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Archaeology (56703)

Verpoorte, Associate Professor

Leiden University, Faculty of Archaeology

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Acknowledgements

Preface

I would like to thank my supervisor, Alexander Verpoorte, for his understanding, diligence, good advice, and never-ending patience, without which I would have surely lost sight of the goal.

I also thank the Board of Examiners and the Archaeology Study Advisers, who were there to assist me at every turn.

I would also like to thank my parents, who trusted me and afforded me the opportunity to not only study abroad, but also follow a discipline that most people back in my hometown could not even spell.

Finally, I would like to dedicate this work to Federico, who sat with me all those long hours in the library, brainstormed with me, provided for me in every sense of the word, and never once wavered in his support and dedication to help me achieve my goals as if they were his own— this work is as much a testament to your devotion as much as it is a testament to my academic achievements (so far). I could not have done it without you.

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Chapter 1: Introduction

The natural world has captivated the human imagination for as long as we have been human. For a very long time, the chief way of expressing this appreciation was through art, in whatever medium was available. The artists' intentions and meanings of these artworks have been lost to time. However, as is the nature of art, it not only speaks for itself but also reveals much about the lives of artists and the world they lived in. Studying certain elements of palaeolithic art may broaden our understanding of Magdalenian societies.

1.2 Research Aim

It is well known that animal representations often form the majority of depictions in palaeolithic art. What is less well understood are the mechanics behind selecting an animal for depiction. Is there a specific selection of animal chosen for depiction in palaeolithic art, and if so, why?

The primary source for my research is Georges Sauvet's 2019 article "The hierarchy of animals in the Palaeolithic iconography" from the Journal of Archaeological Science. Using a database of more than 4700 rock art animal representations, Sauvet puts together a compelling case for the "conceptual dominance" of the horse in the Franco-Cantabrian region, from the Aurignacian through the end of the Magdalenian (Sauvet, 2019, p.1). The purpose of my research is to discover if the perceived dominance of the horse during the Magdalenian period can also be observed in palaeolithic art beyond the Franco-Cantabrian region, particularly in Northwestern Europe. This is significant because if a connection is found, it could indicate the presence of a shared cultural and artistic tradition across Magdalenian Europe that could potentially exhibit the beginnings of animistic thought.

1.3 Case study

My selected case study is Gönnersdorf, an Upper Magdalenian site situated on the Central German Rhineland. The occupation period dates to approximately 13,000 cal BP and consists of a range of dwelling structures (Street et al., 2012, p. 234). It has features that are typical of Upper Magdalenian sites, along with a robust assemblage of both lithic and organic artefacts (Street et al., 2012, p. 232). My dataset will consist of a selection of slate plaquettes from Gönnersdorf, engraved with figurative depictions of women, varied species of animals, and abstract symbols (Street et al., 2012, p. 237).

Case study data will be sourced from the volumes in Gerhard Bosinski's 1980 series "Der Magdalénien-Fundplatz Gönnersdorf". The animal depictions will be collected from the 5th volume of the series, "Mammut- Und Pferdedarstellungen Von Gönnersdorf".

1.4 Research Question and Sub-Research Questions

Therefore, my central research question is: *What is the significance of the Magdalenian horse depictions from Gönnersdorf, Germany?*

As the scope of this question is quite broad, I have broken it down into three sub-questions which I will address in this thesis:

1. Can certain characteristics observed in depictions of horses in the Franco-Cantabrian region also be identified in horse depictions at Gönnersdorf?
2. Are horses at Gönnersdorf depicted in a manner that sets them apart from other species and if so, in what ways? (numerical?)
3. How can the depictions from Gönnersdorf be interpreted in terms of animistic thought?

1.5 Structure of the thesis

I will base my research on organizing the Gonnersdorf horse depictions into a modified version of the characteristics Sauvet uses in his research, to compare my results with his study. I will examine the similarities and differences in our conclusions, explore the various implications of my results, and provide my personal interpretation of the assemblage.

In the following chapter I will provide a summary of Georges Sauvet's paper *The hierarchy of animals in the palaeolithic iconography*, essential context about the Magdalenian period, including the cultural landscape of the time, and an overview of common characteristics of iconographic expression during the Magdalenian.

Chapter 2: Background Research

2.1 Summary of Sauvet's *The hierarchy of animals in the palaeolithic iconography*

Sauvet's paper argues that in Palaeolithic iconography, the horse is not only at the top of the hierarchy of commonly depicted animals, but that they also boast a "conceptual dominance", to the point where cave art is organized in a way where the scene is planned around the central figure of the horse.

Horses serve as the main instrument to examine the mechanisms behind the spread of common ideas across large regions in prehistory. Identifying a common structure in Palaeolithic cave art is the first step to deciphering how groups in Magdalanenian structured their societies and exchange networks. In order to achieve this, a database of over 4700 figurative depictions of horses from sites across the Franco-Cantabrian region was compiled.

The horse was found to be the most numerous of all species (52%) within the database, with the bison coming second. It was observed that the horse was ubiquitous across the entire region, specifically from Northern France to Andalusia, and this trend remained true in every time period from the Aurignacian to the final Magdalenian. Other statistics provided by Sauvet includes that horses were present in more than 44% of all cave panels, present in more than ¾ sites, and always in first or second in terms of numerical superiority. This is visualised in the graph below.

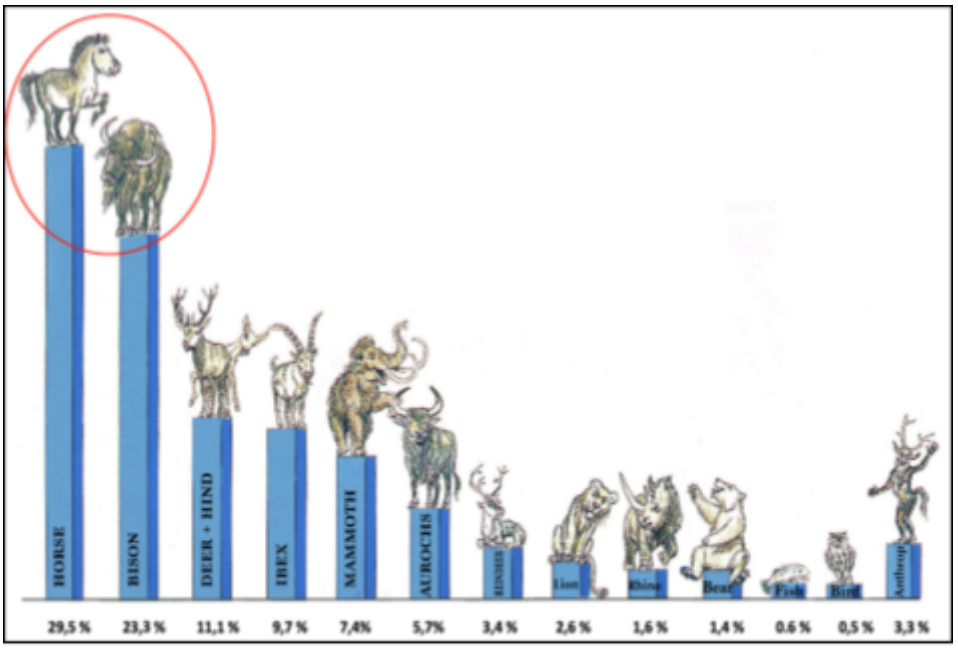

Figure 1. The hierarchy of animals in palaeolithic iconography (Sauvet, 2019, p. 2)

Sauvet conducts a handful of additional statistical analyses, specifically a Khi2 test determining the degree of associations of the horse with other animals, the results of which were inconclusive. A CFA (Correspondence Factor Analysis) was conducted to observe and compare the eminence of the horse, in seven regions in the Franco-Cantabrian and two time periods: Mid-Aurignacian and the Magdalenian. These individual results were compared, upon which it was observed that the horse was the central, unifying factor in all periods and regions. The horse in palaeolithic art "binds the entire iconography" and "maintains its homogeneity… despite its evolution over time" (Sauvet 2019, p. 6).

An analysis of a selection of cave panels where Sauvet identifies the prominence of the horse is provided. The specific characteristics for how prominence is determined are set by Sauvet, which he refers to as the 'formal exemplarity' of the animal. Some of these characteristics are the size, position of the animal, colour, degree of visibility, and location of the horse on the cave panel, especially in relation to the other animals in the panel. An example of a 'prominent' horse that fulfils these criteria is shown below.

Figure 2. A panel from Tito Bustillo cave. Two large horses loom over the rest of the animals in the panel (Sauvet, 2019, p. 6).

In terms of cave art, it seems that the placement of the horse takes precedence over the number of instances an animal is depicted. Sauvet also highlights that the trend of horse superiority throughout different periods of the Palaeolithic is not only observable in cave art but also in portable art, namely horse effigies. A horse statuette from Vogelherd, Germany was found to bear a close resemblance to another statuette from Les Espelugues, France, and although both were made from mammoth ivory, the statuettes were discovered to have been made 20,000 years apart (Sauvet, 2019, p. 6). Sauvet uses this as affirming evidence of the permanency of the horse in Palaeolithic thought.

Sauvet concludes by venturing into how this observed dominance of the horse could be interpreted in regard to animist ontology. He suggests that the observed Palaeolithic hierarchy could parallel pantheons in historical religions, with the horse at the top. Marshall Shalins' re-proposal of Phillipe Descola's four ontologies, where Sahlins argues that Descola's animism, totemism, and analogism are not independent ontologies, but are rather subsets of animism, all fitting under the umbrella of anthropomorphism (Sauvet, 2019, p. 8).

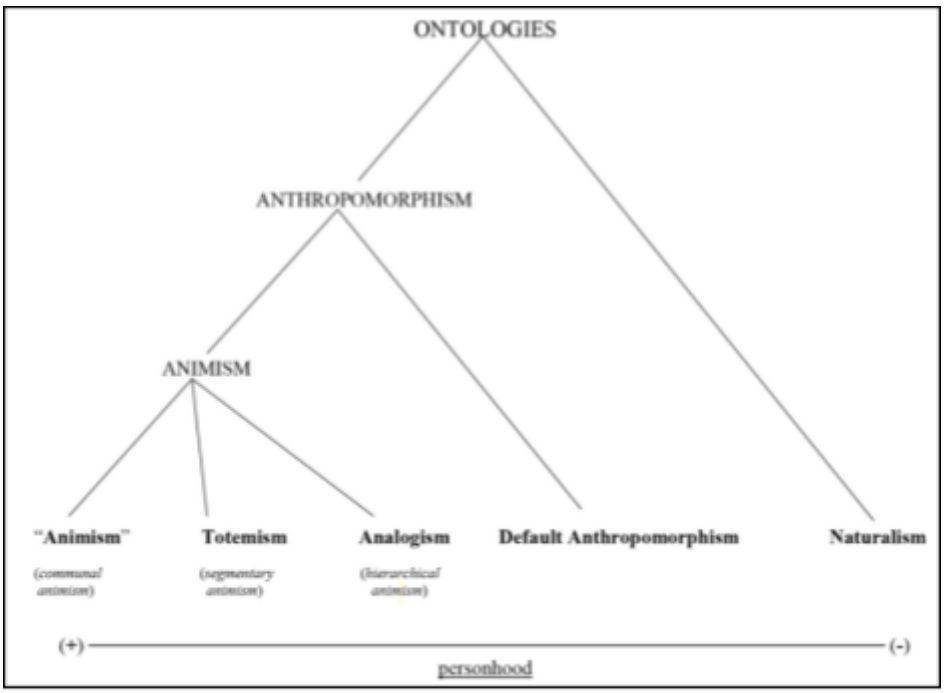

Figure 3. Sahlin's alternative scheme of Descola's four ontologies (Sauvet, 2019, p. 8)

It is then suggested that the observed hierarchy of animals may fit best with Sahlin's hierarchical animism. This ontology consists of the assumption that the world is divided into a 'multitude of singular entities' (Sauvet, 2019, p. 8). It is inferred that Sauvet's hierarchy may be an attempt to classify or reconcile the diversity of the world by putting singular entities together.

In Sauvet's words, *"The permanence of the horse in Palaeolithic iconography for more than 25ka appears to represent a hyphen linking different Palaeolithic cultures."* (Sauvet, 2019, p. 8)

2.2 The Magdalenian: An Overview

The Magdalenian cultures were named after the rock shelter site La Madeleine, in the Vézère Valley in France. The site was discovered in 1863 by Édouard Lartet and Henry Christy. A rich and varied assemblage of flint and bone artefacts was recovered from the shelter, some of which were clearly artistic in nature. After years of subsequent excavation, the lithic industry identified at the site was named 'Magdalénien' for the first time in an article published in 1869 (Maier, 2015, p. 49). Based on the archaeological levels of the site and the identification of distinct lithic categories, and their elaborate worked bone, antler and ivory projectile points and burins (Hererra et al, 2018). The 'Magdalenian' period was subdivided into six phases based on the identified lithic categories, however, the accuracy of this is still debated (Maier, 2015, p. 51).

The Magdalenian succeeded the previous short-lived Solutrean industry. The existing chronology suggests the Magdalenian era lasted from 11,000 - 17,000 years ago, after the end of the Last Glacial Maximum (Hererra et al, 2018). The Magdalenian peoples are considered by some to be the culmination of cultural development in Upper Palaeolithic Europe (Britannica, 2015).

The geographic range of Magdalenian peoples was widespread, as they were semi-nomadic hunter-gatherers. The extent of their reach is defined by where sites positively identified as 'Magdalenian' are found. The easternmost site found so far is located along the Vistula and San rivers in modern Poland (Maier, 2015, p. 3). In the west, it stretches to include the British Isles, as far north as France and south enough to Italy (Maier, 2015, p. 3). These groups lived along coastlines and riverine corridors (Hererra et al, 2018). Extensive long-distance exchange networks existed, which allowed groups to survive in locations where food was scarce.

In the winter they occupied caves or built more substantial dwellings, to revisit in winter. In the summer they lived in tents, and moved frequently, based on their needs, for example, the movements of herds of game animals. This is known as it is possible to determine the season depending on the species hunted: when remains of reindeer dominate the assemblage, it is likely that the site was occupied from spring to autumn, and when remains of horses were more numerous, winter and summer were indicated.

2.3 Iconographic Expression in the Magdalenian

A defining characteristic of the Magdalenian is that some of the most iconic examples of Palaeolithic art were made in this period. The term 'Palaeolithic art' is a generalization, for the sake of specificity, this term can be split into two categories: parietal and portable. Parietal art refers to visual representations that are permanently affixed to something, like on a cave wall. Portable art refers to items that are movable, which is still quite broad but is often used to refer to objects such as tools, statuettes, and even musical instruments (Hansen, 2006, p. 15). Famous examples of Magdalenian portable art are the Venus figurines.

Altamira Cave in Northern Spain is one of the most significant discoveries of the period. Archaeological remains dated to both the Solutrean and Magdalenian periods were found in the vestibule of the cave (Campbell, 2013). The ceiling of the cave is covered with cave paintings and engravings of animals, anthropomorphic figures and hand stencils, created using charcoal, ochre and hematite, giving the paintings a chiaroscuro effect.

What is also remarkable about Altamira is the incorporation of the natural cracks and contours of the cave ceiling into the representations. In the bison shown below, the hump of its back is outlined by a crack running above it.

Figure 4. A bison on the ceiling of Altamira Cave (Saura, 2014).

Animal representations always make up the majority of rock art assemblages across the Magdalenian (Campbell, 2015). It is generally assumed that parietal art carries a religious or symbolic function. The popularity of this idea has led to sensationalism over the perceived shamanistic purpose of these paintings. The "sorcerer" of the Les Trois-Freres cave is a controversial example. It is commonly interpreted as a sorcerer or shaman performing a ritual (Brandon, 1959, p. 112), even though this interpretation or the accuracy of the sketch cannot be verified.

Figure 5. The 'sorcerer' of Les Trois-Frères (Bradshaw Foundation, 2015).

Stylistically, Magdalenian parietal art is relatively consistent. Pigments such as ochre are used to give colour to the animal, with bright colours clearly favoured. Charcoal was used to

outline and shade the animals to create shadow and an element of dimension. While the depictions of the animals remain naturalistic, the curves of the body tend to be emphasized, and the figures are very full-bodied (Hansen, 2006, p. 22).

2.4 Settlement and exploitation patterns in the Magdalenian Rhineland

There are five distinct hunter-gatherer groups spread across the Central European Magdalenian as defined by Maier (2015). The one relevant to this study is the Meuse-Rhine group. The sites attributed to this group are shown below on the map.

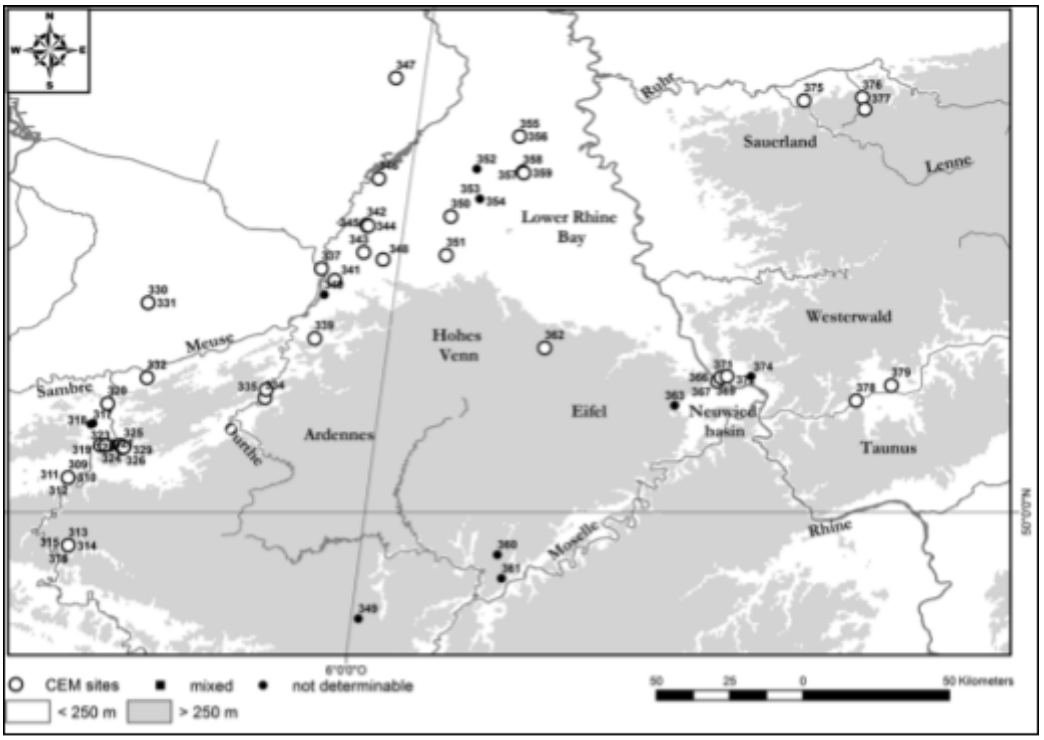

Figure 6. The distribution of sites of the Meuse-Rhine group. The site of Gönnersdorf is located within the Neuwied basin (Maier, 2015, p. 208).

It is apparent that this group of hunter-gatherers had some degree of logistical organisation. This can be observed in the variations in tool assemblages, which indicate the existence of specialized sites for specific purposes, like a hunting station (Maier, 2015, p. 7). It can be inferred that Gönnersdorf could have been a residential camp of sorts. The observation that sites of hunter-gatherer groups in the Ardennes were often situated in optimal hunting locations reinforces this (Maier, 2015, p. 6).

It is suggested that Gönnersdorf was a very large aggregation site, which is defined by its limited temporal existence. What defines an aggregation is the meeting of groups that are normally dispersed. The discovery of over 500 slate plaquettes and portable art confirms the scale of Gönnersdorf at the time, which is almost exclusively found in the largest sites (Hansen, 2006, p. 100).

It seems that Gönnersdorf is representative of a large autumn-winter aggregation site, where the horse was the dominant prey animal. Further upland, reindeer dominate smaller-scale hunting sites (Hansen, 2006, p. 104). Finally, the procurement of raw materials for toolmaking and the slate plaquettes seems to indicate the existence of more extensive summer camps located west and northwest that have not yet been identified (Hansen, 2006, p. 104).

In this chapter, I have summarised Sauvet's paper, from which my methodology will take inspiration. I have given an overview of the Magdalenian period, explanations of the typical iconography of the period, problems in interpreting said iconography, and an introduction to the settlement and exploitation patterns of the region in relation to the site of Gönnersdorf.

Chapter 3: Methods and Dataset

3.1 Case study: Gönnersdorf

The settlement of Gönnersdorf is considered one of the best representations of the late Upper Palaeolithic Magdalenian in the German Central Rhineland. It is located on the north side of the Rhine, with its sister-site Andernach-Martinsberg lying around 2km away on the south side (Street et al., 2012, p. 235). Andernach possesses similar material culture and lithics as in Gönnersdorf, but not to the same extent. Due to the proximity of both sites to one another, both will be elaborated on so a complete picture of the site can be painted. Both sites are situated where the Rhine exits the Newied Basin to re-enter the Rhine Gorge to the northwest (See Fig. 7).

Figure 7. Map of the relevant section of the German Central Rhineland. The area in circle 1 marks the site of Gönnersdorf, circle 3 marks the site of Andernach. (Bosinki, 1979, p. 15)

The high level of preservation for both sites can be attributed to the time of their burial around ~13,000 cal BP, under several meters of Late Glacial volcanic debris expelled from the Allerød Laacher See volcano (Street et al., 2012, p. 234). Both sites have avoided flooding thanks to natural topography, being located on high ground, with Gönnersdorf being situated at the western end of a promontory formed by a Rhine Middle terrace (Street et al., 2012, p. 235).

Gönnersdorf was discovered and excavated between 1968 and 1976 by Gerhard Bosinki, a German archaeologist. The site consists of four distinct concentrations, characterized by the observed placements of stone slabs, pits, and various materials found. These were interpreted as a series of dwelling structures during the excavation. From the outset of the excavation, it was apparent that Gönnersdorf was occupied both in short and long-term capacities, by multiple groups of people with different cultures and traditions. This was deduced from the vast amount, diversity, and placement of the accumulated materials found at the site, the scale of which could only be the result of years of complex development (Street et al., 2012, p.238).

While Gönnersdorf's age is estimated to be around 13,000 cal BP, the newest radiocarbon dates for the site range from 13,270-12,990. This places Gönnersdorf's main occupation phase at the end of the Greenland Stadial 2a, which would have made living in Gönnersdorf freezing and arid for its Magdalenian inhabitants. This period predates the Late Glacial Greenland Interstadial GI 1e (also known as the Bølling-Allerød Interstadial) by at least 1,000 years (Street et al., 2012, p. 235).

These new dates are supported by additional research into the environmental context, such as the observed incorporation of thermophilous microfaunal remains into the sediment of the site only after its burial, and the near absence of remains from thermophilous species at the site— whereas remains of species typical of stadial conditions are consistently present at Gönnersdorf (Street et al., 2012, p. 236). These factors, as well as indications from lithic material found (Franken & Veil, 1983, p. 159), may also serve to indicate that Gönnersdorf and Andernach were re-settled multiple times after they fell into disuse, but not to the same extent as the initial habitation.

A wealth of material has been recovered from Gönnersdorf, both lithic and organic. The 1968 excavation also amassed a faunal assemblage of over 2500 identified specimens across 19 species (Poplin, 1976, p. 156). Of these species, subsequent excavations confirmed that the horse was the most numerous (Poplin, 1976, p. 159). What makes Gönnersdorf unique are the numerous slate slabs found onsite, engraved with geometric patterns, abstract symbols, figurative art of women, and many species of animals. One of these plaquettes is shown on the next page (Fig. 8).

Figure 8. Plaquette 156. Animal parts are identifiable in various places. A small, complete figure of a horse can be seen at the top right corner *(Bosinski & Fischer, 1980)*

Amongst the animals, the most commonly featured species are the horse and mammoth respectively. Also present are woolly rhinoceros, bovid, deer, reindeer, saiga-antelope, wolf, bear, lion, seal, fish, reptiles, and amphibians (Street et al., 2012, p. 236). Portable art and items for adornment are also numerous at Gönnersdorf, such as female figurines and modified animal teeth. Artifacts and the associated waste debitage of needles, burins, and projectile points made out of bone, antler, and ivory are also present, in forms typical of the late Magdalenian (Street et al., 2012, p. 237).

Much of the published studies on Gönnersdorf center on the representations of women. It is my goal to expand on the existing research on the art of Gönnersdorf by bringing the focus onto a specific species, namely the horse.

3.2 Methodology

As the goal of my research is ultimately to create a comparison of the Gönnersdorf data to Sauvet's data, I will use some of the subjective characteristics he used to justify the prominence of the horse in Palaeolithic cave art, so the similarities and differences in the data can be straightforwardly seen. As Sauvet's data consisted of a vast database of rock art from across the Magdalenian Franco-Cantabrian, whereas Gönnersdorf is a single site, it was

deemed unfeasible to re-implement his exact methodology. The comparatively small amount of data from Gönnersdorf meant it would be beneficial to create a more precise, detailed set of characteristics to quantify the Gönnersdorf representations. These characteristics are as follows:

1. Lateralization of the head
2. Completeness of figure
3. Degree of association with other animals
4. The prominence of the horse (above other animals)

As stated previously, it is common in Palaeolithic art for animals to be depicted in left profile due to a host of biomechanical and cognitive factors. In Sauvet's research, he emphasizes that horses across the Franco-Cantabrian region were consistently depicted in right profile, in contrast to most other animals. Therefore, documenting any visible trends in head lateralization in a site outside Sauvet's research area is paramount.

Most of the Gönnersdorf horses are depicted as separate parts of the body, most commonly the head and neck and unconnected sets of fore and hind legs, with varying amounts (but usually little) detail. For this reason, it can be hypothesized that depictions that show the majority or the whole body of the horse could potentially have a greater significance than the more minimalist depictions. A 'complete' figure is considered as such if lines that clearly delineate the main body parts are present. Figures that are identified to be incomplete due to damage and wear will also be considered complete.

'Formal exemplarity' as Sauvet defines in his research is difficult to quantify, especially since it is a subjective indicator. To narrow down the scope, 'formal exemplarity' will be broken down into two correlated indicators. The first indicator is "degree of association" meaning the number of horses that are visually associated with another species in the same plaquette or 'scene'. It is important to clarify that a depiction is only considered to be associated with another animal if they are present on the same side of the plaquette, in relative proximity to each other. The second and final indicator "prominence" refers to the perceived superiority of the horse in regard to the other species depicted within the same plaquette/scene.

As the last indicator is subjective, I will define exactly what aspects of the depictions are considered as 'prominent'. Chiefly, the size, completeness of the body, amount of detail, the realism of the figure, and position/state of movement of the horse will be considered as well as the overall visual impact in the scene. Due to the inherent subjectivity of this indicator, the decision of whether a depiction is prominent or not will be determined on a case-by-case basis.

Microsoft Excel and Google Spreadsheets will be used to record the data. An example of the table used to record is shown below (Table 1).

Plaquette Nr.	Figure Nr.	Lateralization (R/L)	Completeness of figure (C/P)	Associations with other animals (Y/N/INDET.)	Prominence (Y/N)	Comments
67	126	R	C	Y	N	Two female figures on the same plaquette.
68	127	L	P	N	/	Outline of head and neck
69	128	R	P	Y	Y	Galloping, hunting scene

Table 1. A reproduction of the table used to store the raw data

After the data has been entered, the results will be studied by creating graphs. With the results clearly presented, I will then provide my interpretation and answer my research questions. I will also compare my conclusions with Sauvet's research and delve into the implications resulting from this comparison. Lastly, I will leave my final remarks and observations.

The next chapter will contain the results of my data analysis.

Chapter 4: Results

Out of the 51 representations in the dataset, 27 of the horses were depicted with their heads facing left, and 23 facing right (1 entry was excluded due to illegibility). For the depictions without heads, their orientation was determined by examining the features of existing body parts. The bar chart below provides a visual representation of the comparison. The difference between the number of horses facing left or right is small (4), and no statistically significant preference for one direction over another can be observed.

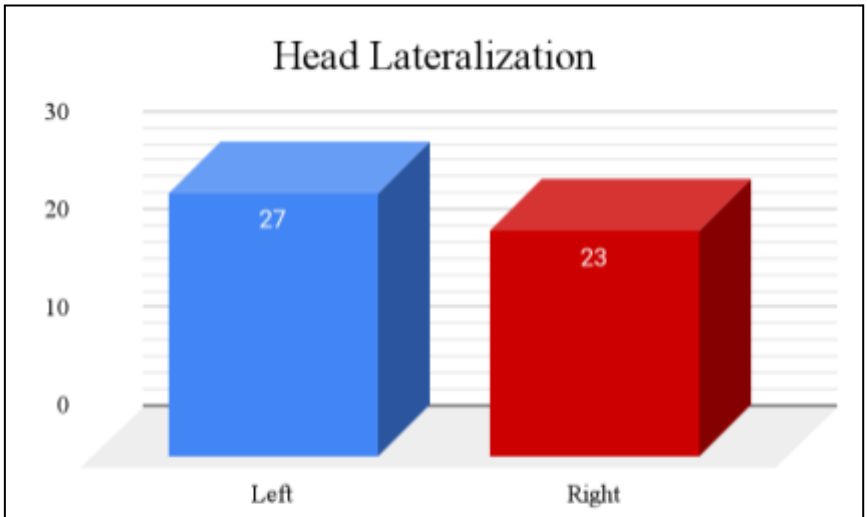

Figure 9. Bar chart showing the amount of depictions facing left (blue) compared to the right (red).

The vast majority of horses are depicted as partial figures. This preference is clearly reflected when the number of partial figures is compared with the number of complete figures. This is shown in the bar chart below. For the representations where it was unclear whether the fragmentation was caused by natural wear and degradation or intentionally, the direction was taken from Bosinki's interpretations of the etchings in the Gonnersdorf archives, as well as my own subjective reasoning.

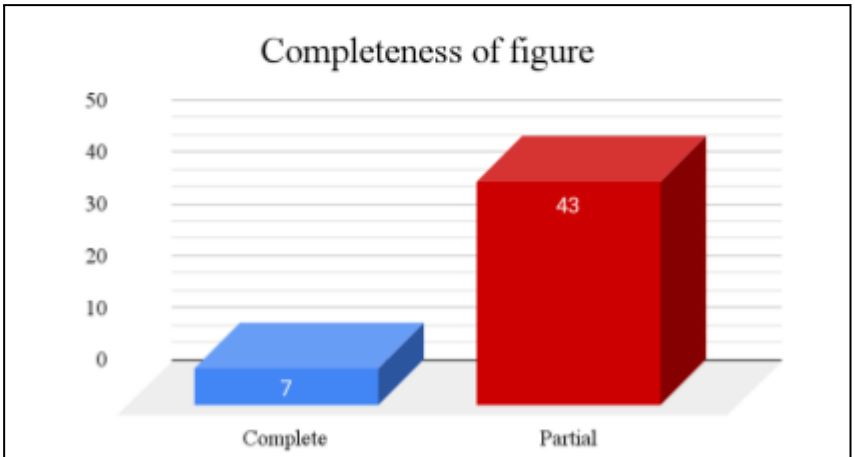

Figure 10. Bar chart showing the amount of complete depictions (blue) compared to partial ones (red).

Out of the 50 depictions, 8 figures held associations with other animals. This is shown in the bar chart below.

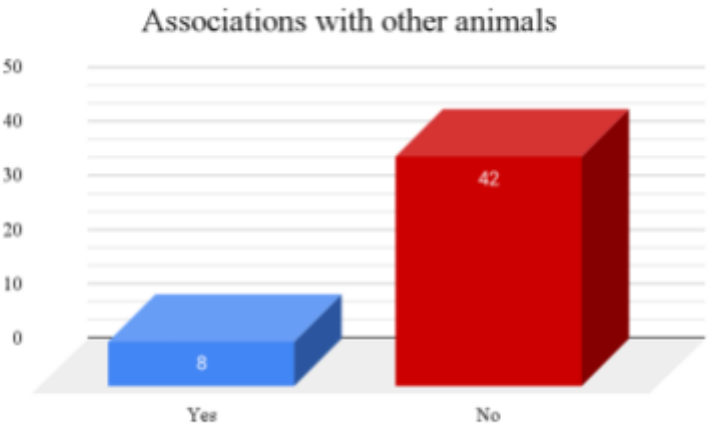

Figure 11. Bar chart showing the amount of figures with associations to other animals (blue) compared to those without (red).

It seems that horses are most commonly depicted independently as solo figures, as even instances of multiple horses depicted in the same context are rare. Due to the fragmented nature of the plaquettes, it was observed that close proximity or the superimposition of one animal over another did not necessarily mean a purposeful association and that to determine the degree of association, a case-by-case evaluation of each scene was required.

After evaluating the degrees of association for each of the 8 figures, I elected to discard 4 figures, two of which were 139b and 141b, shown below. Both depictions feature well-detailed, partially complete horses, with female figures superimposed over them at different points.

While these figures are associated in a technical sense, contextually no discernable link can be observed between the placement of the female figures and the horses. Due to the subjectivity of the assemblage, it was necessary to consider the rest of the plaquette during evaluation. For 139b and 141b, the respective slates were covered entirely with crosshatches and scratches to the point where discerning the figures was near impossible. This increased the chance that the superimpositions were simply that—

Figure 12. Depictions 139b and 141b. (Bosinki & Fischer, 1980).

superimpositions. It is in this context that they were excluded.

Plaquette 155 (shown below) shows two poorly drawn hind legs, angled in a way that suggests the horse is at a gallop, near the bottom of the slate. A birdlike figure is above the legs and a small ‘doglike’ creature with a cartoonish appearance is above the ‘bird’. All figures face right.

Figure 13. Plaquette 155 (Bosinki & Fischer, 1980).

When evaluated in terms of prominence, little can be concluded in terms of realism as most of the horse is missing. Notably, the artist chose to show the horse in a state of movement, as this is rare. It is lifesize. This scene has both visual and thematic parallels to Plaquette 168, one of the most significant plaquettes in the whole assemblage.

Plaquette 163 is a particular case where terrestrial and marine species are depicted in the same context. It shows a small, complete figure of a right-facing horse at the top left of the plaquette, with a massive outline of a seal (facing left) covering the plaquette. There is something resembling a stream going through the bodies of both animals from each end of the plaquette.

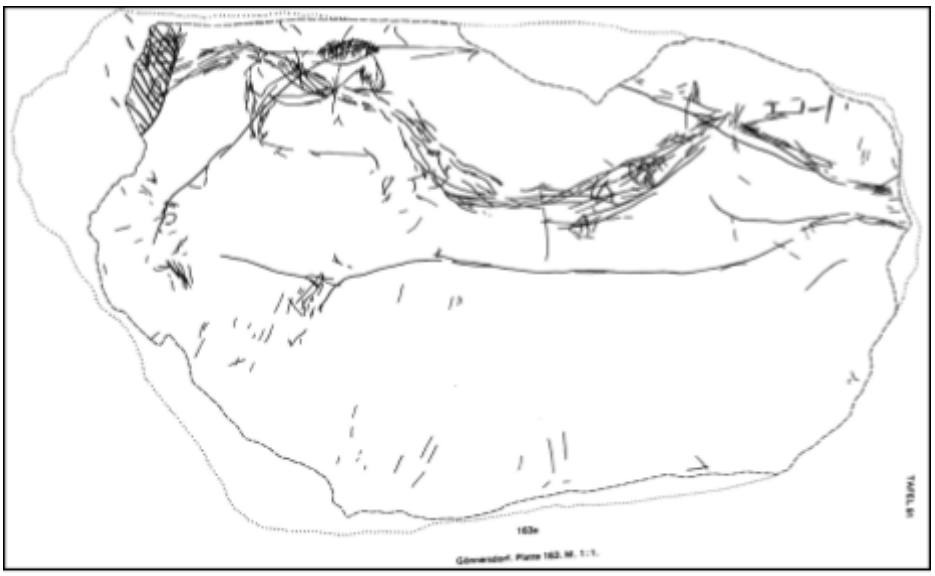

Figure 14. Plaquette 163 (Bosinki & Fischer, 1980).

Judging from the nature of the superimposition of the seal over the horse, it does not seem likely that these animals were intended to be part of the same scene.

Plaquette 167 is fragmented to the point where only the bellies and legs of the animals are visible, with them both facing left. Bosinki interpreted the leftmost animal as a possible rhinoceros and a horse behind it. The visual effect is that the horse is following behind the other animal. In terms of prominence, they both appear to be equal. The lines of both bodies have been heavily repeated and effort has been put into the anatomy. Due to the missing parts of the plaquette, not much more can be determined.

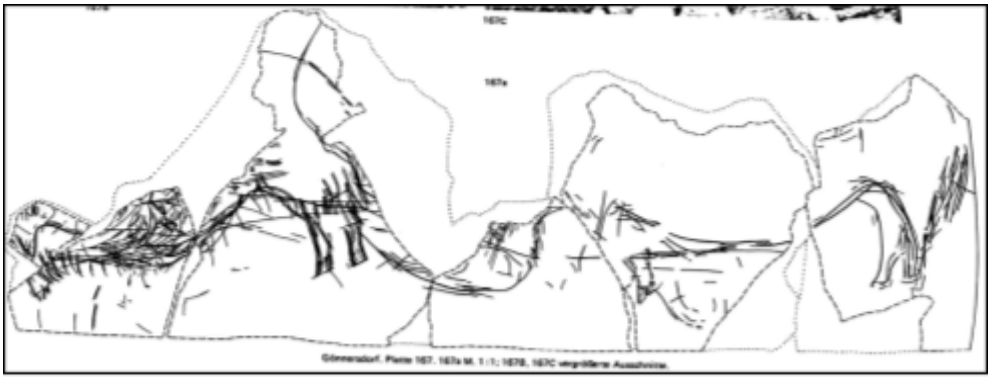

Figure 15. Plaquette 167 (Bosinki & Fischer, 1980).

Plate 168 features one of the most visually striking scenes in the entire assemblage. The central focus of the scene shows two animals overlaid as if running alongside each other but viewed from the side. Based on the anatomical details, the animal at the forefront is a horse, and the one obscured is likely a type of cervid (Bosinki et al, 2008). The heads are missing, save the horse's muzzle, which is drawn open and panting, which is unique in the assemblage. Both are depicted at a gallop.

There is great attention to the anatomical detail of every animal shown, and care was taken in the distribution and depiction of the hair on the horse's forequarters and neck. Below them are two water birds (respectively identified as a duck and coot) in full detail, with feathers and their necks stretched, as if in movement. At the hindquarters of the two animals at the very left corner of the slate is a poorly defined, seemingly anthropomorphic face. Every figure in the scene is facing the right as if fleeing.

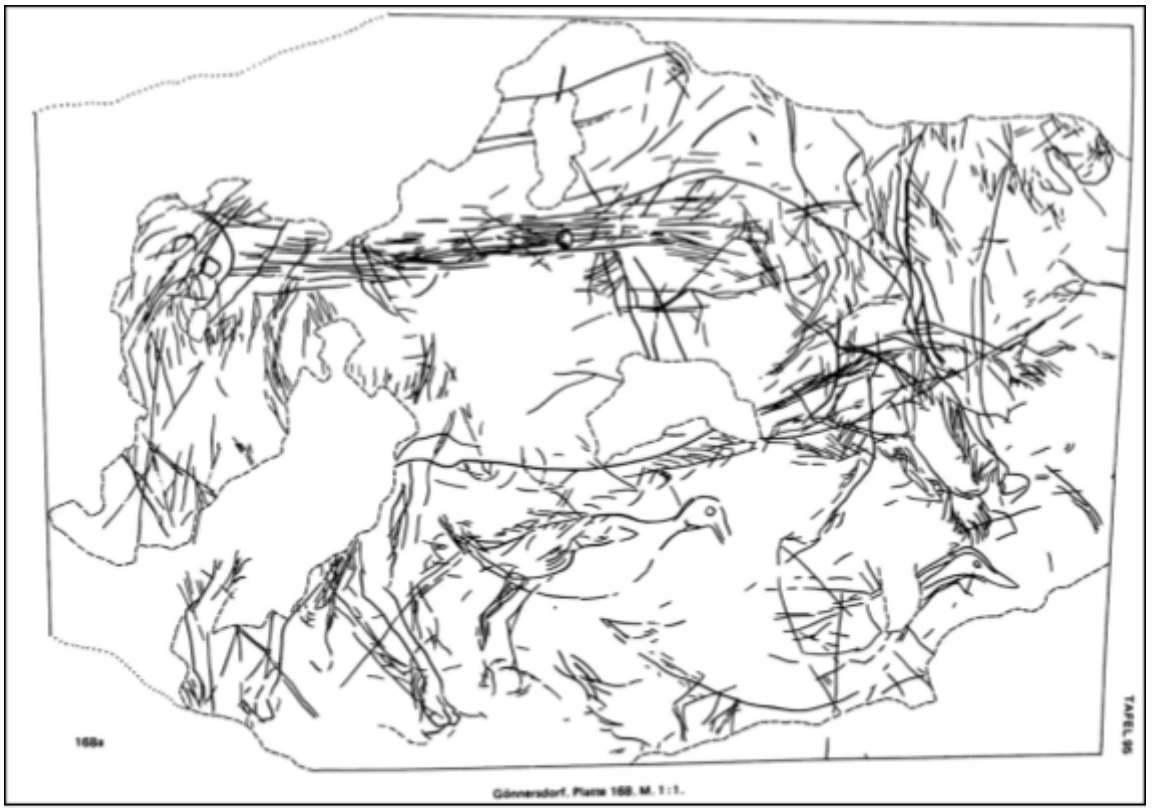

Figure 16. Plaquette 168 (Bosinki & Fischer, 1980).

The horse is in the foreground of the scene. It is lifesize, as can be seen, compared to the birds. Its position suggests strongly that it is the center of a narrative scene.

For these 4 depictions, in terms of identifying the various characteristics defining prominence, there was an overall lack of figures that could be definitively labelled as such in comparison to other species. However, this does not mean that the horse is not prominent, but rather can be an indicator of its prominence in a different way. This will be elaborated upon in the upcoming section.

In this chapter, I have given a comprehensive, case-by-case breakdown of the results of my research, identified and removed outliers from the dataset, and judged the remainder of the depictions in terms of prominence as I set in my methodology. In the next chapter, I will provide my interpretation of the results, and see if they align wih Sauvet's results.

Chapter 5: Discussion

5.1 Comparison to Sauvet's *The hierarchy of animals in the palaeolithic iconography*

As a whole, the results bear little resemblance to Sauvet's. Out of the 50 drawings, 27 of the drawings faced the left and 23 faced the right. This difference in value is not statistically significant enough to conclude that the orientation of the animal was a deliberate choice by the artists. The observed preference towards drawing horses in the left profile can most likely be ascribed to biomechanical and cognitive factors, for the sake of practicality. This contradicts Sauvet's observations that horses in the Franco-Cantabrian were predominantly drawn facing the right. This result implies that lateralization of the animal was not considered as important outside the Franco-Cantabrian region, or at least not by the artists of Gönnersdorf.

The lack of a trend in lateralization is not surprising, considering the Gönnersdorf horses are on slate plaquettes and not on cave walls. The lack of emphasis on the orientation of the animal makes sense if one takes into account the portable nature of the plaquettes, which would likely fail to convey the same visual or thematic intent a cave panel could as a stationary medium. The comparison between the amount of complete and partial figures also bore no statistical significance, with 43 partial figures and only 7 complete figures. While the preference towards partial figures was apparent from the outset of the study, my comparison had the unexpected effect of highlighting the sheer intentionality and effort put into some of the figures, to the point where their significance in the assemblage is unquestionable, especially when compared to the 'rougher' partial figures.

An example of this intentionality can be seen in Plaquette 171, a stunning image of a 1m ½ horse broken up across 46 slates. The body is rendered simply. The artist was familiar with the anatomical features of horses. Fine details such as individual strokes of hair are present. This would have taken a significant amount of time to complete— time which the artist chose to dedicate to this plaquette instead of to more necessary tasks around the settlement, which speaks volumes about the reverence they held for these animals and their awareness behind depicting them.

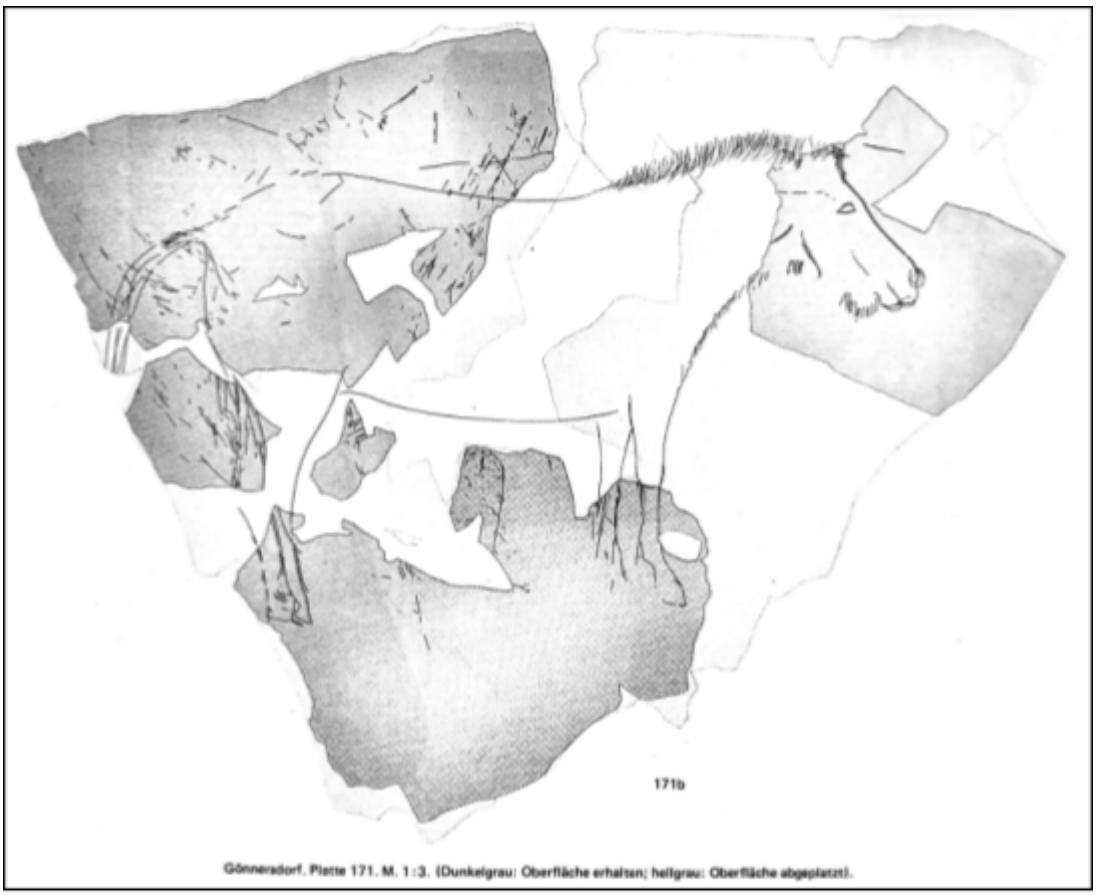

Figure 17. Plaquette 171 (Boskinki & Fischer, 1980).

From the low number of horses that were associated with other animals along with the lack of emphasis on species selection, it can be assumed that at least in Gönnersdorf there was little to no emphasis on mutual association. It is also apparent that judging the prominence of the horse based on comparisons to other figures did not lead to conclusive results. Despite this, the importance of the horse cannot be denied— except instead of searching for proof of its reverence in relation to other species, it can be proposed that from both the frequency of their depiction, and how they are most often depicted solo, that the prominence of the Gönnersdorf horses lies in their status as an independent species situated in Gönnersdorf's 'Palaeolithic canon'. This will be expanded upon in the following subsections.

5.2 Interpreting the Gonnersdorf art in terms of Descola's four ontologies

Sauvet concludes that his results fit best into the ontological category of *hierarchical animism,* which is a retooling of Descola's ontology of analogism (Sahlins, 2014). According to Sauvet, the existing hierarchy of animals as he identifies is evidence of an attempt by the artists to "reconcile its [the world's] diversity by putting together opposite terms" (Sauvet, 2019, p. 8). Based on the results of this study, there is insufficient evidence to establish a link between the art of Gönnersdorf and any of Descola's or Sahlins' proposed ontologies. In numerical terms, the horse is indeed at the top of the Gönnersdorf hierarchy, however, this

alone is not enough indicative of much. The palaeolithic phenomenon of different species being associated together in art (despite not sharing the same environment in reality) is implied by Sauvet to be the direct result of the artists' attempts at 'classifying their world' (Sauvet, 2019, p. 8). While the assemblage does reflect this sentiment to an extent, it seems likelier that the Gönnersdorf artists' attempts at this classification serve as more of a reflection of the influence of the long-distance exchange networks existing at the time. In my opinion, the horses of Gönnersdorf serve foremost as a literal representation of the real-life animal but are at the same time capable of serving a symbolic purpose, especially in scenes where some degree of storytelling appears to be present.

5.3 The Gönnersdorf plaquettes as a storytelling medium

It has been proposed in various studies that Gönnersdorf was seasonally occupied by aggregated groups from all around the region who actively traded with each other (Street, 2012). This hypothesis is strongly supported by a large number of remains of marine species from the distant coast found at the site such as molluscs and seals. These species are also frequently represented in the slate plaquettes, which lend even more support to the hypothesis. It has been observed that large slate plaquettes like the ones at Gönnersdorf are not commonly found outside of large sites, and when found are in great quantities (Hansen, 2006, p. 119). Considering that these sites were potential meeting points for aggregations, it is a small step to infer that the practice of engraving plaquettes was one that carried more significance than just "art for the sake of art" (Nirala, 2015).

Amongst these aggregations, it seems natural to conclude that at such hotspots of activity the presence of so many distinct groups, some of which come from far away, there would be a need to remind them of their common origins and shared histories (Hansen, 2006, p. 119). I suggest that the plaquettes result from such stories being recorded on a tangible medium to establish the stories' permanency, season after season.

The practice of storytelling is at its most superficial about providing entertainment. However, storytelling also has the essential function of establishing the world, the intricacies of social order, outlining how elements of the world relate with one another, instilling ethical and moral values, passing down knowledge, and giving advice and motivation, among others (Hansen, 2006, p. 120). There is a reason why storytelling is often referred to as the oldest form of education. Common in hunter-gatherer societies is the usage of animals to represent people in stories, and it is possible this is the case in Gönnersdorf.

The recurring motifs in the visual imagery of Gönnersdorf and its correspondence to common motifs in Upper Palaeolithic visual imagery could be an indication of storytelling being used as uniting factor between groups, and also possible evidence that the animals of Gönnersdorf are part of a mythological canon originating in a shared past (Hansen, 2006, p. 122). It has been observed across the European Magdalenian that birds, specifically waterfowl were a popular theme during the entirety of the Palaeolithic. In fact, water birds are depicted more often in Palaeolithic portable art than any other type of bird (Domingo et al, 2019, p. 11).

Pope (2021) suggests that this admiration of water birds was due to their unique ability to reside in every habitat, from water, land to sky, and the mystery of their seasonal migrations. Given their significance, the inclusion of the water birds in Plaquette 168 could indicate that Gönnersdorf was part of a broad mythological canon that persisted throughout the Magdalenian, with the horse taking centre stage as one of the main characters.

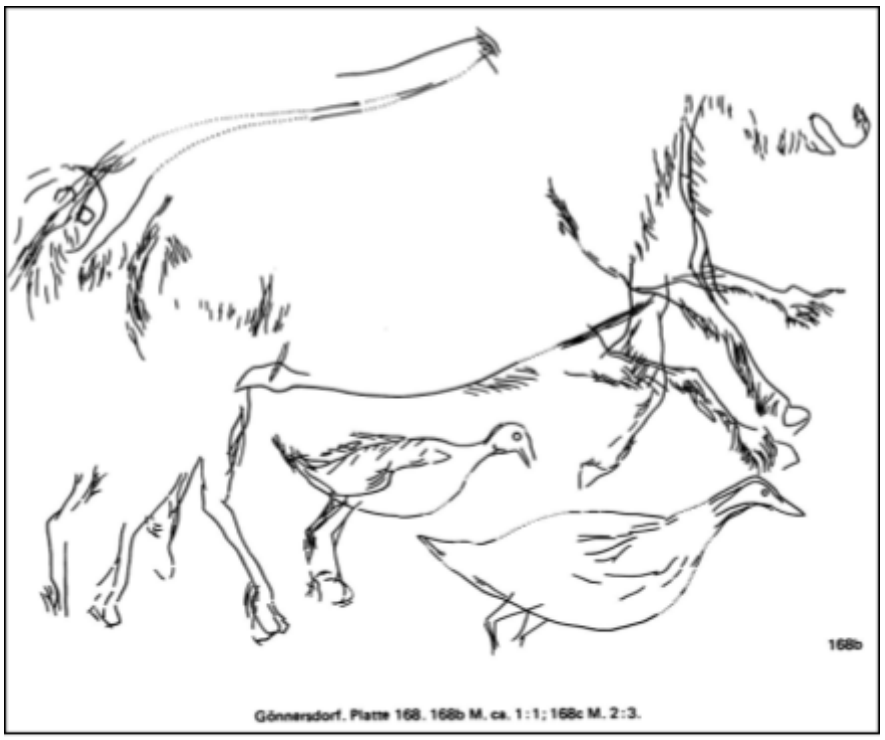

Figure 18. Plaquette 168 with the figures shown in isolation (Bosinki & Fischer, 1980).

Aside from the cast of characters, what makes Plaquette 168 significant is the composition of the scene. Known as the "Great Hunter Plaque" (Domingo et al, 2019, p. 15), the figure located in the tail area of the horse has been previously interpreted as a partial representation of the head of a hunter (Domingo et al, 2019, p. 16), with the other animals shown 'fleeing' from them. A narrative component is clearly present. This plaquette also bears similarities to the birdlike, anthropomorphic figures of Plaquette 155. Could this and the Great Hunter Plaque be an illustration of a parable, meant to impart a moral lesson? Or were they meant as an illustrative attempt to reconcile the elements of the world?

Due to the inclusion of animals that are not typical of the 'usual' species and themes depicted in Palaeolithic art, it suggests that along with a storytelling function, the plaquettes have the added purpose of relaying practical information about unfamiliar environments to groups that had never visited these places. This leads me to propose next that the art of Gönnersdorf was also made to fulfil the need for efficient communication while having a dual purpose of adding to the "existing narrative inventory", by spreading and affirming unifying values and contributing to the broader mythological canon through the plaquettes. (Hansen, 2006, p. 122).

5.4 The Gönnersdorf plaquettes as a “whiteboard”

Hansen (2006) stresses the necessity of social mobility and information relay amongst these aggregations— not only is social interaction between groups necessary, but a healthy network of social bonds must be maintained in order for those who travel beyond familiar territory to be informed on what to expect in the lands beyond, and for those who do not travel to receive information about the wider world.

In this regard, I suggest that the art of Gonnersdorf was made to fulfil a need for quick visual communication, as a medium for storing or exchanging information between groups. Examples of this can be observed in modern hunter-gatherer societies where information about local flora and fauna is recorded on various materials, to be passed around the group (Hansen, 2006, p. 117). It is unlikely that the plaquettes were moved frequently, instead, it is more plausible that their function as ‘whiteboards’ was limited to within the site. The size and weight of the plaquettes would have made them inconvenient to carry, and the constant risk of the engravings fading would have made transportation over long distances risky. This is also supported by the previous observation that slate plaquettes like these are rarely found outside of large sites.

It was observed that the engravings only remain clearly visible if the white dust created during carving is not washed off, based on experiments conducted by Hansen (2006). If the debris is washed off and a new engraving is made on top of the previous one, it appears like a fresh carving on a clean slate. This gives credence to the idea that the plaquettes were used as a sort of whiteboard (hence the name) to communicate concepts and ideas efficiently. The proposed ‘whiteboard’ function would be a good justification for some of the most significant characteristics of the assemblage: the haphazard, apparently random distribution of figures, the densely scratched surfaces of many of the plaquettes, the lack of emphasis on lateralization or association with other species, or the prominence of one species over another.

This also explains the preference for naturalistic partial depictions with a lack of fine detail for the horse representations— there would be little reason to depict more than the minimum physical characteristics necessary to positively identify the animal, and in the case of the horse the head and neck would be enough. This is clearly reflected in the assemblage, for example in depictions 160 and 170:

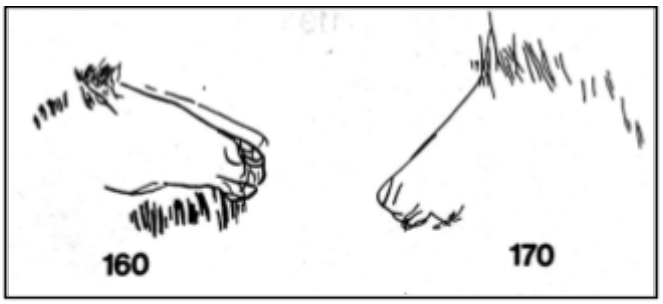

Figure 19. Figures 160 and 170, examples of minimalist horse representations (Bosinki & Fischer, 1980)

Lastly, this shows that examining the association of horses with other species as a method of determining significance may not be very reliable, as the chances of the associations being random become much higher. This also makes it even more challenging to differentiate intentional superimpositions from unintentional ones (see Figure 8. Plaquette 163 for an example). In short, the ambiguity of the purpose behind the depictions indicates that the significance of the Gönnersdorf horses may be better examined in scenes where the representations clearly belong within the same narrative context, or in terms of numerical superiority.

In this chapter, I have given my analysis of each of the set characteristics and came to the conclusion that my results do not take after Sauvet's, and that Gönnersdorf did not fit under any specific animistic ontology. I explained how this did not necessarily mean that the horse was not significant in Gönnersdorf, but rather explained how the prominence of the horse could be observed in other ways. Finally, I provided my personal interpretation of the assemblage being used as a medium for storytelling, and also as a 'whiteboard' for knowledge transmission. In the next chapter, I will conclude my research.

Chapter 6: Conclusions

6. 1 Conclusion

The goal of this study was to discover if there was a specific selection for the horse in the portable art of Gönnersdorf, and to investigate the various implications of my results. In conclusion, the horse was undoubtedly of great significance and was clearly respected as a figure indispensable in everyday life, just not in the same ways Sauvet would define it.

Sauvet's observation of the dominance of the horse in the palaeolithic canon of the Franco-Cantabrian was what inspired aspects of my methodological framework. However, I found that Gönnersdorf bears few consistencies with the characteristics inspired by Sauvet's work. It was concluded that lateralization of the animal was not of importance at Gönnersdorf, as no significant difference was found between the number of depictions that

faced left or right. I suggested this may be due to the portability of the plaquettes since the direction of the animal would not be ‘fixed’ as it would be on a cave wall. While the majority of the representations are partial, this only amplified the contrast in quality and detail of the complete representations. I argued that this contrast represents a healthy respect and appreciation for the horse at Gönnersdorf.

The degrees of association of horses with other animals were deemed inconclusive, as it was pointed out that multiple engravings could be made atop of one another without the previous engravings being visible, as long as the plaquette was cleaned after each carving session, making differentiating between intentional and unintentional superimpositions and associations between figures extremely difficult. Despite this, I was still able to determine the formal exemplarity and prominence of the horse by looking at scenes where the narrative cohesion of the figures in the scene was unquestionable, or by looking at the solo depictions of horses in the assemblage (see Figure. 17).

In terms of animistic significance, I found no significant link between any of the animistic ontologies presented by Descola. Instead, I infer that the prominence of the horse at Gönnersdorf is best understood as a symbol of the animal itself, where its importance stems from its ubiquitous presence across the German Rhineland. It is clear the inhabitants of Gönnersdorf understood their reliance on this animal and gave it the respect it deserved. What separates Gönnersdorf from more well-known sites, such as Ardeche and Lascaux, is that there is a clear preference for depicting the species they hunted most often (Maier, 2015, p. 248). It is this form of reverence that I think is expressed in the horses of Gönnersdorf, not any explicit form of worship or deification of the horse like Sauvet hints at (Sauvet, 2019, p. 7).

Interestingly, the lack of similarities between Sauvet’s results and my own affirm my interpretations of the assemblage where I propose that the plaquettes may have served a dual function, both as a medium for storytelling and as a ‘whiteboard’ for efficient communication between groups. While there is insufficient evidence to claim the horse was considered a figure to be worshipped, I do not exclude that their depiction was without ritual or spiritual importance. I emphasise throughout the discussion the societal and cultural functions of storytelling, and how the inclusion of waterbirds in the ‘Great Hunter’ plaquette may hint at a shared history, via connection to a broader mythological canon spanning the Magdalenian. This certainly gives support to the idea of a shared cultural and artistic tradition.

In regards to the whiteboard interpretation, I present evidence for this by analyzing the assemblage both technically and logistically. Various factors, such as the possibility of repeated use of a single plaquette, the scratched appearance of most slates, the lack of narrative cohesion across the assemblage, and the minimalist depictions of the horses all contributed to this conclusion. The practical function of the plaquettes would indirectly promote and affirm underlying ideas and worldview-forming concepts.

Some limitations were encountered in the process of my research. For example, the nature of the data made a direct comparison to Sauvet's conclusions difficult. Sauvet was able to use the formal exemplarity of the horse in his argument as the medium of his data was cave art, meaning the 'exemplarity' of the horse in comparison to other animals would be relatively easy to observe since they would belong to the same 'scene' or wall. However, the fragmentation of the plaquettes and the scattered distribution of the depictions made this indicator difficult to quantify during data collection. This limitation did not significantly impact my research, as I was still able to analyze specific scenes from the plaquettes through the lens of formal exemplarity on a case-by-case basis.

6.2 Final remarks & suggestions for further research

It is common in archaeology for certain practices to be ascribed ritual function when their actual purpose is unclear. I have attempted to avoid this pitfall by suggesting an alternate understanding of the social aspect of ritual communication, which proposes that the presence of ritual can help establish a framework or organize a worldview (Hansen, 2006, p. 118), which I believe is applicable to Gönnersdorf, especially as there is no black-and-white definition of what can be considered 'ritual' and what cannot, an issue that is still encountered in modern anthropology.

I suggest that for future research, a focus directed towards different types of portable art such as figurines and statuettes of animals would be interesting. A similar analysis to what I have done with the plaquettes could potentially reveal trends or observations previously unnoticed in the material culture of Gönnersdorf. The implications of this research would be profound, as they could further our understanding of long-distance exchange networks and patterns of cultural connection in the Magdalenian.

Chapter 7: Abstract

This paper examines the factors that may potentially influence a specific selection of animal in the slate plaquettes of the Magdalenian site of Gönnersdorf in the German Rhineland. Georges Sauvet identifies the dominance of the horse in Magdalenian parietal art within the Franco-Cantabrian region, and the associated animistic implications. The goal of my research was to observe if the same dominance was observable outside this region. The characteristics Sauvet defined as making a representation 'prominent' were modified for Gönnersdorf for the purpose of making a comparison. Prominent plaquettes were reviewed on a case-by-case basis.

It was found that the Gönnersdorf assemblage did not bear close similarities to Sauvet's conclusions, nor did they align with a specific animistic ontology. It is suggested that the prominence of the horse at Gönnersdorf is most visible in terms of the frequency of depiction, and the formal exemplarity of individual representations. The results indicated two potential alternate functions for the plaquettes: their use as a storytelling medium, and as a communicative aid for culturally separate hunter-gatherer groups aggregating at the site. It was stressed that these two functions may not only be related, but serve a dual purpose.

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Figures and Tables

Figure 19. Figures 160 and 170, examples of minimalist horse representations (Bosinki & Fischer, 1980, p. 107)

Table 1. A reproduction of the table used to store the raw data