



NEW YORK UNIVERSITY
Proceedings of the International Symposium
April 08-10 2013, New York (USA)

2015 # 7

<http://www.palethnologie.org>

ISSN 2108-6532

directed by

Randall WHITE
Raphaëlle BOURRILLON

with the collaboration of
François BON

AURIGNACIAN GENIUS

**Art, Technology and Society
of the First Modern Humans in Europe**



Review published by the P@lethnologie association, created and supported by the TRACES laboratory, Inrap and the Ministry of Culture and Communication.

Director

Vanessa LEA

Editorial committee

François BON
 Pierre CHALARD
 François-Xavier FAUVELLE
 Karim GERNIGON
 Vanessa LEA
 Michel VAGINAY
 Nicolas VALDEYRON

Scientific committee

Michel BARBAZA, University Toulouse Jean-Jaurès, Toulouse, France
 Marie BESSE, University of Geneva, Geneva, Switzerland
 Fanny BOCQUENTIN, CNRS / UMR 7041 – ArScAn, Paris, France
 Laurent BRUXELLES, INRAP / UMR 5608 – Traces, Toulouse, France
 Adrian BURKE, University of Montreal, Montreal, Canada
 Sandrine COSTAMAGNO, CNRS / UMR 5608 – Traces, Toulouse, France
 Philippe CROMBÉ, Ghent University, Ghent, Belgium
 Jesús GONZÁLEZ URQUIJO, University of Cantabria, Santander, Spain
 Jacques JAUBERT, University of Bordeaux / UMR 5199 – Pacea, Bordeaux, France
 Claire MANEN, CNRS / UMR 5608 – Traces, Toulouse, France
 Grégor MARCHAND, CNRS / UMR6566 – CReAAH, Rennes, France
 Marco PERESANI, University of Ferrara, Ferrara, Italy

Geneviève PINÇON, National Center of Prehistory, Périgueux, France
 Karim SADR, University of Witwatersrand, Johannesburg, South Africa
 Isabelle THÉRY-PARISOT, CNRS / UMR 7264 – Cepam, Nice, France
 Boris VALENTIN, University Paris 1 Panthéon-Sorbonne, Paris, France
 Jean VAQUER, CNRS / UMR 5608 – Traces, Toulouse, France
 Randall WHITE, New York University, New York, USA

Translation

Louise BYRNE
 Claire HECKEL

Layout, graphics

Fabien TESSIER

Contributions should be addressed to:

P@LETHNOLOGY REVIEW
 Vanessa LEA, Research associates

CNRS / UMR 5608 – TRACES
 Maison de la recherche
 5 allées Antonio Machado
 31058 Toulouse cedex 9, FRANCE

 Phone: +33 (0)5 61 50 36 98
 Fax: +33 (0)5 61 50 49 59
 Email: vanessa.lea@univ-tlse2.fr

This digital publication received support from



Institut national
de recherches
archéologiques
préventives



La Maison Française
NEW YORK UNIVERSITY

THE
ANDREW W.
MELLON
FOUNDATION

AT THE CROSSROADS

François BON

1 - Aurignacian societies: the state of the debate	10
2 - Behavioral modernity and the Aurignacian phenomenon	12
3 - In what direction do the cogs of biological and behavioral coevolution turn?	13
Acknowledgements	15
References cited	15

To cite this article

Bon F., 2015 - At the crossroads, in White R., Bourrillon R. (eds.) with the collaboration of Bon F., *Aurignacian Genius: Art, Technology and Society of the First Modern Humans in Europe*, Proceedings of the International Symposium, April 08-10 2013, New York University, *P@lethnology*, 7, 8-18.

AT THE CROSSROADS

François BON

Abstract

This paper contributes to the discussion of one of the central questions raised by the Aurignacian: can we really identify the mechanisms of a biological and behavioral coevolution in this key transitional culture between the Middle and Upper Paleolithic, associating anatomically modern humans with a range of accomplishments also readily described as “modern”? And if so, how did these different parameters influence each other? The analysis proposed here suggests that, above all, the reconfiguration of social relations was a decisive driving force behind evolution, directly influencing biological diversity through increased contact and intermingling between groups and populations.

Keywords

Biological and behavioral coevolution, behavioral modernity.

The Aurignacian sits at the crossroads of two main pathways that map Paleolithic humankind's evolution. The first of these corresponds to a significant reduction in human biological diversity, whereas the second involves a marked increase in cultural expression. The first of these pathways, the reduction in biological diversity, is directly linked to the success of *Homo sapiens* relative to other human anatomical forms including the Eurasian Neanderthals. As for the diversification of cultural expression, it is clear that important processes of behavioral innovation occurred in Paleolithic societies during a vast period extending roughly from OIS 5 to OIS 2. While this period sees a universal rise in novel behaviors, all assimilated into the concept of “behavioral modernity” (namely symbolic expression), a second important facet is the multiplication of cultural traditions. Besides the aforementioned rise in symbolic expression (graphic representations, personal ornaments, etc.), these changes are also reflected by the rhythms and ways in which technical equipment transforms, which seem be influenced by two complementary axes. On one hand, we observe the existence of, at times, very far-reaching (both chronologically and geographically) technological trends; on the other hand, we observe an effervescence of more localized technical traits characteristic of more tightly delimited cultural entities in time and in space. The first axis emphasizes connections between human groups, favoring the rapid diffusion of ideas, while the second reflects markers related to personal and group identity as well as the choices influenced by properties of the natural environments in which these groups lived.

It is clear that the divergence of these two pathways (biological reduction / cultural differentiation) did not occur at the same time everywhere. More specifically, each pathway followed different rhythms on different continents, with varied chronological sequences and non-synchronous intersection points. In Europe, this process unfolded during the Middle to Upper Paleolithic transition, centered around 45 to 40 000 cal BP. This is where the Aurignacian plays its role, laying out in large part our expectations for defining the modalities of this process and interpreting its meaning.

Strictly speaking, are both of these pathways co-evolutionary and if so, how do they mutually influence each other? Depending on how we reply to these questions, radically different visions of human evolution emerge.

1 - Aurignacian societies: the state of the debate

In order to develop this reasoning and to navigate through the different aspects of the Aurignacian phenomenon, it is first essential to establish a rapid overview of the current state of affairs, beginning with material culture. The objective of this first section is mainly to highlight topical questions, but also to underscore some obstacles in the literature, and to refer the reader to the abundant recent publications devoted to the Aurignacian (see in particular the bibliographic pointers in the following overviews: Bon, 2010; Otte, 2010).

Since early on in the development of the prehistoric discipline, the Aurignacian has received much attention, and the wide range of Aurignacian lithic and osseous industries has been patiently described. For a long time typological analysis was center stage, showcasing the diverse antler spear points (including the emblematic split-based form), the rich corpus of bone tools (lissoirs, awls, retouchers, etc.), the minute yet important Aurignacian bladelets (with diverse Dufour types and sub-types, in particular), and more significantly the robust retouched blades (namely, end scrapers and retouched blades). These descriptive analyses were refined throughout the 20th century, and continue to evolve presently, forming an ample and complex chronological and geographic series. The Aurignacian covers a period of nearly 10000 years (or roughly speaking between 43 and 33 000 cal BP) and crosses many different environments, from the Mediterranean coast to the large North European Plain, from the Atlantic shores to the Levant and Zagros, even venturing beyond Central Asia, where scattered “Aurignacian-type” industries have been discovered. Although some of these markers cover vast geographical and chronological expanses, others remain more narrowly confined in time and space, and delimit diverse provinces (Delporte, 1998).

Over the past twenty years, the development of technological studies (Tixier, 1991; Le Brun-Ricalens, 1993; Liolios, 1999; Bon, 2002; Bordes, 2006; Teyssandier, 2007; Pesesse, 2008; Tartar, 2009; Michel, 2010) and more recently, of functional studies (O’Farrell, 2005; Normand *et al.*, 2009; Pasquini, 2013), has enabled us to assess some of the economic choices behind these industries. It is these economic choices – in terms of resource acquisition strategies and the equilibrium between the technical investment involved and the relative longevity of the concerned instruments – that provide the best interpretation of the relative success of particular technical solutions. In the lithic domain, bladelet production provides a good example of this as the development of this industry is flexible and displays environmental contrasts, without losing any techno-functional identity (Bon, 2005). For this reason, it is a precious marker of savoir-faire and specific intentions (Le Brun-Ricalens, 2005). This highlights the long-recognized – but not previously interpreted – value of this range of emblematic Aurignacian objects composed of carinated cores and all their variations. These techno-economic orientations tend to outline a certain number of rules, such as the differential management of hunting equipment and domestic equipment. This reasoning applies as much to lithic industries as to osseous industries (Tartar *et al.*, 2006). In this way, the Aurignacian plays a part in a decisive evolutionary pathway, with the progressive individualization of a range of activities, and possibly of individuals themselves, thus opening the way to paleosociological reasoning (Bon, 2009). In sum, little by little, we gain a better understanding of the nature and meaning of the Aurignacian economy as well as the possible social implications for the way in which the Aurignacians managed their equipment.

However, when we try to go any further with our interpretations we are faced with several problems. First of all, we have yet to develop a real palethnological approach that will enable us to assess the site types and functions and how they fit into the territorial exploitation of Aurignacian groups. In this way, we have not yet updated the mobility models governing seasonal routes (Bachellerie *et al.*, 2011), as this approach requires the development of detailed archeozoological studies, which are still too few and far between for the period under study (Letourneau, 2007; Soulier, 2013). The chronological framework is still vague and, in spite of many efforts over these past years to multiply the dating of Aurignacian sites (cf. in particular the programs led by Carolyn Szmidt and Tom Higham), the radiochronological framework is still rather rough. The use of new methods for processing this information (i.e. Bayesian modelling) and the application of calibration curves to these early periods, where the slightest sample pollution results in significant deviations, have not, as of yet, brought major advances in this domain.

This chronological imprecision and relative deficit in palethnological approaches limits our capacity to construct accurate paleohistorical scenarios (*sensu* Valentin, 2008). We are thus limited to a mere “macrohistorical” perspective, or in other words, we must make do with several large divisions within the Aurignacian sequence without being able to assess the fluidity of spatio-temporal changes. While one can easily be defeatist under such circumstances, techno-economical approaches have nevertheless contributed significantly to an Aurignacian “macrohistory”. Most notably, the “classic” Aurignacian (or *princeps*), traditionally defined by an association between an important bone and antler based technology coupled with specific lithic technological markers can be mainly divided into two chronological phases: the Early Aurignacian (D. Peyrony’s Aurignacian I), characterized by split based antler points, carinated bladelet cores, and robust style blade production, which is followed by the Recent Aurignacian (D. Peyrony’s Aurignacian II), itself characterized by solid-based antler points, busked burin type bladelet cores, and again, robust style blade production. These two classic phases of the Aurignacian represent, however, the latter part of the Aurignacian story, both dating after 40 000 cal BP, whereas the first Aurignacian lineage, the Proto- or Archaic Aurignacian, appears in Europe by around 43 000 cal BP.

This means that the phases representative of the “classic” Aurignacian are a European invention and are not the result of the arrival of foreign populations, bringing with them a preexisting cultural baggage (Teyssandier *et al.*, 2010). Therefore, besides the invention of a bone industry – partially linked to resources specific to the European territory as mammoth ivory or reindeer antler (Tartar, this volume) –, figurative art was truly invented in Europe during the course of the Aurignacian (Bourrillon and White, this volume). Figurative art explodes during the Early Aurignacian and even more so during the Recent Aurignacian, whereas it is absent (or practically absent) in clear association with the earliest forms of these industries, the Protoaurignacian.

The last point to be raised here is the rarity of human remains discovered in Aurignacian contexts and, when these remains are sparse, as is generally the case, the problems raised by their species-specific attributions (Henry-Gambier *et al.*, 2004; Bailey, Hublin, 2005). However, there is little doubt that the Early Aurignacian, and even less so for the Recent Aurignacian, are both associated with individuals with *Sapiens* characteristics (Henry-Gambier and Sacchi, 2008; Ramirez Rozzi *et al.*, 2009). The problem thus mainly concerns the first millennia of the Protoaurignacian, even if new results tend to prove its association to *Sapiens* (Benazzi *et al.*, 2015).

2 - Behavioral modernity and the Aurignacian phenomenon

The development of the Aurignacian results from a complex process, involving the adoption of attractive technical solutions over vast territories (transcending environmental contrasts), with a whole mosaic of more firmly anchored practices in particular regions and specific resources (example: panoply of objects in ivory or in cervid antler). Although it may be the product of multiple interactions, and not the result of a wave of steady migration, it nonetheless remains the founding culture of the Upper Paleolithic civilization of Europe and part of Asia. And it ultimately encompasses all the attributes of “behavioral modernity”; a concept long used as a benchmark.

This concept has been widely used but also widely criticized, as hiding behind it is the enlightenment notion of progress, which social scientists have rightly grown to mistrust. Ultimately however, there is perhaps little need for mistrust when this notion is used to trace a limit between objectively fossil forms of societies (that is, societies that do not have any living present-day representatives) and others, equally historically rooted in prehistory, yet still having present-day correlations in the contemporary world. In other words, everyone agrees that there are no comparable human societies to the Acheulean; the latter is by definition a fossil society. On the other hand, who can affirm that Mesolithic-type societies are not the early expression of societies with contemporary hunter-fisher-gatherer counterparts? This does not mean that these societies are relics of prehistory, but simply underlines the fact that our modern world is made up of multiple traditions inherited from diverse pathways and contrasting historical layers. Moreover, if we refuse to acknowledge the “modernity” of Mesolithic-type societies, we run the risk of relegating their present-day homologs to the living museum category, as was the case for a long time. Dear colleagues and friends, we should thus be weary of the oft too easy liberal criticism of the concept of modernity; the road to hell is paved with good intentions. Obviously, the question becomes more complex as we draw nearer to the transition between the Middle Paleolithic and the Upper Paleolithic. I can already hear Mousterian specialists (quite understandably, I might add) sharpening their arguments, cordiform bifaces, and naturally backed knives, ready to attack the creation of any form of hierarchy between the Middle Paleolithic actors and their chronologically posterior counterparts. Nonetheless, while specific elements of the Neanderthal genome may remain extant within you or I, I truly think we can consider Middle Paleolithic forms of society as definitively extinct and only visible to us through fossil form; Upper Paleolithic societies, in contrast, contain many characteristics still representative of modern societies, in the sense of the term explained above.

There is, however, a catch (as there always should be). This Aurignacian, the founder, after a (not to be forgotten) long and complex process, is not the first culture to possess such characteristics. We now know that the African Middle Stone Age contains several precursory cultural expressions of the Aurignacian, including the famous Howiesons Poort in the southern part of the continent. Moreover, the current dominant model was established on the basis of these data, postulating that “behavioral modernity” takes root in Africa during OIS 5 and then emerges in Eurasia and in Oceania during OIS 3 (for an excellent overview on the history of interpretations on this subject see Stringer, 2014). However, is the evidence supporting this story so readily traceable? Currently, there are many lacunae between the quite different archeological contexts of the African MSA and the Upper Paleolithic in Europe and the Near East. We may choose to think that advances in research will fill in these gaps little by little and that the predicted pathway will progressively become less a hypothesis and more a confirmed archeological reality. The appearance of the first graphic expressions (cf. for example, the spectacular engraved ostrich eggshells from Diepkloof;

Texier *et al.*, 2010) or personal ornaments (cf. for example, perforated shells from Blombos; D'Errico, 2005) must clearly be extended to the MSA, but does continuity necessarily follow a first appearance? Must this be construed as the starting point of an irreversible phenomenon, in keeping with the postulate that there are *necessarily* milestones between the early African and later expressions in Europe? Is evolution truly both unilinear and unidirectional? Have we not moved beyond such a limited perspective?

We can confidently state that the elements that constitute our definition of behavioral modernity seem to have reached an irreversible threshold during the Aurignacian. Over the past 40 000 years, there is, as of yet, no culture that is not founded on some of the already perceptible orientations of the Aurignacian context. All cultures use symbolic expression to codify social relations and express the foundations of a society in relation to the surrounding universe. But what was the case beforehand? Can we concede that such orientations, first of all present in certain MSA African contexts, could have remained reversible for a long time and that the appearance of corporal ornaments as graphic manifestations could have been abandoned only to reappear at a later stage? This clearly raises a major theoretical problem. Personally, I simply wish to recall the hypothesis, however uncomfortable it may be, stating that the Aurignacian is fundamentally different from earlier experiences in that behavioral orientations are marked by the seal of irreversibility, which was not the case beforehand. Irreversibility gives the Aurignacian its full meaning.

3 - In what direction do the cogs of biological and behavioral coevolution turn?

Since the invention of the term Aurignacian by Henri Breuil, the vast majority of prehistorians accept that the success of *Sapiens* is partly linked to the network of behavioral transformations evoked above. We can even conclude that, as a direct result of the intellectual “battle” confirming the existence of the Aurignacian (Dubois, Bon, 2006), the invention of the Upper Paleolithic at the very beginning of the 20th century marks this paradigm in golden letters. From that time onwards, biological human transformation was fully accepted by the community of prehistorians, and only the ultimate stage of this transformation was considered as modern, thereby confirming the division between the Early Paleolithic¹ and the Upper Paleolithic (Breuil, 1913; Boule, 1921). In this way, Breuil and his generation set the terms for the debates that the 19th century had left open (Bon, 2009), when partisans and detractors of the theory of evolution confronted each other and when some of the most virulent critics of Paleolithic spirituality were engaged by its first supporters.

While we may choose to accept the “impossible coincidence” between these two processes (Mellars, 2005), the mechanisms of their reciprocal link still deeply divide prehistorians. Nonetheless, one model overtook all the others during the course of the 20th century, and remains dominant to this today. This is the model of biological, as opposed to behavioral primacy: *Sapiens* lit the world from the depths of caverns and created art as a result of new cognitive capacities. Of course, this biological supremacy of *Sapiens* over his Neanderthal counterparts also met with detractors, who postulate that the latter were also capable of “inventing” hence modern humans from a behavioral viewpoint (D'Errico *et al.*, 1998; D'Errico, 2003; Zilhao, 2007). But, if Neanderthals and *Sapiens* display similar aptitudes, how can we explain the success of one group and the decline of the other?

1. Recall that the concept of the Middle Paleolithic was only defined at a later stage during the course of the 20th century.

The most straightforward answer is to consider that they are simply from the same species and that Neanderthals did not actually disappear but that their attributes were gradually diluted among *Sapiens* traits (Trinkaus, 2005). Why this way around and not the other? If we accept that the Neanderthal settlement zone was more limited or less densely occupied than that of *Sapiens* then demographic factors of the respective populations undoubtedly played a role some 50 000 years ago. This vision was met with severe criticism several years ago, and partisans of such theories were readily seen as naive multi-regionalists (compare, for example: Stringer, 1994; Wolpoff *et al.*, 1994). But it has since been reinforced by paleogenetic approaches (Green *et al.*, 2010), which now suggest that some Neanderthal blood flows through our veins, showing the contacts developed by this plural humanity.

Therefore, the conditions are now in place for countering this trend and proposing a radical alternative model: the primacy of social behavior and its direct influence over biological otherness. If *Sapiens* and Neanderthal are part of the same species, if, in other words, humankind only possessed strong intra-specific variability, the reduction of this could have been the result of an increase in genetic exchanges between human groups rather than the disappearance of some of them. What conditions could have favored such exchanges? We can, for example, envisage that societies founded on strong endogamy during the Middle Paleolithic gave way to more exogamous societies, accounting for a stronger diffusion of genic flux at the dawn of the Upper Paleolithic. This hypothesis is naturally very difficult to prove. However, the development of corporal ornaments, considered to be one of the clearest markers of mutations in these human societies, could be interpreted as the result of an identity in need of assertion, as a corollary to increased contacts between human groups, according to classic anthropological models (White, 2007). The circulation of shell ornaments has moreover been proposed as evidence of matrimonial exchanges, in the fine pages written by Yvette Taborin on this subject (Taborin, 1993). These reflections, and the rest of this contribution, are in keeping with the abundant literature devoted to this question by Anglo-Saxon researchers, such as Clive Gamble (Gamble, 2007) or Chris Stringer (Stringer, 2014).

For my part, the principle of coevolution between biological and behavioral transformations appears to be unquestionable and I in turn suggest a reconsideration of the chain of causality leading to the invention of our humanity. For this, we need to question the available evidence in order to determine the paleosociological scope and the consequences of this on the biological structure of human groups. This concerns first of all marriage organization, and in particular the long and mid-distance circulation of corporal ornaments and other objects, if we accept that they are related to exogamy. In other words, if we accept that the development of the social codes symbolized by corporal ornaments, the invention of symbolic expression aiming to codify Man's role in his universe, the transformation of technical equipment in favor of an increased individuation of the players of these same groups, are symptoms of more profound social changes, then we are entitled to question the consequences that they may have had on the biological identity of populations. This is the question that must be raised today by all those focusing on Aurignacian culture, as well as by anthropologists seeking to explain this reduction in the biological diversity of humanity. It is clear that this hypothesis stems from a philosophical model proposing that human evolution arises more from reciprocal meetings and influences, however antagonistic they may be, than from a separation of the body and mind of its protagonists.



Acknowledgements

Many thanks to Lars Anderson and Randall White for their great help for translation and comments, as well as an anonymous reviewer and Raphaëlle Bourrillon.

References cited

- Bachellerie F., Bon F., Deschamps M., Eizenberg L., Henry-Gambier D., Mourre V., Normand C., Pelegrin J., Primault J., Scandiuzzi R., Thiébault C., 2011 - Archaeological Signatures of Hunting Activities Applied to Comparisons of Mousterian, Chatelperronian and Aurignacian Industries in the Pyrenees: The Nature of Hunting Tools and Site Functions, in Bon F., Costamagno S., Valdeyron N. (eds.), *Hunting Camps in Prehistory. Current Archaeological Approaches*, Proceedings of the International Symposium, May 13-15 2009, University Toulouse 2 – Le Mirail, *P@ethnology*, 3, 131-167.
- Bailey S.E., Hublin J.-J., 2005 - Who made the Early Aurignacian? A reconsideration of the Brassemouy dental remains, *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, 17 (1-2), 115-121.
- Benazzi S., Slon V., Talamo S., Negrino F., Peresani M., Bailey S.E., Sawyer S., Panetta D., Vicino G., Starnini E., Mannino M.A., Salvadori P.A., Meyer M., Pääbo S., Hublin J.-J., 2015 - The makers of the Protoaurignacian and implications for Neandertal extinction, *Science*, 348 (6236), 793-796.
- Bon F., 2002 - *L'Aurignacien entre Mer et Océan. Réflexion sur l'unité des phases anciennes de l'Aurignacien dans le sud de la France*, Paris, SPF, Mémoire de la Société préhistorique française, XXIX, 253 p.
- Bon F., 2005 - Little Big Tool. Enquête autour du succès de la lamelle, in Le Brun-Ricalens F. (dir), *Productions lamellaires attribuées à l'Aurignacien, chaînes opératoires et perspectives technoculturelles*, Actes de la table-ronde organisée dans le cadre du XIV^e congrès de l'UISPP, Liège, 2001, Luxembourg, ArchéoLogiques, 1, 479-484.
- Bon F., 2009 - *Préhistoire. La fabrique de l'homme*, Paris, Le Seuil, « L'Univers historique », 349 p.
- Bon F., 2010 - Les Aurignaciens et l'émergence du Paléolithique supérieur (chapitre V), in Clottes J. (dir.), *La France préhistorique. Un essai d'histoire*, Paris, Gallimard, « NRF essais », 116-141.
- Bordes J.-G., 2006 - News from the West: a reevaluation of the classical Aurignacian sequence of the Périgord, in Bar-Yosef O., Zilhão J. (dir.), *Towards a Definition of the Aurignacian*, Trabalhos de Arqueologia 45, Lisboa, American School of Prehistoric Research / Instituto Português de Arqueologia, 147-171.
- Boule M., 1921 - *Les Hommes fossiles, éléments de paléontologie humaine*, Paris, Masson, 491 p.
- Bourrillon R., White R., ce volume - Early Aurignacian Graphic Arts in the Vézère Valley: In Search of an Identity?, in White R., Bourrillon R. (eds.) with the collaboration of Bon F., *Aurignacian Genius: Art, Technology and Society of the First Modern Humans in Europe*, Proceedings of the International Symposium, April 08-10 2013, New York University, *P@ethnology*, 7, 118-137.
- Breuil H., 1913 - Les subdivisions du Paléolithique supérieur et leur signification, *Actes du Congrès International d'Anthropologie et d'Archéologie Préhistoriques*, 14^e session, Genève 1912, Genève, Kündig, 166-238.

Delporte H., 1998 - *Les Aurignaciens, premiers hommes modernes*, Paris, La Maison des Roches, « Histoire de la France Préhistorique », 128 p.

D'Errico F., 2003 - The invisible frontier. A multiple species model for the origin of behavioral modernity, *Evolutionary Anthropology*, 12, 188-202.

D'Errico F., Hensilwood C., Vanhaeren M., Van Niekerk K., 2005 - *Nassarius kraussianus* shell beads from Blombos Cave: evidence for symbolic behaviour in the Middle Stone Age, *Journal of Human Evolution*, 48, 3-24.

D'Errico F., Zilhão J., Julien M., Baffier D., Pelegrin J., 1998 - Neanderthal acculturation in Western Europe? A critical review of the evidence and its interpretation, *Current Anthropology*, 39, S1-S44.

Dubois S., Bon F., 2006 - Henri Breuil et les origines de la “bataille aurignacienne”, *Sur les chemins de la Préhistoire. L'abbé Breuil du Périgord à l'Afrique du Sud*, Paris, Somogy, 135-147.

Gamble C., 2007 - *Origins and Revolutions: Human Identity in Earliest Prehistory*, Cambridge, Cambridge University Press, 352 p.

Green R. E. et al., 2010 - A draft sequence of the Neandertal genome, *Science*, 328, 710-722.

Henry-Gambier D., Maureille B., White R., 2004 - Vestiges humains des niveaux de l'Aurignacien ancien du site de Brasempouy (Landes), *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, 16 (1-2), 49-87.

Henry-Gambier D., Sacchi D., 2008 - La Crouzade V-VI (Aude, France) : un des plus anciens fossiles d'anatomie moderne en Europe occidentale, *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, 20 (1-2), 79-104.

Le Brun-Ricalens F., 1993 - Réflexions préliminaires sur le comportement litho-technologique et l'occupation du territoire du Pays des serres à l'Aurignacien : le gisement de « Toulousète » à Beauville (Lot-et-Garonne), une occupation moustérienne et aurignacienne de plein air, *Paléo*, 5, 127-153.

Le Brun-Ricalens F. (dir.), Bordes J.-G., Bon F. (coord.), 2005 - *Productions lamellaires attribuées à l'Aurignacien : Chaînes opératoires et perspectives techno-culturelles*, Actes de la table-ronde organisée dans le cadre du XIV^e congrès de l'UISPP, Liège, 2001, Luxembourg, ArchéoLogiques, 1, 568 p.

Letourneau C., 2007 - Quelle place pour le renne dans la subsistance aurignacienne ? Réflexions à partir de quelques exemples de l'Aurignacien ancien, in Beyries S., Vaté V. (dir.), *Les civilisations du renne d'hier et d'aujourd'hui. Approches ethnohistoriques, archéologiques et anthropologiques*, Actes des XXVII^{es} Rencontres Internationales d'Archéologie et d'Histoire d'Antibes, 2006, Juan-les-Pins, APDCA, 345-361.

Liolios D., 1999 - *Variabilité et caractéristiques du travail des matières osseuses au début de l'Aurignacien : approche technologique et économique*, Thèse de doctorat, Université Paris 10, 359 p.

Mellars P., 2005 - The impossible coincidence. A single-species model for the origins of Modern Human behaviour in Europe, *Evolutionary Anthropology*, 14, 12-27.

Otte M. (dir.), 2010 - *Les Aurignaciens*, Paris, Errance (Actes Sud), 303 p.

Michel A., 2010 - *L'Aurignacien récent (post-ancien) dans le Sud-Ouest de la France : variabilité des productions lithiques. Révision taphonomique et techno-économique des sites de Caminade-Est, abri Pataud, Roc-de-Combe, Le Flageolet I, La Ferrassie et Combemenuet*, Thèse de doctorat, Université Bordeaux 1, 600 p.

Normand C., O'Farrell M., Rios Garaizar J., 2009 - The Function(s) of Archaic Aurignacian Bladelets: Data and Thoughts based on Examples from Isturitz Cave (Pyrénées-Atlantiques, France), in Pétilion J.-M., Dias-Meirinho M.-H., Cattelain P., Honegger M., Normand C., Valdeyron N. (dir.), *Projectile Weapon Elements from the Upper Palaeolithic to the Neolithic*, Proceedings of session C83, XVth UISPP World Congress, Lisbon, September 4-9, 2006, *P@lethnology*, 1, 6-44.

O'Farrell M., 2005 - Étude préliminaire des éléments d'armature lithique de l'Aurignacien ancien de Brasempouy, in Le Brun-Ricalens F. (dir.), *Productions lamellaires attribuées à l'Aurignacien, chaînes opératoires et perspectives technoculturelles*, Actes de la table-ronde organisée dans le cadre du XIV^e congrès de l'UISPP, Liège, 2001, Luxembourg, ArchéoLogiques, 1, 395-412.

Pasquini A., 2013 - *Les traces de notre passé européen. Le Protoaurignacien au début du Paléolithique supérieur : l'éclairage de la tracéologie*, Thèse de doctorat, Université Aix-Marseille, 2 vol., 331 p + 147 p.

Pesesse D., 2008 - *Les premières sociétés gravettiennes. Analyse comparée des systèmes lithiques de la fin de l'Aurignacien aux débuts du Gravettien*, Thèse de doctorat, Université Aix-en-Provence, 2 vol., 276 p. + 179 pl.

Ramirez Rozzi F. V., D'Errico F., Vanhaeren M., Grootes P. M., Kerautret B., Dujardin V., 2009 - Cutmarked human remains bearing Neandertal features and modern human remains associated with the Aurignacian at Les Rois, *Journal of Anthropological Science*, 87, 153-185.

Soulier M.-C., 2013 - Entre alimentaire et technique. L'exploitation animale aux débuts du Paléolithique supérieur : stratégies de subsistance et chaînes opératoires de traitement du gibier à Isturitz, La Quina aval, Roc-de-Combe et Les Abeilles, Thèse de doctorat, Université de Toulouse – le Mirail, 2 vol., 548 p + 196 p.

Stringer C., 1994 - Out of Africa – a personal history, in Nitecki M.H., Nitecki D.V. (eds), *Origins of Anatomically Modern Humans*, New York, Plenum Press, 151-172.

Stringer C., 2014 - *Survivants. Pourquoi nous sommes les seuls humains sur terre*, Gallimard, NRF essais, 467 p. (version originale anglaise : 2012).

Taborin Y., 1993 - *La Parure en coquillage au Paléolithique*, Gallia Préhistoire, XXIX^e suppl., CNRS Éditions, 536 p.

Tartar É., 2009 - *De l'os à l'outil. Caractérisation technique, économique et sociale de l'utilisation de l'os à l'Aurignacien ancien. Étude de trois sites : l'abri Castanet (secteur nord et sud), Brasempouy (grotte des Hyènes et abri Dubalen) et Gatzarria*, Thèse de doctorat, Université Paris 1, 2 vol., 310 p + 65 p.

Tartar É., ce volume - Origin and Development of Aurignacian Osseous Technology in Western Europe: a Review of Current Knowledge, in White R., Bourrillon R. (eds.) with the collaboration of Bon F., *Aurignacian Genius: Art, Technology and Society of the First Modern Humans in Europe*, Proceedings of the International Symposium, April 08-10 2013, New York University, *P@lethnology*, 7, 34-55.

Tartar É., Teyssandier N., Bon F., Liolios D., 2006 - Équipement de chasse, équipement domestique : une distinction efficace ? Réflexion sur la notion d'investissement technique dans les industries aurignaciennes, in Astruc L., Bon F., Léa V., Milcent P.-Y., Philibert S. (dir.), *Normes techniques et pratiques sociales. De la simplicité des outillages pré- et protohistoriques*, Actes des XXVI^{es} Rencontres internationales d'Archéologie et d'Histoire d'Antibes, Juan-les-Pins, APDCA, 107-117.

Texier P.-J. et al., 2010 - A Howiesons Poort tradition of engraving ostrich eggshell containers dated to 60,000 years ago at Diepkloof Rock Shelter, South Africa, *Proceedings of the National Academy of Sciences (of the United States of America)*, 107, 6180-6185.

Teyssandier N., 2007 - *En route vers l'Ouest. Les débuts de l'Aurignacien en Europe*, Oxford, British Archaeological Series (BAR International Series, 1638), 312 p.

Teyssandier N., Bon F., Bordes J.-G., 2010 - Within projectile range. Some thoughts on the appearance of the Aurignacian in Europe, *Journal of Anthropological Research*, 66, 209-229.

Tixier J. (dessins : M. Reduron), 1991 - Et passez au pays des silex : rapportez-nous des lames !, in *25 ans d'études technologiques en Préhistoire*, Actes des XI^{es} Rencontres internationales d'Archéologie et d'Histoire d'Antibes, Juan-les-Pins, APDCA, 235-243.

Trinkaus E., 2005 - Early Modern Humans, *Annual Review of Anthropology*, 34, 207-230.

Valentin B., 2008 - *Jalons pour une paléohistoire des derniers chasseurs (XIV^e-VI^e millénaire avant J.-C.)*, Paris, Publications de la Sorbonne, « Cahiers archéologiques de Paris 1 », 325 p.

White R., 2007 - System of personal ornamentation in the Early Upper Paleolithic: methodological challenges and new observations, in Mellars P., Boyle K., Bar-Yosef O., Stringer C. (dir.), *Rethinking the human evolution: new behavioural and biological perspectives on the origin and dispersal of modern humans*, Cambridge, McDonald Institute for Archaeological Research, 287-302.

Wolpoff M.H., Thorne A.G., Smith F.H., Frayer D.W., Pope G.G., 1994 - Multiregional evolutions: A worldwide source for modern human populations, in Nitecki M.H., Nitecki D.V. (eds), *Origins of Anatomically Modern Humans*, New York, Plenum Press, 175-199.

Zilhão J., 2007 - The emergence of ornaments and art: an archaeological perspective on the origins of “behavioral modernity”, *Journal of Archaeological Research*, 15, 1-54.

François BON

Professor of Prehistory

UMR 5608 - TRACES, Maison de la recherche

Université Toulouse Jean Jaurès, Campus Mirail

5 allées Antonio Machado, 31 058 Toulouse Cedex 9, FRANCE

Honorary Research Fellow

School of Geography, Archaeology and Environmental Studies

University of the Witwatersrand, Johannesburg, SOUTH AFRICA

bon@univ-tlse2.fr

