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Archaeological spatial analysis and GIS in a small fortification: Ephemeral occupations along the border during the '*Conquest of Desert*' process in Argentinean Pampas (19th Century)☆

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ABSTRACT

In the following paper we formulate an interpretation about how the space was managed inside a classic 'Fortín', a sort of small fort, which was located in the Argentinean Pampas during the 1860–1870's period. We review the main features of these sites, like the nature of its structures and buildings or the quick abandonment of military positions due to the advancing process in the frontier. As a case study, *Fortín Otamendi* site is a large area (> 2600 sq. m) divided in several sectors where we had detected and confirmed different scatterings of heterogeneous archaeological remains (e.g. fauna, lithics, metals, glasses…), both in the site and its proximities.

Analytical steps in this research on spatial distributions have been developed from free GIS platform (QGIS) and geostatistical methods. Our aims are to establish an efficient fieldwork, to quantify and characterize spatial distributions, and –according the results obtained–, to solve the problem related with building potential locations, for which we have estimated the probability of a structure location in terms of subareas with significantly low-density distributions of remains.

1. Introduction

The following study belongs to the *Archaeology of Conflict*, field which is defined as the study of cultural patterns, human activities and behaviours associated to conflicts, both in Prehistoric and Historical societies (Freeman and Pollard, 2001; Klausmeier et al., 2006; Scott and McFeater, 2011). This broad definition includes many types of archaeological sites: fortifications, detention facilities, mass graves, monumentality, bunkers and battlefields, among others.

In Pampas region of Argentinean Republic, large areas were occupied by indigenous groups that later were subjugated and conquered militarily by the advance of the 'nation state' involved in an incipient *capitalist world market*. This dynamic built a specific landscape: the invasions of Pampas and Patagonian lands entailed a new geographical organization through new military and civilian settlements. This *invasive dynamic* of indigenous territories by different governments settled in Buenos Aires in the second half of the 19th century established a set of military structures called '*Fuertes*' (military forts) and '*Fortines*' (small military forts or fortlets). During the 1860 to 1870[1] decades, '*Fortines*' like Otamendi site were quite small, round-shaped (diameter size: from 20 to 50 m), and surrounded, first by a ditch and then by a wall or a fence to protect the horses. Commonly, inside the round area there was a wooden watchtower called '*mangrullo*', which was an elevated platform with a straw roof; there also were one or two huts for the troops. On the other hand, these military sites were designed with a specific shape and size, usually circular with one or two rectangular buildings, while the average size was around 3000 sq. m., including the stable that housed the horses (Fig. 1).

Usually, that kind of areas had one cannon, mostly used to warn against enemies or dangers rather than fight the indigenous people. According to their importance, these small settlements housed from 20 to 50 soldiers. Finally, these structures were functional until the reassigned area would be pacified (Walter, 1964). Once the area was pacified, all mobile structures and reusable materials (e.g. wooden fences)

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[1] Between 1878 and 1885 in Pampa and Patagonia territories, a series of military campaigns and actions were carried by the Argentinean Army against diverse Indian peoples. Those campaigns are historiographically known as '*Conquest of Desert*'. Their results were the genocide of several ethnic groups and the complete State control of the territories.

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Fig. 1. Recreation of ideal *Fortín*. Structural elements like buildings; *margullo* and ditch. Picture from A. Gómez Romero.

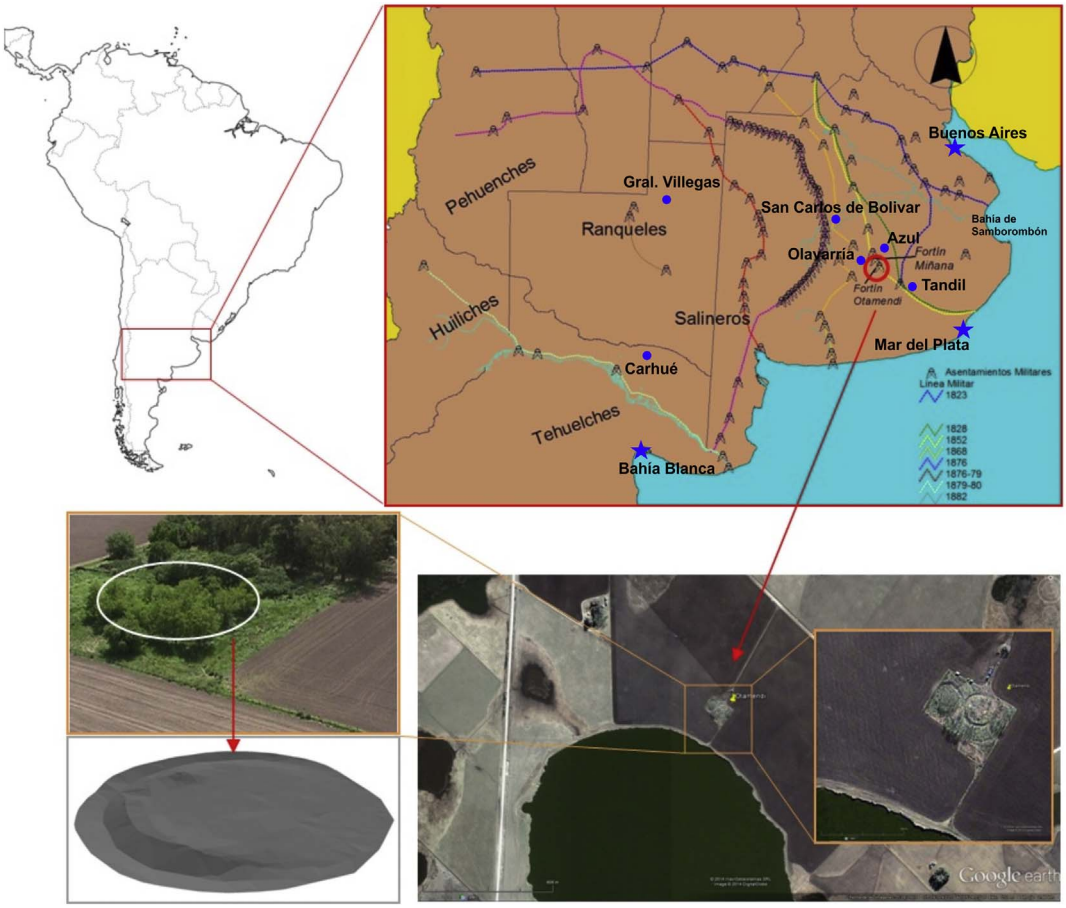

Fig. 2. At the top, location of *Otamendi* site (in red circle) and advancing border line into Indian territories (1823–1882) (Salminci et al., 2009). At the bottom, pictures with aerial details (Google Earth) and 3D surface model of site (white circle on the left). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

were removed to the next location in the advancing border frontline (Ebelot, 1968: 82) (Fig. 2).

The dynamics and conflict of the border spaces constitute a fertile field for the investigation of different disciplines of the Social sciences, such as History, Ethnohistory and Archaeology. Archaeological-historical research carried out in settlements located in the Argentinean southern border against the indigenes has begun to proliferate since the mid-nineties of last century. Military forts and fortlets, located in the present provinces of Buenos Aires, Mendoza, Córdoba and La Pampa, were studied by several researchers (Gómez Romero and Ramos, 1994; Austral and Rocchietti, 1997; Gómez Romero, 1999; Tapia, 1999; Lagiglia, 1991; Leoni et al., 2007; among others). Their productions were interesting contributions that enriched the general and particular knowledge in relation to a chronologically close past, but distant and diffuse in the collective imaginary of Argentine society (Landa, 2011).

The most common material evidences in these kinds of sites are visible topographic changes, a set of concentrated remains in some areas and intentional empty spaces in others (both associated with different social actions). According to that, these sites have a particular post-depositional and taphonomic process: buildings inside the fort had no foundations, and their walls were made of mud ('*adobe*'), using the earth and sands coming from the excavated ditch. Thus, when that kind of structure is abandoned, it collapses and returns to the sedimentary matrix, leaving no traces behind, the building limits fade and become fuzzy. This formation process makes it very difficult to locate any trace of structures that were extensively documented in written sources and