster than the first, covering the surface of a circle with a diameter of approximately 6 palms, and the emanation appeared like the previous one". As reflected from these annotations, the naturalist's curiosity, the spirit of observation, the experimental method of the eighteenth-century man of sciences and the attention to detail and architect's aptitude for technical drawings combined to investigate this occurrence and bring an unusual phenomenon, which had given rise to mistaken popular belief (the ruin of ancient Velleia had erroneously been attributed to the 'volcanoes'), back to the reassuring domain of science.

Conclusions

From a comprehensive reading of the manuscript, the notes annotated on the various drawings and the printed text, we can reveal how Antolini tirelessly and carefully recorded a series of survey findings, information, details and graphic annotations which, for the most part, are not included, other than as a documentary base for rather more general affirmations, in the published work. Similarly, this information is not present in the tables that accompanied the text, which did not at any point reach this level of detail if only for reasons of size and, presumably, due to an evaluation of the editorial costs and the relevance of the

Fig. 7. G.A. Antolini, Drawings concerning the territory surrounding Velleia. On the left the geochemical phenomenon called "fuochi naturali" (natural fires); on the right a map of Chero and Riolo creeks. BCFo CR 25/325 346.

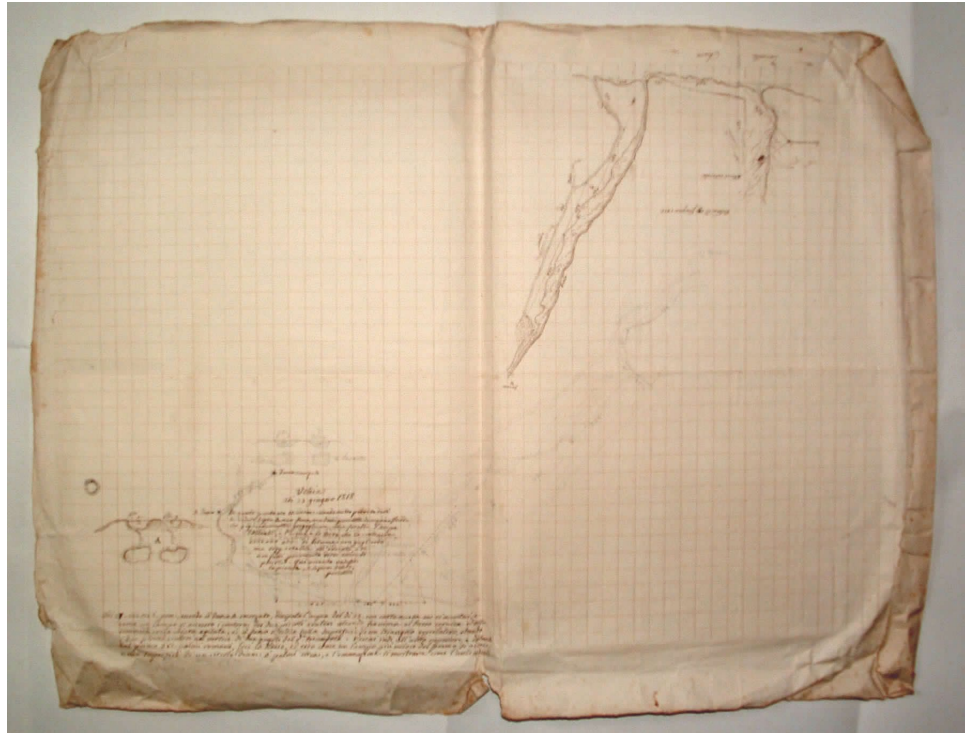
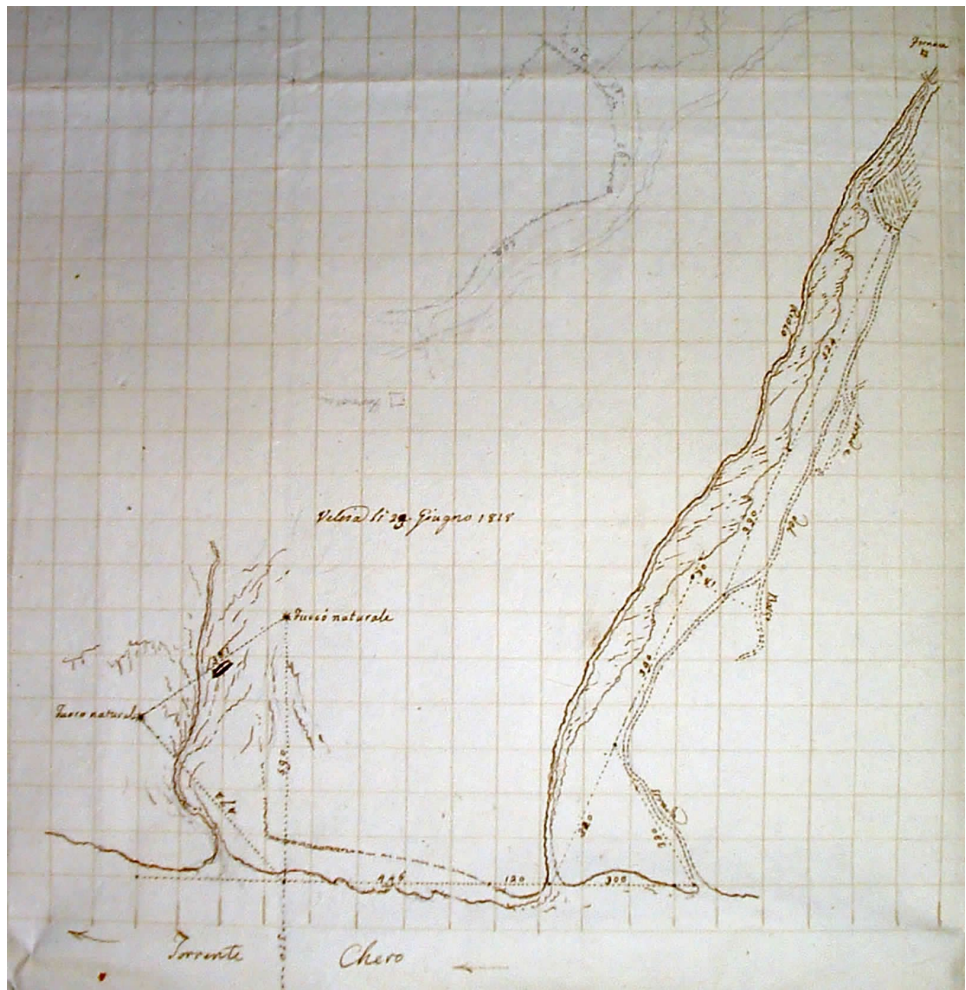


Fig. 8. G.A. Antolini, Map of Chero and Riolo creeks with the location of 'natural fires'. BCFo CR 25/325 346, detail.



content, which was sometimes strictly technical and internal to the process of archaeological investigation. Antolini's work therefore attested to a spontaneous and genuine interest and a documentary rigour that demonstrated his scientific approach and aspiration for completeness.

Direct references to natural sciences are frequent in his published texts, as they are in the handwritten personal notes with even deeper analysis. Thus emerges the profile of a multi-disciplinary figure, belonging to a rationalist context and influenced by the Enlightenment: a scholar who united architectural culture and technical preparation, who bridged the gap between the knowledge of construction and academic education, who used drawings and measurements as investigative tools, who combined rigorous archaeological awareness with technical knowledge. A knowledge that is difficult to learn through the channels of institutions, but which in any case finds answers in tangible experience, in the educational fields on the margins of academic courses. Thus it is a knowledge seemingly absent from official routes of architectural training, although indispensable for the implementation of correct and tangible archaeological knowledge. A knowledge, ultimately, that Antolini mastered with surety and a breadth of interests, as is confirmed by the drawings and pages of a diary that is both intimate and rigorous at the same time; that is his notebook on the surveys of Velleia.

Notes

[1] The notebook is kept at Forlì municipal library [BCFo, Romagna Carte, Autografi 25/332, shortened herein to BCFo 25/332]. The document consists of a bound notebook, lined, measuring 23 by 34 centimetres. The numbering of the pages is divided into two series which follow different methods. The first 19 pages bear numbering allocated by the archive, written in pencil. The original numbering begins at the twentieth page of the notebook, starting with the number 10. A convention has therefore been adopted to make it possible to distinguish between the original numbering and that which has been assigned by the archive: the notation 'na', is placed next to the page number indicates that reference is being made to the page numbering assigned by the archive; the absence of any notation instead means that reference is being made to Antolini's original numbering. Transcriptions and translations from the manuscript and the drawings found in this paper have been curated by the author.

[2] Piancastelli Collection, Carte Romagna section [BCFo CR]. All the images are courtesy of the Forlì Municipal Library Aurelio Saffi.

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