

# EAORC BULLETIN 984 – 24 April 2022

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## NOTICES

### PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.

If there is a journal you feel I should be tracking on a regular basis, let me know.

And if you have any other ideas for extending the “EAORC experience”, please contact me.

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## ACADEMIA.EDU – Three Stages in the Evolution of Human Cognition

*In Tracy B. Henley, Matt J. Rossano & Edward P. Kardas (eds.), Handbook of Cognitive Archaeology: Psychology in Prehistory. Routledge: New York (2019).*

### **CERI SHIPTON – Three Stages in the Evolution of Human Cognition: Normativity, recursion, and abstraction**

The human mind is likely the most complex in the animal kingdom, and it differs from those of our nearest great ape relatives in a number of ways (Suddendorf, 2013). Popular literature is replete with “prime mover” explanations of what the most important of these might be. But the archaeological record should caution us against fixing on any one particular aspect of our cognition, as our ancestors passed through many distinct phases of behavior since the divergence of our lineage and that of our closest living relatives (chimpanzees and bonobos). The premise adopted here is that understanding the evolution of our cognition requires a gradualist approach, looking at the cognitive implications of each major period of human behavior and understanding the broader adaptive context in which these behaviors emerged. This chapter examines the last one million years of human evolution and argues that each of three major archaeological periods, the late Acheulean, the Middle Palaeolithic, and the late Palaeolithic, are characterized by the cumulative addition of three unique components of our cognition: normativity, recursion, and abstraction, respectively. While the selective conditions operating during each period and the cognitive traits that resulted are presented here as causally linked, they are essentially two independent hypotheses for each period with the link between them not integral to their validity. In an evolutionary account the order of the appearance of traits is critical, and here it is suggested that normativity preceded recursion, while both preceded abstraction. [https://www.academia.edu/41566823/Three\\_Stages\\_in\\_the\\_evolution\\_of\\_human\\_cognition\\_normativity\\_recursion\\_and\\_abstraction](https://www.academia.edu/41566823/Three_Stages_in_the_evolution_of_human_cognition_normativity_recursion_and_abstraction)

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## RESEARCHGATE – 'Grammars of action' and stone flaking design space

*In April Nowell and Iain Davidson (eds.), Stone Tools and the Evolution of Human Cognition. University Press of Colorado. (2010)*

### **MARK W. MOORE – 'Grammars of action' and stone flaking design space**

Human infants and primates use similar strategies to organize utterances and motor actions. These strategies, called "grammars of action," are initially similar followed by an ontogenetic divergence in children that leads to a separation of complex linguistic and action grammars. Thus, more complex grammars arose after the emergence of the hominin lineage. Stone tools are by-products of action grammars that track the evolutionary history of hominin cognition, and this study develops a model of the essential motor actions of stoneworking interpretable in action grammar terms. The model shows that controlled flaking is achieved through integral sets of geometrical identifications and motor actions collectively referred to as the "flake unit." The internal structure of the flake unit was elaborated early in technological evolution and later trends involved combining flake units in more complex ways. Application of the model to the archaeological record suggests that the most complex action grammars arose after 270 kya, although significant epistemological issues in stone artifact studies prevent a more nuanced interpretation.

[https://www.researchgate.net/publication/285505820\\_%27Grammars\\_of\\_action%27\\_and\\_stone\\_flaking\\_design\\_space](https://www.researchgate.net/publication/285505820_%27Grammars_of_action%27_and_stone_flaking_design_space)

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## CONFERENCE ALERT – EVOLUTION 2022, joint meeting of ASN, SSB & SSE – Costa Rica – July 20-23 2022

The early registration discount for EVOLUTION 2022, the joint annual meeting of the ASN, SSB, and SSE, is available until May 1.

Evolution 2022 is hybrid; join us in-person and/or online:

June 21 & 22: virtual conference

June 24-28: in-person in Cleveland, OH

For everyone's safety, we have strict vaccine and mask requirements. Event staff will also be masked.

Information: <http://www.evolutionmeetings.org>

### **REGISTRATION:**

<https://www.xcdsystem.com/evolution/attendee/index.cfm?ID=4LdX6xZ>

### **HIGHLIGHTS:**

- \* Many events and programs in support of diversity, equity and inclusion
- \* Talk & poster submission are available once you complete main registration.
- \* Talk sign-up is first-come, first-served. All submissions accepted until capacity reached or May 15, WHICHEVER IS EARLIER.
- \* All posters are accepted until June 1.
- \* Hotel and dorm accommodations are available
- \* Conference-ending Super Social is a private event at the incredible Rock & Roll Hall of Fame!
- \* Hoping to compete for the SSB Mayr or SSE Hamilton awards? <https://www.evolutionmeetings.org/student-awards.html>
- \* Free on-site childcare
- \* Cleveland has a vibrant and attractive downtown with ample options for food and drinks near the convention center.

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## CONFERENCE ALERT – ABS 2022 – Costa Rica – July 20th-23rd, 2022

We are pleased to announce the 2022 annual meeting of the Animal Behavior Society, to be held July 20-23, 2022 in San Jose, Costa Rica, with a vibrant virtual component to reach more widely to all in our community. We look forward to seeing many of our fellow animal behaviorists in-person in a COVID-safe environment while connecting and sharing our research with those from around the world as we enjoyed for the past two virtual ABS meetings. We have a terrific lineup of both plenary speakers and symposia on diverse topics spanning the range of animal behavior. We also have a full slate of pre-meeting workshops that we invite you to investigate.

[https://r20.rs6.net/tn.jsp?f=001m\\_tuA1fsZyFZBx\\_gwFCXSdw48ckW8CPVO\\_ycqsb2-DXHQYcr9TKhoqFnQ42EiS-Xnoilxvw\\_eyxe\\_W6Lnimpl9VIs2\\_4MUE6VIViQ7-6DTxEB8SoLvFgl-FlwQ6Bg7xjBd1kFyxcUR4WyntIplvL3M00tDRwJyM\\_ilpyfC2PYHmU=&c=4ZsnvQYRs4QteDiDFO2Mha\\_-Ndx5JlI33mPFDxA9d8qb36OKunimPQ==&ch=X\\_L07ByjEnImeyTNVDrBFD4-w\\_3e04p4OIhkJRwHikw2Jihz8qOLBg==](https://r20.rs6.net/tn.jsp?f=001m_tuA1fsZyFZBx_gwFCXSdw48ckW8CPVO_ycqsb2-DXHQYcr9TKhoqFnQ42EiS-Xnoilxvw_eyxe_W6Lnimpl9VIs2_4MUE6VIViQ7-6DTxEB8SoLvFgl-FlwQ6Bg7xjBd1kFyxcUR4WyntIplvL3M00tDRwJyM_ilpyfC2PYHmU=&c=4ZsnvQYRs4QteDiDFO2Mha_-Ndx5JlI33mPFDxA9d8qb36OKunimPQ==&ch=X_L07ByjEnImeyTNVDrBFD4-w_3e04p4OIhkJRwHikw2Jihz8qOLBg==)

### **PRESENT YOUR WORK AT ABS 2022**

Submission Deadline: May 1st, 11:59 PM EDT.

ABS policy is that acceptance of submissions for the talk sessions are on a first-come, first-served basis. Registrants may submit one abstract and mark their preference for a talk or poster presentation.

NEW THIS YEAR! - For this year only, you may submit an abstract BEFORE registering for the meeting. However, all authors are required to register for the meeting prior to May 1 in order to have their submission considered for presentation. This means that you may submit your abstract now, but you have until May 1 to decide if you are going to attend the meeting in-person or virtually.

To broaden participation, authors will be able to submit abstracts in Spanish and/or Portuguese in addition to the English version. All versions will be available at the meeting portal. In addition, presentations can be in Spanish or Portuguese as long as English is accessible (i.e., words on slides in English, video subtitles in English). We have a Multilingual Buddy Program to support those that may want help translating their talks into another language

You will have the option to submit an abstract for EITHER in-person presentation or virtual presentation. All in-person presenters are asked to make a recording of their presentation and upload it for on-demand viewing IN ADDITION to giving their live-presentation in Costa Rica.

[https://r20.rs6.net/tn.jsp?f=001m\\_tuA1fsZyFZBx\\_gwFCXSdw48ckW8CPVO\\_ycqsb2-DXHQYcr9TKhokVGga0hCOWV7QHvZAZRjdBfOI93rUisT7kbNsRZw4IKts1Uo97y1ksaZj09dO1Oka94UEmUsydgK-1UYXdNKPXUGmR9Cr5YJJwAD66ZK4Anf3Ms4RHOMrSIMLxTwJmOmymrbEgRPeba&c=4ZsnvQYRs4QteDiDFO2Mha\\_-Ndx5JlI33mPFDxA9d8qb36OKunimPQ==&ch=X\\_L07ByjEnImeyTNVDrBFD4-w\\_3e04p4OIhkJRwHikw2Jihz8qOLBg==](https://r20.rs6.net/tn.jsp?f=001m_tuA1fsZyFZBx_gwFCXSdw48ckW8CPVO_ycqsb2-DXHQYcr9TKhokVGga0hCOWV7QHvZAZRjdBfOI93rUisT7kbNsRZw4IKts1Uo97y1ksaZj09dO1Oka94UEmUsydgK-1UYXdNKPXUGmR9Cr5YJJwAD66ZK4Anf3Ms4RHOMrSIMLxTwJmOmymrbEgRPeba&c=4ZsnvQYRs4QteDiDFO2Mha_-Ndx5JlI33mPFDxA9d8qb36OKunimPQ==&ch=X_L07ByjEnImeyTNVDrBFD4-w_3e04p4OIhkJRwHikw2Jihz8qOLBg==)

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## CONFERENCE ALERT – ICLC-16 – 2023

The 2023 International Cognitive Linguistics Association conference was planned to take place in Buenos Aires, Argentina, after having been postponed from 2021 due to the COVID pandemic. However, due to ongoing issues with infrastructure in the country brought on by the pandemic, the Board of ICLA has determined that it would be best to postpone the Argentine conference to 2025. We have identified a new host site for ICLC-16. Dr. Stefan Hartmann and his colleagues have agreed to host our ICLC-16 conference at Heinrich-Heine University in Düsseldorf, Germany. The conference will take place the week of August 7-11, 2023.

I and the Board of ICLA want to express our thanks to Dr. Hartmann and the German organizing committee. We also wish to thank Dr. Claudia Borzi, head of the Argentine organizing committee, for the hard work she and her team have done throughout this unprecedented situation. Dr. Borzi and the Argentine organizing committee are already working to host a successful conference in 2025. I am sure we all look forward to attending ICLC-17 in Argentina in 2025.

More information about ICLC-16 will be forthcoming.

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## NEWS

### BREAKING SCIENCE – Magdalenian Hunter-Gatherers Created Art by Firelight, Archaeologists Say

Archaeologists have examined the engraved limestone plaquettes excavated from Montastruc, a rockshelter site in southern France. These plaquettes are likely to have been made using stone tools by Magdalenian people, an early hunter-gatherer culture dating from between 23,000 and 14,000 years ago.

<http://www.sci-news.com/archaeology/montastruc-plaquettes-10735.html>

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### SCIAM NEWS – What Birds Really Listen for in Birdsong (It's Not What You Think)

Birds seem to pay more attention to fine acoustic details that humans cannot hear than to the melodies that captivate us.

<https://www.scientificamerican.com/article/what-birds-really-listen-for-in-birdsong-its-not-what-you-think/>

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### SCIENCE DAILY – Study challenges theories of earlier human arrival in Americas

The new analysis suggests that misinterpretation of archaeological evidence at certain sites in North and South America might be responsible for theories that humans arrived long before 13,000-14,200 years ago.

<https://www.sciencedaily.com/releases/2022/04/220420170453.htm>

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## SCIENCE DAILY – Anglo-Saxon kings were mostly veggie but peasants treated them to huge barbecues

Very few people in England ate large amounts of meat before the Vikings settled, and there is no evidence that elites ate more meat than other people, a major new bioarchaeological study suggests. Its sister study also argues that peasants occasionally hosted lavish meat feasts for their rulers. The findings overturn major assumptions about early medieval English history.

<https://www.sciencedaily.com/releases/2022/04/220421094123.htm>

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## SCIENCE DAILY – Brains and brawn helped crows and ravens take over the world

Crows and ravens have great flying ability, which allows them to gain access to new places more easily. While these skills were key to their success, new research also shows that big bodies and big brains played an important role in helping crows and ravens survive in the new climates they occupied.

<https://www.sciencedaily.com/releases/2022/04/220421094104.htm>

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## SCIENCE DAILY – For cooperative teams, modesty leaves the best impression

People may forgo displaying luxury brands and other signals of status when they want to convince others that they will collaborate well with a team, as people who signal their wealth and social status could be perceived as uncooperative, according to new research.

<https://www.sciencedaily.com/releases/2022/04/220421094043.htm>

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## OTHER NEWS – GUARDIAN – ‘In other primates, I don’t find the kind of intolerance we have’

What can the behaviour of apes teach us about sex and gender? A great deal, according to a new book by primatologist Frans de Waal – and his findings are already stirring controversy.

Review of ‘Different: What Apes Can Teach Us About Gender’ by Frans de Waal.

<https://www.theguardian.com/science/2022/apr/17/frans-de-waal-in-other-primates-i-dont-find-the-kind-of-intolerance-we-have>

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## PUBLICATIONS

### Animal Behaviour

#### PAPERS

#### **LEVEDA CHENG et al – Love thy neighbour: behavioural and endocrine correlates of male strategies during intergroup encounters in bonobos**

Across group-living taxa, males act aggressively towards outgroup males because they represent a threat to reproduction with ingroup females. This intergroup aggression can entail agonistic coalition formation between group members, is typically associated with higher testosterone levels and prevents extended associations between members of different groups. However, in a few species, including humans, groups can interact peacefully, allowing the exchange of resources and information. To better understand how social relationships are manifested between groups and the involvement of males in these relationships, we investigated behavioural and endocrine correlates of male strategies during intergroup encounters in bonobos, *Pan paniscus*. We found that, despite overt intergroup aggression, males rarely engaged in coalitionary attacks against outgroup individuals and their testosterone levels did not rise during intergroup encounters. Also, males sacrificed the time available to affiliate with ingroup individuals and actively affiliated with outgroup individuals, especially outgroup males. The paucity of cooperative group defence and high levels of intergroup affiliation suggest that male bonobos play a role in maintaining tolerant intergroup relationships. We discuss how our findings relate to the establishment of male–male social relationships beyond the group level in other species.

<https://www.sciencedirect.com/science/article/abs/pii/S0003347222000550>

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## Mind & Language

#### PAPERS

#### **RICARDO MENA – Metalinguistic effects**

We can communicate linguistic information by asserting sentences that are not explicitly about linguistic matters. Stalnaker offers a pragmatic account of this phenomenon. It is not clear that such an account is correct. In this article I offer an alternative account that does not rely on pragmatic mechanisms and which captures many of the insights in Stalnaker's theory of linguistic communication. The view is inspired by Barker's semantics of vague adjectives.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12390>

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## Nature Communications

### PAPERS

#### **PIERRE FRÉMONDIÈRE et al – Dynamic finite-element simulations reveal early origin of complex human birth pattern**

Human infants are born neurologically immature, potentially owing to conflicting selection pressures between bipedal locomotion and encephalization as suggested by the obstetrical dilemma hypothesis. Australopithecines are ideal for investigating this trade-off, having a bipedally adapted pelvis, yet relatively small brains. Our finite-element birth simulations indicate that rotational birth cannot be inferred from bony morphology alone. Based on a range of pelvic reconstructions and fetal head sizes, our simulations further imply that australopithecines, like humans, gave birth to immature, secondary altricial newborns with head sizes smaller than those predicted for non-human primates of the same body size especially when soft tissue thickness is adequately approximated. We conclude that australopithecines required cooperative breeding to care for their secondary altricial infants. These prerequisites for advanced cognitive development therefore seem to have been corollary to skeletal adaptations for bipedal locomotion that preceded the appearance of the genus *Homo* and the increase in encephalization.

<https://www.nature.com/articles/s42003-022-03321-z>

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## Nature Reviews Neuroscience

### PAPERS

#### **SHAN H. SIDDIQI et al – Causal mapping of human brain function**

Mapping human brain function is a long-standing goal of neuroscience that promises to inform the development of new treatments for brain disorders. Early maps of human brain function were based on locations of brain damage or brain stimulation that caused a functional change. Over time, this approach was largely replaced by technologies such as functional neuroimaging, which identify brain regions in which activity is correlated with behaviours or symptoms. Despite their advantages, these technologies reveal correlations, not causation. This creates challenges for interpreting the data generated from these tools and using them to develop treatments for brain disorders. A return to causal mapping of human brain function based on brain lesions and brain stimulation is underway. New approaches can combine these causal sources of information with modern neuroimaging and electrophysiology techniques to gain new insights into the functions of specific brain areas. In this Review, we provide a definition of causality for translational research, propose a continuum along which to assess the relative strength of causal information from human brain mapping studies and discuss recent advances in causal brain mapping and their relevance for developing treatments.

<https://www.nature.com/articles/s41583-022-00583-8>

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## Nature Scientific Reports

### PAPERS

#### **CHRISTOPH J. VÖLTER et al with JOSEP CALL – The structure of executive functions in preschool children and chimpanzees**

Executive functions (EF) are a core aspect of cognition. Research with adult humans has produced evidence for unity and diversity in the structure of EF. Studies with preschoolers favour a 1-factor model, in which variation in EF tasks is best explained by a single underlying trait on which all EF tasks load. How EF are structured in nonhuman primates remains unknown. This study starts to fill this gap through a comparative, multi-trait multi-method test battery with preschoolers (N = 185) and chimpanzees (N = 55). The battery aimed at measuring working memory updating, inhibition, and attention shifting with three non-verbal tasks per function. For both species the correlations between tasks were low to moderate and not confined to tasks within the same putative function. Factor analyses produced some evidence for the unity of executive functions in both groups, in that our analyses revealed shared variance. However, we could not conclusively distinguish between 1-, 2- or 3-factor models. We discuss the implications of our findings with respect to the ecological validity of current psychometric research.

<https://www.nature.com/articles/s41598-022-08406-7>

#### **ASIER GARCÍA-ESCÁRZAGA et al – Human forager response to abrupt climate change at 8.2 ka on the Atlantic coast of Europe**

The cooling and drying associated with the so-called '8.2 ka event' have long been hypothesized as having sweeping implications for human societies in the Early Holocene, including some of the last Mesolithic hunter-gatherers in Atlantic Europe. Nevertheless, detailed 'on-site' records with which the impacts of broader climate changes on human-relevant environments can be explored have been lacking. Here, we reconstruct sea surface temperatures (SST) from  $\delta^{18}\text{O}$  values measured on subfossil topshells *Phorcus lineatus* exploited by the Mesolithic human groups that lived at El Mazo cave (N Spain) between 9 and 7.4 ka. Bayesian modelling of 65 radiocarbon dates, in combination with this  $\delta^{18}\text{O}$  data, provide a high-resolution seasonal record of SST, revealing that colder SST during the 8.2 ka event led to changes in the availability of different shellfish species. Intensification in the exploitation of molluscs by humans indicates demographic growth in these Atlantic coastal settings which acted as refugia during this cold event.

<https://www.nature.com/articles/s41598-022-10135-w>

**NICOLETTE J. SULLIVAN, ROSA LI & SCOTT A. HUETTEL – Peer presence increases the prosocial behavior of adolescents by speeding the evaluation of outcomes for others**

Peer presence can elicit maladaptive adolescent decision-making, potentially by increasing sensitivity to the rewards one receives. It remains unknown whether peer presence also increases adolescents' sensitivity to others' outcomes, which could have an adaptive effect in contexts allowing pro-social behaviors. Here, we combine social utility modeling and real-time decision process modeling to characterize how peer presence alters adolescents' processing of self and other outcomes. We found that adolescents behaved selfishly when privately allocating monetary rewards for themselves and a peer in an incentive-compatible task. In peer presence, however, adolescents became more altruistic. Real-time decision process estimates collected using computer mouse tracking showed that altruistic behavior was associated with relatively earlier influence of peer-outcomes relative to self-outcomes, and that peer presence sped the influence of peer-outcomes without altering the time at which self-outcomes began to influence the decision process. Our results indicate a mechanism through which peer presence prompts greater prosocial behavior by altering how adolescents process prosocial outcomes.

<https://www.nature.com/articles/s41598-022-10115-0>

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**PLoS One**

**PAPERS**

**ABAY NAMEN et al – Mechanical properties of lithic raw materials from Kazakhstan: Comparing chert, shale, and porphyry**

The study of lithic raw material quality has become one of the major interpretive tools to investigate the raw material selection behaviour and its influence to the knapping technology. In order to make objective assessments of raw material quality, we need to measure their mechanical properties (e.g., fracture resistance, hardness, modulus of elasticity). However, such comprehensive investigations are lacking for the Palaeolithic of Kazakhstan. In this work, we investigate geological and archaeological lithic raw material samples of chert, porphyry, and shale collected from the Inner Asian Mountain Corridor (henceforth IAMC). Selected samples of aforementioned rocks were tested by means of Vickers and Knoop indentation methods to determine the main aspect of their mechanical properties: their indentation fracture resistance (a value closely related to fracture toughness). These tests were complemented by traditional petrographic studies to characterise the mineralogical composition and evaluate the level of impurities that could have potentially affected the mechanical properties. The results show that materials, such as porphyry possess fracture toughness values that can be compared to those of chert. Previously, porphyry was thought to be of lower quality due to the anisotropic composition and coarse feldspar and quartz phenocrysts embedded in a silica rich matrix. However, our analysis suggests that different raw materials are not different in terms of indentation fracture resistance. This work also offers first insight into the quality of archaeological porphyry that was utilised as a primary raw material at various Upper Palaeolithic sites in the Inner Asian Mountain Corridor from 47–21 ka cal BP.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0265640>

**ANDY NEEDHAM et al – Art by firelight? Using experimental and digital techniques to explore Magdalenian engraved plaquette use at Montastruc (France)**

Palaeolithic stone plaquettes are a type of mobiliary art featuring engravings and recovered primarily from Magdalenian sites, where they can number from single finds to several thousand examples. Where context is available, they demonstrate complex traces of use, including surface refreshing, heating, and fragmentation. However, for plaquettes with limited or no archaeological context, research tends to gravitate toward their engraved surfaces. This paper focuses on 50 limestone plaquettes excavated by Peccadeau de l'Isle from Montastruc, a Magdalenian rockshelter site in southern France with limited archaeological context; a feature common to many art bearing sites excavated across the 19th and early 20th Centuries. Plaquette use at Montastruc was explored via a programme of microscopy, 3D modelling, colour enhancement using DStretch®, virtual reality (VR) modelling, and experimental archaeology, the latter focusing on limestone heating related to different functional and non-functional uses. While the limited archaeological context available ensures the results remain only indicative, the data generated suggests plaquettes from Montastruc were likely positioned in proximity to hearths during low ambient light conditions. The interaction of engraved stone and roving fire light made engraved forms appear dynamic and alive, suggesting this may have been important in their use. Human neurology is particularly attuned to interpreting shifting light and shadow as movement and identifying visually familiar forms in such varying light conditions through mechanisms such as pareidolic experience. This interpretation encourages a consideration of the possible conceptual connections between art made and experienced in similar circumstances, such as parietal art in dark cave environments. The toolset used to investigate the Montastruc assemblage may have application to other collections of plaquettes, particularly those with limited associated context.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0266146>

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