

**Laure Fontana, Thierry Aubry (préface),  
Les sociétés de chasseurs de rennes  
du Paléo-lithique récent en France –  
Économie, écologie et cycle annuel du  
nomadisme, 2023. Col-lection: Les  
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## BOOK REVIEW

Laure Fontana, Thierry Aubry (préface), *Les sociétés de chasseurs de rennes du Paléolithique récent en France – Économie, écologie et cycle annuel du nomadisme*, 2023. Collection: Les cahiers de la MSHE Ledoux n° 9, Série: Homme et environnement n° 3, Presses Univeau Franche-Comte, pp. 248, 92 illustrations, 2 annexes

**Reviewed by Magdalena Sudol-Procyk<sup>a</sup>**

The scientific work under review was published in 2023 by the University of Franche-Comté (France) and focuses on the reconstruction of the migrations of reindeers, being the main wild game for hunters living in the territory of France at the decline of the Pleistocene, in order to understand the mobility of human groups in the last cold episode of the Palaeolithic, i.e., between 30,000 and 15,000 cal BC. The book was written by Laure Fontana, a research scientist at the CNRS, archaeozoologist at the Laboratory Arscan in Nanterre (France), engaged in studies upon economy and reconstruction of an annual cycle of nomadism based on exploitation of animal resources in the Late Palaeolithic.

The book consists of four major sections containing expanded chapters. They are preceded by a few introductory chapters, including a Preface written by Thierry Aubry, Scientific and technical manager in C<sup>ô</sup>a Parque (Foundation for the preservation and enhancement of the C<sup>ô</sup>a valley, Vila Nova de Foz C<sup>ô</sup>a in Portugal), in which the author included a synthetic and substantive description of results of studies presented in the work by L. Fontana. The entire publication was published in French language.

In the first section, entitled “Contextes et objet d’étude”, in four chapters, the author presented introductory issues into the topics of studies upon remains of reindeers in the context of archaeological assemblages of the Upper Palaeolithic in the territories of France.

The first section starts with the Chapter 1, entitled “De l’Aurignacien au Magdalénien: des cultures Paléolithiques?”, in which the author presents the issues of

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identification of the Palaeolithic cultures based on the typology of lithic industries, before they were perceived as cultural systems, frequently equated with ethnic groups. Having applied this approach, other sources, including tools made of other types of organic materials, are investigated within the previously established frames. L. Fontana draws an attention to the fact that other aspects, such as management of animal resources in the Upper Palaeolithic, evolved at a rate not corresponding with the changes in chronological and cultural complexes. Therefore, presenting data within accepted chronological timeframes, with reservation that a significant number of samples lack absolute chronology, is a certain inconsistency.

In Chapter 2, entitled “L’environnement de la France au Pléniglaciaire supérieur et au tardiglaciaire”, the author presents, in a concise though comprehensive manner, the environment of the Upper Pleniglacial during the last Glaciation period in the territory of France. Archaeological periodisation of the Late Palaeolithic in Western Europe was discussed clearly, correlating particular Palaeolithic cultures with changeable environmental factors. The author indicates difficulties in univocal identification of the impact of climate in the period under scrutiny on the changes in fauna and flora, being the major elements of the ecosystem. The complexity of these relationships, which are not always global and vary depending on the species, environment and climatic changes, is confirmed by the existing scientific works referring to ecology and biogeography.

The following Chapter 3, entitled “Le renne (*Rangifer tarandus*)”, provides data referring to ethnology and biology of present populations of reindeers and caribous, based on the existing literature. The species *Rangifer tarandus* was described in detail in the scope of its morphology and genetics, referring this information to the regions and various environments where it lives currently. An interesting thread of this Chapter, providing the grounds for analysis on fossil materials, is presentation of the species in question as an animal with a wide spectrum of environmental adaptation ability. Despite the fact that a reindeer is perfectly adapted to survive in the coldest environments and the extent of its occurrence within the Subarctic zone is the most widespread amongst all other ungulates, it is also encountered in various habitats with changeable weather conditions depending on the season of the year, from Arctic tundra, through Subarctic taiga, to boreal coniferous and deciduous forests. This Chapter ends with an interesting discussion on the origins and evolution of *Rangifer tarandus* through the recent two million years, in particular, referring to the oldest bone remains recorded at the Palaeolithic sites from the period MIS 10 in Western and Central Europe.

This section of the book ends with the Chapter 4, entitled “Constitution des corpus et des espaces d’étude”, which presents data collected from excavated and

recorded sites. The sites were listed in a table, and were divided into 10 regions of their concentrations, with an appropriate location on the map. Graphical presentation of this data was very well designed – every region was marked with different colour (the same colours were used in the Figures nos. 23 and 24), thanks to which the reader can easily understand this multi-aspect summary of caves and open sites ascribed to particular archaeological cultures. Apart from this synthetic description, additional data on fauna, coming from 117 sites from the territory of France, since the Early Gravettian to the Late Magdalenian, was presented in greater detail in the Appendices I and II. It should be stressed that a great value of this section is the graphical material, namely aptly selected and well-designed figures, which facilitate the easy understanding by the reader of the discussed issues.

The second section, entitled “La place du renne dans l’économie des ressources animales entre 30000 et 14000 cal BP”, describes the significance and position of reindeers, amongst other species of wild game, in the management of animal resources in the Late Palaeolithic societies. The author rightly considers this issue with reference to the significance of hunting and antler shedding, on one hand; on the other hand, she addresses the strategy of obtaining and exploitation of antlers. These choices entailed successive decisions on the entire economic and technical system, habitat and mobility. The successive research stages were designed properly, which helps the reader fully understand the topic determined by the title of this section.

In Chapter 1 of this section, entitled “La part du renne dans les chasses” the author presents a quantitative contribution of hunted reindeers known from the Late Palaeolithic sites in the territory of France, in order to facilitate understanding of the observed variability. This Chapter contains information that provides the grounds for questioning various environmental and anthropogenic parameters considered as factors determining the selection of reindeer hunting zones. Colourful representation of data referring to sites and regions where the investigated material was discovered is consistent and coherent with the graphical markings proposed in the first section of the book under review. Also in this section, the high quality of the graphic presentation is noteworthy, which is very helpful in effective tracing of multi-aspect results of the analyses.

The following Chapter 2, entitled “Les stratégies de chasse au renne” describes hunting strategies and indicates that animals were chased in certain seasons of the year, depending on their availability in the particular environment and characteristic traits, such as weight, antler size, and the nature of their coat. An analysis of available data revealed that various configurations of hunting seasons were adopted depending on the region, for instance, all-year-round hunting was recorded for Dordogne/Charente and the central-western Pyrenees, winter and spring hunting was confirmed for

the Black Mountains (Noire), spring, summer and autumn for the Massif Central and the region Lot/Quercy, hunting exclusively in autumn was recorded for the Paris Basin (in the southern part of the region even in winter). The author proved that the variability of data within particular regions is, in general, very low, except for the Pyrenees and, to smaller extent, the central-western region. This conclusion raises a question whether the evidenced variability recorded merely in two regions reflects the factual situation or it is rather due to poor state of the evidence available. Regardless of this, proving that, in all of the regions except for the Paris Basin, the reindeer hunting seasons in the territory of France were contained in at least two seasons of the year is an important premise for further considerations on the migration of reindeers, discussed in the following parts of the book under review (section 3).

In Chapter 3, entitled “Les bois de renne: stratégies et saisonnalité d’acquisition et d’exploitation”, L. Fontana addresses the issue of manners of antler exploitation. This material was obviously obtained through cutting it off from an already dead, hunted animal; although there was another manner, namely collecting antler dropped in the process of shedding, which takes place, at least, during three seasons of the year, depending on whether it belonged to a male or a female, adult or juvenile individual. Since the properties of animal carcass and antler differ, the manners of their exploitation are also different in terms of processing, conservation, transportation, and utilisation. The author evidenced that the exploitation of an animal and its antler throughout the year followed two separate logic paths (either partly or entirely) due to the fact that their availability and properties varied. Amongst significant conclusions, especially noteworthy are the following: antlers of adult females were not collected; selected antlers of males obtained in the autumn-winter season constitute a predominant part of the finds; human societies obtained antler regularly in the course of hunting, where non-selected antler of males was acquired in autumn, while in winter and early spring antler of females and juveniles were gathered.

In the final Chapter of this section, namely Chapter 4, entitled “Conclusion: le statut économique du renne”, conclusions referring to the economic status of reindeers at the decline of the Palaeolithic are presented. The discussion held by scholars engaged in studies on prehistory has been oriented, until the present, on the issues of the exploitation of reindeers by human societies at the end of the Pleistocene, resulting from their quantity, availability practically all-year-round, herding and mobility, which facilitated hunting in open environments. L. Fontana in her book does not question the significance of the reindeer population in the territory of France in the period between 30,000 and 14,000 cal BP, instead, she points out the variability in the number of reindeers, which was mainly due to geographical conditions, namely occurrence in various environments, and more or less significant, hunting for other

species. From the economic viewpoint, reindeers seem to have been the most important wild game species in six out of ten regions under scrutiny, and as important as horses in two out of three mountainous regions. Moreover, the author indicates that the specific status of reindeer in human economy was also based on exploitation of antler, which seems to be exceptional in comparison with the antler of other hunted species. These observations confirm a convergence between an occurrence of artefacts made of reindeer antler and the regions where reindeer was a predominant species amongst other hunted wild game.

The third section, entitled “Mobilité des rennes et mobilité des groupes humains” addresses the very important issue of reindeer migration as a factor affecting the phenomenon of nomadism of prehistoric hunters from Western Europe, in terms of frequency, duration and the extent of migration. Since the half of the 20th century, thanks to research works published by French scholars (e.g., Bouchud *et al.*, 1952; 1953), there has been held a view on the existence of non-migrating reindeers in the territory of south-western France, staying in one habitat throughout the entire year, which might indicate a sedentary, at least partly, lifestyle of human groups. This approach was questioned until the 1990s, mainly due to results of studies oriented at typological classification and determination of the provenance of lithic materials (e.g., Sonnevile-Bordes and Perrot 1954–1956; Bordes 1961) and insufficient state of knowledge on a microregional scale, particularly in the scope of integrated analyses on the management of animal and lithic resources. A certain response to this insufficient state of knowledge were investigations initiated in 2000 in the region of the Massif Central (Fontana *et al.*, 2009), and the obtained results encouraged scholars to extend the research area over other regions as well. This is covered in Chapter 1 of this section, entitled “État de la question et objectifs”, where the author formulated questions referring to the scope of exploitation of reindeers throughout the year in association with other factors, including exploitation of lithic deposits. An attempt to answer these questions was made in the successive parts of the book under review.

Chapter 2, entitled “Rennes migrants et rennes sédentaires au Pléniglaciaire supérieur et au Tardiglaciaire”, is a synthetic summary of our knowledge on reindeer migrations within particular regions. An interesting observation, made based on the analysed data, is a decrease in the frequency and extent of migration of reindeers in the territory of France at the end of Upper Pleniglacial and the Late Glacial. The results of these considerations prove that a low mobility of these animals, particularly legible within the zone between the Paris Basin and the Pyrenees, was undoubtedly connected with the environment they lived in, and the behaviour of reindeers was correlated with parameters of the natural environment. L. Fontana, referring to the ecology of populations of reindeers and caribous living presently in the territories of

northern Eurasia and America, univocally indicates two aspects that are significant from the viewpoint of mobility of these species, namely vegetation and the nature of landform. A basic food for reindeers are lichens, which can grow throughout the entire year but only on acidic soils, and strong development of reindeer populations was conditioned by an appropriate abundance of this type of food. This reasoning seems to be confirmed by isotopic analyses performed for fossil bones of the species in question (Drucker 2001). Taking into account all of these issues, the author negates the commonly accepted canon of perception of the Late Palaeolithic France, as a large, open space with herds of reindeers migrating on a great scale. Apart from the vegetation factor, she also points out a series of other factors, such as the size of population, predator pressure (including humans), or the direction of the winds, which might have affected, to greater or smaller extent, the mobility of animals.

The latter issue was discussed in greater detail in the following Chapter 3 entitled “Cycle annuel de nomadisme: plusieurs configurations ou plusieurs visibilitées?”. This presents a wide spectrum of occurrence, availability and exploitation of the Turonian flint deposits in the region of the Massif Central and the context of occurrence of artefacts made of this raw material, already known to flintknappers since the Middle Palaeolithic. To summarise this chapter, the author comprehensively presented a reconstruction of activity of hunters-gatherers in the Late Palaeolithic of France, referring it to exploitation of regional animal and lithic resources within particular seasons of the year, and finally indicating that it was undertaken all-year-round, almost in all regions of France, except for its south-western part.

The final, fourth section of the book under review, entitled “Discussion”, is a skilful discussion upon the issues presented in this research work, taking into account the current state of knowledge. The fourth section starts with the Chapter 1, entitled “L’environnement de la France entre 30000 et 15000 cal BP: des écosystèmes à définir”, being an attempt of an objective presentation of the environment of France in the period under scrutiny, based on palaeoclimatic and palaeobotanical data. L. Fontana strongly underlines that current knowledge has led to France in the period between 30,000 and 15,000 cal BP being seen as an open terrain, in general, with dry and cold environment, whereas, the new data suggests the existence of various ecosystems in this territory, which may influence their characteristics, at least, on the regional level. With regard to a series of formulated questions associated with the vegetation and organisation of animal populations, L. Fontana quotes the characteristics of the mammoth steppe proposed by R. Dale Guthrie (e.g., 1990) and confronts it with the new data obtained in the recent ten years. The author wonders whether the geographical localisation of France, on the western fringe of this very specific and widespread biome, resulted in development of specific climatic and environmental

properties, and whether this can provide the grounds for undermining an affiliation of this region to the mammoth steppe. On the other hand, she raises an interesting issue, whether this specific region could have had its analogues, for instance, in certain regions of Central Europe, with favourable conditions for lichens to grow in abundance, namely between the zone of the plains and the zone of icecap. Until present, there has not been published any synthetic elaborations of fauna from Central-Eastern Europe that could confirm the uniqueness of the territory in question. Regardless of the specifics of the mammoth steppe, on its western fringes it can be divided into a few ecosystems, which are referred to the ability of effective adaptation of animals to this new environment. The possibilities of such interpretation are suggested by the results of isotopic analyses, based on the diets of animals living presently and in the past, namely in the Upper Pleniglacial and the Late Glacial, such as saiga antelope, deer or horse (e.g., Drucker *et al.*, 2009). With regard to these results, L. Fontana formulates a hypothesis that mobile reindeers could have adapted to favourable conditions of France, indicating a possibility of varied structure of reindeer populations in uplands and valleys abundant with lichens and herbaceous plants. In such an environment, reindeers might have lived in small groups, without forming large herds, except for the breeding season.

Chapter 2, entitled “Durant 15 000 ans, un système unique au-delà des particularités”, is a proposition of a concept of an annual cycle of hunters-gatherers’ lifestyle in the territory of France, based on hunted large fauna from the period between 30,000 and 14,000 cal BP. Referring to the conclusions gathered based on fauna remains, one can assume that the environmental conditions during cold seasons of the year could have fostered permanent settlement. If this assumption is true, expeditions could have been restricted mainly to local resources, namely wild game, shed antler and certain forms of flints. In the remaining parts of the year the mobility certainly could have been greater. L. Fontana suggests that the organisation of an annual cycle of hunting groups’ lifestyle (except for the Paris Basin) was not dependant on a presence or absence of reindeers. Such decisions could have been made based on seasonal biological traits of this animal and the environment. However, one cannot forget that the organisation of an annual cycle, apart from these environmental factors, was also based on cultural choices, which are very difficult to identify.

The final, synthetic chapter entitled “Conclusions” summarises the major research findings presented in the particular chapters.

The research work by L. Fontana is the first such comprehensive publication discussing various issues based on remains of reindeers, being the animals with the highest level of adaptation ability to live in the cold environment, and coming from the sites of the Gravettian, Solutrean, Badegoulien and Magdalenian cultures, located in



various regions of France. The author strives to reveal the guidelines that would allow her to reconstruct an annual cycle of reindeer migrations, before she tries to understand how it affects the groups of hunters-gatherers' lifestyle, hunting strategies in particular. She proposes a few hypotheses referring to seasonal migrations of reindeers within the defined regions. The analyses indicate that the share of hunted reindeers slightly varied between 28,000 and 14,600 cal BP, which could suggest moderate climatic changes during this cold period. A suggestion that these were the climatic changes that influenced technical variability in flint assemblages seems to have lost its justification recently, and the lithic technique seems to be as stable and independent of the climatic changes as the animal resources management. The studies presented in the book under review represent a change in perception on strategies employed by hunting groups that, during 15,000 years, in the territory of France, except for the Paris Basin, hunted reindeers a few times a year, or even all-year-round, with hunting areas near their camps, and utilising various fragments of animal carcasses as food or materials, both, soft and hard, for production of various utilitarian objects. A selection of hunting strategy of low risk level satisfied major needs of these societies and provided them with nutritional safety. This picture contradicts the vision of a human struggling to survive in the cold environment of the Upper Pleniglacial of Central Europe. In this respect the work under review is of great significance from the viewpoint of the mobility of groups of hunters-gatherers from the decline of the Pleistocene. Assuming that this specific region had its palaeoenvironmental analogues, for instance, in some regions of Central Europe, further studies on the picture of a lifestyle of our Palaeolithic ancestors remain an open issue. In my opinion, the work exhausted the subject of the hypotheses set by the author, and the questions that were raised and left open can be considered research postulates rather than uncompleted research tasks.

In terms of the content and technical preparation, the book under review represents a high level. Analytical investigations were performed with great competence and were thoroughly prepared. The high quality graphics and well designed summaries in tables do not raise any objections. The layout of the book is well planned. Properly construed references are followed by a very helpful summary of sources, chronology, locations and illustrations contained within the text. The only drawback, from the viewpoint of a reader not speaking French, is the lack of English summary for particular sections of the book, which would significantly facilitate primary acquaintance of the issues raised. Some other minor defects, such as missing reference to the chapter 4 in the table of contents (p. 224), do not affect the general positive assessment of the work.

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