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PLEISTOCENE ART OF THE WORLD

Short articles



THE RELEVANCE OF FORENSIC SCIENCE IN PLEISTOCENE INVESTIGATIONS

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Forensics is a process that follows five basic methodological stages: detection; documentation; collection; analysis; interpretation. Common to all these stages is the concept of evidence. To the question, “what constitutes evidence?” and limited by space, only a generic definition will be proposed here: evidence includes all items observed and potentially collected from a scene (a site). At this juncture, it is important to reiterate the fact that these investigations operate in complete absence of informants and therefore motivations and purposes. The rock art site becomes a “crime scene”.

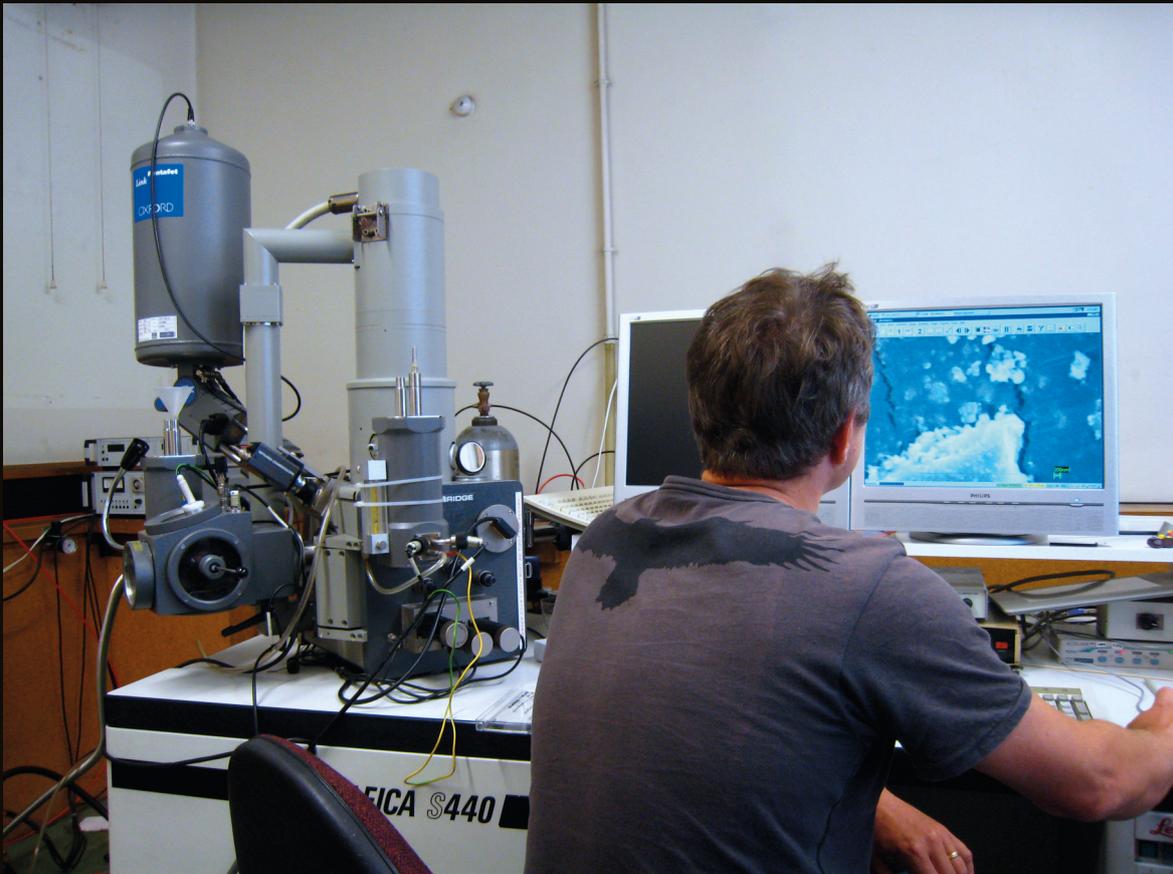
This is evidence that does not forget...

Even in the absence of the “perpetrator(s)”, we are still able to reconstruct their behaviour based on the fact that “Wherever he steps, whatever he touches, whatever he leaves, even unconsciously, will serve as a silent witness” (Harris v United States 1947).

Consequent to the exchange principle is the concept of trace evidence. “Trace evidence is a generic term for small, often microscopic fragments of various types of material that transfer between people, places, and objects, and persist there for a time”, according to Houck. Trace evidence is critically important for determining the nature of the transfer. In forensics, trace evidence is any type of material left at the scene. In the context of rock art evidence, trace evidence results from the contact between the site’s surface and material transported, applied, buried or forgotten. The generic typology of trace evidence includes, among others, fingerprints, hair, fibres, glass, soil, organic residues, DNA... The degree of force involved in the process of producing trace evidence will result in the transfer of variable amounts of substance from the surface of the substrate to the surfaces of the tool and vice versa. Transferred trace evidence found on modified surfaces can help reconstruct the biomechanical nature of the contact, the provenance of the substance, an absolute or a relative date for the transference, and once thoroughly examined can potentially feed a deduced interpretation.

The taphonomy of trace evidence

The taphonomy of trace evidence, here defined as “evidence dynamics” (ED) is another fundamental aspect of forensics, which needs to become standard in rock art investigations. ED refers to any agency that has played a critical role in changing, relocating, obscuring, or obliterating physical evidence. ED comes into play during the interval that begins with the discovery of the trace evidence to its completed analysis, either in situ or in lab conditions.



Using SEM for discrimination of quartz particles in haematite (Canterbury University, New Zealand).

But the established fact that contacts leave traces is not enough on its own. Often missing from the analysis is a consideration of those influences that have changed the identified physical evidence prior to or as a result of its examination. The list of possible taphonomic modifications of an item of evidence is too voluminous to be detailed here, suffice to say that the investigator is required to understand the taphonomic history of a site or of an artefact and how these processes of decay might have influenced the shape and localisation of the evidence as observed at the time of discovery.

The spectrum of modifications as by-products of ED is broad and complex. Physical evidence can be modified at the micro- or macro-level. Indexing these modifications is a prerequisite. Prior to the collection of samples and artefactual evidence, the site and the artefact need to be analysed thoroughly so that any observed modifications can be documented in order to be replicated. Replication is the methodological culmination of the forensic process. Through controlled experiments, the investigator will replicate aspects of the taphonomic history and the environment as well as the biomechanical process responsible for the deposition of traces and the modification of the observed physical evidence. Only then is the collected data useful for testing hypotheses and propositions.

A new discipline?

The forensic-inspired approach should not be understood as a new discipline, but rather approached as a forum where past efforts, recent developments, and future innovations could be effectively synthesised. The aim is to create a coherent and rigorous axis around which contributing disciplines articulate and communicate by using standardised methodologies to collect, analyse, describe evidence, and assess propositions. The dawn of this approach can be traced back to the year 1957 with the publication of *Prehistoric technology* by S.A. Semenov. Thus the idea of replicative analysis was launched and, combined with microscopy and traceology, brought the investigation about our past one step closer to forensics. Semenov's groundbreaking methodologies inspired many, amongst them A. Marshack and F. D'Errico. Marshack's internal analysis has ushered us into the forensic concept of trace analysis and tool marks. D'Errico, on the other hand, has given microscopy its *lettres de noblesse* by demonstrating that tool marks and other traces on portable artefacts could be empirically identified and hence matched to collected evidence. The matching of observed modifications to actual evidence is at the core of forensics. Inspired by these robust and rigorous methodologies, recent investigators have made commendable efforts to adopt some of these techniques and to adapt them to field conditions. An exhaustive list of innovators would certainly start with the remarkable work of the teams involved with the Chauvet Cave. Large sections of the cave have been sealed for future investigations that will certainly benefit from more advanced technologies. The result is large areas where evidentiary material is most likely unspoiled, uncontaminated – a perfect “crime scene”.





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