Los emplazamientos topográficos de poblados durante el Tercer Milenio A.C. en la Europa Occidental: Líneas comparadas entre Cataluña y la Provenza

Topographic locations of settlements during the third millennium BCE in Western Europe: comparing trends in Catalonia and Provence

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Abstract
In several European regions, an abrupt change in settlement pattern dynamics was thought for years to be contemporaneous with the spread of the Bell Beaker phenomenon. The aim of this paper is to propose a comparative analysis on topographic locations based on third millennium BCE settlements in two nearby Mediterranean regions: Catalonia (northeast Spain) and Provence (southeast France). These domestic establishments contain a significant amount of Bell Beaker pottery, amongst other artefacts, which balances its classical renown in sepulchral environment. Questioning the presence of these specific remains in these domestic deposits, the Bell Beaker overlapping the various local traditions, still appears as a crucial issue. The study reveals some changing trends in settlement choices for the Late Neolithic/Early Bronze Age transition in these two North West Mediterranean regions, but underlines at the same time, the lack of reliable classification frameworks to produce any historical discourse about the spread of Bell Beakers.

Keywords: Topographic locations, late third millennium BCE, Bell Beaker, Catalonia, Provence

Résumé
Dans plusieurs régions européennes, on a longtemps pensé qu’un changement abrupt s’était produit dans les dynamiques de peuplement avec la diffusion du phénomène campaniforme. Le but de cet article est de proposer une analyse comparative des implantations topographiques des gisements du troisième millénaire av. n. è., dans deux régions méditerranéennes voisines : la Catalogne (nord-est de l’Espagne) et la Provence (sud-est de la France). Ces établissements domestiques présentent une quantité significative de céramiques campaniformes, parmi d’autres artefacts, ce qui relativise sa renommée classique en contexte sépulcral. En questionnant la présence de ces vestiges spécifiques dans les habitats, le Campaniforme, imbriqué dans les différentes traditions locales, se pose toujours comme un problème majeur. L’étude révèle des tendances changeantes dans les choix de peuplement pour la transition entre la fin du Néolithique et l’âge du Bronze ancien, dans ces deux régions de Méditerranée nord-occidentale, tout en soulignant l’absence de cadres de classification fiables permettant de produire un discours historique sur la propagation du Campaniforme.

Mots-clés: Emplacement topographique, fin du troisième millénaire avant notre ère, Campaniforme, Catalogne, Provence.

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INTRODUCTION

In the literature, the Bell Beaker is usually embodied by the figure of the warrior, especially through the grave goods such as decorated Bell Beaker ceramics, copper dagger, barbed and tanged arrowheads, bowman wrist-guard element, V-perforation buttons. However, the Bell Beaker does not reflect a monolithic cultural “identity” but rather a real social mix at regional level that involves constant interactions between collective and individual representations.

The spread of the Bell Beaker in Late Neolithic Europe provides one of the most puzzling examples about settlements patterns and changes in site location choices across the landscape during the third millennium BCE. Indeed, this spread across central and western Europe is frequently perceived as a global and dramatic change marking the transition between the Late Neolithic and the Early Bronze Age, like the recent results of genetic studies have revealed the great mobility of Bell Beaker people (Haak et al., 2015; Olalde et al., 2018).

However, it is imperative to adopt a more balanced vision as there is also widespread evidence of continuity in the material culture of Bell Beaker regional groups throughout western and central Europe. For instance, generally speaking, except in Hungary, it can be said that there is no typical Bell Beaker architecture model: in fact, there is a so great variability in domestic constructions, that it can be compared with the diversity found in the common Bell Beaker ceramics (Besse y Desideri, 2005; Vander Linden, 2006: 166). When architecture recorded in settlements with Bell Beaker, the Bell Beaker groups either used earlier architectural solutions or re-used old constructions.

In this paper, we develop a basic comparative approach of topographic locations in two similar regions of the north-western shore of the Mediterranean: Catalonia, in northeast Spain and Provence in southeast France. Both regions provide sufficient data and site lists and several authors have already showed the likeness of Bell Beaker ceramics from Catalonia and Provence (Courtin, 1974; Guilaine, 2004; Lemercier, 2004)

1. PRELIMINARY ASSESSMENTS OF THE “BELL BEAKER“ IN THE MEDITERRANEAN SOUTH-WESTERN EUROPE

1.1. A still misunderstood emergence and propagation

First, it is important to consider some preliminary assessments of the Bell Beaker in Mediterranean southwestern Europe. Beyond its well-known late third millennium BCE material culture (inverted bell-shaped profile pottery, copper daggers, “wrist-guard archer”, barbed and tanged arrowheads and V-perforated buttons), the emergence and the spread of the Bell Beaker are still widely misunderstood. In spite of the development of a comprehensive set of analytical methods for the study of Bell Beaker material (decorated ware, common ware, pottery techniques, etc.), the question of the propagation of this material culture across Europe has become increasingly complex and the origin of the “phenomenon” still is a highly debated question since more than a century.

However, it seems obvious that, to some extent, the spread of the Bell Beaker entails the movement of people. Since the end of nineteenth century, the Bell Beaker has been considered as a “dynamic phenomenon” and several theories have been advanced, based on different scales of mobility, summed up well by R. J. Harrison (1974). As L. Salanova (2003) recalls, researchers focused mainly on the origins of this European phenomenon, some of them suggesting an Iberian Peninsula homeland, others preferring an origin in the Netherlands. At the present time, while the traditional theories about Bell Beaker migrating populations carrying and diffusing innovations such as copper metallurgy have been put aside, current interpretations highlight putative mobility networks fuelling the spread of the Bell Beaker throughout Western Europe (Pearson et al., 2016: 634) and accounting for population renewal in Southern France, Hungary and Switzerland from the Iberian Peninsula (Price et al., 2004; Desideri y Besse, 2010, Desideri, 2011: 159-168). As the recent paper of I. Olalde et al. (2018) points out, “even at local scales, the Beaker complex was associated with people of diverse ancestries”.

Another problematic point is the existing chronological framework: in general, it is difficult to claim that the typological sequences are valid when checked at the stratigraphic and chronologic levels. In Bell Beaker sites in the southeast of France and Catalonia, sherds from a single layer sometimes include all the pottery types from the classical Bell Beaker typochronology published thirty years ago (Guilaine, 1984), and thus can neither be assigned to a reliable stratigraphic context nor confirm present-day chronologic classifications. In North-Western Europe, particularly in the Iberian Peninsula, P. Ríos Mendoza (2011) deplores the scarcity of dating in Chalcolithic domestic contexts and the lack of well-defined vertical
stratigraphy sites. Moreover, “in the majority of the Galician deposits in which the Bell Beaker appears, there is a mix of styles from the middle of the third millennium BCE” (Ríos Mendoza et al., 2011-2012: 199). In addition, in Galicia, the study of the stylistic tendencies of the Bell Beaker collections leads M. P. Prieto Martínez to conclude that each of the four identified tendencies are found between 2800-2600 and 1600-1400 cal BCE and that “neither the typologies used nor the ceramic variants are indicative at the chronological level” (Prieto Martínez, 2011: 358).

For that reason, in Provence for example, on a corpus of 86 Bell Beaker sites (Fig. 1; Fig. 2), only 20 % have a clear stratigraphic context, that is to say, a documented and reliable context or from a strict closed set (interest of data available Level 4 or 5, from O. Lemercier, 2004). 45 % of Provencal Bell Beaker sites have a confused stratigraphic context, that is to say, a documented context with mixing possibilities (interest of data available Level 3, from O. Lemercier, 2004). And finally, 35 % have an uncertain stratigraphic context, that is to say, an uncertain Bell Beaker attribution, localization or attribution problems or marginal presence (interest of data available Level 0 to 2, from O. Lemercier, 2004).

The question is even more disconcerting when we take into account the occurrence of Late Neolithic artefacts. In fact, the archaeological remains from many late third millennium BCE settlements in Catalonia and the South of France generally seem to belong to the same unclear archaeological strata. For instance, we have to note that the major part of the stratigraphic information at La Fare (Forcalquier, Alpes-de-Haute-Provence) is still misunderstood and has not been yet published. Some archaeological structures considered as part of a large dwelling are quite unusual and the Bell Beaker occupation is attested by an interesting but very unconventional single burial (Lemercier et al., 2011).

Fig. 1. Map of the third millennium BCE selected sites for Provence region (southeast France). The numbers match with Fig. 2.
Fig. 2. Selected sites of the third millennium BCE in Provence region (southeast France).
If the habitats are now better known thanks to the last years’ discoveries in several places in Europe (Besse et al. 2007), the data concerning the Bell Beaker architectural elements remains tenuous and very diverse and no specific Bell Beaker house model cannot be defined (Lemercier, 2004: 413; Vander Linden 2006: 166). Furthermore, marked variability in funerary practices (individual or collective burials) in South France would be linked to the persistence of local traditions (Lemercier y Tchérimissinoff, 2011), as well as the important variability of regional Bell Beaker decorated ceramics.

There is no doubt that culture and traditions could be expressed, exposed and flaunted through ceramic material and burials, but we might argue that the cultural values and practices (ethos) could also be transmitted by settlement forms and types. As A. Coudart (1999) wrote: the analysis of domestic settlement structures (topography, surface, orientation, partition, landscape) could allow us to grasp the “identity substance of all communities”. Here, we would focus on a single topic: the dynamics of the topographic locations of the Bell Beaker dwellings in comparison to contemporaneous non-Bell Beaker groups.

These aforementioned considerations lead us to ask exactly what these Bell Beaker domestic settlements are. Should all archaeological sites with some Bell Beaker sherds be considered as Bell Beaker settlements? If not, how can we objectively differentiate “Bell Beaker sites” from “sites with Bell Beaker”, when most of the time we only find mixed material from late third millennium BCE cultures?

1.2. Bell Beaker settlement relocation in Europe

While we cannot answer these questions directly, the reality of Bell Beaker settlement relocation must be assessed. Evidence of this phenomenon is scant and limited, for instance, to the European regions of Spain (Valencia and Central Meseta), Budapest (Hungary) and the north-western Alpine foreland (Switzerland). Bell Beaker sites seem to circumvent places previously occupied by local groups. In fact, according to the study by C. M. Barton et al. (1999 ; 2002) in Alto Polop Valley (Valencia, Spain), the extensive Neolithic IIIB sites enclosed by ditches in valleys are located near the best farming soils whereas the Bell Beaker sites are installed on valley sides or on hill tops. In the Central Meseta (Spain), 67 % of the settlements with Bell Beaker artefacts occupy more or less prominent locations in the landscape, with a wide visual control of the environment, and especially the meadows of the rivers, features perhaps less pronounced in the Neolithic and even clearer in the Bronze Age (Garrido Pena, 2000: 47). In the Budapest region, Makó Culture settlements are mostly located in small valleys and plains whereas the Bell Beaker settlements are better represented along the Danube River (Kalicz-Schreiber, 2001). Finally, in the north-western Alpine foreland, in spite of a positive correlation between the density of archaeological sites and warmer periods (Pétréquin et al., 2005), no Bell Beaker lake dwellings are known (Magny, 1993 ; Magny, 2003 ; Magny, 2004). Indeed, the end of lake dwelling traditions in this region provided an accurate description of a rapid and major phenomenon leading to complete relocation in less than a century. The origin of this relocation pattern remains unknown and the obvious need for protection against raids and attacks may be challenged by other explanations. Nevertheless, such a change in traditional patterns must also entail important social and economic repercussions.

For the southeast of France, these questions have already been mentioned by some scholars. While J. Courtin (1974) notes the importance of rock shelter settlements for regional Bell Beakers, he did not reject the possibility of seasonal tableland villages, while the regional non Bell Beaker dwellings tend to display the opposite pattern. Later, A. D’Anna (1995) suggested that small sites belonging to regional Bell Beaker entity were located in:

- remote places such as Les Calades (Orgon, Bouches-du-Rhône) (Barge, 1989), or with narrow access structures, such as Le Col Saint-Anne (Simiane-Colloque, Bouches-du-Rhône) (Müller, 1989), Le Fortin-du-Saut (Châteauneuf-lès-Martigues, Bouches-du-Rhône) (Gagnière, 1972) and Château-Virant (Laçon-de-Provence, Bouches-du-Rhône) (Lafranè et al., 1983);

These settlements located on the fringes of good farming soils (i.e. on “second choice” locations), would tend to demonstrate that “first choice” locations were already inhabited by local groups (D’Anna, 1995). O. Lemercier (2004) noted that sites with Bell Beaker International styles ceramics tended to be settled on slightly elevated places whereas sites with regional Bell Beaker wares (Rhodano-Provencal style) showed a more even distribution among plains and elevated locations.

1.3. Research goal

Therefore, it was appropriate to evoke a possible relocation of Bell Beaker settlements in Catalonia and in the southeast of France, in comparison with the evolution of settlement choices during the Late Neolithic/Early Bronze Age transition. More specifically, it is possible to identify topographic characteristics in the location of settlements with Bell Beaker ceramics in comparison with non Bell Beaker traditions. On what basis can we differentiate “Bell Beaker sites” from “sites with Bell Beaker”? We also address this problem from a quantitative viewpoint and attempt a comparative approach between Catalonia and the South of France.
2. A COMPARATIVE APPROACH FOR TOPOGRAPHIC CHOICES

2.1. METHOD

2.1.1. DATABASES AND SOURCES

For our Catalan database, we browsed the old “Base de Dades Radiocarbònique de Catalunya” website (now the archaeological Database of the Catalan General Directorate of Archives, Libraries, Museums and Heritage website) to gather our own database. This allowed us to select fairly well-known, dated and located settlements, with a sample of 39 sites attributed to the whole of Late Neolithic/Early Bronze Age transition (Fig. 3; Fig. 4). Actually, the chrono-cultural framework for Catalan Late Neolithic is hardly informative as A. Martín Collíga (2003) notices. Some local ceramic sherds with nipples and smooth bar-shaped handle, sherds with Bell Beaker ornaments or barbed and tanged arrowheads allow to situate *grosso modo* the period, but more concretely, it is difficult to know if, chronologically or technologically, we are faced with the ends of Neolithic or already in the Chalcolithic (Martín Collíga, 2003). Only 36% of our corpus (14 sites) shows Bell Beaker elements: 9 sites present Pyrenean style (regional Bell Beaker), 4 sites own Barbed Wire style and 3 have indeterminate Bell Beaker style.

![Map](image)

Fig. 3. Map of the third millennium BCE corpus for Catalonia region (northeast Spain). The numbers match with Fig. 4.

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3 http://invarque.cultura.gencat.cat/
For our Provencal database, we selected a sample of 103 sites, attributed to this same transition, from three essential academic works (Fig. 1; Fig. 2): the corpus of O. Lemercier (2004) for the Bell Beaker sites, of J. Cauliez (2009) for the Late Neolithic sites and of the D. Dubesset (2003) for the Early Bronze Age sites. Using the most recently established chrono-cultural framework for Provencal Late Neolithic, we selected a sample of 14 sites belonging to the first phase (around 2900-2850/2600-2550 cal BCE), 29 attributed to the second phase (around 2600-2550/2400-2350 cal BCE), 6 to the third phase (around 2400-2350/1900 cal BCE) and 49 to the Early Bronze Age (after 1900 cal BCE). On this corpus, 84% (86 sites) have Bell Beaker elements: 29 sites present International and derivatives styles, 59 sites own Rhondano-Provencal style and 29 sites have Barbed Wire Style. In relation to the hypothetical Bell Beaker typo-chronology, by O. Lemercier (2007), International and derivatives Bell Beaker styles would appear between 2500 and 2400 cal BCE, Rhodano-Provencal Bell Beaker style between 2400 and 2300 cal BCE and Barbed Wire Bell Beaker style between 2200 and 2100 cal BCE.

Considering this distribution, we decided to compare the evolution of Late Neolithic settlement location, in Catalonia and Provence. In the two cases, however, bearing in mind the question of the Bell Beaker chronology, one of the main challenges was to distribute the settlements within a well-defined and accurate chronological and cultural framework.

Geographic coordinates of Catalan sites were collected on the old “Base de Dades Radiocarbònique de Catalunya” website. For each Provencal site, we intersected the GIS database of Regional Service of Archaeology Provence-Alpes-Cote-d’Azur (PATRI-ARCHE) with the archaeological reports, to retrieve the geographical coordinates. It is important to note that the reliability of these coordinates and therefore of the assigned topographic positions is limited due to the fact that these data were recorded using different techniques (reading of topographic maps, use of GPS, etc.), and may include errors and falsified coordinates. To limit the biases due to these geographic coordinates, we have generated a circle of 500 meters in diameter around the habitats, using a basic GIS procedure. These restrictions have led us to use simple percentages and Ford Battleship diagrams, which should be interpreted very cautiously. We are aware of the distortion problems with this diagram: for instance, the third Late

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6 This is the most recently established chrono-cultural framework, detailed in the PhD work of J. Cauliez (2009). It has been checked by new datings and by statistical multivariate analyses and it has been published in 2011 (Cauliez, 2011) with some modifications concerning the phases’ name: phase 1 corresponds to horizon 2, phase 2 to horizon 3 and phase 3 to horizon 4.
Neolithic Phase, consisting of six archaeological dwellings, will obviously be over-represented in comparison with the other phases.

2.1.2. Geographical specificities

A similar geography and environment and the obvious sea-mountain opposition pattern made this comparative approach between Catalonia and Provence relevant for our purposes. In fact, these two regions are mainly made up of intertwined and similar reliefs (Deffontaines, 1960): old coastal massifs (Esterel, Maures for Provence and Tibidabo, Montnegre for Catalonia), young and high orogeny (Provence backs onto the Alps and Catalonia onto the Pyrenees), and low proportions of continental plains and narrow strips of plain along the Mediterranean Sea. In both regions, these distorted landscapes present problems for the hydrographical systems, even if both regions are crossed and limited by a huge river (the Rhône in Provence and the Ebro in Catalonia). However, whereas the Rhône is clearly a true communication axis to the northern part of France, in spite of its length the Ebro badly serves the surrounding areas.

On the one hand, Catalonia is globally articulated according to several relief units: the Pyrenean area, the Central Depression and finally the Mediterranean System. The Pyrenees is undoubtedly one of the most important relief units in Catalonia, where the Axial Pyrenees concentrate the highest altitude (around 3000 m) and the pre-Pyrenees constitute a more accessible parallel chain which decreases until the Central Depression. The Central Depression is stuck between the Pre-Pyrenees and the Mediterranean System with a staggered succession of plateaus (between 800 and 100 m). In the Mediterranean system, pre-coastal Cordillera, pre-coastal Depression, coastal Cordillera and coastal Plain follow one another in parallel strips, from the Central Depression to the seaside.

On the other hand, Provence also presents a great variety of reliefs, climates and substrates, divided into five units: the Southern Alps, Upper and Lower Provence, coastal plains and crystalline Provence. The Southern Alps peak at over 4100 m with its high mountain ranges in the north and then go down eastwards to the Mediterranean Sea. Upper and Lower Provence constitute a structured and fragmented central zone by a succession of tablelands and dry mountains, between 1000 and 2000 m. The coastal Plains border the Mediterranean and the Rhone and receive in the south the Crystalline Provence, area of old massifs, volcanic or compartmentalized, with acid and eroded soils.

Taking into account the similarity of both regions, the same methodology can be used in Provence and in Catalonia and a topographic typography has been employed to describe the location of the establish-ments. An elementary Geographic Information System procedure on ArcGis 10 was implemented to create this topographic typography. The paper focuses only on this variable. We have considered that the “site location” corresponded to a circle of 500 meters in diameter around the habitat. Through geographic coordinates, Digital Elevation Models and the creation of buffer of 500 meters in diameter, we collect geographic data about the location area of each sites: we crossed the digital data of the transversal mean curvature and the longitudinal mean curvature of the slopes, to generate the topographic typography. For a better understanding, we convert these digital data to qualitative data, to get five different terms (Fig. 5): clear prominence, valley, minor prominence, hillside and plain.

2.2. Results

2.2.1. Catalonia

Firstly, we can note that on 39 Catalan sites, 50 % are located below the altitude of 280 m and the 50 % remaining, above this altitude.

Secondly, the results for Catalonia show a slight evolution in the settlement dynamics trends between the Late Neolithic and the Early Bronze Age (Fig. 6A). Indeed, the Late Neolithic seems to be characterised mostly by locations in valleys (43 %), then in plains (26 %) and on hillsides (22 %). The sites with Bell Beaker are found for the most part in plains (50 %). The Early Bronze age establishments are mainly located in plains (46 %) and to a lesser extent on hillsides (23 %) and in valleys (15 %). If it is difficult to assess the importance of Bell Beaker settlement relocation, given that there were only fourteen sites, in comparison with the Late Neolithic context, a substantial change seems to emerge at the end of third millennium BCE.

Finally, we can see that the choice of clear prominences and of hillsides is stable all along the observed period (Fig. 6B), the choice of valleys is strongest during the Late Neolithic and the choice of plains prevails during the end of third millennium BCE. Minor prominences seem to be specific of sites with Bell Beaker.

However, these comments must be treated with caution as this may result from our data patterning and from the lack of information for some periods.

2.2.2. Provence

Firstly, we can note that on 103 Provençal sites, 50 % are located below the altitude of 228 m and the 50 % remaining, above this altitude.

Secondly, at first glance, the results for Provence seem to present a great homogeneity in topographic choices between Late Neolithic sites, sites with Bell Beaker and Early Bronze Age sites (Fig. 7A y B). Nevertheless, the choice of location in plains is globally higher during the Late Neolithic phase in Provence.
Indeed, during the first Late Neolithic phase, preferred locations correspond to minor prominences (36%) and plains (36%) (Fig. 8A). This trend seems to continue during the second Late Neolithic phase with respectively 31% and 28%, but the clear prominences become significant (24%). The third Late Neolithic Phase settlements appear to be located mostly in plains (50%) but this result is biased by the meagre quantity of dwellings dated to this phase (six sites). The topographic distribution of Early Bronze Age settlements seems to be more homogeneous, with a slight predominance of clear and minor prominences and of plains (22% for each location type); the remaining sites are located in valleys and on hillsides (16% for each location type). Moreover, on the second graphic version (Fig. 8C), minor prominences positions appear to be globally characteristic of the first Late Neolithic Phase (36%) and the plains positions, specific to all Late Neolithic Phases and Early Bronze Age; the clear prominences positions are not negligible during the second Late Neolithic Phase (24%) and the Early Bronze Age (22%).

Finally, as regards the Bell Beaker case, the situation appears to be slightly different (Fig. 8B). Dwellings with Bell Beaker International styles, supposedly contemporaneous with the second Late Neolithic Phase, appear to be mostly situated on clear prominences (38%), and to a lesser extent, on minor prominences (17%) and plains (17%). Bell Beaker Rhodano-Provencal style settlements are mainly found in valleys (24%) and plains (24%), then in minor prominence (19%) and hillsides (19%). A topographic distribution quite similar to the Early Bronze Age can be attributed to the dwellings with Barbed Wire Bell Beaker type ware: minor prominences are predominant (31%) and then clear prominences (21%). Here again, even if the second graphic version (Fig. 8D) shows that all topographic positions are used for sites with Bell Beaker, some of them are more characteristic of one Bell Beaker style than others. The clear prominences are clearly specific to the Bell Beaker International styles and the minor prominences to Bell Beaker Barbed ware style. Valleys, hillsides and plains are slightly in majority for the Bell Beaker Rhodano-Provencal style.

The main result is that the emergence of Bell Beaker during the second Late Neolithic Phase does not seem to have any significant effect on Late Neolithic settlement pattern dynamics. In fact, we can

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**Fig. 5.** Topographic typology used in the study (transversal and longitudinal curvature crossed).
see that topographic traditions of the first Late Neolithic Phase persist with locations on minor prominences and plains. As only six dwellings belong to the third Late Neolithic phase, it is impossible to detect the real impact of Bell Beaker presence on it. However, we observe a sensitive change in Bell Beaker Rhodano-Provencal style with a transition from the clear prominences to the valleys and plains. Last but not least is the observation that, in spite of a dominance of minor prominences in favour of sites with Barbed Wire Bell Beaker ware, the transition to the Early Bronze Age shows a more balanced occupation of all topographic locations. In this way, according to the available data, we cannot weigh the real impact of Bell Beaker presence on non Bell-Beaker settlements.

2.3. Comparisons

Globally, despite common ecological features and some similar geographical settings in both regions, it is difficult to carry out a reliable comparison for the spread of the Bell Beakers in Catalonia and Provence, from a topographic point of view.

If we compare topographic results for Late Neolithic between Catalonia and Provence, using a Fisher’s exact test’ (p-value = 0.003 < 0.05), we can say that there is a statistic significant relation

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7 The “Fisher’s exact test” corresponds to the “Khi-square test” but it adjusts to small effectives (equal to 5 individuals or under).
between the geography of sites (Catalan or Provencal) and their topographic position. So, we can argue that Late Neolithic Catalan sites tend to be settled in valleys, hillsides and plains, whereas Late Neolithic Provencal sites tend to be located in plains and on minor and clear prominences.

But now, if we compare topographic results for sites with Bell Beaker, between Catalonia and Provence, using a Fisher’s exact test (p-value = 0.38 > 0.05), we can say that there is not a statistic significant relation between the geography of sites (Catalan or Provencal) and their topographic position. So, we cannot interpret the difference in topographic choices between Catalan and Provencal sites with Bell Beaker. It seems to be the same for Early Bronze Age sites (Fisher’s exact test with p-value = 0.37 > 0.05): it is impossible to compare the tendencies of Early Bronze Age topographic choices between Catalonia and Provence.

To sum up, topographic choices are significant for the Late Neolithic in Catalonia and Provence, but not for the sites with Bell Beaker and for the Early Bronze, whatever the geographic region. Do these results express dynamics of change (like stress or disequilibrium) during the Late Neolithic–Chalcolithic transition, just before Bell Beaker emergence? Would this be related to a demographic pressure? The population growth used to be evocated by many researchers to explain the changes in settlement pattern and in social hierarchy in the late prehistoric societies. In our study, the non-significant results for the location of sites with Bell Beaker and of Early Bronze Age could show that

Fig. 7. Topographic choices for the third millennium BCE in Provence.
Fig. 8. More detailed settlement patterns dynamics for the third millennium BCE in Provence.
our samples are not representative of the demographic intensity of these phenomena and their capacity to take up a large range of ecological niches. But, it could also reveal a more drastic variability in the settlement pattern choices of north-western Mediterranean at the ends of third millennium BCE and some complex intercultural mixes. But could not this cultural and/or demographic variability owed to the natural variability of the regional topographies?

3. DISCUSSION

3.1. An indecipherable historical dynamic

This comparative survey highlights the difficulties involved in drawing up a comprehensive and reliable comparison of settlement trends in Catalonia and Provence. As seen above, it has only been possible to shed light on some global trends during the Late Neolithic/Early Bronze Age transition, the main obstacle being the compatibility between Catalan and Provencal chronologies. However, other problems undoubtedly stem from data patterning and the biases due to coordinate and topographic recording errors. It also appears that our study is primarily hindered by the chronological frameworks used, and we believe that it is still difficult to reason in terms of historical dynamics without a well-founded corpus of stratigraphic evidence and a solid and reliable chrono-typological framework for the Bell Beaker, elements still lacking today. It may be easier and more relevant to work with broader chronological frameworks and to advance several scenarios for Bell Beaker material culture, bearing in mind the four chronological model propositions, such as succession, contemporaneity, simultaneity and extension models already brought to light by archaeological fieldwork (Fig. 9).

Obvious objections may be raised as to the validity of this outlook, but another solution could be to distinguish “Bell Beaker settlements” from “settlements with Bell Beaker”. For this reason, we attempted to divide our Provencal sample into “Bell Beaker sites” and “Sites with Bell Beaker” based on selected variables, i.e., an explicit list of easily identified material culture items in the archaeological record (essential types used in Clarke, 1970, Appendix 3.2): Bell Beaker decorated ware, Bell Beaker common ware, Late Neolithic ware, barbed and tanged arrowhead, long flint blade, nail-

Fig. 9. Four propositions of chronological models.
shaped flint scraper. The Fig. 10 sums up the dichotomy observed in the Bell Beaker domestic assemblages in Provence, between “Bell Beaker sites” and “Sites with Bell Beaker”. Following these criteria, it transpires that only 20% of the Provencal sites can be considered as “Bell Beaker sites” (Fig. 2), exposing the difficulties involved in estimating Bell Beaker impact on local settlement pattern traditions and showing that narrative interpretations are somewhat tenuous.

3.2. Dealing with contemporaneity in Provencal domestic contexts: a handful of possibilities

We now know that the theory of succession model (whereby Bell Beaker would be totally posterior to regional cultures) in Mediterranean regions is not true everywhere (Guilaine et al., 2001) and a more accurate scenario is thus required. Material culture items (hybrid artefacts) from mixed traditions have been discovered in southern France (Haydenet al., 2011), such as grog tempered pots of Bell Beaker typology, as grog is not part of Mediterranean pottery traditions from the Earlier Neolithic onwards. Another example is the occurrence of Fontbouisse shaped pots bearing Bell Beaker decorations (Convertini et al., 2004). No “ready for use” historical process can be taken for granted. Diversified and accurate scenarios are required to encompass the whole material record, as D. L. Clarke (1976) did. They must be critically investigated and compared. Our aim here is not to pretend to be exhaustive in terms of possible readings, but to propose an opening to a more nuanced reflection. In the following paragraphs we outline three classical scenarios based on ethnographic observations and archaeological contexts from southwest Europe. Then, we attempt to match the data for the Bell Beaker dwelling sites in the Provence region to each scenario.

3.2.1. Scenario 1: Beaker settlement on a Late Neolithic dwelling (Reoccupation Scenario)

In the Mediterranean area, late Holocene stratigraphic records are often altered by very strong post-depositional processes that remain under-investigated. These geoarchaeological phenomena can erase a succession of archaeological occupations spanning a couple of centuries. They usually provide archaeologists with a thin archaeological layer with several mixed and badly preserved material culture traditions.

Moreover, some archaeological sites in Western and Central Europe provide clear examples of occupations from the Late Neolithic period (prior to the Bell Beaker period) and the Bell Beaker period. The most extensively investigated and published funerary con-

Fig. 10. Proposition to differentiate “Bell Beaker sites” from “Sites with Bell Beaker” in Provence.
Ceramic ethnoarchaeology for instance, clearly shows in material culture practices is reduced or irrelevant. Provided but, in most cases, the reification of identity Ethnographic and ethnohistorical illustrations can be material culture traditions and social identity overlap. It also implies that material culture sets within a sufficiently short period archaeologists can distinguish two or more different and methodological prerequisites. It means that European archaeologists regardless of the theoretical occupation after a Late Neolithic phase, such as Le France, several sites reveal a specific Bell Beaker reoc-
tic contexts, this diachronic relationship between two material culture sets (Pre-Beaker and Beaker) is provided by the Los Millares (Sante Fe de Mondújar, Almería) fortifed site in southern Spain. The largest extension of this settlement belongs to the late fourth millennium BCE while the Bell Beaker phase is restricted to a smaller part of the site (Millán Ramos Millán, 1981 ; Molina González et al., 2004; Ríos Mendoza et al., 2011-2012). In Leceia (Oeiras, Portugal), beyond the enclosing wall, a dwelling unit contains most of the Bell Beaker material culture (Cardoso, 1997-1998 ; Cardoso, 2001). We can add too the case of Valentina de la Concepción (Sevilla, Spain), a huge domestic and funerary site, where the most of Bell Beaker ceramics are recorded in a single structure that appears to have been previously sealed by ritual deposition of human remains (Inácio et al., 2017). This scenario may have been common but is often barely visible in the archaeological record, particularly with early excavations standards.

This first scenario corresponds to establishments where the stratigraphy shows reoccupation above an earlier occupation (Fig. 11, top). In the South of France, several sites reveal a specific Bell Beaker reoc-
contacts, such as in Concise Sous-Coulachoz (Vaud, Switzerland) (Burri, 2007) and Boussargues (Argeliers, Hérault, France) (Colomer et al., 1990). In Concise, a recently excavated lake dwelling, the den-
dated waterlogged wood offers a very interesting pattern of spatial organization in one of the dwelling phases from the 4th millennium BCE. The timber

3.2.2. Scenario 2: two populations share the same region with distinct and separated material cultures and dwelling patterns (Contemporaneity scenario)

This scenario is commonly accentuated by European archaeologists regardless of the theoretical and methodological prerequisites. It means that archaeologists can distinguish two or more different material culture sets within a sufficiently short period of time to infer that they are related to different contemporary social or ethnic groups. It also implies that material culture traditions and social identity overlap. Ethnographic and ethnohistorical illustrations can be provided but, in most cases, the reification of identity in material culture practices is reduced or irrelevant. Ceramic ethnoarchaeology for instance, clearly shows

3.2.3. Scenario 3: populations with different material culture sharing the same living space (Simultaneity scenario)

The third scenario is less common and less clear in archaeological sites but no less interesting. The following examples show that a site with specific traditions can include a domestic unit of another tradition or a domestic unit embodying the two different traditions (Fig. 11, bottom) and have been interpreted as shared living space for different contemporaneous social groups.

On the one hand, this cohabitation situation can be observed, in other south-western European Neolithic contexts, such as in Concise Sous-Coulachoz (Vaud, Switzerland) (Burri, 2007) and Boussargues (Argeliers, Hérault, France) (Colomer et al., 1990). In Concise, a recently excavated lake dwelling, the den-

lization of the relationships between ceramic production and use and the multidimensional nature of cultural identity.

Despite the complexity involved, this scenario has been advocated by archaeologists in several cases in Western Europe: Cerny vs Rössen, Chasséen vs Michelsberg, etc. for the 5th and 4th millennia BCE. One of the most convincing cases is the opposition between the lake dwelling cultures and Alpine culture in Western Switzerland. Dozens of lake dwellings spread over the Plateau make up the Auvernier-Cordé culture and show few or no connections with the near-

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Fig. 11. Three scenarios hypotheses (with coexistence possibilities) to understand the presence of Bell Beaker elements in Late third millennium BCE settlements in Mediterranean South-Western Europe.
frame buildings are identified by dendrochronology and archaeological analysis. A dichotomy appears between the two parts of the settlement, as far as ceramic ware and herding practices are concerned (Chiquet y Burri, 2013). The interpretation published by the excavators points to a settlement shared by populations from two different cultures: Cortaillod from the east and Bourguignon Middle Neolithic from the west. While this interpretation has been challenged elsewhere, the same scenario occurs in an ethnographic case study in western Africa and it cannot be ruled out. For our intents and purposes, such dwellings would provide very complex and indistinct archaeological records. The dendaro-dated lake-dwelling of Chalain, Station 3 layer 8 (Fontenu, Jura, France), around 3200 cal BCE, published 15 years ago, comprised a community from two different archaeological cultures. The accurately described material culture, the architecture and the practices provided extensive details of technological choices related to two different traditions (pottery making, tool shape, etc.). It also demonstrated that the architecture used by people from both traditions was shared and could be archaeologically perceived as neutral (Pétrequin, 1997).

This unusual scenario is one potential interpretation for the spatial material culture patterning (mostly decorated ware) in the dry-stone dwelling of Boussargues, around 2600-2400 cal BCE in southern France. This site is part of the Later Neolithic culture of Fontbouisse with one domestic unit (Cabane 1) containing ceramics sets from two different Late Neolithic traditions.

On the other hand, G. De Ceuninck (1994) provided an insightful ethnographic example, in the Inner Niger Delta (Mali). The inhabitants of the Kakagnan Peul concession used to buy Somono concession vases so that Kakagnan houses could gather more Somono pots than Peul pots.

Therefore, we can envisage that a Late Neolithic settlement could include a Bell Beaker locus, which would explain why, without a good stratigraphy, we can find Bell Beaker items and Late Neolithic elements at the same time. In La Balma del Serrat del Pont (Tortellà, Girona, Catalonia), a metallurgical activity shelter with outdoor fireplaces and pieces of oven-vases with regional Bell Beaker features (Pyrenean shelter with outdoor fireplaces and pieces of oven-vases) was found in a rapidly filled dumping ground bearing many domestic artefacts of both traditions (the Bell Beaker Rhodano-Provencal style is dominant but not exclusive). Finally, Les Vignauds 3, a neighbouring site with traditional Fontbouisse dry stone houses, reveals a technological combination of Bell Beaker International or Rhodano-Provencal styles features and typical Fontbouisse clay inclusions.

These three scenarios do not encompass every potential situation. Nevertheless, they are sufficient to challenge common interpretations of the spread of the Bell Beaker in our field of inquiry. And the existence of these three scenarios in different parts of southeast France during the third millennium BCE is irrefutable. Due to the lack of reliable stratigraphic information, we cannot distribute our Provencal corpus among the different scenarios.

However, we can tentatively link some sites to each scenario. It is likely that the establishments of Ponteau (Martigues, Bouches-du-Rhône) (Margarit et al., 2007; Margarit et al., 2012) and Le Collet Redon (Martigues, Bouches-du-Rhône) (Dürenmath et al., 2010 Escalon de Fonton, 1968) illustrate the first scenario (Reoccupation-Succession scenario). At both sites, Bell Beaker sherds (Rhodano-Provencal and Barbed Ware styles) were found above Late Neolithic occupations. The second scenario (Contemporaneity scenario) would be represented by Les Lauzières (Lourmarin, Vaucluse) and Les Fabrys (Bonnieux, Vaucluse) (D’Anna et al., 1989). These sites are about 8 km apart and contain Late Neolithic Phase 1 (Cauliez, 2009) and Bell Beaker Rhodano-Provencal style vases (Lemercier, 2004) and could thus be contemporaneous and work together. Lastly, to the third scenario we could assign the sites of Les Calades (Orgon, Bouches-du-Rhône) (Barge, 1989), Les Barres (Eyguières, Bouches-du-Rhône) (Barge, 2000), La Balance-Rue Ferruce (Avignon, Vaucluse) or Place du Palais (Avignon, Vaucluse) (Courtin 1974). Les Calades and Les Barres show respectively two and three dry stone domestic units (Barge, 2009) and the Bell Beaker remains seem to be located in a concentrated area (respectively with Maritime style or with International and Rhodano-Provencal styles). In La Balance-Rue Ferruce and Place du Palais, the Bell Beaker International styles ceramics are blended with Late Neolithic Phase 2 vases (Cauliez, 2009) in the same stratigraphic layer.

4. CONCLUSION

Here, we would like to sum up several key ideas:

- Given the current chronological frameworks in the two studied regions, it is difficult to identify specific dynamics regarding the topographic location of sites with Bell Beaker ceramic ware. We can merely point to changing trends in settlement choices for the Late Neolithic/Early Bronze Age

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transition. This paper underlines the lack of reliable chrono-typological frameworks for comparisons of the Bell Beaker phenomenon on a broader European scale. In the Mediterranean areas of Bell Beaker extension, the lack of reliable classification frameworks is not conducive to any historical discourse about the spread of Bell Beakers. Therefore, for the time being, to lead a comparative study in the different Mediterranean regions, we should merge all the sites from this period into three main entities: the Late Neolithic; dwellings with Bell Beakers; the Early Bronze Age.

- We emphasize the paradoxical lack of any Bell Beaker architecture model, a frequently overlooked aspect of Bell Beaker presence. To our knowledge, the changes in settlement pattern dynamics at the end of the third millennium BCE would be less marked in the Mediterranean regions than in central European regions (Hungary, south Germany and western Switzerland). Nevertheless, a fine appraisal of such dynamics is still essential for further analysis. Some other indispensable variables exist in our GIS database for Provence and some multivariate statistical analyses have been conducted on several data such as altitude, degree of slope, relief variation, topography and slope orientation, in our PhD work (Caraglio, 2016a; Caraglio, 2016b). Otherwise, the trends of settlement choices during the Late Neolithic in Catalonia and in Provence can be considered as significant, whereas the trends of sites with Bell Beaker and Early Bronze Age artefacts are less significant.

- Three diversified but classical scenarios have been proposed to critically investigate the whole Bell Beaker material record. They are not exhaustive in terms of possible readings, but they propose an opening to a more nuanced reflection on Bell Beaker settlement pattern.

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**References**


Besse, M.; Desideri, J. (2005): “La diversidad Campaniforme : habitats, sepulturas y cerámicas” en M.A. Rojo-Guerra, Garrido-Pena, R., Garcia-


Olalde, I.; Brace, S.; Allentoft, M.E.; Armit, I.; Kristiansen, K.; Booth, T.; Rohland, N.; Mallick, S.;
en Galicia: cambios sociales en el III y II milenios BC en el NW de la Península ibérica. Pontevedra: 345-362.


