

## Round Table “Probing pre- and proto-historic signs”: a commentary

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Greater attention to the archaeological record has made much easier to recognise signs in prehistoric contexts. Some of these signs can be recognised as writing of some sort, i.e. established signs that pointed univocally to specific meanings if not words; most commonly depictive rock art or repetitive signs.

In general, any falsifiable model looking at the evidence faces a difficult requirement: determining with certainty that a sign may be or not part of a symbolic system of communication. Regardless of whether the actual meaning of the symbol can or cannot be recognised, no art-based effort can tell us reliably if a set of symbols/signs was in fact an established recording system. A mathematical model, or just strong determination and will on one's side, will produce positive results that may be false positives because such signs as those found in rock art cannot be chained in any way. In some cases, the dialogue is diachronic, between people at the same place but on vastly different times (rock art in some places can span millennia). This dialogue of sort is meaningful, but also fanciful in that it does not convey precise meanings, only the imagination of talking (to the ancestors). In other cases, the chronology of certain signs as well as their spatial distribution may be restricted, but there is no meaning conveyed through the signs. Some signs from scripts in Bronze Age Aegean ceramics seem to have only suggested the quality of the product contained as they replicate the practice of recording palatial goods, which may have been perceived as quality goods. Despite some patterns, the decipherment of Linear B and systematic study of many ceramic vessels has proven that signs in non-palatial ceramics are in fact random or simply vague imitations of meaningful signs observed by chance. In short, if archaeologists and semioticians look hard enough at the archaeological evidence, they will be able to recognise meaningful signs even where there are none.

A negative approach based on recognising patterns similar to writing to determine the presence of signs inserted in some established system of communication may also fail to recognise failed attempts to produce such a system. It appears therefore that despite the best efforts, patterns cannot be recognised reliably using traditional methods or even more advanced mathematical algorithms. These algorithms would prove the effectiveness in communication of a given set, not what the signs were meant for. They would determine (i.e. calculate) the probability that some patterns are real or not on the basis of the effectiveness of any set of signs. The uncertainty would remain because localised and limited systems may be very cumbersome and ineffective. Humans may not follow the assumption that they intend to communicate freely and openly in the most effective way. Communication may be scrambled to keep it secret, even in the basic systems that prevent eavesdropping by containing some non-obvious key for decoding the message and therefore restricting such communication to the initiated.

Conscious attempts to build systems that could produce patterns are very different from the basic symbols found at Blombos cave and elsewhere, which are very old, and may simply be exercises in translating abstract meanings into the material world, without any intended connection among the signs. Such systems can only appear when that initial phase of translation is well and truly over, and symbols (including gestures) are used to express abstract or immaterial perceptions.

One way to progress is to record the signs and their contexts, and check the degree of repetition within those contexts. This system would produce falsifiable hypotheses. For instance, rock art huts may be found in proximity (or at some distance) from actual settlements. If a pattern can be recognised, in one region, then it is likely to be true if it holds valid in neighbouring regions. Rock art however presents serious problems in identifying precise contexts, and no definitive answer could ever be achieved. Signs in ceramics and other objects may appear to be better examples, but in fact signs on portable antiquities can (and will) become decorative or following some very broad understanding with the passing of time. A very short amount of time may separate the attempted definition of a systematic pattern to express complex or abstract meanings and its accidental destruction by masses that only imitate the original attempt without really understanding it, or associating vague or broad meanings to once precise symbols.

Schmandt-Besserat in her seminal work on the origins of writing has established a secure link between mathematical counting and written recording. Numbers are indeed abstract and can be understood with some precision. Counting is so pervasive that even non-human animal species are capable to enumerating (i.e. simple abstract concepts). Because of this, it is expected that even early hominids may have been able to count. The need to memorise and record counts must have been strong at all times, and it is likely that many signs must contain some numerical value. Indeed, all early writing systems are nothing but extensions of counting systems, where additional concepts referring to specific materials are devised to clarify the meaning of the count. I would suggest that any falsifiable model aimed at recognising patterns should focus on numbering and only after some conclusive results be applied to decode other systems. It remains true that there may symbols used only once at one time by one person and be meaningful (e.g. a heart with initials on a tree to declare the love between two persons), and symbols repeated multiple times by many people in a confined area and only be relatively vague references (e.g. representations of ships in most contexts).

Any systems that include numbers however must be regular and repetitive enough to present the possibility of decoding and verifying their meaning. Regrettably, signs associated to numbers can be very boring or unattractive, and most efforts are aimed at decoding puzzling imagery. The presence of numerical systems also would confirm some logical connection between any of the signs and their meaning. For instance, a hut may represent anything from nostalgia to hope for a new hut or some expression of anxiety for the household (such as a request to the supernatural world to protect one's home). There can be plenty of reasons to depict a hut, as well as none. A hut in a system including numerals however, must have some specific and logical meaning, or at least it has the greatest chance to be a real pattern.

To conclude, I think that the focus of research on probing pre- and proto-historic patterns of signs needs to prove first that there is some logical connection among the signs, and numbers offer the best chance to uncover it. Pure logographic systems without numbers can exist and it may be possible to decode them, but only if precise enough contexts can be included in the analysis. The main problem in producing falsifiable hypotheses on systems of signs today is that almost any such model would sit on assumptions, sometimes explicit, most often implicit and not so obvious. There is also the problem that one true and real system may sit hidden within random imitations, "noise" for algorithms, which in our case may be several amounts louder than the pattern that we set to uncover.

Determining the logical connection among signs is of paramount importance to establish that a given method works and the recognised pattern has some understandable meaning. Without proving the logical connection among signs which is a fundamental characteristic of any writing system, nothing can be decoded with any certainty, and virtually all attempts will be doomed to be falsifiable even when they are actually correct. Look to the numbers, I say!