



## Hands stencils and sexual dimorphism: samples and prospects from the Borneo caves

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### ABSTRACT

*As presented in the previous XXI Valcamonica Symposium, a large, new and unexpected series of painted caves has been discovered in the Eastern part of Indonesian Borneo. Amongst some particularities, the high number of hand stencils provides new clues concerning that motif. Altogether more than 1500 hands have been counted from 32 caves, but distribution varies from 2 to more than 360. Added to that highly variable repartition is the case of twin caves containing 130 and 140 hands without any other motif. This would become a limit case of study concerning the possible function of hand stencilling. The analogy with the operative chain involved in the therapeutic practices leads to consider hand stencilling as a symbolic representation of the role/efficiency of the hand, by healers, shamans, soothsayers or so. The application in parallel the Manning's formula measuring the 2D/4D fingers ratio permitting to reveal the sexual dimorphism. A presentation of hand stencils in different caves of the Indonesia and the world provides new clues concerning men's and women's activities in the caves.*

### RIASSUNTO

*Una più vasta ed inaspettata serie di nuove grotte dipinte, simili a quelle presentate nel precedente XXI Valcamonica Symposium, è stata scoperta nell'area orientale del Borneo Indonesiano. Tra le varie peculiarità di queste grotte, un elevato numero di decorazioni a forma di mano fornisce nuove informazioni sui temi raffigurati. Sono state contate più di 1500 mani in 32 grotte, ma la loro distribuzione varia da 2 a più di 360 in ognuna di esse. Da aggiungere a questa eterogenea distribuzione vi è il caso di due grotte gemelle, rispettivamente con 130 e 140 mani e senza nessun altro tripodi decorazione. Questo potrebbe divenire un caso limite di studio avente ad oggetto la funzione della stampigliatura delle mani. L'analogia con la catena operativa delle pratiche terapeutiche porta a considerare la stampigliatura delle mani come una rappresentazione simbolica del ruolo/efficienza della mano eseguita da guaritori, sciamani, indovini e così via. L'applicazione in parallelo della formula di Mannings, che misura la ratio delle dita in 2D/4D, permette di rilevare il dimorfismo sessuale. Una presentazione delle mani stampigliate in diverse grotte dell'Indonesia e del mondo fornisce nuove prove relative alle attività svolte dagli uomini e dalle donne all'interno delle grotte.*

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As presented in the previous XXI Valcamonica Symposium, a new and particular rock art has recently been found in the area of the South East Asia and more precisely in the eastern Indonesian part of Borneo island.

That rock art, which contains all common "classical" figures displayed all over the world, has nevertheless some particularities. These latter consist of a rather large number of negative hands prints whose concentrations are not regular. Until now, in the 30 or so, ornate caves, which have been yet surveyed and studied, around 1.500 hand stencils have been altogether recorded. This is already a larger number in respect to the findings in many other places of the world. But the repartition is far from being equal, because 4 caves contain more than half of the total. The distribution of numbers varies from less than 10 to at least 360, 3 caves including two twin caves, contain 130 to 140 negative hands prints. Compared to these high numbers, the quantity of zoomorphic and in an even much lesser measure, anthropomorphic figures are reduced, reaching hardly a few hundreds altogether. Geometric signs are even lesser, and prac-

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tically concentrated in a very few number of places. All that distribution shows that hand stencilling, at least in the sites which have been surveyed until now<sup>1</sup>, played an important role. This fact is enhanced by two complementary data. The first one is that a large proportion of these handprints are overpainted with different motifs; the second is that they are themselves linked together in some panels, forming a visible entity, expressing at least a symbolic link between each hand stencil (see Chazine XXI Valcamonica pre-proceedings, p. 164-172).

Associated with the fact that nearly all the ornate caves are located in the upper levels of fossilized caves networks (pict. 1), it makes them the most remote and almost inaccessible places. If one takes in account that all test-pits conducted in these cavities have revealed themselves free of any archaeological dwelling or occupation remains, one has to consider that these ornate caves, have probably played a very specific role. Content, location and absence of any remaining material usually discovered by archaeological methods are converging there to attribute to these cavities a specific status.

Above all that, there is the "limit case" represented by the twin caves of Masri I and II, which present the particularity of containing only hand stencils. There is absolutely no other design or glyph of any kind associated to the respectively 130 and 140 hands prints displayed on different panels grouping between two to 30 or so hands. As particularly visible also on the picture, groups of hands and particular dispositions are clearly apparent (see pict 2). We have there some irreducible clues showing that hands prints have not only a very specific function but this latter is also forcibly totally symbolic. If one of the goals would have been the visible and clear representation of hands, even "primitive" prehistoric peoples were able to draw or paint a figurative positive hand. In choosing an indirect process, which is using the hand as a means but not intended to represent it, we may be sure that it is an intellectual process of figuration, which has been acted. In a simplified formula, we may suggest that these indirect -i.e. negative or stencilled- representations of hands are not hands... At best they would correspond to hands which have been involved in actions including hands!

The complete absence of any other sign implies that processing of these prints is self-sufficient -at least in the spirit of their authors- and answers thus to their expectations. At least in fact, the answer to the "question", the need or the expectations that led to the realisation of all the process of painting by itself, is provided and expressed there. On the other side, the fact that this segment of process is a complete one by itself, does not mean that no other action would have been materialised to complete the whole. Many other actions (talks, chants, dances, gesture procedures... etc) may have been also involved (before, during or after the event), but nevertheless, this implies a change in the categories and has to be dissociated from the strict production and use of hands and colour. Like any ethnographic fact or action, the intrinsic and internal logic of the process, which is observed and analysed by any external observer, does not fit all the time with the vernacular classification. Therefore, whatever has been the real process involved in the realisation of negative hand printing (and probably, the painting concept itself), we have to differentiate and separate the technical steps, as far as they imply different intellectual or psychological states. As only negative hand stencils have been intentionally painted in these caves, it means automatically that it provides, if not all, at least enough of what was expected by the authors. If the result provokes moreover some aesthetical or even simple pleasure while gaining its supposed efficiency, and beyond the fact that the elementary goal is reached, feeling does not represent automatically the intention, but the "secondary effect". There is also another possibility, being effectively transposed from ethnographic observations which is the frequent capacity for "traditional" (i. e. "primitive") cultures to involve more in the way the spirit is invoked or asked to perform some action than in the action itself (Audouze & Schlanger 2004 amongst many others). Therefore the power of oral invocation, chants or accounts which are necessary to ensure the success of many ritual practices is so frequent. Negative hand printing, which cannot be associated with any kind of positive representation, would thus possibly represent or correspond to the original intention to realise something. It would just be the silent and everlasting mute witness of a piece of action. The important thing is not the results expressed by the hands stencils themselves, but the symbolic representation of what was intended during the complete sequence involving hand stencilling. The use of ochre is of course fundamental, but the fact that it has to be crushed and mashed liquid enough to be not only kept in the mouth, but spitted with the breath, corresponds to a complete single process. Apart using some blowing accessory like a bone, a horn or a hollow piece of wood, each step is necessary to produce that kind of pictures. No change is possible. This is why one may consider that this latter is totally different from any other way of producing positive and, figurative or not, figures.

As I expressed already in previous communications (Chazine, 1999; 2003), the strong analogy which is apparent between traditional healing procedures (application of hands, use of breath, spitting of the-rapeutical or simply powered matters) and the common use of ochre cannot be discarded. If not totally universal and present from oldest prehistoric periods to contemporaneous times, the use of ochre in many ceremonial rituals is frequent. This led me to consider that the principle of stencilling hands to produce an

inverted print requires another intellectual (and/or cultural) program than producing or creating any kind of positive feature.

Practically using a *reductio ad absurdum* argument, one may guess that if the positive way of spitting ochre upon hands to produce at the end a simple stencil of hand has been selected by authors, it would thus mean that another motivation would lay behind or beyond the fact... The complex organisation of painting to which the use of the breath is also added is not harmless at all. It must have another and different meaning, that other designs do not possess - at least at the same level of efficiency-

That simple observation, if added to the totally isolated situation of caves, led also to consider that these ornate caves cannot be considered as free open places. Apart from the caves containing only hands stencils, if the contents of different panels are expressing or corresponding to some visual language, this latter would be understood by a small number of people only. It would at best correspond to an esoteric language based upon the sole disposition of signs, something like a very basic code. These places have possibly been used as spots devoted to particular rituals focusing on practices like healing, shamanism, "sorcery", soothsayers, or any kind of non public activity like teaching, training, initiations, rituals or ceremonial practices and fasting sequences. Following the "best fit hypothesis" principle proposed by J. Clottes (in Hempel, 19\*\*), I would suggest that at least in the case of Borneo's caves, whose global context is clearly different from other cases, we may consider that special events have been recorded in these caves. Until now, the samples of pigment intended to analyse paintings did not contain any organic matter forbidding yet any radiocarbon datings. Indirect analyses have nevertheless indicated that, at least, the oldest paintings could be dated from more than 10,000 years ago, that is to say before the end of Pleistocene.

Although the simplest way would be to count each print as a single trace corresponding to a single event, we are still unable to project any credible chronology from the resulting painted panels. Observation of superimpositions unveils at least a short chronology which cannot be made more precise, unless differences in materials or techniques would be revealed by more high-technological analyses. In our cases, it is tantalising to tend to proceed to some structural analysis, as advisable by many colleagues (Anati 2003, Vialou \*, Lorblanchet 1995; Morwood 2002; Rosenfeld & Ucko 1966) but the uncertainty of inter-micro-chronologies makes that goal yet unrealistic.

Therefore, a large part of that gap has begun to be crossed after having learned from colleagues (pers. comm. Sharpe & Van Guelder 2004, then Snow 2005) that there was a somehow scientific method for deciphering the sex of human hands. Experimentations conducted by Manning and his team (Manning & al. 2002) had shown that length ratio between forefinger and ring finger would remain different between men and women. That ratio may vary from one ethnic group to another in the world, but a difference between men and women remains perceptible. The biologic explanation which is suggested is that the foetus would fix differently the testosterone and the estrogens provided by the pregnant mother. Practically the main value of "Manning's ratio" for women would be around 1,00 while men would be around 0,96. Based upon that first indication (itself attested by hundreds of physical measurements upon living communities<sup>2</sup> (see supra)), we could have some faith and begin to test that ratio on some pictures of hand stencils from Borneo<sup>3</sup> (see Chazine & Noury 2006b). Mathematical and statistical distributions of values (Gauss curves and indeterminacy area) shows effectively two groups of data which may thus be considered as differentiation between men and women.

The first test has been applied upon Masri II main panel, which had already been reconstructed with a computer from original pictures by L.H. Fage (pict 3). The analysis of the repartition of men and women hands stencils is conceivable at two levels of interpretation. They may be seen as one single event, a superposition of micro-events or a mixed and composite creation involving different kinds of serial actions. From the primary observation of pigments, which look similar, and in absence of physic-chemical analysis, no more precise choice is directly possible. Therefore, I would suggest that we consider the whole result as a succession of really or not, simultaneous actions which have been created/realised with the same spirit or similar intentions. The analysis of the whole panel is thus possible, but the resulting display has to be considered as compressed or concentrated, while the reading may be decompressed with computer files.

Here, with the Masri's panel, compressed or not in one or more sequences, it becomes evident that not only men but also women have left their traces. The numbers (13 versus 16) are somehow similar, but the location of display on the same panel shows a clear differentiation in the occupied surface. Hands stencils, although generally scattered all over the surface, are in fact not that much really intermixed. Men's and women's hands are such concentrated in clusters that one can easily see different periods corresponding at least to tiny chronologies. It is also more visible that they form a somehow organised patch of features, which are not identical. Although the main designs like the "fan" composed with two hands or the 3 hands producing the "tryptique" are either from women and men respectively, results of these hands impositions are different. The men's hands are grouped in three clusters and women's groups are more scattered in a higher number of places (see supra pict. 3).



In fact thanks to the program concept elaborated by Noury, we are also able to check all the identical hands and practically isolate some micro-events within each group of hands. The program *©kalimain* is thus able to differentiate successive micro-actions themselves identified by a sexual difference and possibly by different individuals. In the Masri II example (pict. 4), we have already identified the men's hands which shows that 6 different men have put twice their hands on the panel. Results would be even better if the two hands between men and women groups were not litigious when length of fingers are not complete for instance. Nevertheless, we have begun to seek other possible and yet unveiled ratios correlating other hand's or finger's measures, as substitution procedures.

While awaiting men's deciphering, which would precise how many men have been involved on that panel, we are nevertheless able there to make a distinction between men and women interventions. Present ethnographic investigations conducted by women within the women's groups have more and more shown that the complexity of "primitive" societies was even more intricate than suspected. What the men were aware of their own society was just a part of the whole; the women's society being as rich as their partners', but that reality used to remain strictly hidden. Many or some men's rituals are usually forbidden to women, but symmetrically, men do not even imagine that women have secrete and totally private practices (Bonnemère 2005). This is just to say that the hypothesis separating men's and women's actions is quite plausible if not probable. Therefore, in Masri II's case, it is unlike that men and women would have applied together their hands on the same occasion. Starting from the fact seen supra that these caves being the most remote, isolated and unreachable of the area, are thus special places where special activities were conducted, we may suppose that men and women were not present together at the same moment, right in the same cave. The different clusters of men's and women's hands stencils would thus correspond and confirm the different chronological events.

It is always difficult if not dangerous to directly refer to ethnographic data for transposing sub-present or contemporaneous reality into the past: the variety of human cultures, practices, beliefs and techniques is an evident regulator. Nevertheless, behind these visible differences, there are also many common elements, which are totally shared from the beginning of humankind until very recent, if not contemporary periods. Separation between men and women could easily be considered as one strong survival of them.

Once tested with Masri II example, we have begun to collect other hands pictures from as many sites of the world as possible.

We begun thus to decipher pictures from Africa (Algeria, Libya, Egypt and the Sahara), South America (Argentina/Patagonia), Australia and the Indo-Pacific area (New Caledonia, New Guinea and Insulinde: West Papua, Moluccas, Timor and Sulawesi)<sup>4</sup>. The first results show that everywhere women were also present and have left their hands stencils (see pict. 5 to 10 or 12) A first broad breakdown shows an equal number of men and women although each cave may present various proportions. It is the same for right and left hands, which globally correspond to one and two third respectively, but present strong variations in each case. For instance the Masri II's panel contains 14 right and 18 left hands whose sexual distribution is almost equal (apart for the case of the 5 indeterminate hands which being peripheral, would not change very much the proportions). Complementary data and relative deciphering will provide probably later a more statistical -and precise- insight.

Although men and women were probably not acting exactly together at the same time, but were both involved in similar practices in the same places, it is easier to suppose that the content of their activities would have been also the same. Therefore, the hypothesis of (miming) healing practices strongly linked to the use of hands and ochre becomes even more credible.

Numerous observations ancient from before the European middle-age or even contemporaneous (Camus 1995; 2002), as much as for Chinese medical conceptions (Girardeau 2005) have been describing how healers used to lay on hands<sup>5</sup>. Ethnographic accounts (Camus ibid; Schlemmer 2004; Lemonnier 2007 pers. comm.) would allow one individual carrying at least one special gift towards healer/sorcerer capacities upon 40 within small communities (hunter-gatherers) and upon around 140/150 for larger groups. Men and women would have an identical distribution of skill although differences in the cultural attitudes would apparently change that repartition.

It is still difficult, if not even impossible to precise the origin, evolution or adaptation of these human capacities towards their fellow creatures. It seems more than probable that for the simple East Asiatic case, the theoretic and semiotic frame has probably anticipated during prehistoric periods the formalisation of the "Chinese Medicine" (usually called TCM) involving the use of the Qi and all corresponding gestures.

This leads nevertheless to the question, which in fact became more and more evident. Negative hands stencils are said and openly considered as being universal. In fact, they are not that much... And this is the real last question: if healing needs are universal in any community and if it is evident that within human groups, some individuals -men and women- have naturally special gifts, in particular through hand laying on, why is there some places free of hands stencils? One of the results of having attested that men and women had both and symmetrically left their traces in the ornate caves, the reason being itself universal,

is that their presence should also be universal. We may thus think that there are other reasons, probably intra-cultural, having adapted and spread over time to explain that gap. As prehistoric paintings are not universal, although all the functions or intentions behind that activity may have been universal, indicating that complementary parameters have been involved, presence or absence of hands stencils may depend on the same correlations. Not only the world map of caves containing hand stencils has to be drawn, but its own inverted stencil too has to be established.

**(ENDNOTES)**

<sup>1</sup> Recent surveys conducted independently on their own initiative last may 2006, by speleologists L.H. Fage and G. Robert, have unveiled a new set of ornate caves, some 50 kms to the North West of Mounts Marang area. They contain too hundreds of hand stencils -some of them being also over impressed- often associated with figurative representations. A survey study organised with the Indonesian Archaeology Service in the next months should officially complete and correlate these new data.

<sup>2</sup> We are also collecting with A. Noury as many hands stencils from different parts of the world as possible, to complete -and go on in testing- the sampling.

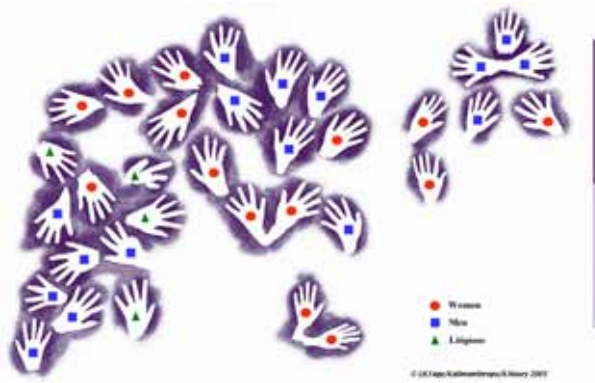
<sup>3</sup> In that purpose, I have asked my colleague Arnaud Noury, an archaeologist specialised in the Lapita Cultural complex who moved to computer programming, to elaborate a program especially intended to calculate and apply automatically the Manning's ratio, called *©kalimain* (Noury 2005).

<sup>4</sup> I would like to express there my acknowledgment and gratitude to everybody who has been interested in that deciphering experience and has kindly lent some pictures, at least for this first step of that experimental research.

<sup>5</sup> Although a post-modern version has been translated for some Westerners into "therapeutic touch" (TT), involving basic and punctual pieces of a theoretical and reduced shamanism, the basic use of the "Chinese" Qi appears to be general and would be older than 5,000 years. A possible anteriority based upon empiric observations may thus possibly be predated from Pleistocene.



1Marang



3Masri2a



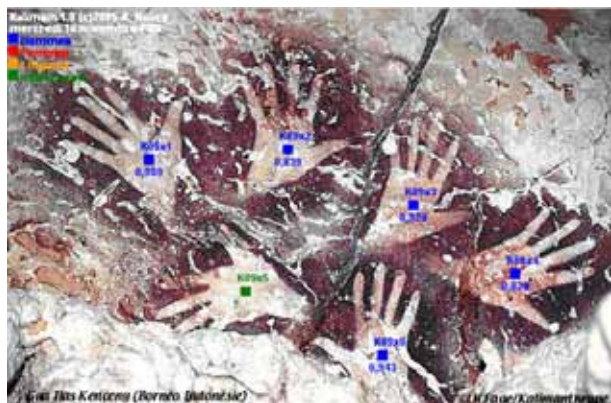
5H=FMardua



2MasriOrig



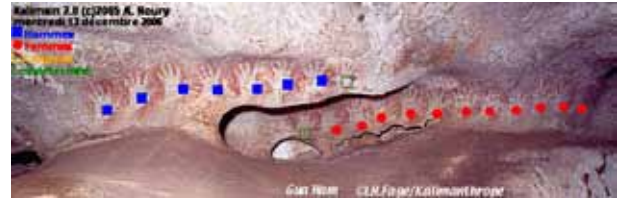
4Masri2-3



6H=FKenceng



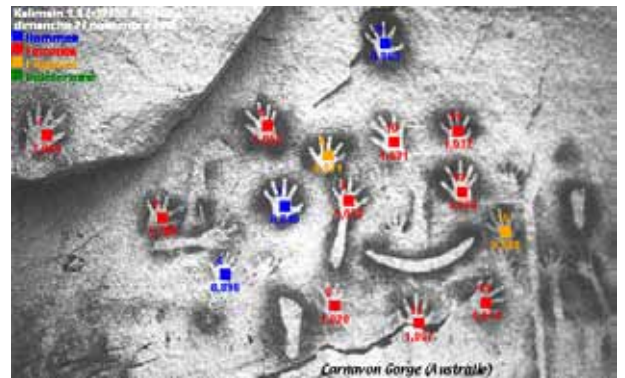
7H=FTwt



8H=FHam



9H=FLifou



10H=FCarnavon



11H=FArgentine



12H=FPchMrle



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