



Understanding the Terrain of the Aragon Front Through Drawings Made During the Spanish Civil War

Santiago Elía-García   and Ana Ruiz-Varona 

AOS Research Group, San Jorge University, Saragossa, Spain
selia@usj.es

Abstract. During the Spanish Civil War, the cartography unit of the Corps of Volunteer Troops (*Corpo Truppe Volontarie*) created drawings (*schizzo panoramico*) that precisely depicted the terrain where the conflict was fought and served as the basis for the military tactics developed by the Nationalist faction. The significance of this study is its historical perspective and its use of cartographic terminology. Using reference material on the Aragon Front, this study explored the quality of these illustrations and their depiction of a specific landscape. The activity of the Italian cartography service, the techniques and instruments used, and their chorographic functions were analyzed, and other similar historical precursors were identified. Once the circumstances of the drawings' creation were understood, we assessed the value and accuracy of these panoramic sketches by viewing the same landscapes today. Knowing the locations and vantage points from which the drawings were made enabled us to evaluate their reliability and understand how this terrain has changed in the decades since.

Keywords: Landscape · Travel drawing · Graphic illustration · Spanish civil war · Chorography

1 Introduction

This article relates to an ongoing area of research on cartography in relation to different areas of the Ebro River Valley in Aragon during the Spanish Civil War.

The Lower Ebro River Valley is the setting of the final significant battle of the Spanish Civil War, a few months before the conflict ended. The Nationalist faction, strengthened by its victories in Aragon, was able to isolate the government of the Second Spanish Republic in Catalonia from the other Republican forces, turning the Ebro River (for a few months) into a boundary separating the two opposing factions (Silvan Sada 2011, p. 348). This territory encompassed a large area of land for both factions to study in detail to design the most appropriate offensive and defensive strategies.

The cartographic techniques available at that time offered neither the coverage nor the quality to support optimal planning of war maneuvers. The Republican faction controlled the cartography production centers, i.e., the Spanish National Geographic Institute (*Instituto Geográfico Nacional*) and the Cartography Unit of the Army General Staff (*Estado Mayor Central del Ejército de Tierra*). These centers produced

planimetric maps, though incomplete, of the Iberian Peninsula at the 1:50,000 and 1:25,000 scales (Montaner et al. 2007, p. 16). The special edition of the 1:25,000 scale Master Plan, a document used to plan most of the military's tactical operations, was developed based on these maps.

The rebel forces did not control any of Spain's cartographic capabilities and had to rely on the cartography archives for the Ebro basin available at the Ebro Hydrographic Confederation (*Confederación Hidrográfica del Ebro*), based in Zaragoza (Nadal et al. 2003, p. 659). They also received information from their international, German, and Italian supporters. Germany sent black and white lithographic reproductions of the 1:50,000 scale maps previously published by the National Geographic Institute, while Italy provided a team of cartographers, namely, the topography unit of the Corps of Volunteer Troops (*Corpo Truppe Volontarie-CTV*). This unit produced a series of topographic illustrations that complemented existing drawings, thus providing a complete compilation for the disputed land (Ruiz and Temes 2018).

In addition to the 1:200,000 and 1:50,000 scale maps, the CTV produced a series of panoramic views and sketches of remarkable quality and usefulness (Fig. 1). These illustrations were developed using on-site notes and observations and available planimetric maps. Thus, two types of graphic documents are available: the documents created in the field and those produced later in offices with better technical and environmental conditions (Fig. 2). Both synthesize the morphology of the landscape with line drawings, a graphical technique that, according to Báez (2010, p. 2), is used to simplify, with rigor, the model to the geometric value of a shape to achieve the best possible reading.

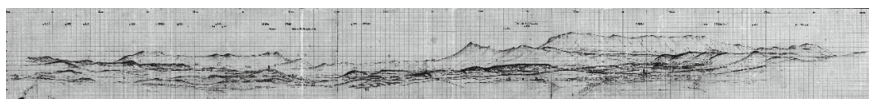


Fig. 1. Panoramic view created by the topography unit of the Corps of Volunteer Troops (*Corpo Truppe Volontarie*). Source: Cartographic and Geological Institute of Catalonia (*Instituto Cartográfico y Geológico de Cataluña*), ICGC, E-209594.

The first set of graphic documents, created in uncomfortable surroundings, are a collection of brief notes featuring annotations, with rough lines drawn several times on millimeter graph paper. The second set of documents are more carefully drawn and represent a synthesis of fieldwork. In addition to containing all the necessary data, they can be admired for their indisputable graphic expression.

This article examines these landscape illustrations developed by Italian cartographers as a primary source of detailed knowledge of the various areas of Aragon that were of strategic importance during the conflict. More specifically, this article explores the working conditions in which the illustrations were developed and analyzes the tools and techniques used. The analysis reveals the illustrations' technical and visual attributes and fidelity to the represented landscape, proper to graphic illustration as a discipline.

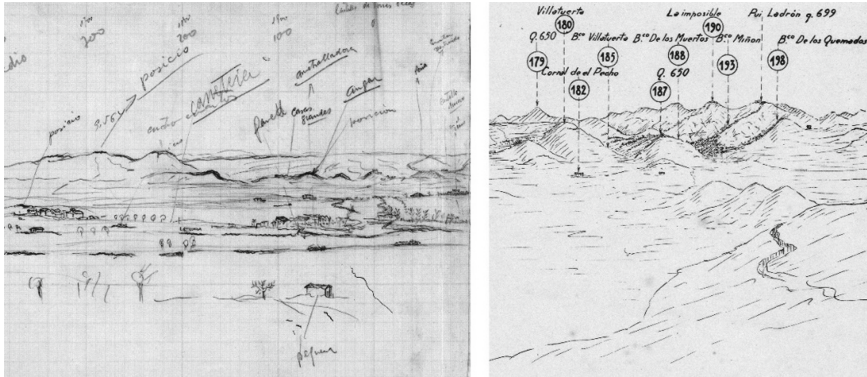


Fig. 2. Fieldwork and office work detail. Source: ICGC, E-209654 and 209656.

2 Background of Graphic Illustration

The material analyzed and its reason for being can be understood in relation to other graphic illustration precursors that have been studied more extensively and are better known. Landscape representations in the form of graphic descriptions of places as seen through the eyes of an observer have been a constant throughout history.

As early as the second century, Claudius Ptolemy coined a term for this type of document, i.e., chorography, derived from the Greek word *choros* (place). A chorography describes “the smallest details of a place” and “paints a faithful semblance of the places being described” (Chias 2018, p. 109). Chorography combines, to a greater or lesser extent, the artistic aspect of drawing or painting with the scientific aim of representing the exact dimensions of a landscape. Mathematical methods (subject to the technical limitations of the era) assist the author’s subjective perceptions to depict a scene with the greatest possible rigor and precision (Báez 1993).

The drawings of the urban landscapes of major cities that Anton van den Wyn-gaerde made for Philip II are well known in Spain. As some of the few graphic documents that illustrate 16th century cities, they represent a set of chorographies of great historical value, (Espigares 2015). They doubled as cartographic instruments of propaganda for the kingdom and as images of great artistic and visual value. To create them, Wyngaerde created some initial drawings on which he located important elements on a panorama to be completed in detail later (Oliver 2015, p. 135). Similarly, the 102 maps and illustrations of Spain’s territories and coasts commissioned by Phillip IV in the 17th century and created under the direction of the royal cosmographer Pedro Texeira, represent noteworthy reference points that remained unpublished until 2002 (Pereda and Marías 2004).

As early as the 16th century, a distinction between artistic chorography and utilitarian, geometric chorography, which aims to depict accurate information about the landscape viewed, was drawn. To facilitate the latter and to ensure the illustrations did not depend solely on the eye, topographical instruments were developed to aid measurement and drawing that ensured the geometric and methodological validity of the

results (Oliver 2015, p. 131). Of pertinence to this study is the use of the camera obscura to record images of natural landscapes during scientific expeditions towards the end of the 18th century (Oliver 2015, p. 143). This instrument was used not so much to facilitate the drawing process, but rather to ensure objectivity when reproducing an image. In the aforementioned historical examples, certain forms of representation are observed that transmit values such as the incidence of light, space, or color based on stains. However, the Italian panoramas studied exclusively used the line drawing technique to illustrate reality with as few elements as possible, excluding elements not needed for planning war strategies.

3 Panoramic Sketches (*Schizzi Panoramici*) Created in Aragon During the Civil War

Research for this article focused on two areas of Aragon that were strategic for attacking and defending its territory, namely, the environs of the city of Huesca and the Alcubierre mountain range (the main mountainous area of the Monegros region) that runs parallel to the Ebro River and forms the northern boundary of the river downstream from Zaragoza. For Huesca, there is a panoramic sketch created in the field (Fig. 3), and for Alcubierre, there is a more elaborate drawing created in the office (Fig. 4). These areas were the sites of battles between 1936 and 1938 that were crucial to the outcome of the conflict known as the Aragon Front.



Fig. 3. Panoramic sketch created in Huesca. Source: ICGC, E-209658.

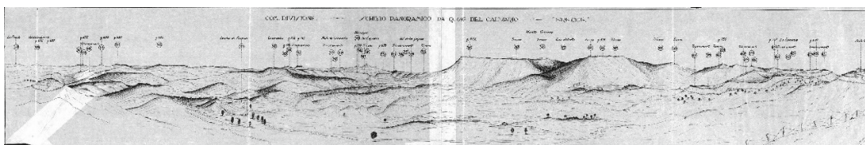


Fig. 4. Panoramic sketch created in the office from Calvario Q.697. Source: ICGC, E-209652.

In 1937, at the height of the Spanish Civil War, the National Defense Board published a book titled “Topographic information for the campaign” (“*Conocimientos topográficos para campaña*”) by the engineer and lieutenant Francisco Prats Salas. This book is of great interest for this study because it contains information concerning how military cartography is presented and interpreted, along with the most common topographic procedures, instruments, and methods used in a military context. One chapter is dedicated to describing how landscapes should be illustrated, both the quick panoramic sketches created in the field and the more detailed drawings created in the office.

Topographic maps are a characteristic example of military cartography, where accuracy is pursued by applying abstract and rigorous graphic illustration conventions that render a place's measurements as precisely as possible. As a complement to these maps, chorographic panoramic sketches aim to depict a terrain as it appears to the observer's eyes, typically from a distant and elevated vantage point. These sketches also adhere to predefined graphic conventions, though these are applied less strictly to allow the illustrator freedom to depict the natural aspects perceived. In fact, distortions in the height scale are allowed so that distinctive features of the terrain can be highlighted (Prats 1937, p. 40).

In "Topographic information for the campaign", it is suggested that sketches should be made on sheets of graph paper to control dimensions. This technique is evident in the fieldwork material analyzed (Fig. 3) in which sheets of yellowish graph paper (35 cm wide by 20 cm high) are taped together to create an elongated document for drawing the landscape. Along the horizontal edge, 50 mm of paper represent 100 m of terrain, so the scale of the x-axis is 1/2,000.

This publication also indicates that panoramic sketches must be drawn with a sharp pencil to avoid imprecise lines and contours. Additionally, the pencil lead should be sufficiently soft to draw thicker lines for details closer to the observer. The publication specifically explains how vegetation such as individual trees or woodlands should be illustrated. It also indicates how to depict roads, paths, bridges, and isolated and clustered buildings. Regarding the text of a drawing, place names must be indicated by straight lines with arrows at both ends, as apparent in the office work analyzed. The application and referencing of all these military engineering guidelines are evident in the analyzed illustrations, which were produced at approximately the same time as the publication.

In addition to the analysis of the panoramic sketches in the context of the specific circumstances of the Italian cartography unit and the techniques used, a more in-depth study of the complex Aragonese landscape was necessary. The latter provides complementary and valuable information to evaluate the precision and accuracy of the landscape illustrations. Thus, exhaustive fieldwork was required to locate the vantage points from which the documents were drawn. This work also enabled an evaluation of the depth of the landscape depicted, as well as a comparison with the present-day profile of the same landscape and an evaluation of the transformations that have occurred in recent decades.

4 A Comparison of the Panoramic Sketches to the Present-Day Landscape

Both the documents analyzed represent two characteristic landscapes of the Aragon region. The landscape sketches created in the field depict the foothills of the Pyrenees to the north and east of Huesca, from a vantage point somewhere to the west of the capital city (Fig. 3). The Sierra de Guara is one of the sketches' main reference points. The illustration created in the office corresponding to the panoramic sketch from Calvario Q.697 illustrates part of the Sierra de Alcubierre in the region of Los Monegros. The dominant geographic features of this illustration are Monte Oscuro, San

Caprasio, and Valdelumbierre (to the north). These unique geographic reference points, along with the illustrator's notes on the drawing, make locating the exact vantage point straightforward (Fig. 5).

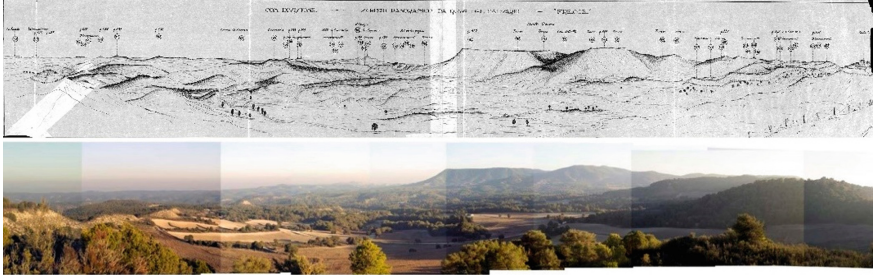


Fig. 5. Comparison of a present-day photograph and the panoramic sketch from Calvario Q.697 (1938). Source: photo superimposed on ICGC, E-209652.

First, a detailed analysis of the first landscape illustration is presented. The illustrator has made notes along the horizon line that indicate place names for population centers, landmarks, or geographic anomalies and provide information for future battle strategies, such as “important position of ours”, “our trenches”, “shelters”, “very far” or “red” (alluding to enemy positions). To identify the exact vantage point for the illustration, the places mentioned in the document are pinpointed on a topographic map. The superimposition of an aerial orthophotograph on the illustration enables an assessment of the various ground covers that influence the visualization of the features observed from the illustrator's vantage point (Fig. 6).

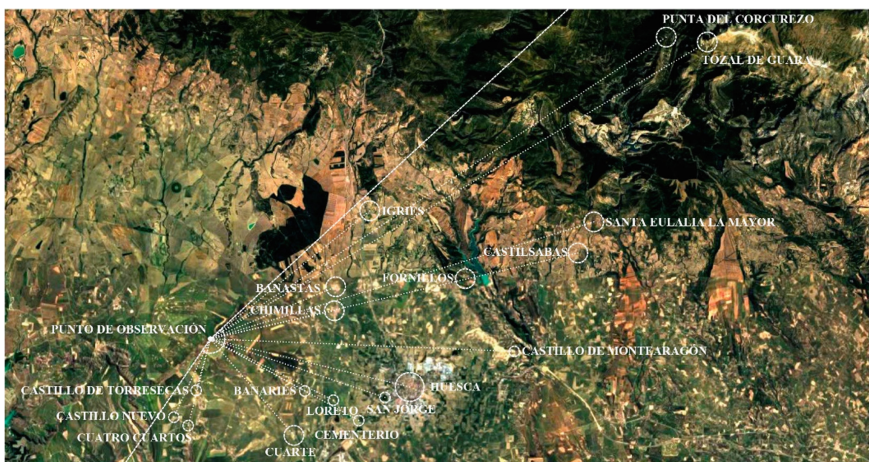


Fig. 6. Locations of the places identified in the panoramic sketch (Fig. 3) of Huesca's environs. Source: created by the authors.

Along a first, lower horizon line (north to southwest of Huesca), urban centers and isolated buildings are depicted one after another: Igríes, Banastás, Chimillas, the Hermitage of San Jorge, the Hermitage of Loreto, Banariés, the municipal cemetery, Cuarte, and Castillo de Torres Secas. Along a second middle line further away and therefore deeper are Fornillos de Apiés, Castilsabás, and Castillo de Montearagón to the north; and Torreluerta, Balsa de Cuatro Cuartos, and Balsa del Castillo Nuevo de Torres Secas to the southwest. Above them, on the first of four sheets of graph paper, is the ridgeline of the Pyrenees foothills. To the north, though not labeled as such, is the unmistakable contour of the Tozal de Guara, along with the clearly labeled Punta del Corcurezo and Santa Eulalia La Mayor.

These three horizon lines facilitate an estimate of the height of the vantage point used by the team of cartographers to create the illustration. In addition, the order in which the urban centers and regional settlements appear provides sufficient information for triangulating a plane on the topographic map in which the vantage point is located. A more detailed analysis of this plane reveals that it is a hill of approximately 1.5 km in length (running north to south) that sits between the municipalities of Lupiñén and Alerre.

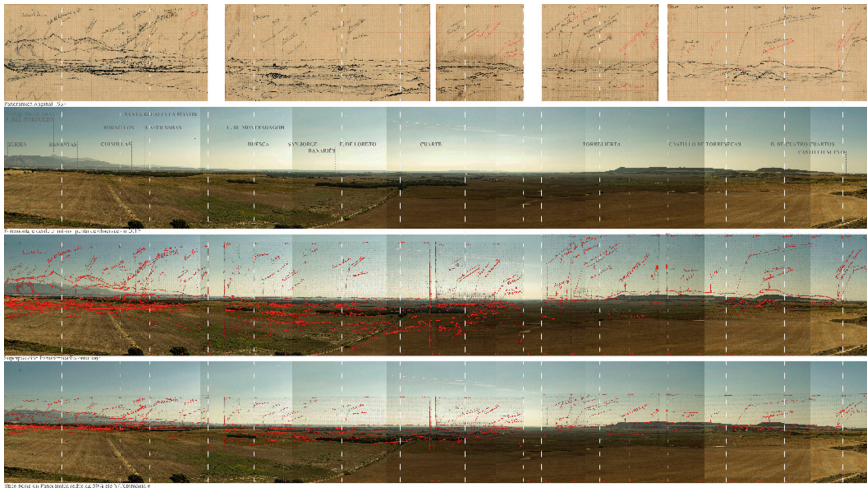


Fig. 7. Comparison of a present-day photograph and the panoramic sketch of Huesca's environs (1938) from the same vantage point. From top to bottom: Panoramic sketch, present-day photograph, superimposition, superimposition on the sketch with a 50% height reduction. Source: created by the authors based on ICGC, E-209658.

The precise location on the vantage point on the aforementioned hill requires fieldwork to rule out other possible locations. The authors obtained access to an elevation point where, sketch in hand, they verified that the illustration created 80 years ago corresponds to the landscape they were seeing from that point. Photographs were taken to build a panoramic photomontage comparable to the landscape in the sketch. The superimposition of both documents produced a graphic file with a transparent

background that features the main lines of the approximate drawing superimposed on the present-day landscape (Fig. 7).

The locations of the most recognizable points reflect a scalar adaptation that may have been applied when creating the landscape illustration. Of note is the proportional scaling on the x-axis. However, the y-axis is significantly disproportional. Proportion is a key issue when examining the techniques for creating landscape illustrations. Prats (1937, p. 40) indicates that slightly uneven terrain is represented by an enhanced height scale that is no more than double the horizontal to avoid too much deformation of the panorama. It was confirmed that if the y-axis measurements in the original drawing are halved, then the percentage of concurrence between the approximate model and the present-day photograph significantly increases. In fact, the accuracy achieved and the control of the measurements indicate that this fieldwork must have been conducted using supporting site documentation and some of the most commonly used topographic instruments of the time, such as the theodolite, the tachymeter, or the plane table (Prats 1937).

Knowing the exact location of the vantage point provides initial insight into the accuracy of this illustration. In addition, an analysis of the pictorial language used provides clues for evaluating the quality of this type of document. Examining the model more closely reveals three different types of lines (Fig. 8).

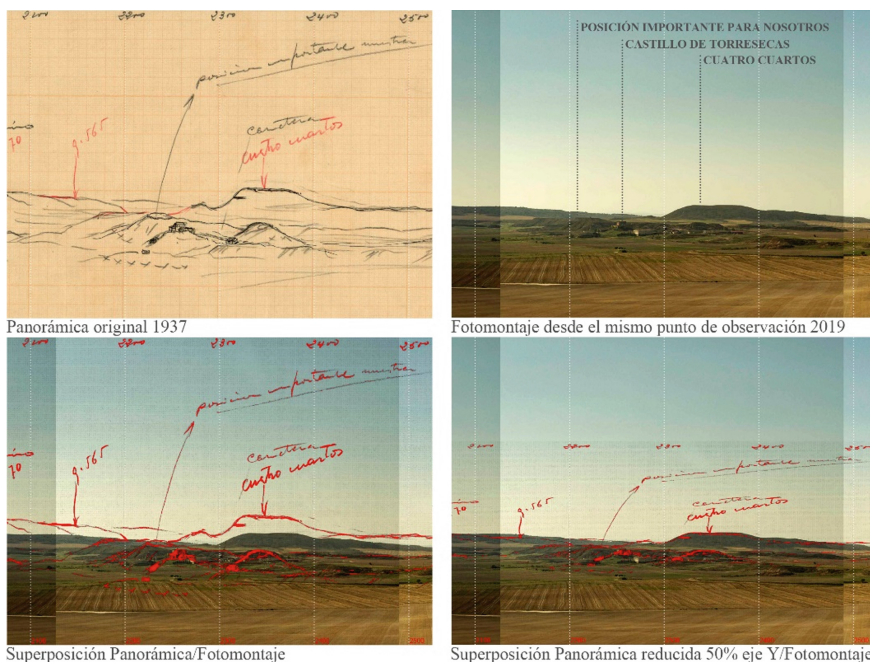
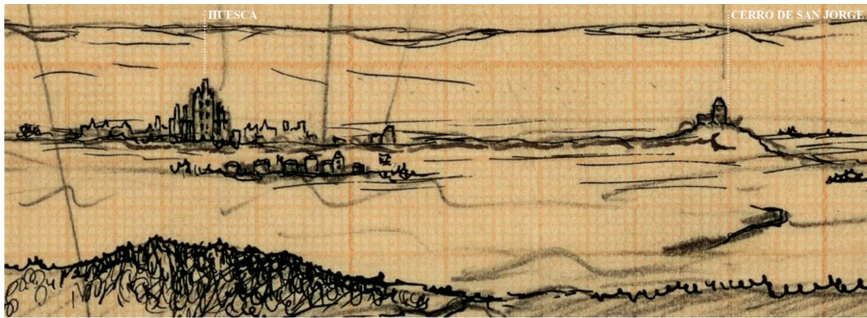


Fig. 8. Comparison of a present-day photograph and the panoramic sketch of Huesca's environs (1938) from the same vantage point. From top to bottom and left to right: panoramic sketch, present-day photograph, superimposition, superimposition on the sketch with a 50% height reduction. Source: created by the authors based on ICGC, E-209658.

First, one can see multiple lines drawn one on top of the other that attempt to define land contours, whereas the lines with no particular direction indicate the volumes. The width, texture, and low intensity of the lines indicate that they were drawn with soft lead pencils, so time has made them appear faint and blurred. One can also see areas that were erased and redrawn.

Second, one can observe fine, precise lines in black ink that define land contours more strongly than do the lines in pencil. This type of line was also used to depict the silhouettes of buildings and the schematic textures of the countryside or vegetation in areas closest to the observer. These ink lines allow the use of depth in the illustration to distinguish different planes and distance elements.



Detalle de Huesca y Cerro de San Jorge en la panorámica original 1937



Detalle de Huesca y Cerro de San Jorge en la actualidad 2019

Fig. 9. Details of the comparison (Fig. 7) for Huesca. Source: created by the authors based on ICGC, E-209658.

Third, the illustration features dotted lines in red pencil that indicate corrections to other lines, join lines that were interrupted, and complete omitted or incomplete labels.

Features that do not change such as the landscape contours that appear at a distance largely concur with those in the photograph, as do the principal features of the main urban centers and the terrain features. However, it is difficult to identify the elements that do change, such as vegetation or the crop fields in the foreground of the drawing. This difficulty is due partly to the difficulty of illustrating a flat surface with the conventions of a line drawing but mostly to how the cultivated landscape has changed over the last 80 years.

Regarding the urban centers, how the most important city in the illustration has changed over the years is clear. Huesca was depicted in the original drawing as a hamlet surrounding the cathedral, with the Hermitage of San Jorge isolated and far from the city, at a distance equal to the length of the capital city itself (Fig. 9). However, the city now extends all the way to the Hermitage, with large sports and health care facilities around the promontory on which it sits, namely, San Jorge Hill. This hill was depicted by the Italian illustrator without vegetation but is now one of the largest and most wooded green areas of the city.

5 Conclusion

The material that was the object of study combines the technical rigor typical of a document that captures an objective reality with the depiction of a reality perceived by the authors of these illustrations. The details in these illustrations result from observing the terrain from a strategic vantage point and focus on elements such as the main city access routes, roads, or the locations of combat trenches. Thus, the panoramic sketches provide subjective information that help present-day observers understand the specific circumstances of the Italian cartographers. The fact that the illustrations made in the field include lines that are not clean and precise and are drawn with multiple, short strokes, indicate the speed at which they were created. The results of the analysis suggest that the illustrator was well versed in topographical methods but had not mastered the visual techniques of line drawing. The disorganized ancillary lines and labels for place names, as well as the calligraphy used, reflect the urgency and uncomfortable nature of fieldwork that had to be completed quickly in inclement weather, both of which facts affected the quality of the resulting drawing. Lastly, specific notations on the drawings aimed at facilitating the planning of war strategies, such as the locations of combat trenches, shelters, and qualitative assessments of certain places, provided valuable information for controlling the territory depicted and today, give these illustrations a unique quality, while leaving them open to the interpretation of those who study them.

The results presented in this article establish connections in the field of cartography between the new technology-based tools and the enduring drawings by hand, revealing the beneficial coexistence of very different techniques used approximately a century apart. However, both attempt to fulfill one of humankind's most deep-rooted needs, the need to be able to situate and orient oneself and understand the resources offered by the surrounding landscape.

Acknowledgments. This work was supported by European Regional Development Fund [grant number S04-17D].

References

Báez, J.M.: Aspectos subjetivos de la representación del territorio en el dibujo y la pintura. EGA expresión gráfica arquitectónica (2), 57–68 (1993)

- Báez, J.M.: El dibujo a línea y la arquitectura. Un idilio interminable. EGA expresión gráfica arquitectónica (15), 36–45 (2010)
- Chías, P.: La representación de la ciudad, del territorio y del paisaje en la revista EGA: mapas, planos y dibujos. EGA expresión gráfica arquitectónica (34), 106–121 (2018)
- Espigares, B.: Leer una imagen. La cartografía urbana y su conocimiento: Vista de Granada de Anton Van den Wyngaerde. Revista Letral (15), 101–117 (2015)
- Montaner, C., Nadal, F., Urteaga, L.: Los mapas en la Guerra Civil española [1936–1939]. Institut Cartogràfic de Catalunya, Barcelona (2007)
- Nadal, F., Urteaga, L., Muro, J.L.: Los mapas impresos durante la guerra civil española [I]: cartografía republicana. Estudios geográficos LXIV (251), 305–334 (2003)
- Oliver, J.C.: La imagen visual del territorio: corografías y panoramas. En: Cabezas, L., López, I.: Dibujo y Territorio. 1ª ed. Cátedra, Madrid (2015)
- Pereda, F., Marías, F.: De la cartografía a la corografía: Pedro Texeira en la España del Seiscientos. Eria (64–65), 129–157 (2004)
- Prats, F.: Conocimientos topográficos para campaña. Defensa Nacional, Madrid (1937)
- Ruiz, A., Temes, R.: La evolución del paisaje a través de TIG. El caso de la comarca de los Monegros, Zaragoza. En: López, M.J., Carmona, P., Salom, J., Albertos, J.M. (eds.) Tecnologías de la Información Geográfica: perspectivas multidisciplinares en la sociedad del conocimiento. Universitat de València, Valencia (2018)
- Silvan Sada, L.: Unas reflexiones sobre la batalla del Ebro. Geographicalia (59–60), 347–356 (2011)