

Egalitarian or transegalitarian? A socioeconomic perspective on status and prestige during the Magdalenian and the Mesolithic

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Zusammenfassung

Egalitär oder transegalitär? Status und Prestige während des Magdaléniens und Mesolithikums aus einer sozioökonomischen Perspektive

Der vorliegende Artikel beleuchtet den Status und das Prestige sozialer Positionen unter prähistorischen Jägern und Sammlern anhand von Datensätzen aus dem französischen Magdalénien und Mesolithikum als diachrone Fallstudie. Unter Rückgriff auf klassische theoretische Ansätze aus den Sozialwissenschaften werden die Entstehung und normative Bestätigung von Prestige und Status als komplexes, multifaktorielles soziales Phänomen verstanden. Unter Berücksichtigung der vielen Einschränkungen, die sich aus den per se fragmentarischen archäologischen Überlieferungen ergeben, wird ein sozioökonomischer Ansatz angewandt, um gut erhaltene Körperbestattungen von Einzelpersonen zu bewerten. Auf der Grundlage eines neu entwickelten Bewertungssystems ergab die Auswertung der beiden Datensätze, dass die Gruppen im Magdalénien egalitär organisiert waren, während die gesellschaftliche Hierarchie im Mesolithikum stärker ausgeprägt war. Überraschenderweise haben ältere und senile Individuen in der Regel niedrigere Punktzahlen, was auf einen Verlust wirtschaftlicher Privilegien in Phasen reduzierter sozialer Aktivität gegen Ende ihres Lebens hindeutet. Wertvolle Kleidung, die sozioökonomisch an den am Körper befestigten Schmuckgegenständen gemessen wird, ist ein wichtiger Faktor für die Anhäufung von außergewöhnlich hohen Punktzahlen in einigen der Bestattungen von adulten Erwachsenen sowohl im Magdalénien als auch im Mesolithikum. Dieser Befund wird zwar durch die geringe Fallzahl abgeschwächt, aber er wird als Übertragung von Kleidung zwischen den Generationen interpretiert, die nur im Falle des Todes des eigentlichen Inhabers der entsprechenden sozialen Position unterbrochen wird. Trotz der Unterschiede bei den allgemeinen Investitionen in den Bau von Gräbern war der wirtschaftliche Wert der Bestattungen in beiden Perioden meist verborgen, sobald die Bestattungszeremonie beendet war.

Schlagwörter Magdalénien, Mesolithikum, Frankreich, Primärbestattungen, Bewertungsschema

Introduction

The question of social organisation is central to all anthropological sciences. Whereas grand theories (see Münch 2002a) often refer to social organisation on the macroscale

Summary

The present article elucidates the status and prestige of social positions among prehistoric hunter-gatherers using datasets from the French Magdalenian and Mesolithic as a diachronic case study. Taking advantage of classic theoretical approaches from social sciences, the emergence and normative validation of prestige and status are understood as a complex, multifactorial social phenomenon. Considering the many constraints resulting from the per se fragmentary archaeological record, a socioeconomic approach is applied to evaluate well-preserved inhumation burials of single individuals. Based on a newly developed scoring system, the evaluation of the two datasets revealed that Magdalenian groups had an egalitarian societal organisation, whereas in the Mesolithic, societal hierarchy was more elaborated. Surprisingly, mature and senile individuals generally have lower scores, indicating a loss of economic privileges in phases of reduced social activity towards the end of their lives. Valuable clothing, socioeconomically measured by pendants attached as personal ornaments to the body or garment, is one major factor in the accumulation of exceptionally high scores in some of the burials of adults in both the Magdalenian and the Mesolithic periods. This finding, although weakened by the low number of cases, is interpreted as a transfer of clothing between generations, only interrupted in the case of the death of the actual holder of the related social position. Despite differences in the general investment in burial construction, in both periods the economic value of burials was mostly hidden once the burial ceremony had ended.

Keywords Magdalenian, Mesolithic, France, primary inhumations, scoring system

level, it is primarily the social microscale where social phenomena emerge. Individuals experience societal imprinting from early childhood onwards, being embedded in social networks and confronted with constant decision-making due to the dynamics and mostly open character of social

situations. As soon as marked differences in the rating of social positions occur and the number of higher-ranked positions is smaller than the number of applicants, social hierarchies emerge.

In prehistoric archaeology, it has often been assumed that social inequality is linked to the production of surplus and territoriality (e.g. Hayden/Guy 2024) and that it, therefore, predominantly occurs in sedentary societies. However, differences in the rating of social positions are omnipresent in all societies, starting with the differential rating of age class, gender, and skills or experience. Things are further complicated by the fact that the rating not only takes into consideration the ascribed value of a structural social position, often referred to as status, but at the same time also considers the rating of the behaviour of an individual who holds a social position. The concept of social role is one way to better understand the complex interplay of norms, societal expectations, and the rating of others that result in the potentially dynamic status and prestige of social positions. In this article, classic social sciences approaches are used as a frame of reference for investigating potential social inequality among prehistoric hunter-gatherers. In contrast to metadata, this study is based on the investigation of primary inhumations from burials of the French Magdalenian and Mesolithic. In addition, the burial of Bad Dürrenberg, Saalekreis District, Germany, is included to cover the full range of Mesolithic burial equipment and layout. The advantage of a direct correlation between the evident structure and the material culture of a burial on the one hand and the buried individual on the other is essential for the analysis of status and prestige, but to some extent, outbalanced by the small number of cases available. A major methodological problem lies in the reduced character of archaeological material data and the total lack of an emic perspective. This leads to a unidimensional operationalisation of the research question, which is merely based on an etic rating of economic aspects of the archaeological data from burials. Before elaborating on the material analysed and the methods used, the theoretical frame of the analysis is presented below.

Status and prestige in the archaeology of prehistoric hunter-gatherers

In the light of ethnographic studies, the common notion that the social organisation of prehistoric hunter-gatherers can be considered less complex has been proven wrong due to two major observations (for an overview, see Moreau 2020):

First, the impression that egalitarian groups (Peoples/Bailey 2009, 285–286) lack any societal differences is incorrect. Instead, the views of other group members of a given individual usually differ due to gender and age, as well as family and ritual relationships (Haller 2005, 179), resulting in varying obligations, duties, and/or privileges. In addition,

most hunter-gatherer groups have informal leaders who – in particular situations – have respected influence on group decisions, but no authority.

Second, while an egalitarian organisation in the above sense is often taken as the null hypothesis for most Palaeolithic and Mesolithic hunter-gatherers, there are constant claims that at least some Upper Palaeolithic hunter-gatherers may have been complex hunter-gatherers with transegalitarian organisation e.g.¹. The main argument for equating groups of the Gravettian *sensu lato* (for a critical assessment of the status of this industry, see Pesesse 2017) and the Magdalenian with American Northwestern hunter-gatherers is their assumed availability of large amounts of storable food resources.

Structural inequality in Magdalenian and Mesolithic hunter-gatherer societies of Central Europe? Formulating the null hypothesis

The second aspect mentioned in the section above, e.g. the hypothesis of Upper Palaeolithic transegalitarian hunter-gatherer societies, is of special interest here, as it explicitly refers to differences in status and prestige resulting from structural inequalities. But how probable is the existence of non-egalitarian social structures in the Magdalenian and Mesolithic? Table 1 shows feature characteristics from B. Hayden's (2021) models for simple and transegalitarian hunter-gatherers applied to the case studies of this article, e.g. the Magdalenian and Mesolithic in Central Europe. In the following, each variable with data available in the archaeological record is briefly discussed.

Richness of resources

Regarding the richness of resources, any direct comparison of Pleistocene conditions with extant ecozones is complicated by the fact that despite comparable temperatures, marked differences exist – among other things – regarding insulation, rainfall, and snow cover due to the mid-latitude position of Central Europe. In the Early and Middle Magdalenian, cool temperatures and almost treeless landscapes are, to some extent, compensated by a vegetation mosaic and high ungulate biomass. Despite a marked seasonality in the availability of key resources and their dispersed spatial and temporal allocation (Schultz 2016, 104–106), there are still some good reasons to assess the availability of resources during the Magdalenian as ›rich‹. This is reflected in data from present-day boreal tundra ecosystems, in which herbivorous mammals consume up to 10 % of the net primary plant biomass (Schultz 2016, 106). During the Mesolithic, under interglacial conditions with a dense wood cover, resources are generally more evenly distributed and include far more edible plants. At the same time, the overall ungulate biomass is more diverse but lower if compared to boreal ecosystems. The low carrying capacities of densely

1 E.g. Hayden 2018; Hayden 2021; Uthmeier 2023; Hayden/Guy 2024.

	Simple hunter-gatherers foragers	Complex hunter-gatherers, trans-egalitarian hunter-gatherers	Magdalenian	Mesolithic
Availability of resources	resource-poor	resource-rich		
Diversity of technologies	limited	high		
Demography	< 0.2 people per km ²	> 0.2 people per km ²		
(Residential) mobility	high	low (seasonally sedentary)		
Group size	small (< 20 people per group)	large (> 20 people per group)		
(Food) sharing	mandatory	reduced	?	?
Production of surplus	storage for bad season	common	*	*
Competition involving food	forbidden	common (feasts, marriage, alliances)	?	?
Private property	limited	family and individual property	**	**

Tab. 1 Matrix of attributes for simple (in light orange) and complex (in green) hunter-gatherer groups (after Hayden 2021; * apart from caches, no storage constructions; ** indicated by the similar size of evident structures/dwellings and the gear therein).

*Tab. 1 Matrix der Attribute für einfache (in hellorange) und komplexe (in grün) Jäger- und Sammlergruppen (nach Hayden 2021; * abgesehen von Zwischenlagern, keine Lagerbauten; ** gekennzeichnet durch die ähnliche Größe der offensichtlichen Strukturen/Bestattungen und der darin enthaltenen Ausrüstung).*

forested Early Holocene environments in Central Europe are reflected in unexpectedly large annual territories for Mesolithic hunter-gatherer groups, deduced from raw material catchments (Richter 2023, 663–664). Consequently, the availability of resources during the Mesolithic is rated as ›rather poor‹.

Diversity of technologies

Estimating the diversity of technologies is made difficult by the poor preservation of organic raw material. Judging from the available data, largely confined to objects made from stone or hard animal tissue such as ivory, antler, and bone, the diversity and internal variability of Magdalenian artefacts is large, especially if compared to the Mesolithic. Such an assumption is supported by comparative quantitative analysis of ethnographic data (Read 2008), showing that increased complexity of implements first and foremost relates to the number of residential moves and the risk of failure in the procurement of food resources. While residential mobility in Palaeolithic and Mesolithic archaeology can be inferred from raw material transportation distances, estimations of risk is more difficult to access (Collard et al. 2005). In essence, the risk of failure is assumed to depend on the seasonality of food procurement and the intensity of site use. Although these two factors do not necessarily correlate with specific climates in the ethnographic sample of the study cited above, they do correlate with broader subsistence tactics. In conclusion, ›more complex implement assemblages (including more elaborate implements) in groups with a collector strategy in comparison to a forager strategy also suggest that the former entails greater

risk as a consequence of the greater resource intensification involved with a collector strategy‹ (Read 2008, 620).

Demography

The most recent diachronic demographic estimations for the Upper Palaeolithic and Mesolithic based on a common methodological procedure are those using the Cologne protocol (Schmidt et al. 2021). Although not free from research and preservation biases, the datasets generally have proven reliable (Boemke et al. 2023). For Palaeolithic and Mesolithic hunter-gatherers, between 0.0004 and 0.02 individuals per square kilometre are calculated (Schmidt et al. 2020, 7 Fig. 1), which is lower by far than the numbers assumed by B. Hayden (2021) for transegalitarian groups, i.e. > 0.2 individuals per km² (Tab. 1).

(Residential) mobility

Estimations of the amount of residential mobility in the Upper Palaeolithic are related to the duration of occupations at base camps. These approximations are made difficult by the possibility that a straightforward interpretation of complex evident structures as indicators of long-term occupations might be misleading because they may represent palimpsests from the re-use of more simple structures². For the Central European Magdalenian, C. Pasda and M. Weiß (2020) suggest short-term occupations, whereas others argue for summer and winter camps probably maintained for a full season, or even for 'limited sedentism' (Jöris 2021, 329) of half-a-year or more. In the Mesolithic, the surprisingly complex evident features at the open-air site of Rottenburg-Sie-

² E.g. Leesch/Bullinger 2012; Jöris 2021; Uthmeier 2021; Uthmeier et al. 2021.

benlinden, Tübingen District, Germany (Kind 2003), which can be best explained as dwellings used for a substantial period, challenge the widespread notion that Mesolithic occupations were generally short-term and that residential mobility during the Mesolithic was high. Nevertheless, estimations of Magdalenian and Mesolithic occupations longer than one season of a year must be seen critically and were most probably shorter than those documented for present-day transegalitarian hunter-gatherer groups. To conclude, it must be assumed that the Magdalenian and Mesolithic residential mobility was moderate to high.

Group size

The question of group size is equally related to the complicated question of the extent to which evident structures at a given site taken as dwellings are contemporaneous or not. Again, current debates are far from consensus and vary between a sequential use of neighbouring structures, as proven by refits of structural elements from fireplaces at Monruz-Champvèrès, Canton of Neuchâtel, Switzerland (Leesch/Bullinger 2012), to the presence of central activity areas surrounded by between one (e.g. Bad Kösen-Lengefeld, Burgenlandkreis District, Germany: Uthmeier 2021; Uthmeier et al. 2021) and probably several light tent constructions (e.g. at Gönnersdorf, Neuwied District, Germany: Jöris 2021). Nonetheless, if each of the small tent-like dwellings of the Magdalenian and Mesolithic is equated with one core family, it is very unlikely that the overall group size exceeded 20 persons at the same time, even if a site was a seasonal meeting spot (e.g. Jöris 2021).

Production of surplus

In general, caches (for a definition see Uthmeier et al. 2020) in the Palaeolithic are rare. Whilst most of these contain artefacts deposited in preparation for planned or unforeseen future activities, some are discussed as meat caches (Einwögerer 2021; Chabai et al. 2022). However, apart from the difficulty of distinguishing between storage of staple food resources for times of nutritional shortage and the storage of surplus, the frequency and the sizes of Palaeolithic meat caches found so far speak for the former. To what extent meat was dried (for the interpretation of evident structures as smokers see Uthmeier 2021; Uthmeier et al. 2023) or stored underwater (Speth 2017; Fisher 2021) is unclear, as these techniques leave behind no or only diffuse archaeological traces (Fisher 2021). The hypothesis of social inequality based on these storable resources (e.g. Hayden/Guy 2024) is therefore not supported by data from the Palaeolithic period.

Private property

Private property is difficult to grasp in archaeological contexts. This also applies to the most convincing argument for grave goods in single burials, which seemingly indicate individual ownership. However, this notion might be misleading because any burial object could just as well be a gift donated after death. Nevertheless, it seems clear that the

core and/or the extended family were the basic economic units, at least during the Magdalenian. This is suggested by the divergent origins of major raw materials found at the same site but in separated concentrations (e.g. at Gönnersdorf: Jöris et al. 2011), combined with the rather small sizes of the dwellings reconstructed so far (e.g. Leesch/Bullinger 2012). The most parsimonious explanation for these findings, which might be assigned to the Mesolithic site of Rottenburg-Siebenlinden as well, is the seasonal fission and fusion of family groups. If so, private ownership of gear would be inevitable on the family level, and personal property, in the light of the differences in age and gender among family members, highly probable. The hypothesis of private property in the Magdalenian (and the Mesolithic?) is further supported by the individuality of engraved and/or sculptured objects such as the famous Magdalenian spear throwers. Therefore, it can be concluded that most grave goods in Magdalenian and Mesolithic burials, and especially those attached to the body, such as pendants, were owned privately.

Null hypothesis

In sum, the existence of structural inequalities as the source of differential status and prestige in the Magdalenian and Mesolithic groups of Central Europe seems rather unlikely.

Towards working definitions: social position, status and prestige in the social sciences

Status, prestige and prestige goods are often poorly defined in archaeological research, albeit that the assumed concept behind these terms, e.g. social inequality and its expression in material culture, is nevertheless widely applied (Bernbeck/Müller 1996). Referring to social science theory, R. Bernbeck and J. Müller (1996) distinguish between social position, status, and prestige. In the social sciences as well as in ethnology, social role is another key element that makes it possible to register the active part of social position, status, and prestige from a micro-scale perspective.

Social position and status

From a structural point of view, social positions are places in the societal scaffold independent from the personality of the actual holder but associated with socially defined patterns of expected behaviour and relations to other social positions (Merton 1996; Dahrendorf 2006; Schulz-Schaffer 2024). Rather than being fixed, social positions and the associated bundles of codes of conduct are created and transformed by the group members in the course of continuous discourse, as are the norms and values that are the baseline of these debates. The same applies to status as the result of the rating of a social position by the group. Differences in status are largely deduced from intersubjective dialogue and are, therefore, group-specific. It follows from its nature as a result of negotiation processes that the status of social positions is not necessarily static but may undergo changes. At the same time, especially in larger, more com-

plex societies, the rating of the status of a social position may vary among sub-groups, e.g. from a higher ranking in the peer group to a possibly lower ranking in socially more distant groups. In any case, social positions and their status are constitutive parts of the social structure independent of individuals who apply for them, and, to a large degree, independent of the personality of the individual who holds a certain social position.

Social prestige

In contrast to status, prestige depends on the personality of the position holder. Much like the social role, which is a metaphor for the expectations the group or society addresses to the holder of a social position and the resulting normative behavioural rules, prestige belongs to the active parts of social positions. The rating of prestige is coupled with the degree of fulfilment of expectations associated with a social position. In other words, the better the performance in terms of the expected behaviour, the higher the prestige. Following R. Bernbeck and J. Müller (1985), this concept of prestige goes back to M. Weber (1922 [1980]) and is embedded in his notion of social power. In Weber's view, prestige may lead to authority based on the deliberate acceptance by other group members; the transfer of competence for decisions is voluntary. Prestige comprises objective and subjective aspects. The objective components are the visible and thus measurable consequences of prestige, e.g. more central positions in social networks, courteousness when meeting others, or – if this is congruent with the role expectations – the accumulation of wealth. The subjective aspect of prestige is the feeling of positive or negative feedback that subjectively originates from role behaviour and the self-assessment of the degree of prestige one has gained.

Social role

Social role is the bundle of expectations other group members direct towards the holder of a social position³. These expectations are expressed in a combination of norms and rules regarding how to perform. The degree of fulfilment largely influences the prestige rating of a position holder. At the same time, the manifold relations between the role holder and the others who interact with him or her, and the fact that any member of a society has more than one social position and thus performs several social roles creates considerable potential for role conflicts. Originally, social role was a microscale element of structural-functional approaches and was supposed to secure societal stability when an individual learned role expectations during socialisation. Such an inflexible interpretation of social role underwent substantial modification, stimulated – among other things – by the theory of symbolic interaction. The relation between the holder of a social position and the accepting but expecting – others is now seen as influenced by inse-

curity, empathy and a recurrent reciprocal discourse about performances of a given social role (Mead 1973; Blumer 2013, 94: ›taking the role of others‹; for an application in Palaeolithic archaeology see Uthmeier 2016). This not only includes changes in the rules and assessment of the prestige of a given social position by the group but at the same time may allow the actors of a social role to implement changes by themselves. The window of opportunities is limited by the amount of freedom the role expectations offer or the ability of the actor to enforce his or her perception of appropriate behaviour by using charisma, prestige obtained from other social positions, or inherited means of power. Both the precision of fit of the individual performance to the role expectations and the possible freedom to interpret a social role are not only a result of the flexibility of the underlying social norms and values but also of subjective knowledge. In more recent concepts that combine the two major models of social acting, e.g. *homo oeconomicus* and *homo sociologicus*, any social actor is a ›[...] resourceful, restricted, expecting, evaluating, maximising man‹ (Esser 1999, 235). It follows that the scale of innovation in the interpretation of a social role is not only a question of power and the result of evaluating the pros and cons of being innovative but also highly depends on the amount of information to which an individual has access.

Material and Methods

Methods

Measuring status and prestige in social sciences and in archaeology

In the social sciences, status is often measured by the formal education expected as suitable for candidates of a social position and the economic outcome after becoming the holder of that position (Wegener 1985). Recently, the subjective rating of the status by the position holder also gained importance (Pollack 2024). Because this relies primarily on individual performance, the two-fold nature of status as the result of both the rating of the entire group and the subjectively felt consequences of that ranking applies even more so to prestige. To register the objective framing of status and prestige, e.g. the rating by the group – or rather the society – and the subjective aspect of the self-evaluation of the holder of a position, B. Wegener (1985) suggests collecting data not only from the viewpoint of society but also of the individual, combined with measurements in different social scales. However, much of the data needed for such an approach stem from interviews, which are unavailable in prehistoric archaeology (Tab. 2). Therefore, the *per se* important differentiation between an objective and a subjective component of status and prestige must be left aside. Even more, although status and prestige are different dimensions of social position and not inter-communicable,

³ Merton 1996; Münch 2002b, 347–364; Dahrendorf 2006; Preyer 2012, 55–94; Schuller-Schaffer 2024.

	Social scale	Attribute	Operationalisation and measurement	Measurement in Paleolithic and Mesolithic archaeology
Objective	societal	Social structure	Number of prestigious social positions and number of candidates for open positions (in case of official positions: metrical attributes)	Impossible due to the lack of graveyards, demographic census and written sources
	individual	Social-economic wealth	Metical attributes	Burial equipment, prestigious objects; only in cases when status and prestige correlate with economic wealth
Subjective	societal	Social interaction	Social network analysis based on participatory observation or interviews	Impossible due to the lack of objects indicative for exchange of goods (and information) in between individuals or groups that would allow proper network analysis
	individual	Social reputation	Interviews (reliance questionable due to subjectivity in the answers)	Impossible

Tab. 2 Scales and attributes of status and prestige as well as measurement instruments in social sciences (in grey, after Wegener 1985) and their practicability in Palaeolithic and Mesolithic archaeology.

Tab. 2 Skalen und Attribute von Status und Prestige sowie Messinstrumente in den Sozialwissenschaften (in Grau, nach Wegener 1985) und ihre Anwendbarkeit in der paläolithischen und mesolithischen Archäologie.

it seems impossible to differentiate them with the Palaeolithic and Mesolithic data at hand, which are not only fragmentary but at the same time reduced to an uninformed, etc perspective. The – to a certain degree disappointing – consequence is that the present study must fall back on structural-functionalist approaches to some extent by presuming socio-economic status to be the best measurement instrument to investigate differences in status and prestige in Palaeolithic and Mesolithic societies.

The economic and societal rating of objects:

Practical and prestige technologies

Although it would also be conceivable to investigate status and prestige on the level of settlements, any consideration of the societal evaluation of social positions must rely on burials. In fact, apart from the analysis of single artefacts or refits of production sequences correlated to the producer, burials are one of the few possibilities to link archaeological material culture to individuals. Even though, in the end, any aspect of a burial is, first and foremost, the materialised outcome of activities and decisions of the entombing community, it would be far-fetched to assume no relation at all between the buried individual and his or her burial features. This is not to say that status and prestige are necessarily reflected in burial equipment, but in cases where a group agrees on showing social differences in individually owned material culture, there is good reason to expect such an association in burial contexts. Based on these premises, scoring systems to collect data on the ›wealth‹ of burial equipment have already been applied to prehistoric cemeteries based

on workload, diversity and variability of objects, number of objects, and the assumed value of certain raw materials (e.g. Rebay 2005; Rebay 2006; with a summary of the controversy about quantitative and qualitative approaches: Burmeister 2009). In economic approaches, the presence of ›prestige goods‹ or ›status symbols‹⁴ e.g. is often supposed to indicate high status and prestige. Most working definitions name high workloads for their manufacture deduced from experimental archaeology, valuable raw material rated as such due to transportation distances, and workload calculated for its acquisition, and/or the import of objects from distant regions (Eggert 1991; Hayden 1998). In addition, rarity is often taken as another part of the working definitions. For hunter-gatherer contexts, B. Hayden (1998; Hayden 2021, 38–40), referring to ethnographic studies, distinguishes between practical technologies and prestige technologies. According to him, practical technologies solve practical problems using the most cost-efficient solution. In contrast to economical and effective practical technologies, prestige technologies solve social and political problems by adding effort and cost to the manufacture or procurement. The focus is not on cost-efficiency but on impressing viewers or increasing the magnitude of debt when an object is exchanged with others. Among hunter-gatherers, prestige technologies can occur as ritual items that are owned by the group, or as status items, which are individually owned capital for sociopolitical strategies benefitting the individual owner. Ritual items are usually hidden and rare, whereas prestige items are produced in greater numbers, and since their owners often compete, they are displayed in public. From a cultural anthropological point of view, prestige

⁴ E.g. Eggert 1991; Müller/Bernbeck 1996; Schumann 2012; Bagley/Schumann 2013.

	Points (in ascending order from 0 to N within category)	Maximal total sub scores	
Burial context	0 point = all-day conext (e.g. in the centre of activity area)	3	
	1 point = in separate area within a campsite		
	2 points = special burial site, with several burials		
	3 points = isolated special burial site with single burial		
Burial orientation (one entry)	0 point = random (or unknown)	2	
	1 point = along a given axis of the site		
	2 points = along compass point		
Burial construction (several entries possible)	0 point = on the ground level	8	
	1 point = in natural depression		
	2 points = in artificial pit		
	3 points = (additional) construction with material collected from the site (stone slabs)		
	4 points = (additional) construction with locally to regionally collected materials (pebbles from river terraces, faunal elements)		
Burial equipment attached to the body (several entries possible)	1 additional point = construction visible on the surface	28	
	1 additional point = ochre scatter		
	0 point = no pendant		
	1 point = isolated pendant		
	2 points = numerous pendants		
	3 points = pendants attached to headgear or headdress		
	4 points = pendants attached to upper or lower part (clothes)		
	5 points = pendants attached to upper and lower part (clothes)		
	6 points = role attributes attached to the body used during lifetime (e.g. »mask«)		
	7 points = materials attached to the body pointing to differential treatment of the dead (e.g. plastered head etc.)		
	1 additional point = objects attached to the body were unused (made for the burial)		
	1 additional point = raw material of exceptional value (transportation distance/acquisition costs)		
	1 additional point = manufacture of exceptional value (work load)		
Burial equipment: grave goods (several entries possible)	0 point = no grave goods	17	
	1 point = faunal remains (food offering)		
	2 points = all-day equipment from flaked industry		
	3 points = all-day simple objects produced from organic materials (bone point, smootheners, axe etc.)		
	4 points = complex objects produced from organic materials (spear thrower, perforated baton etc.)		
	5 points = role attributes (drumstick etc.)		
	1 additional point = raw material of exceptional value (transportation distance/acquisition costs)		
	1 additional point = manufacture of exceptional value (work load)		
Maximal total score 1		58	
1 additional point: body wrapped in leather?		1	
Maximal total score 2		117	

Fig. 1 Scoring of different categories of burial equipment (table on the left) and maximal score per category (note that in several categories multiple entries are possible in case the listed items/objects are present; in these cases, the accumulated maximum score is given); green = low score; yellow = medium score; red = high score.

Abb. 1 Bewertung der verschiedenen Kategorien von Grabausstattungen (Tabelle links) und maximale Punktzahl pro Kategorie (zu beachten wäre, dass in mehreren Kategorien Mehrfachnennungen möglich sind, falls die aufgeführten Gegenstände vorhanden sind; in diesen Fällen wird die kumulierte maximale Punktzahl angegeben); grün = niedrige Punktzahl; gelb = mittlere Punktzahl; rot = hohe Punktzahl.

items transform a surplus of resources into durable objects that maintain the surplus value, create and maintain social bonds when given to others, visually underline the importance of key sociopolitical events, serve as compensation in social conflicts, and display general economic success and political power. However, if such far-reaching interpretations can be reliably made based on material culture alone seems questionable. Even more so, the actual prestigious value of an object in an unknown society is difficult to access and may not correlate with the effort made during the production (Krauß 2006). The same applies to

role attributes, e.g. objects visually identifying holders of specific social positions. Using B. Hayden’s (2021) terminology, role attributes are not necessarily part of »prestige technologies«. For example, the simple gear of a hunter or the percussion tools of a flintknapper almost certainly had the function of role attributes meaningful in specific societal situations. Of interest in this study are role attributes potentially connected to the higher prestige and status of the social position they visually indicate. Based on large-scale ethnographic studies, the probably most secure indication of role attributes in the archaeology of hunter-gatherers is

Signifier	Social inequality	
	Present	Absent
Overall value of burial	Burials with higher total scores separated from all other burials by clear gaps	Continuum of burial scores
Diversity of burial equipment	Burials with high values show a larger variety of different object classes	Comparable diversity of burials goods in all burials
Role attributes	Burials with role attributes have higher total scores	Burials with role attributes do not have higher value scores
Special treatment of the dead	Some burials show structures visible on the surface	Burials structures are simple

Tab. 3 Matrix of attributes taken as indication for the presence or absence of social inequality in the present study.

Tab. 3 Matrix der Attribute, die in der vorliegenden Studie als Indikator für das Vorhandensein oder Fehlen von sozialer Ungleichheit herangezogen wurden.

their association with ritual technologies. In the archaeology of hunter-gatherers, this primarily applies to masks and noise-making equipment supposedly used by shamans (VanPool 2009; Uthmeier 2018).

The measurement of grave equipment in this study

The assessment of the data collected is designed for comparative analysis within and between the Magdalenian and Mesolithic. Objects of grave equipment are rated solely by their estimated workload; their normative value is not measured. Workloads are estimated within predefined categories and, within these categories, only in relation to each other in a simple ranking order with equal intervals and without correspondence to actual worktimes (Fig. 1). For example, within the category of ›burial equipment attached to the body‹, which by and large corresponds to clothing, isolated pendants have a lower score than numerous pendants, which again have a lower score than pendants clustering near the upper and/or the lower body part of the body. The rationale behind the higher scores of clustered pendants is the assumption that they indicate the presence of more elaborate clothing, such as parkas and/or trousers. Potential ›prestige technology‹, e.g. higher transportation and acquisition costs deduced from exogenous or rare raw materials, as well as the presence of elaborate manufacturing procedures, are rated by their extra workload with one additional point. The lack of further differentiation takes into consideration the problems in locating raw material sources and estimating exact workloads. Notable exceptions are role attributes: in this study antler masks (if present, rated with an addition of 6 points) and the evidence for special treatment of the dead (if present, rated with an addition of 7 points). The latter is deduced from a rare and, at the same time, elaborate staging of the burial. The only example from this study's dataset is from Bad Dürrenberg, where the corpse of an adult woman holding an infant was placed in a sitting position in a large basket-like structure (Orschiedt et al. 2023). One problem in the proposed operationalisation of economic status lies in the different resolution within the categories, coupled with a simple ranking order of point scores. Because more parameters result in higher parameter

values within a category, the maximal possible scores of the proposed categories differ substantially. If all parameters are present, burial equipment attached to the body reaches the highest potential maximum score (28 points) – higher than burial goods (18 points) and much higher than burial construction (8 points), burial orientation (2 points) or burial context (3 points). Quantitative analysis is done by the comparison of scores in histograms produced for the maximum scores of the burials, the average scores of each category, and scores differentiated by gender and age. Age classes are defined as infans I (0–6 years), infans II (7–12 years), juvenile (13–18 years), adult (19–40 years), mature (41–60 years) and senile (> 60 years), respectively. Any interpretation of age class distributions must take into consideration that the time spans represented differ substantially due to the anthropological resolution of the respective skeletal material: while the range of infans I, infans II, and juvenile is six years, the classes of adults, mature and senile have a range of 20 years or more.

Testable attributes of potential inequality in the Upper Palaeolithic and Mesolithic

Some basic assumptions are necessary when methodologically linking status and prestige with economic status. In the present study, it is inferred that holders of social positions with higher status and prestige

- play more prominent roles in negotiation processes and decision-making due to (situational) authority,
- occupy more central positions in social networks,
- have more social contacts within their own group and with members of other groups, and
- have more chances to be equipped with role attributes indicating specific positions.

If these prerequisites hold true, individuals with a higher status and prestige are expected to have greater chances of receiving more

- valuable (including far-travelled) objects from balanced reciprocal exchange,

- b) valuable objects as gifts,
- c) valuable objects as role attributes, and
- d) elaborate burial constructions and burial equipment resulting from the involvement of larger parts of the social network.

As a matter of course, these attributes are neither exclusive nor are all of them mandatory at the same time. It must be underlined that the correlation between status and prestige of social positions and valuable objects is only possible for societies that allow differences in personal ownership and, at the same time, award higher status and prestige with material culture. Societies with different attitudes towards the material reward for societal performance or social positions not awarded in economic ways traceable in archaeology cannot be analysed in this way. For the sake of methodological traceability, a matrix is used for the interpretation and discussion of the scores (Tab. 3).

Material

A brief survey of the literature found that the number of completely preserved Magdalenian inhumation graves is surprisingly low⁵. The criterion of complete preservation necessary to correlate potential grave goods with the buried individuals leads to the exclusion of more recent discoveries of human remains from Magdalenian contexts, such as the perinatal human skeleton found in an ice wedge at Wilczyce, Świętokrzyskie Voivodeship, Poland (Irish et al. 2008) or the remains of a burial from the El Mirón Cave, Autonomous Province of Cantabria, Spain, which underwent severe post-depositional alteration by both animal and human agency, leaving behind only minimal traces of the original context (Marín-Arroyo 2015). If a critical evaluation of data (as much as possible) is another criterion, then the number does not exceed the nine burials already extensively described and analysed by B. Wüller (1999). Consequently, the latter monograph is the major source for the data acquisition of Magdalenian burials (Tab. 4). The fact that all the better-preserved burials of the Magdalenian that allow a rating of the complete burial equipment come from France sets the geographical frame for the Mesolithic, which is known for much larger numbers of burials preserved (e.g. Grünberg 2000; Meiklejohn et al. 2016; Boulestin 2018). To keep the data comparable, only inhumation graves from Mesolithic groups in France using terrestrial subsistence strategies were included in the analysis, which therefore excludes larger multi-burial cemeteries from semi-sedentary societies in Brittany economically related to 'harvesting the sea' (Dupont et al. 2009; Larsson 2016). The strict application of these criteria resulted in a total of nine Mesolithic burials (Tab. 5), for which data was extracted from J. M. Grünberg (2000). To also cover burials with extremely elaborate burial equipment, the site of Bad

Dürrenberg⁶ was included in the Mesolithic dataset as well. For the sake of simple reasoning, e.g. following the principle of Ockham's razor (Lazar 2010), it is assumed that at Bad Dürrenberg the bulk of burial equipment was dedicated to the adult female (in this study labelled 'Bad Dürrenberg 1') and not the 6- to 8-month-old boy (for determinations of age and gender see Orschiedt et al. 2023). Regarding the scoring of individual burial equipment, the infant ('Bad Dürrenberg 2') only profits from the rating of the burial context, the burial orientation and the burial construction. Such scoring seems acceptable because even if the burial construction was, in the first case, devoted to the commemoration of the adult, it was nonetheless a decision of the burying community to entomb the newborn in the same grave. This is particularly comprehensible when presuming a close genetic and/or societal relation between the two individuals: in the light of genetic analysis (Orschiedt et al. 2023), the female and the boy were either directly related no closer than the 4th degree or as close in time as four to five generations. The low overall number of cases and the many burials excavated before WW II in each subset of data immediately lead to the question of representativity. A superficial exploration of this aspect (Tab. 6) underlines that the dataset is indeed debited by biases. The most important one is the paucity of burials. Despite comparably low estimations of the total populations for both the Magdalenian and the Mesolithic (Schmidt et al. 2020, 7 Fig. 1) and an estimated meta-population for the Magdalenian of between 4900 and 10 700 individuals only (Kretschmer 2015; Maier 2017), there is still a substantial general imbalance between the demographic estimates and the preserved and/or excavated burials (see also: Jeunesse 2021). There is no question that preservation and yet undiscovered sites are in part responsible for this bias. However, the overall 1570 Magdalenian sites used by I. Kretschmer (2015) for her demographic estimates seem representative enough to support the hypothesis of selective burial rituals, which is reinforced by the occurrence of secondary burials (i.e. in the Magdalenian of the Brillenhöhle, Alb-Donau District, Germany: Orschiedt 1999) and the burial of selected body parts (i.e. the Mesolithic burials in the Ofnet Caves, Donau-Ries District, Germany: Orschiedt 2002). Both examples point to primary burial rituals conducted outside the campsites, possibly without leaving any archaeological traces. It follows that being buried in larger campsites might have already been a privilege (see Jeunesse 2021). In general, this also applies to Mesolithic groups, although the number of sites is much larger than in the Magdalenian (Meiklejohn et al. 2016). Among these, some sites have the character of linear cemeteries with continuous use over several generations, but this seems to be linked to aquatic or marine resources (Meiklejohn et al. 2016, 33). If so, the dataset analysed in this study would primarily record individuals selected for burial immediately on the campsites, possibly already indicating higher status and prestige.

5 E.g. Binant 1991a; Binant 1991b; Henry-Gambier 2018; Orschiedt 1999; Orschiedt 2013; Orschiedt 2018; Wüller 1999.

6 Geupel 1977; Porr 2004; Porr/Alt 2006; Orschiedt et al. 2023.

		Number of data set												
		1	2	3	4	5	6	7	8	9	10	11		
		Abri Corneille-Sulauze I - 1	Abri Corneille-Sulauze I - 2	Abri Corneille-Sulauze I - 3	La Baume de Montclaus - 1	La Baume de Montclaus - 2	Le Cuzoul de Garmat	Le Poeymaü	Le Rastel	Abri Sous-Balme	Bad Dürrenberg - 1	Bad Dürrenberg - 2	occurrences	
Site														
»Meta« data	site type	rock shelter			rock shelter		cave	cave	cave	rock shelter	open air			
	excavation date(s)	1947–1977			1954–1971		1923–1933	1948	1961	1957	1934/2019			
	stratigraphical position	layer 6, base			layer 5, base	layer 16	layer II	layer 3	layer 5	niveau 1	1 layer			
	industry	Montadien ancien			Epi-Castel-novien	Sauveterrien final		Late Mesolithic	Mesolithic					
	number of burials in the site	3			m n 2		1	1	1	1	1	2		11
	number of dead in the same burial	2	1	1	1	1	1	1	1	1	1	2		11
Individual: body position	supine position											1	3	
	flexed position		1		1					1			3	
	contracted position (taphomy or wrapping?)								1				1	
	sitting upright position										1		1	
	unknown position	1	1			1								3
Individual: anthropology	infans I (0–6 years)											1	1	
	infans II (7–12 years)												0	
	juvenile (13–18 years)				1			1					2	
	adult (19–40 years)		1				1		1	1	1		5	
	matur (40–60 years)												0	
	senile (< 60 years)	1		1									2	
	age unknown					1							1	
	gender female			1	1							1		3
	gender male		1			1	1	1	1	1				6
	gender unknown	1										1		2
anthropological specifics														
Burial context	0 point = all-day context (e.g. in the centre of activity area)	1	1	1	1	1	1	1	1				8	
	1 point = in separate area within a campsite												0	
	2 points = special burial site, with several burials												0	
	3 points = isolated special burial site with single burial									3	3	3	3	
Burial orientation (one entry)	0 point = random (or unknown)			1		1							2	
	1 point = along a given axis of the site	1	1		1		1			1		1	6	
	2 points = along compass point							2	2		2		3	
Burial construction (several entries possible)	0 point = on the ground level			1		1							2	
	1 point = in natural depression												0	
	2 points = in artificial pit	2	2		2		2	2	2	2	2	2	9	
	3 points = (additional) construction with material collected from the site (stone slabs)	3	3		3		3	3	3	3			7	
	4 points = (additional) construction with locally to regionally collected materials (pebbles from river terraces, faunal elements)										4	4	2	
	1 additional point = construction visible on the surface							1		1	1	1	4	
1 additional point = ochre scatter								1	1	1	1	4		
Burial equipment attached to the body (several entries possible)	0 point = no pendant	1	1	1	1	1		1				1	7	
	1 point = isolated pendant						1		1				2	
	2 points = numerous pendants										2		1	
	3 points = pendants attached to headgear or headdress									3			1	
	4 points = pendants attached to upper or lower part (clothes)												1	
	5 points = pendants attached to upper and lower part (clothes)												0	
	6 points = role attributes attached to the body used during lifetime (e.g. »mask«)												0	
	7 points = materials attached to the body pointing to differential treatment of the dead (e.g. plastered head etc.)										7		1	
	1 additional point = objects attached to the body were unused (made for the burial)												3	
	1 additional point = raw material of exceptional value (transportation distance/acquisition costs)									1	1		2	
	1 additional point = manufacture of exceptional value (work load)												0	

Continued on the next page

		Number of data set											
		1	2	3	4	5	6	7	8	9	10	11	
Site		Abri Corneille-Sulauze I - 1	Abri Corneille-Sulauze I - 2	Abri Corneille-Sulauze I - 3	La Baume de Montclus - 1	La Baume de Montclus - 2	Le Cuzoul de Garmat	Le Poeymaü	Le Rastel	Abri Sous-Balme	Bad Dürrenberg - 1	Bad Dürrenberg - 2	occurrences
Burial equipment: grave goods (several entries possible)	0 point = no grave goods	1		1	1	1		1				1	6
	1 point = faunal remains (food offering)										1		1
	2 points = all-day equipment from flaked industry		2				2		2		2		4
	3 points = all-day simple objects produced from organic materials (bone point, smoothened, axe etc.)									3	3		2
	4 points = B8 complex objects produced from organic materials (spear thrower, perforated baton etc.)										4		1
	5 points = role attributes (drumstick etc.)										5		5
	1 additional point = raw material of exceptional value (transportation distance/acquisition costs)										1		1
	1 additional point = manufacture of exceptional value (work load)										1		1
	Total 1	6	8	0	6	0	9	8	11	18	40	12	
	1 additional point: body wrapped in leather?								1		1		2
Total 2	6	8	0	6	0	9	8	12	18	41	12		

workload assumed to be low
 workload assumed to be medium
 workload assumed to be high/
 exceptional burial equipment

Tab. 4 Data collected for the Magdalenian (source of raw data: Wüller 1999).

Tab. 4 Erfasste Daten für das Magdalénien (Quelle der Primärdaten: Wüller 1999).

		Number of data set										
		1	2	3	4	5	6	7	8	9		
Site		Grotte de Les Hoteaux	Saint-Germain-la-Rivière	Chancelade	Laugerie-Basse	Cap Blanc	Bruniquel, Abri Lafaye - 1	Bruniquel, Abri Lafaye - 2	Grotte Duruthy - 1	Grotte Duruthy - 2	occurrences	
»Meta« data	site type	cave	rock shelter									
	excavation date(s)	1896–1919	1928–1933	1887–1890	1864–1888	1908/1992	1884		1873	1957–1961		
	stratigraphical position	6 th foyer/-2m	single layer	foyer A (lowermost layer, but in pit from foyer C?)	depth of 4 m, base of arch. horizon	base of foyer inférieur (couche 3)	couche 20 c (layer D)/-0.75 m		niveau Tn (sq. CIII)	couche 3/4 (sq. DII)		
	industry	unknown	15780 ± 200 uncal BP	19500–18000 cal BP	15000 uncal BP	unknown	unknown	unknown	unknown	13520 ± 220 uncal BP		
	number of burials in the site	Magdalenian	Middle Magdalenian		Magdalenian	Badegoulien or Middle Magdalenian	Late Magdalenian				11	
	number of burials in the site	1	1	1	1	1	2		2		9	
	number of dead in the same burial	1	1	1	1	1	2 (?)		1	1	7	
	Individual: body position	supine position				1						1
		flexed position	1					1				2
		contracted position (taphomy or wrapping?)		1	1		1					3
unknown position								1	1	1	3	
Individual: anthropology	infans I (0–6 years)										1	
	infans II (7–12 years)										0	
	juvenile (13–18 years)	1				1					2	
	adult (19–40 years)		1	1	1		1				4	
	matur (40–60 years)								1	1	2	
	senile (< 60 years)										0	
	other age estimations										0	
	gender female		1				1	1			4	
gender male	1		1	1					1	3		
gender unknown								1	1	2		
anthropological specifics			Athritis, skull trauma									

Continued on the next page

		Number of data set										
		1	2	3	4	5	6	7	8	9		
		Site	Grotte de Les Hoteaux	Saint-Germain-la-Rivière	Chancelade	Laugerie-Basse	Cap Blanc	Bruniquel, Abri Lafaye - 1	Bruniquel, Abri Lafaye - 2	Grotte Duruthy - 1	Grotte Duruthy - 2	occurrences
Burial context	0 point = all-day context (e.g. in the centre of activity area)	1	1	1	1			1	1	1	1	8
	1 point = in separate area within a campsite						1					0
	2 points = special burial site, with several burials											0
	3 points = isolated special burial site with single burial											3
Burial orientation (one entry)	0 point = random (or unknown)											2
	1 point = along a given axis of the site		1			1		1	1		1	6
	2 points = along compass point	2										3
Burial construction (several entries possible)	0 point = on the ground level		1	1	1			1	1	1	1	2
	1 point = in natural depression											0
	2 points = in artificial pit	2					2					9
	3 points = (additional) construction with material collected from the site (stone slabs)		3							3	3	7
	4 points = construction with regionally collected materials (pebbles from river terraces, faunal elements)											2
	1 additional point = construction visible on the surface	1	1							1	1	4
Burial equipment attached to the body (several entries possible)	1 additional point = ochre scatter	1	1	1	1							4
	0 point = no pendant			1			1	1	1		1	7
	1 point = isolated pendant	1										2
	2 points = numerous pendants		2						2			1
	3 points = pendants attached to headgear or headdress					3						1
	4 points = pendants attached to upper or lower part (clothes)					4						1
	5 points = pendants attached to upper and lower part (clothes)					5						0
	6 points = role attributes attached to the body used during lifetime (e.g. "mask")											0
	7 points = materials attached to the body pointing to differential treatment of the dead (e.g. plastered head etc.)											1
	1 additional point = objects attached to the body were unused (made for the burial)											3
	1 additional point = raw material of exceptional value (transportation distance/acquisition costs)		1			1				1		2
1 additional point = manufacture of exceptional value (work load)											0	
Burial equipment: grave goods (several entries possible)	0 point = no grave goods			1	1	1	1	1	1	1	1	7
	1 point = faunal remains (food offering)		1									1
	2 points = all-day equipment from flaked industry											0
	3 points = all-day simple objects produced from organic materials (bone point, smoothened, axe etc.)		3									1
	4 points = complex objects produced from organic materials (spear thrower, perforated baton etc.)	4										1
	5 points = role attributes (drumstick etc.)											0
	1 additional point = raw material of exceptional value (transportation distance/acquisition costs)											0
1 additional point = manufacture of exceptional value (work load)											0	
Total 1	11	13	1	15	3	1	1	8	5	40		
1 additional point: body wrapped in leather?		1	1			1					1	
Total 2	11	14	2	15	4	1	1	8	5	41		

workload assumed to be low
workload assumed to be medium
workload assumed to be high/
exceptional burial equipment

Tab. 5 Data collected for the Mesolithic (source of raw data: Grünberg 2000).

Tab. 5 Erfasste Daten für das Mesolithikum (Quelle der Primärdaten: Grünberg 2000).

Results

The results are presented in two sections: individual scores and cumulated scores. Due to the small number of cases, we will refrain from further elaborate statistical analysis. Therefore, all analysis takes advantage of natural numbers.

More specifically, individual scores record each burial separately, whereas cumulated scores result from the addition of scores or the summed-up presence or absence of attributes in categories to display the total amount of workload the respective groups are willing to invest in the burial equipment of their dead members.

Potential bias	Archaeological evidence supporting presence of bias	Consequences	Bias present in this study?	
Reduced representativity of dataset due to limitation to inhumation graves	Differential access of group members to burials with the deposition of the entire body?	Secondary burials of (cremated) body parts (e.g. in the Magdalenian of Brilenhöhle: Orschiedt 2013) and the Mesolithic (Grünberg 2000)	Sample biased by social selection towards higher status and prestige	Highly probable
Reduced representativity of dataset due to overrepresentation of burials in settings which have higher chances of being excavated (caves, base camps)	Differential access of group members to burials at camp sites?	Presence of isolated burials in the Paleolithic (e.g. Brno II: Oliva 2000; Bad Dürrenberg: Orschiedt et al. 2023); 46% of Mesolithic burial sites are open air sites (Grünberg 2000, Tab. 2)	Sample biased by social selection and probability of site discovery (especially in the case of open-air burial sites)	yes
Reduced representativity of dataset due to selective excavation methods	Early dates of excavation lead to loss of information?	Most Magdalenian burials in French rock shelters and caves were excavated before WW II	Unreliable information about/interpretation of stratigraphy, burial pits, stone constructions etc.	yes
Reduced representativity of dataset due to limitation on hunter-gatherers with comparable subsistence tactics (e.g. primarily focus on terrestrial game)	Burials of large Mesolithic burial from aquatic/marine subsistence tactics more informative in search for differences in status and prestige?	Sample does not include Mesolithic burial grounds, which may have > 100 burials (Grünberg 2000, Tab. 2)	A large part of Mesolithic burials is missing	yes

Tab. 6 Possible shortcomings of the dataset.

Tab. 6 Mögliche Unzulänglichkeiten des Datensatzes.

Individual burial scores

Total burial scores

In the Magdalenian (Fig. 2), burial scores range between one point for the two burials from Bruniquel, Dép. Tarn-et-Garonne, France, and 15 points for the burial from Laugerie-Basse, Dép. Dordogne, also France. The increase in total scores per burial, visualised by their rank order, is almost constant. At the same time, with the two exceptions at the very lower end of the value range, each burial has a different total score. The Mesolithic scores are more unevenly dispersed. If Bad Dürrenberg is not considered, scores range between 0 and 18, which is roughly the same range as in the Magdalenian. However, the increase is less constant, as there is a considerable gap between the lowermost score of 0 and the next group with values between 6 and 12 points. Another gap is between Le Rastel, Commune de Peillon, Dép. Alpes Maritimes, France, with 12 points and Abri Sous Roche de La Balme de Thuy, Dép. Haute-Savoie, France, with 18 points. These differences in the steps of increasing burial scores may be rooted in the imprecision of the scoring system applied, because scores are given by rank order instead of actual workload. The jump of values between Abri Sous Roche de La Balme de Thuy and Bad Dürrenberg of twenty-three points is another matter and certainly reflects marked differences in burial equipment. The more weighted distribution of economic efforts invested in the Mesolithic individual burials is better visible in the lower part of Fig. 2, which shows the frequency of cases for burial scores in the two datasets. In the Magdalenian, the distances between neighbouring scores are low, whilst the Mesolithic distribution is characterised by clus-

tering within the lower values ≥ 12 points, followed by large gaps in the higher values.

Burial score and age

The question here is to what extent the age of the individuals may have influenced status and prestige. Again, it must be mentioned beforehand that the analysis is weakened by the small number of cases. Thus, the methodological discrimination against younger age classes, due to their shorter time span and the higher vulnerability of the skeletons of very young individuals to decomposition, results in a weighted distribution of age classes, which in both datasets is best described as unimodal with a peak in the age class of adults (Fig. 3). The major premise in the social analysis of hunter-gatherers is the assumption that social hierarchies are low and that social positions with higher status and prestige are not inherited but need to be earned by performance. Given the individual ownership of gear and valuable objects, one would expect an increase of burial attributes indicating higher status and prestige with an increase of age and, after reaching the maximum, a plateau in the following age classes. The following observations (deduced from Fig. 3) deviate from this expectation and therefore require explanation (note that the comparably high score of the infant from Bad Dürrenberg 2 is omitted here because it is possibly a secondary burial):

- a large variability of scores in the class of adults resulting from the presence of very low scores, and
- the fact that adults reach the highest scores, but at the same time, mature and senile individuals all have low to very low scores.

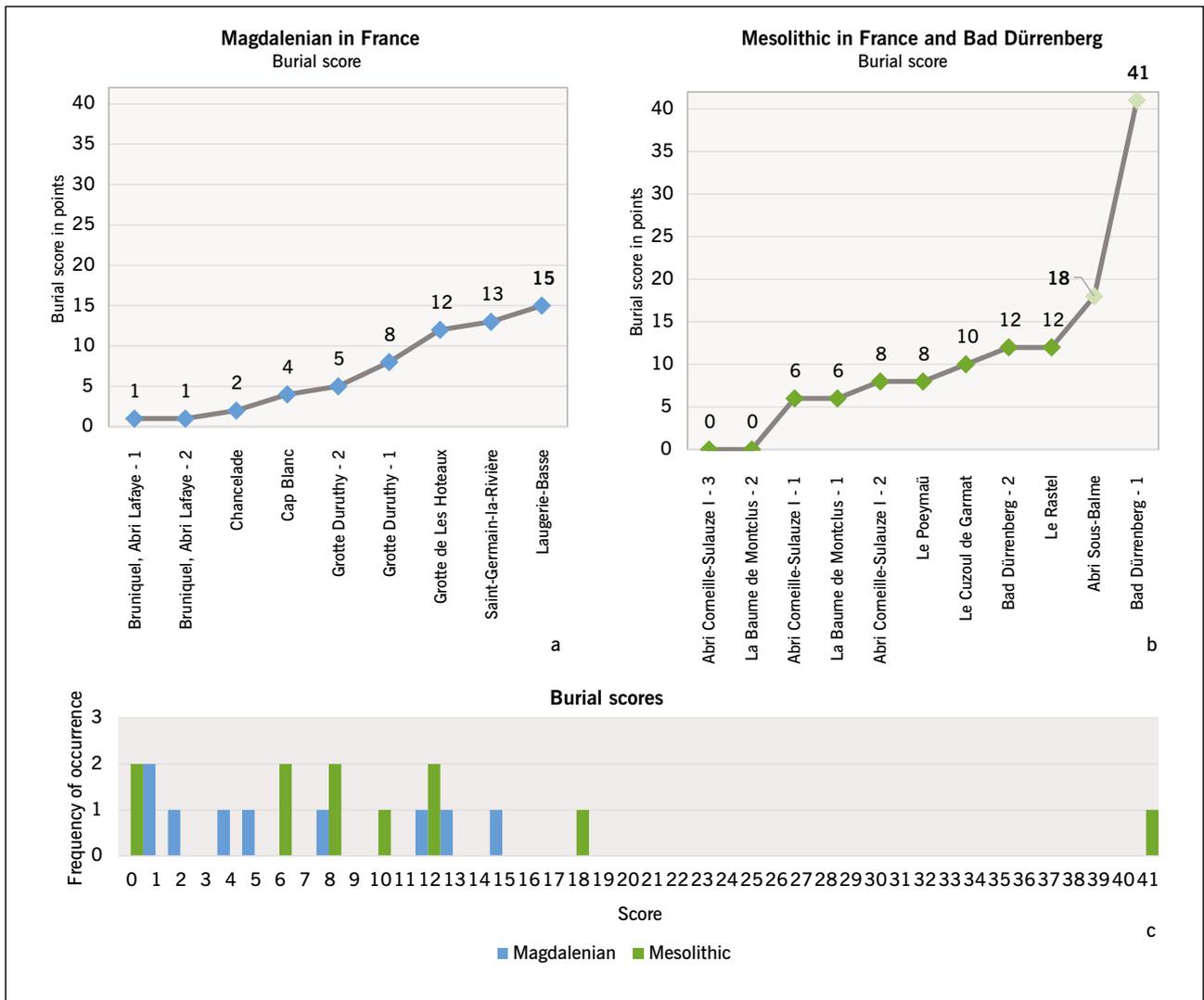


Fig. 2a–c Burial scores.

Abb. 2a–c Bewertung der Bestattungen.

Burial score and gender

The problem of small numbers also affects the examination of potential relations between burial score and gender. Nonetheless, the resulting diagrams (Fig. 4) are briefly described below. In the Magdalenian dataset, the ratio between male and female individuals among the buried is almost equal. The same applies to the partition of burial scores, where both females and males appear among burials with low and high scores. The difference between the high score in female burials of 14 points and that of male burials of 15 points is negligible. When the comparison is confined to burials from France, the picture in the Mesolithic is markedly different. In contrast to the Magdalenian, the maximum score in the Mesolithic male burials of 18 points is three times higher than the highest score in the female burials. The picture changes notably with the inclusion of Bad Dürrenberg. Following the argument that the bulk of burial equipment was dedicated to the adult woman, this burial aggregates a burial score that more than doubles the highest score for male burials.

Cumulated burial scores

The informative value of a summation of burial scores for broad categories (Fig. 5) might be called into question, as the focus in the analysis of burials is on the status and prestige of individuals. However, it might also be interesting to know what aspect of burials a community (virtual, in the studied cases) is willing to invest in, or vice versa, what burial features are accepted to designate higher status and prestige. From such an economic perspective, the Magdalenian and Mesolithic burials show marked differences. In the Magdalenian, the burial construction and the burial equipment attached to the body (by and large identical to clothing) reach by far the highest scores, which are very similar to each other. It is of note here that the attribute ›body wrapped in leather‹ was counted as part of the burial construction. In contrast, in the Mesolithic, the score for the category ›burial construction‹ exceeds all others by far, independent of the inclusion or exclusion of the Bad Dürrenberg burial. Whether this difference can be interpreted as a shift in signals for status and prestige from items personally owned by the individual during their lifetime (e.g.

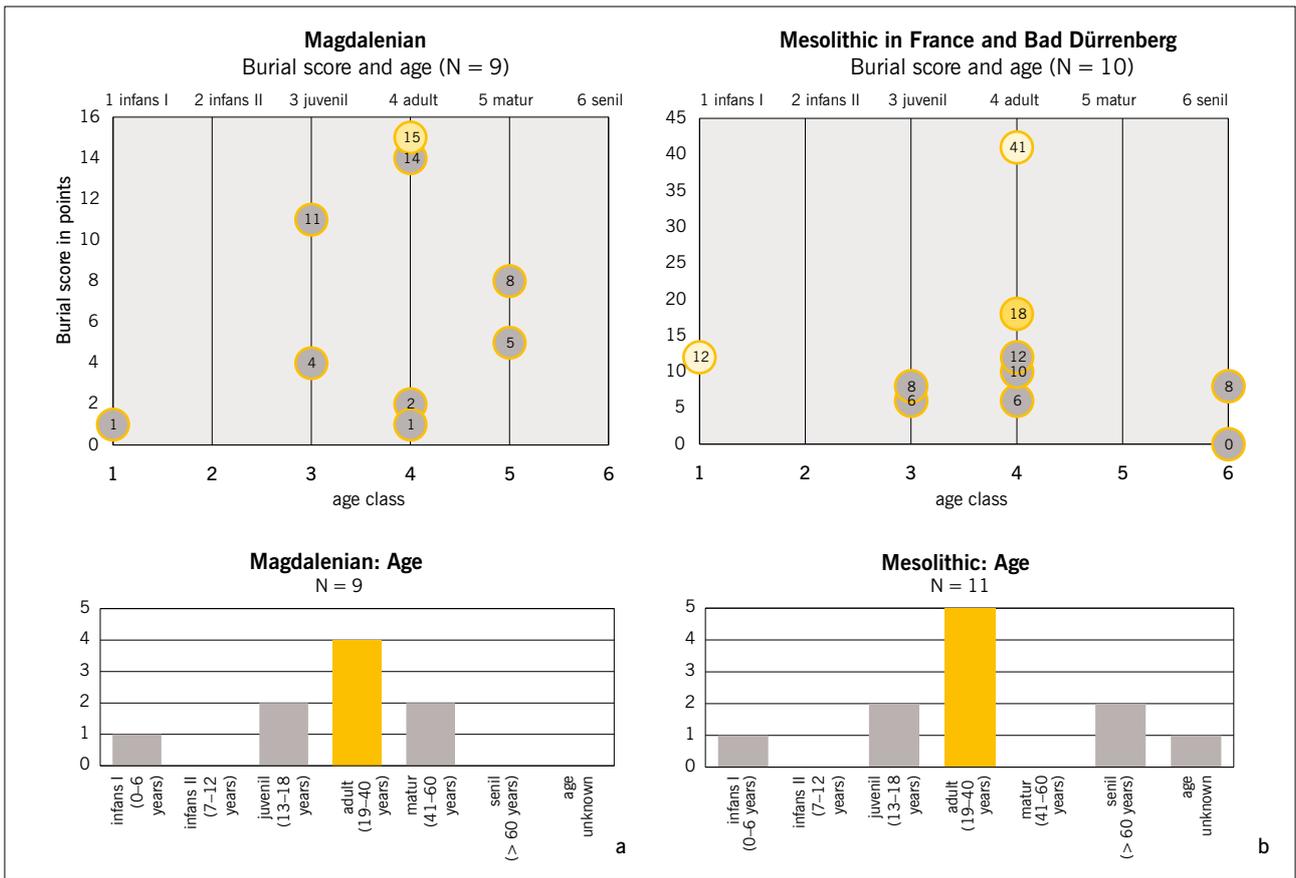


Fig. 3a–b Burial scores and age (orange: maximum; light orange: scores calculated for Bad Dürrenberg).

Abb. 3a–b Bestattungswertungen und Alter (orange: Höchstwert; hellorange: für Bad Dürrenberg berechnete Werte).

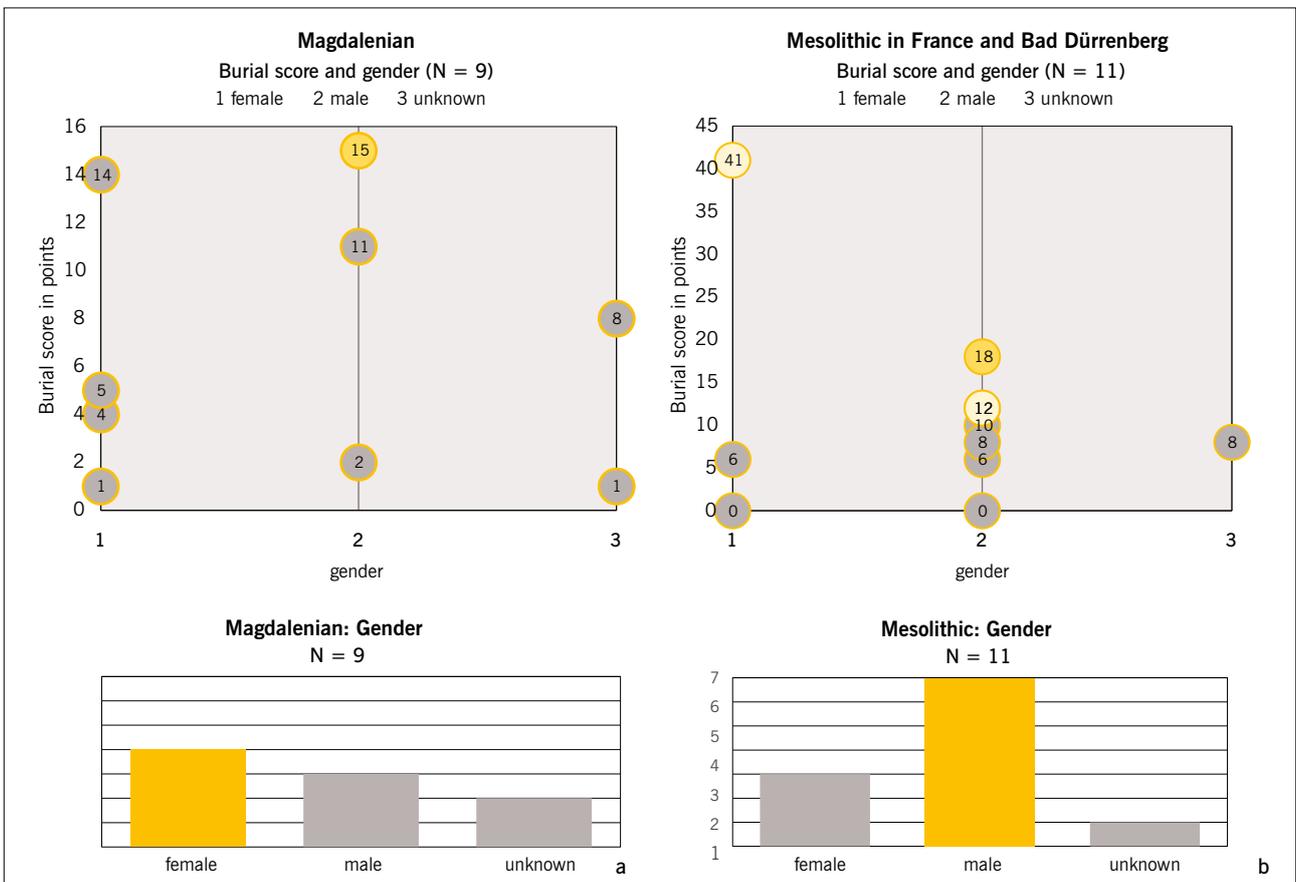


Fig. 4a–b Burial scores and gender (orange: maximum; light orange: scores calculated for Bad Dürrenberg).

Abb. 4a–b Bestattungswerte und Geschlecht (orange: Maximum; hellorange: für Bad Dürrenberg berechnete Werte).

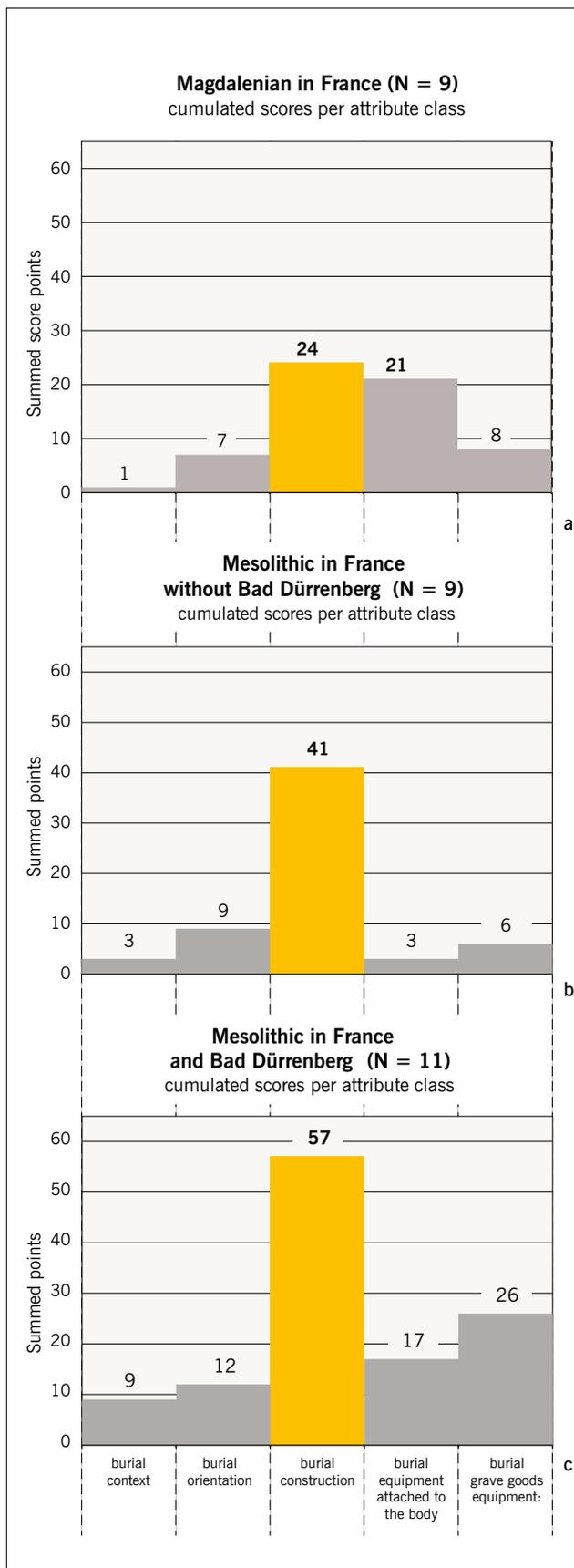


Fig. 5a–c Cumulated burial scores (orange: maximum; note that the attribute ›body wrapped in leather‹ was counted as part of the burial construction).

Abb. 5a–c Kumulierte Bestattungswerte (orange: Maximum; zu beachten wäre, dass das Attribut ›in Leder eingewickelter Körper‹ als Teil der Bestattungskonstruktion gezählt wurde).

clothing) to investments made by the burying community for the dead (e.g. burial construction) will be discussed in the following section.

Discussion

Due to the weak database, the results of the present study (Fig. 6) should be treated with caution. At best, they can be taken as the results of a pilot study aiming at the application of an economic scoring system to prehistoric hunter-gatherer burial contexts. However, it is questionable whether enlarging the geographical scale would have also substantially enlarged the dataset – at least for the Magdalenian. For example, Magdalenian/Epi-Gravettian burials are more numerous in Italy, but these are heavily disturbed in an overwhelming number of cases (Orschiedt 2013). In contrast, widening the geographical scope of Mesolithic burials to the entirety of France would, indeed, lead to an increase in cases (Boulestin 2018). Although the number of burials in Mesolithic necropoleis near the French Atlantic coast, such as Tévéc, Dép. Morbihan, is again limited, especially when compared to Scandinavian sites from the late Mesolithic, e.g. Skateholm, Skåne County, Sweden and Bøgebakken, North Jutland, Denmark (Larsson 2016), an inclusion of groups exploiting marine and/or aquatic resources would have enlarged the dataset (see also Meiklejohn et al. 2021). However, at the same time, that would have made it incongruent with the Magdalenian data due to different subsistence tactics. Within the methodological presumption that, in hunter-gatherer groups, the economic value of the burial equipment is an appropriate indicator of the status of a social position and/or the prestige of the position holder, both the Magdalenian and the Mesolithic datasets show the presence of differences in the socioeconomic status and prestige of the buried. However, the findings are not identical. Instead, Mesolithic groups seem to have allowed larger differences in economic status linked to social positions than those of the Magdalenian.

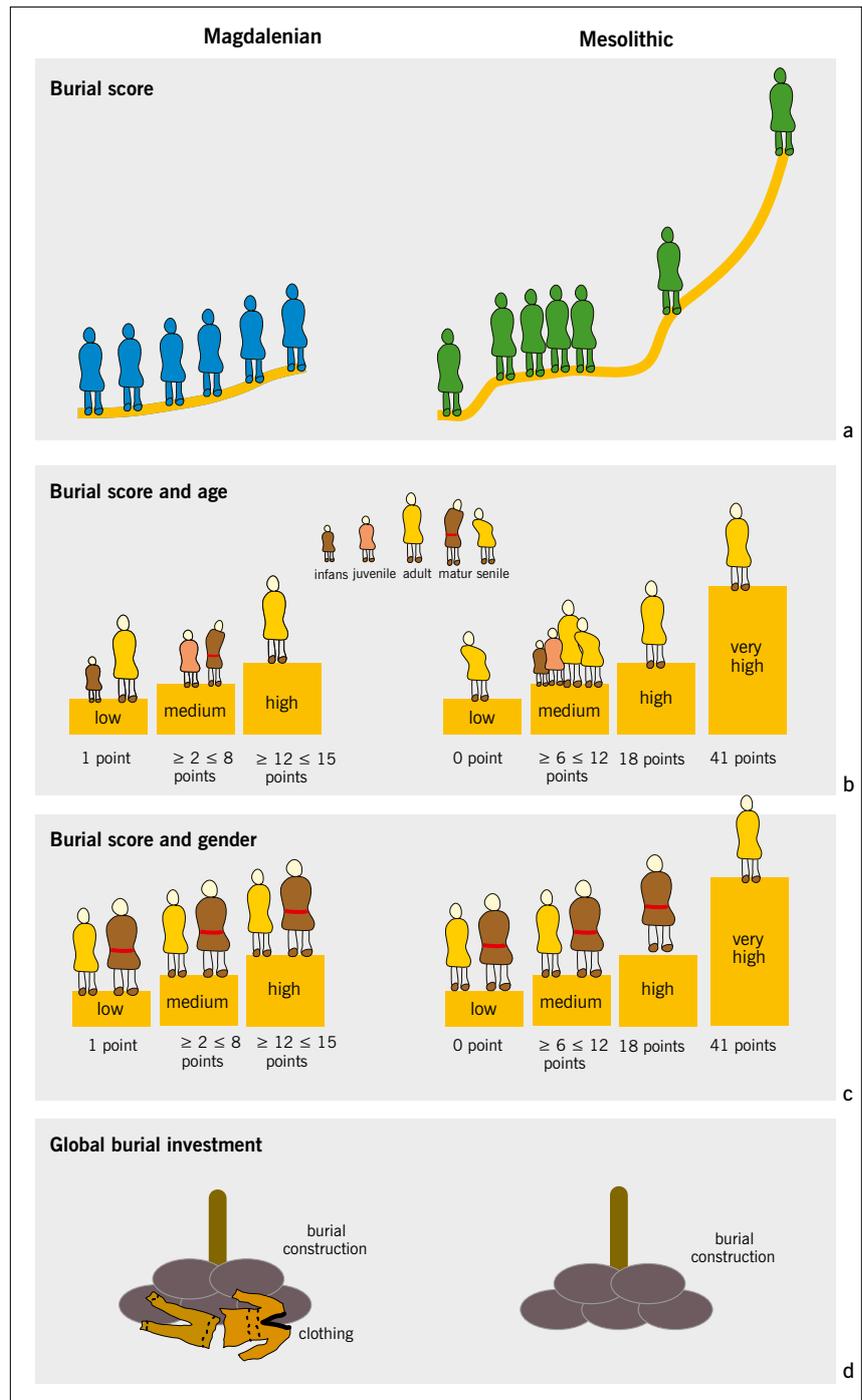
Total burial scores

Marked differences were observed in the analysis of the total amount of workload invested in the burials of the Magdalenian and the Mesolithic periods. The range and the gradient of total scores are much higher in the Mesolithic. At the same time, it is characterised by clusters rather than a constant increase as in the Magdalenian. Two hypotheses can be deduced from this:

1. In the Mesolithic, the weighted and unbalanced distribution of burial scores accompanied by a top-ranking position distant to the remaining individuals mirrors marked differences in status and prestige indicative of a transegalitarian society. The more clustered increase of scores might indicate the existence of several, albeit vaguely defined, classes of socioeconomic status.
2. In the Magdalenian, the continuous increase of burial scores combined with the absence of larger gaps and

Fig. 6a–d Comparison of major results of the present study.

Abb. 6a–d Vergleich der wichtigsten Ergebnisse der vorliegenden Studie.



without extremely high values all speak for less economic difference in status and prestige, thus indicating an egalitarian society. Furthermore, the fact that each burial has a different score indicates a more nuanced relation between status and prestige on the one hand and the individual performance of the buried holders of social positions on the other.

Burial scores, gender and age

Despite the limited representativity of the dataset already discussed in length above, gender seemingly did not influ-

ence the chances of becoming the holder of a social position with higher status and prestige. Regarding access to such positions in relation to age, it is more difficult to decide to what extent the low number of cases blurs the distribution of burial scores in age classes. Firstly, this applies to the estimation of age at death. In both datasets, adults dominate the distribution of age classes among the buried individuals. One argument for taking this as a sign of statistical bias is the imbalance within the ranges of the ages estimated. Age estimations of young individuals have a higher precision, leading to a higher resolution of the age classes, which cover a span of around 5 years. Conversely, the age classes of adult and mature individuals are as large as 20 years.

This enlargement favours larger numbers of individuals, thus increasing the chances of advanced variability. However, besides the fact that the frequencies of adult, mature, and senile individuals with some probability meet the actual life expectancy of hunter-gatherers at the time (Uthmeier 2023, 365–369), any explanation solely based on statistical biases is further weakened by the observation that both datasets show the same basic relation between burial scores and age classes. In the Magdalenian and Mesolithic alike, burial scores of adults reach a peak and have the largest range, whereas the burial scores of the young, as well as those of mature and senile individuals, are lower. This justifies suggesting the following hypotheses:

1. The occupation of social positions with higher status and prestige was not heritable.
2. The acceptance of candidates for social positions with higher status and prestige resulted from performance or, more precisely, performance accumulated with increasing age. The kind of performance remains unknown. It is possible that this was related to situations in which candidates for prestigious social positions proved their value, or whose performances resulted in the cumulation of knowledge and skills. Following this line of argument, the burials of adults with low scores could be explained by group members who were less successful in this regard.
3. The regular fallback of burial scores of mature and senile individuals behind those of adults may indicate that higher economic status and prestige, or their material visibility, was not a life-long privilege.

While the first two hypotheses meet general expectations, the last hypothesis deserves more attention. It presumes that the lack of rich burials of older individuals is not random, e.g. a consequence of the low number of cases, but in fact, the result of passing valuable objects to younger successors. In the run-up of the discussion, it is important to note that measuring burial scores only makes it possible to elucidate the economic aspect of status and prestige in its materialised form – and only if it is visible in the archaeological remains of the burial of the respective individual. Therefore, a higher status and prestige not expressed by valuable burial goods cannot be recognised. Consequently, it is impossible to answer the question of whether Magdalenian and Mesolithic holders of positions with higher status and prestige nevertheless kept their authority and still met with similar esteem after the suggested recession. What can be reflected on is the character of the objects potentially passed. To explore this aspect further, a diagram was calculated for the summed scores of burial categories sorted by age class (Fig. 7). It enables the identification of the main difference between adult burials on the one hand, and those of senile or mature individuals on the other, which is to be found in burial equipment attached to the body, e.g. clothing. In the Magdalenian, the exceptionally high score of the burial from Laugerie Basse in this category (total burial score: 15 points) differentiates it from all other burials from this period. The same applies to the Mesolithic, where the category ›burial equipment attached to the body‹ shows

an exceptional drop of points between the burial of adults (e.g. Abri sous Roche de La Balme de Thuy, total burial score: 18 points, and Bad Dürrenberg-1, total burial score: 41 points) and those of the mature individuals from Abri Corneille-Sulauze I-1, Commune d' Istres, Dép. Bouches-du-Rhône, France, and Abri Corneille-Sulauze I-3, Commune d' Istres, Dép. Bouches-du-Rhône, France. Consequently, and with all caution, one hypothesis drawn from this is that valuable clothing, e.g. caps, anoraks, and/or trousers decorated with pendants indicating higher status and prestige, was passed from generation to generation. If so, valuable clothing would have to be counted as a role attribute. Following B. Hayden's (1998) differentiation between practical and prestige technologies, valuable clothing would belong to the prestige technologies and, more precisely, to ritual technologies with restricted – in this case, temporal – private ownership.

Cumulated scores

The values mirroring the overall investment of synthetic Magdalenian and Mesolithic groups can best be summarised as follows: while in the Magdalenian the burial construction and the equipment attached to the body reach the by far highest scores, reaching almost the same level, Mesolithic burial scores are dominated by high values in the category of burial constructions. A closer look at the distribution of attributes within this category reveals that burial constructions visible on the surface are found in both datasets in equal but relatively low numbers (four burials each). Valuable burials are, therefore, not so much characterised by surface visibility after the burial but by features merely visible during the time of construction and the burial ceremony itself, such as a burial pit or stone slabs later covered by sediment. Interestingly, the scores for burial constructions are quite similarly distributed among the age classes in the Mesolithic but not so in the Magdalenian. This being said, the differences observed allow for further consideration of the agency of valuable burial goods. In the Magdalenian, valuable burial equipment attached to the body was at least potentially acquired during the lifetime by the personal performance of the buried individual, whereas in the Mesolithic, investment in the burial construction was provided by the living for the dead. In theory, this would allow numerous members of the burying community to contribute to the overall burial value, e.g. by donating stone slabs or producing part of the ochre.

Further thoughts on the low frequency of Magdalenian and Mesolithic burials

C. Jeunesse (2021) postulated an underrepresentation of burials in relation to the overall populations in prehistoric hunter-gatherer groups. While this is more than obvious for the Magdalenian, the latest collection of Mesolithic burial data (Meiklejohn et al. 2016) requires a short review here. Their data set, which comprises sites from the entirety of Europe, includes 211 sites – a larger num-

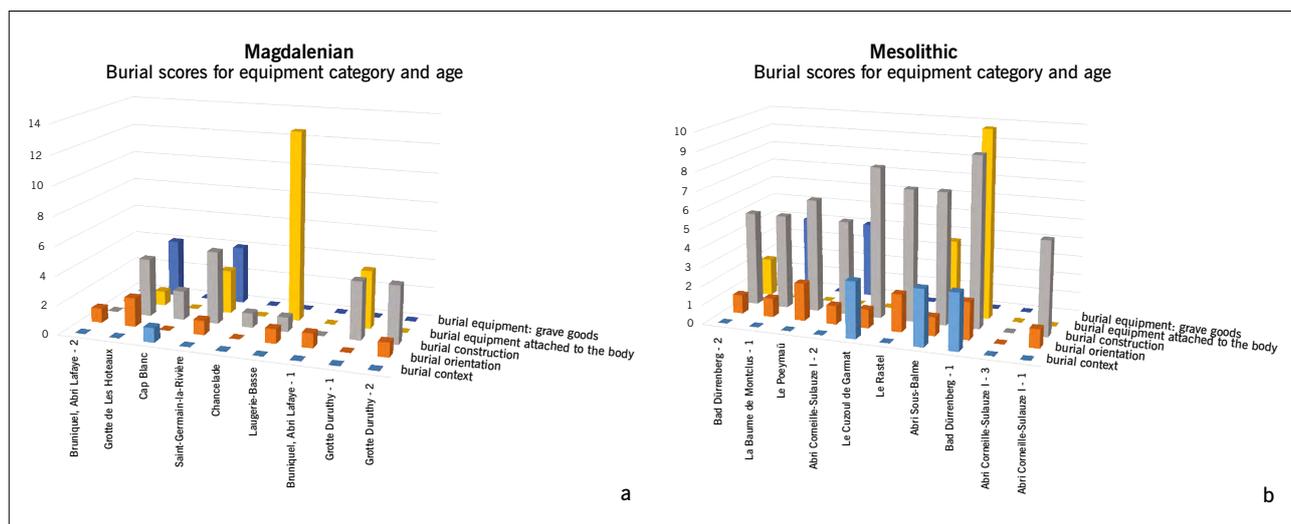


Fig. 7a–b Summed scores for different burial categories in age classes.

Abb. 7a–b Summenwerte für verschiedene Bestattungskategorien nach Altersklassen.

ber by far than in the Magdalenian. Does this mean that the case of underrepresented burials does not apply to the Mesolithic? The above-cited data review comprises burial sites from coastal, near-coastal and inland areas and, therefore, contains substantially different subsistence tactics. The latter influence the respective land use patterns, which in turn may lead to differences in burial customs. For example, it is assumed that the primary use of spatially and/or seasonally localised aquatic resources such as shellfish, mussels or freshwater fish is coupled with a land use pattern characterised by longer occupations and repeated site use (Marchand 2007). In Brittany, ›semi-sedentary‹ Mesolithic lifeways are coupled with the emergence of large burial grounds (Marchand 2007, 227–229). Excluding coastal and inland river contexts relativises the number of burials per site. In total, the range is from 1 to 177, but in most cases absolute numbers are quite low: the median for the number of burials per site is only two (Meiklejohn et al. 2016, 30), meaning that half of the Mesolithic burial sites have only one or two burials. Given that most of the large burial grounds correlate with aquatic resource procurement, it follows that burials in nomadic Mesolithic hunter-gatherer groups with subsistence tactics based on terrestrial game are also an exception. According to C. Jeunesse (2021), this underrepresentation is related to a specific perception of the supernatural powers of the dead. In contrast to egalitarian or ranked societies with sedentary lifeways, who see their dead as helpful ancestors remembered through elaborate funeral rites and even memorials, nomadic hunter-gatherers often see their dead as harmful ghosts that must be banished from the sphere of the living and erased from the memory of the group. In this sense, C. Jeunesse (2021) argues for erased memories in the Upper Palaeolithic and Mesolithic. However, the question of the extent to which the few existing inland burials from the Magdalenian and Mesolithic periods, and especially those with high burial scores, can already be interpreted as the intention to construct ancestors is difficult to answer.

Conclusion

The baseline of the present article is the assumption that differences in status and prestige exist in almost all human societies. Whereas the presence of different social positions in the simplest form is related to gender, age, and division of labour, differences in status and prestige are the consequence of the group's rating of the importance of social positions for the community, as well as the individual performance of the position holders. Although status and prestige are two dimensions of the societal complement of social positions, it is impossible to differentiate them in archaeological contexts due to the lack of emic information. Therefore, status and prestige are treated as one variable investigated using a socioeconomic approach. The most promising way to couple status and prestige on the one hand and archaeological material culture on the other is seen in burials. Consequently, the present pilot study tests a newly developed scoring system for evaluating the socioeconomic status of individuals in prehistoric hunter-gatherer burials with the help of a diachronic dataset from the French Magdalenian and Mesolithic. Judged from a socioeconomic perspective, Magdalenian groups had an egalitarian societal organisation, whereas in the Mesolithic societal hierarchy was more elaborated. Regarding the occupation of positions with high status and prestige, gender does not seem to have been a criterion. What seems to have been a precondition for acquiring higher status and prestige in both industries is age, coupled with performance. Surprisingly, mature and senile individuals have lower scores, possibly indicating a loss of economic privileges in a phase of reduced social activity. Another conjunctive element is a peak in the economic significance of equipment attached to the body, e.g. clothing, in burials with the overall highest burials scores, in each case found in the adult age class. This finding, although weakened by the low number of cases, is interpreted as a transfer of clothing from a former position holder, who had become inactive through age, to the

succeeding active position holder. If so, valuable clothing would have the societal meaning of a role attribute. Despite differences in the general investment in burial construc-

tion, which was much more common in the Mesolithic, the economic value of burials in both industries was mostly hidden once the burial ceremony had ended.

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Source of figures

1–7 author
Tab. 1–6 author

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