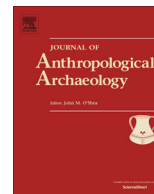




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The Initial Magdalenian mosaic: New evidence from Urutiaga cave, Guipúzcoa, Spain



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ABSTRACT

Transitional moments in prehistory are of broad interest in archaeology. Immediately following the Last Glacial Maximum, two technological shifts occurred in SW Europe: in France, at ~18,000 uncal. BP, an industry characterized by large Solutrean projectiles was replaced by the well-defined Badegoulian industry; a thousand years later in Vasco–Cantabrian Spain, Solutrean technologies were gradually replaced by Magdalenian antler point (*sagaie*) and lithic inset composite weapons. The Solutrean–Magdalenian transition remains ill-defined in Vasco–Cantabria, where very few “transitional” assemblages dating to the c. 17–16,000 uncal. BP interval have been identified, leaving questions as to how the changes occurred and what kinds of relationships existed between French and Spanish groups during this period. Urutiaga cave (Guipúzcoa) Level F (17,050 ± 140 uncal. BP) contributes a new Initial Magdalenian archaeological sample to the discussion of Last Glacial behavioral change during a technological transition. This paper synthesizes the results of a detailed lithic analysis with findings from previous studies of fauna and osseous industry from Urutiaga Level F. Then, the analysis explores Initial Magdalenian organizational behaviors through a series of lithic procurement/mobility models that show dynamic land use in eastern Vasco–Cantabria. Finally, Urutiaga Level F was compared to four other Initial Magdalenian occupations in the region, demonstrating that lithic maintenance—in manufacture, use, and rejuvenation—was a significant factor in how Initial Magdalenian groups organized their landscape-level behavioral strategies. The archaeological assemblages from Urutiaga cave are important contributions to archaeological questions surrounding the Solutrean–Magdalenian transition, providing further evidence for *in situ* technological change in Vasco–Cantabria. Additionally, the economic analyses discussed in this paper provide new attributes that archaeologists can use to identify Initial Magdalenian sites on the landscape. This study develops a methodological procedure that is broadly applicable to archaeological studies related to prehistoric cultural transitions and to those studies that apply data from collections recovered during the early 20th century to modern interpretive frameworks.

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1. Introduction

Archaeologists have a longstanding interest in understanding continuity and change, stemming from the work of the discipline's early culture historians who created chrono-cultural technocomplexes as way to describe prehistoric behavioral shifts. These units have a legacy in modern archaeology: researchers are still asking how cultural traditions changed and what factors influenced the material culture variations recognized in each period (see examples in [Casalheira and Bicho, 2013](#); [Schmidt et al., 2012](#); [Straus, 2015](#)). One challenge that archaeologists face is how to utilize

archaeological collections that were recovered long ago, without the precision of modern excavation and recording techniques, and incorporate these data into modern interpretive frameworks. This case study approaches a particular chrono-cultural transition in prehistory, the Solutrean–Magdalenian interval c. 18–16,000 uncal. BP, using a multi-faceted and broadly applicable methodology that incorporates materials (lithic, osseous, and faunal) analysis with spatial and landscape modeling and inter-site comparisons.

In the Upper Paleolithic period, the first material culture analyses at the turn of the 20th century used “type” sites to characterize the artifact variations that marked particular culture-historical divisions (e.g., Solutrean at Solutré and Laugerie-Haute, Magdalenian at La Madeleine and Laugerie-Basse). In the past fifty years, excavations that employed modern techniques, including water-

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screening and radiocarbon dating, have revealed that regional geographic variation (e.g., lithology, available comestible resources, environmental patches) substantially affected Upper Paleolithic technology in Vasco-Cantabrian Spain, and by proxy, how archaeologists made culture-historical attributions and compared Spanish and French lithic and osseous industries (Barandiarán, 1985; Freeman et al., 1998; González Echegaray, 1960; González Echegaray and Barandiarán, 1981; Straus, 1992, 2005). This work has shown that while groups who lived in France and Spain traveled similar trajectories in having to deal with major climatic shifts throughout the Upper Paleolithic, important differences in lithic technologies, subsistence strategies, art motifs, and chronology led to distinct regional “expressions” of these western European archaeological cultures (Aura et al., 2012; Banks et al., 2009; Straus, 1992, 2005, 2013; Utrilla, 1981).

Advances in archaeological techniques have also provided archaeologists a more precise lens through which to view technological developments and their co-occurrence with climatic shifts and ensuing environmental change (Schmidt et al., 2012). Immediately following the Last Glacial Maximum, c. 18–16,000 radiocarbon years uncal. BP, when the western European climate was gradually and unevenly beginning to warm, large, “expensive” Solutrean point technology was replaced by “maintainable” composite antler point and microlith insert projectiles (see Bleed, 1986; Straus, 1991, 1993). In the past two decades, researchers working in Vasco-Cantabria and southwest France have identified many sites with “intermediate” assemblages that date to the Solutrean–Magdalenian transition. In France, this transition is marked by the Badegoulian industry, whose assemblages are typically raclette-rich (but see Clottes et al., 2012) and generally versatile in addressing tool blank production needs (i.e., thick and thin flakes) (Ducasse, 2012; Ducasse and Langlais, 2007). In contrast to the well-defined Badegoulian industries, the Solutrean–Magdalenian transition in Vasco-Cantabria is marked by very few occurrences of so-called Initial Magdalenian assemblages dating to c. 17,000 uncal. BP: El Rascaño Level 5 (Cantabria), El Mirón Levels 117–119.3 (Cantabria), and now, Urutiaga Level F (Guipúzcoa); and chronologically late Solutrean levels: La Riera 17 (Asturias); Las Caldas Pasillo 4 (Asturias); Chuffin (Cantabria); Aitzbitarte IV (Guipúzcoa) and Arlanpe II (Vizcaya) (Altuna, 1972; Aura et al., 2012; Corchón, 1999; González Echegaray and Barandiarán, 1981; Straus, 1983; Straus and Clark, 1986; Straus et al., 2014; Rios-Garaizar et al., 2013). Thus, the Solutrean–Magdalenian transition is not nearly as well documented in northern Spain as it is in France, making it difficult to understand exactly *how* this technological change occurred, specifically, whether it was the result of gradual *in situ* adaptations to organizational strategies or more drastic cultural shifts (see Bosselin and Djindjian, 1999). This paper presents results from Urutiaga Level F lithic analyses and synthesizes these findings with those from previous studies of osseous industry (Mugica, 1983) and faunal remains (Altuna, 1972) from the level, thoroughly describing the Initial Magdalenian occupation at this location. This analysis then explores Initial Magdalenian land use through a series of mobility/lithic procurement models. In synthesis, Urutiaga Level F is compared to four other archaeological levels dating to c. 17,000 uncal. BP in order to address *what organizational aspects* contributed to the Solutrean–Magdalenian technological shift in Vasco-Cantabria. Together, these contexts demonstrate that assemblage maintenance—in manufacture, use, and rejuvenation—was an important aspect of Initial Magdalenian lithic technology. Additionally, the Urutiaga cave assemblage contributes to archaeological understanding of the Solutrean–Magdalenian transition in Vasco-Cantabria, providing further evidence of *in situ* regional “desolutreanization” and economic attributes that archaeologists can use to recognize Initial Magdalenian contexts. This study is broadly analogous to archaeological

research in Europe and other world regions related to: (a) understanding changes between cultural-historical units against the backdrop of major climatic changes (in this case, from the Last Glacial Maximum to the Oldest Dryas within MIS 2) and/or (b) applying data collected from assemblages that were recovered using early recording systems to modern interpretive frameworks.

2. The Solutrean–Magdalenian transition

How archaeologists investigate Upper Paleolithic archaeological cultures has been influenced both by long term research histories (i.e. the archaeological record from this period in the Vasco-Cantabrian region has been under-researched relative to the same period in France, due in part to early chrono-cultural systematization by French prehistorians (notably H. Breuil, D. Peyrony and D. de Sonneville-Bordes) who then sometimes applied their temporal systems on the Spanish record) and by regional cultural-historical trajectories (Straus, 2013, 2015). Despite the fact that archaeological cultures in the Franco-Cantabrian region (the Vasco-Cantabrian northern Spanish coast and the southern Aquitaine) share some common lithic and osseous artifacts and artistic similarities at various points in the Upper Paleolithic chronology (e.g., during the Upper Magdalenian), there are major differences in these two landscapes (Straus, 2015). While mountain chains and coasts geographically bound both areas (Vasco-Cantabria by the Picos de Europa and Cantabrian Cordillera to the south, the Bay of Biscay to the north; Aquitaine by the Pyrenees to the south and Massif Central to the north, the Atlantic Ocean and Mediterranean Sea to the west and east, respectively), the Vasco-Cantabrian region is characterized by short, steep river valleys with diverse local environments, while the Aquitaine had great plains with steppe–tundra vegetation during the Oldest Dryas (Straus, 2015). These environmental differences—including terrain, lithology, vegetation, and comestible resources—no doubt influenced how the human groups who inhabited these areas organized their territories, their mobility and subsistence strategies, and the unique regional cultural trajectories that developed in each area throughout the Upper Paleolithic (Straus, 2015). The Solutrean–Magdalenian transition is one cultural-historical “moment” where the hunter-gatherer groups living in western Europe took separate paths (Straus, 2013). In the Vasco-Cantabrian region, the transition can reasonably be summarized by the following chronological trajectory (Straus, 2015):

- Solutrean: 21,000–17,000 uncal. BP.
- Initial Magdalenian: 17,000–16,000 uncal. BP.
- Lower Magdalenian: 16,000–14,300 uncal. BP.

By comparison, the French Badegoulian archaeological culture dates to c. 18,200 – 16,500 uncal. BP (Banks et al., 2011).

The Solutrean period is archaeologically known by its large, single-lithic tip projectile weaponry, which was likely used as a component of atlatl-propelled or thrusting spears (Straus, 1992, 2005, 2009). In Vasco-Cantabria, the period is also known for its evidence of situational subsistence specialization, with groups killing red deer and ibex in their respective habitats (coast and montane) and overall diversification, with incidences of hunters taking boar, reindeer, fox, and roe deer, probably opportunistically, to such extent that Straus and Clark (1986) called it an early “broad spectrum revolution”. As the Solutrean period progressed, hunter-gatherer groups developed diverse regional projectile point styles (e.g., shouldered or concave base)—and perhaps also distinct regional identities—that may have in turn influenced their social organization, ideology, territoriality, and (reduced) interaction networks (see Aura et al., 2012; Banks et al., 2009; Straus, 1983;

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