The influence of solar aspect on Upper Paleolithic site location

Randall White
New York University
Department of Anthropology
25 Waverly Place
New York, New York 10003

It has long been intuitively recognized that a strong relationship exists between solar orientation and French Upper Paleolithic sites. As early as 1884, Doigneau (in Schmieder 1971: 15) noted that Upper Paleolithic sites in the Isle de France tended to occur on south-facing slopes and cliff faces. De Sonneville-Bordes (1960) alludes to a similar tendency for Magdalenian occupations in the Périgord. However, apart from Bouvier's (1966) limited study of Vézère Valley sites, the following is seemingly the first attempt to (1) measure this tendency with data from a large sample of Upper Paleolithic sites and (2) consider the advantages conferred by the occupation of south-facing localities by late Pleistocene humans.

The data base employed here is that of the Périgord region of southwestern France for which nearly 200 Upper Paleolithic sites are known. Nearly all of these were visited in the course of a broader study which sought to determine the logic behind Upper Paleolithic site choice in the Périgord (White 1982; in press). In nearly all cases, the data presented were collected in the field by the author.

Figure 1 portrays the distribution of orientations for some 161 Upper Paleolithic sites in the Périgord. South-facing preference is most obvious. Figure 2 breaks down this distribution by cultural period. There appear to be no significant departures from the choice of southern exposures through time. Using the Magdalenian as an example, we see that 54 of 79 Magdalenian occurrences are at least partially south-facing; 26 of these face directly south. Traditional intuition is confirmed.

As is often the case, the question arises as to whether this pattern is a function of human choice or of topographic and geological factors. Given that the major rivers in the Périgord run roughly east to west, it is possible that inhabitable caves and shelters are more available on one side (the north one) of these axes. Side of river data presented in Table 1 indicate no preference for either the right or the left side of major river drainages. In fact, the symmetry is remarkable given the largely unassessable quality of the sample. Equally suggestive is the fact that, even in roughly north-south running valleys such as that of the Couze (Figure 3), anomalous south-facing slopes were chosen for occupation despite the predominance of east and west-facing cliff faces.

Few data are available concerning unoccupied caves and shelters. Nevertheless, there are known examples of north-facing caves and rock shelters that seemingly went unoccupied further suggesting that site orientation was largely a matter of human choice. In the vicinity of the site of Tourtoirac in the Auvézère Valley, there are a number of north-facing caves and shelters containing only sterile deposits (C. Archambeau, personal communication). At Les Eyzies, the massive north-facing Guilhem cliffs, despite being dotted with
Figure 2. The orientation distribution of Perigord Upper Paleolithic sites according to time period.
A: Lower Perigordian
B: Aurignacian
C: Upper Perigordian
D: Solutrean
E: Magdalenian
In conclusion, the data presented here force us to think of Upper Paleolithic sites not merely as artifact-bearing localities, but as carefully chosen points on a heterogeneous landscape. It is probably less necessary today to emphasize that Upper Paleolithic peoples were much like us. Nevertheless, the logic evident in the above data reinforce this fact, especially at a time when placing our own occupations in south-facing locations is becoming a strategy of survival and resource conservation.

Table 1

Distribution of Upper Paleolithic occurrences according to the side of the major river drainage in which they occur

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Right Side of Major River</th>
<th>Left Side of Major River</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Perigordian</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Aurignacian</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Upper Perigordian</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Protomagdalenian</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Solutrean</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>Badegoulian</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Magdalenian</td>
<td>44</td>
<td>43</td>
</tr>
</tbody>
</table>
References


passage. Parallel and series combinations of these acoustical elements create the cavity resonances, which significantly influence thresholds of hearing in the mid-frequency range (e.g., see Dallos, 1973, chap. 3). Variations on the dual cavity-septum configuration are also found in lorisid primates, domestic cats, and guinea pigs. For these reasons, we interpreted the morphological similarities between tarsier and anthropoid auditory regions as convergent (or perhaps parallel) anatomical correlates of middle ear function.

One objective of morphological description is to avoid a strict typology in which different character states are associated with every slight morphological variation. On the other hand, the organization of anamnestic observations into summary terms such as perbular pathway and dual cavity-septum configuration encompassing various morphologies with presumably negligible differences in detail may lead us to overlook the evidence for convergence. All one can do at the morphological (observational) level is to specify what structural similarities exist and their detail. Knowledge of function is our only guide to the appropriate level of descriptive detail in intertaxon comparisons. The dual cavity-septum configurations of *Tarsius* and anthropoids differ in those anatomical details (particularly the construction of the foramen passage) which determine the acoustical action of the middle ear cavities. Since the form of the cavities and septum clearly evolved with regard to the function of providing specific cavity resonances, the anatomical differences are not incidental variations, but rather are present in those features which underlie the evolution of the form-function complex. This is the preferred criterion of convergence. Also, only a form-function complex can be considered as a valid individual character.

Another advantage of studying mechanical function and adaptive roles over straight description is the appreciation of correlated characters. An excellent example is provided by the external auditory meatus. It is generally accepted that a cartilaginous meatus extends laterally from the bony ring holding the eardrum as a primitive character in mammals. However, plesiadapiforms, omomyid tarsioids, *Tarsius*, a few recent strepsirhines, and modern Old World (but not New World) anthropoids have evolved bony meatal tubes extending laterally beyond the meatal rim of the bulla. We have found that bony meatal structures are produced in therian mammals which have a jaw joint bordering directly on the meatus, or when (as in some rodents) the mandible is brought into contact with the meatus during a stage of the chewing cycle. In other forms, the structural relation between the jaw joint and the meatus is relatively remote, and a postglenoid process of the temporal bone forms the posterior wall of the jaw joint. Experiments on human subjects have shown that motions of the mandible greatly increase the loudness of bone-conducted tones when the mandible is shifted laterally so as to border on the easily-moveable cartilaginous portion of the meatus (Bekeay, 1960). The thin but relatively rigid wall of bone directly behind the jaw joint (bony meatus or postglenoid process) reduces the radiation of noises into the ear canal due to motions of the mandible. Such noises would mask important, relevant auditory signals, thus creating an unfavorable situation particularly for herbivorous mammals which chew continually.

In primates, a close structural relation between the jaw joint and the external auditory meatus may be related to small body size, length of the sphenoid-pterigoid region of the basicranium, the degree of splanchnoflexure, large orbits which push other cranial structures downward and backward, the anterior position of the foramen magnum which in turn may be related to posture or encephalization, the size and position of masticatory muscle


only ten numerals exist (i.e. 0, 1, 2, 3, ..., 9). We need only think for a moment, though, to realize that our familiar list of numerals is one list of arbitrary symbols which can easily be expanded (e.g. 0, 1, 2, ..., @, ☛, ◊, ... )\(^1\) until a string of, for example, 20 uniquely defined symbols has been developed. In actual use each symbol would be multiplied by a place position multiplier to determine its value. For example, the decimal equivalent of the vigesimal number 23 can be calculated as follows:

\[
\begin{align*}
(2 \times 20^1 &= 2 \times 20) &= 40 \\
(3 \times 20^0 &= 3 \times 1) &= 3 \\
\text{Decimal} \\
\text{Equivalent} &= 43
\end{align*}
\]

Figure 2.

One more complex example from our vigesimal system is needed. The decimal equivalent of the vigesimal number @¢ (where @=11 and ¢=12) is:

\[
\begin{align*}
(\circ \times 20^1 &= 11 \times 20) &= 220 \\
(¢ \times 20^0 &= 12 \times 1) &= 12 \\
\text{Decimal} \\
\text{Equivalent} &= 232
\end{align*}
\]

Figure 3.

With these basic concepts in mind we can now look with greater confidence at the Mayan arithmetic system. It is vigesimal but with an interesting variation from our idealized model. The Mayan system has only three symbols ( • , --- , ☛ ) which translate into (1, 5, 0) respectively in our system.

Obviously there is an accommodation which must be made in order to employ three symbols in a system based on place position multipliers of powers of 20. The Mayans resolved that issue quite elegantly by accumulating ( • )s and ( --- )s into "symbol clusters" which in effect become unique numerals. The largest symbol cluster that can be constructed in this manner is ☛☺☺ (the number 20 must become a ( • ) in the 20\(^1\) place position).

First translating our earlier example into Mayan, and then converting the number into the base ten equivalent, we arrive at the answer given below. (In actual use, the Mayans ordered their place positions from bottom to top rather than from right to left so 23 would be written ☛☺☺ .)

\[
\begin{align*}
((☺☺ \times 20^1 &= 2 \times 20) &= 40 \\
((☺☺☺ \times 20^0 &= 3 \times 1) &= 3 \\
\text{Decimal} \\
\text{Equivalent} &= 43
\end{align*}
\]

Figure 4.

\(^1\) Note the symbol @ could stand for the number represented by the symbol cluster 11 in the decimal system.
The other thirteen items in his table are merely examples of applying rules to those three products (i.e. the commutative property of multiplication which asserts that $2 \times 3 = 3 \times 2$ and the vigesimal rule for place position value determination). The triviality of his multiplication tables becomes even more obvious when one realizes that they are open-ended; another eight elements can be added by using $\otimes$ and $\otimes$ as multipliers and then eight more can be added by using $\otimes$ and $\otimes$ and so forth.

An equivalent situation in our own decimal system would be to insist that one must memorize the 20 times table as well as the 2 times table. Clearly, if we know the rule for handling "trailing" zeros, we do not have to encumber ourselves with a 20 times table any more than we need to memorize a 200 times table or a 2,000 times table.

Having belabored the point that Anderson clutters his tables with information that should not be included in multiplication tables, let us consider the information that he does not include but that would be of great assistance to anyone who was actually employing the Mayan numerical system to solve practical problems.

Anderson seems to have assumed that the elementary act of multiplication must occur between symbols. This, of course, is what we do in our own system. We multiply the symbols 0, 1, . . ., 9 with each other and keep track of place position values when dealing with large numbers. In order to do this efficiently, we must at least memorize the multiplication tables 1 through 9. The problem with Anderson's assumption is that while minimizing the number of items in his times tables it maximizes the number of steps required to solve a problem.

It seems far more plausible that the Mayans would have adopted symbol clusters (see fig. 6) as the basic elements of multiplication. This would have necessitated memorizing the times tables from 1 to 19 (see Appendix A); once this feat had been accomplished the continuing advantage would have been tremendous. The average number of steps in large, complex problems would have been significantly reduced and the probability of error would have been reduced proportionally.

In a privately published paper, Steenstrup (1971) hints at a similar approach. His technique appears to pre-suppose knowledge of multiplication tables although he never specifically addresses the subject. His examples (Steenstrup 1971: 20-22) are little more than translations into decimal of vigesimal partial products. The specific Mayan numerical process employed is left to the reader's imagination and as such transcends criticism. Anderson, on the other hand, clearly demonstrates exactly what the Mayans would have had to do to utilize his technique.

W. French Anderson eloquently explains his multiplication process (1971: 57) as follows:

Multiplication, although in principle as easy in Maya as in Hindu-Arabic, can become difficult in practice because of the number of symbols involved in any large problem. The process itself, however, is simple. It consists of multiplying each character of the multiplicand (the top
The third and final step would then be:

\[ \begin{array}{c}
\bullet \\
\hline \\
\times \\
\hline \\
(5) \ & \ (20) \\
\end{array} \quad (5 \times 20) \]

\[ \begin{array}{c}
\bullet \\
\hline \\
(0) \\
\end{array} \]

Figure 10.

which, when added to the previous accumulation produces the second partial product:

\[ \begin{array}{c}
(100) \\
\hline \\
+ \quad \bullet \\
\hline \\
(0) \ & \ (1) \\
\end{array} \quad (100) \]

\[ \begin{array}{c}
\bullet \\
\hline \\
\hline \\
(30) \ & \ (130) \\
\end{array} \]

Figure 11.

This tree-step procedure is not shown in Anderson's example (his fig. 6), but it is clearly implied by his statement:

The process . . . consists of multiplying each character of the multiplicand . . . by each character of the multiplier (1971).

This matter of hidden steps associated with accumulating ( \( \bullet \) )s and ( \( -\) )s must be kept in mind as we consider more complex examples.

First, however, let us consider how a Mayan scribe who had memorized his ( \( \bullet \) ) times table would attack the same problem:

<table>
<thead>
<tr>
<th>Multiplier</th>
<th>Multiplier</th>
<th>1st partial product</th>
<th>2nd partial product</th>
<th>Final product</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \bullet )</td>
<td>( \bullet )</td>
<td>( \bullet )</td>
<td>( \bullet )</td>
<td>( \bullet )</td>
</tr>
<tr>
<td>( 6 )</td>
<td>( 26 )</td>
<td>( 6 \times 6 )</td>
<td>( 6 \times 20 )</td>
<td>( 156 )</td>
</tr>
</tbody>
</table>

These are the memorized products which our hypothetical scribe would have used. In addition to these products from his ( \( \bullet \) ) times table he would, of course, have been required to know the correct place position in which to record them. Note that two steps are required compared to six in Anderson's method.

Figure 12.
The first partial product represents the accumulation of three steps:

Step 1. \((\circ \circ) \times (\bullet \bullet)\) \hspace{1cm} 7 \times 12

Step 2. \((\circ \circ) \times (\bullet \bullet \bullet \bullet)\) \hspace{1cm} 7 \times 160

Step 3. \((\circ \bullet) \times (\bullet \bullet)\) \hspace{1cm} 7 \times 400

\[7 \times 572\]

Figure 15.

The second partial product also represents the accumulation of three steps:

Step 1. \((\bullet \bullet) \times (\bullet \bullet)\) \hspace{1cm} 6 \times 12

Step 2. \((\bullet \bullet) \times (\bullet \bullet \bullet \bullet)\) \hspace{1cm} 6 \times 160

Step 3. \((\bullet \bullet) \times (\bullet \bullet)\) \hspace{1cm} 6 \times 400

\[6 \times 572^*\]

\(^*\text{(Since the "6" is in the "20^1 place position" this arithmetic expression ultimately becomes \((6 \times 20) \times 572) = 68,080", which when added to the first partial product \((7 \times 572 = 4004)\) yields a final product of 72,644).}\)

Figure 16.

Note that Anderson's method generates five partial products instead of two and each one of his represents the accumulation of nine separate multiplication steps as compared to three in our approach. In summary, six multiplication steps in our method compared to forty-five in Anderson's.

The larger the numbers the greater the advantage to having "symbol cluster" products memorized. One final example (see fig. 17) will clearly reveal the exponential nature of that increasing advantage.

The advantage associated with this greater emphasis on memorized products continues to be felt in the "long division" process (see Appendix B). This is true for two reasons:

1. Long division is a process that includes repetitive multiplication.

2. The memorized data included in our expanded multiplication tables (see Appendix A) gives an individual an intuitive advantage in estimating the partial quotients. Clearly, the closer one can come to a "best estimate" the simpler will be the problem.

The critical point being expressed in this analysis is not simply that
### Appendix A

#### The 2 Times Table

<table>
<thead>
<tr>
<th>Multiplier</th>
<th>Multiplier</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

#### The 3 Times Table

<table>
<thead>
<tr>
<th>Multiplier</th>
<th>Multiplier</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
The (10) Times Table

<table>
<thead>
<tr>
<th>Multiplier</th>
<th>Multiplicand</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This example is the same one used by Anderson (p. 60):

\[
\begin{array}{c}
27 \\
133 \\
\hline
3591 \\
266 \\
931 \\
931 \\
0
\end{array}
\]

- divisor = 133
- dividend = 3591
- quotient = 27
- remainder = 0

\text{partial dividend} = 359
\text{partial quotient}_1 \text{ high order place value of quotient} = 2
\text{high order place position of quotient} = 100s
\text{partial product}_1 = 266
\text{high order place values of partial dividend}_2 = 93
\text{lowest order place value of partial dividend}_2 = 1
\text{partial quotient}_2 = 7
\text{partial product}_2 = 931
Rhythms of Nature:
An Introduction to the Folklore of the
Fertility Cycle in a Barbadian Village

Jennifer W. Ehrhard
Barbados 1981
Fieldwork Group
Colgate University
Hamilton, New York 13346

"Symbolic thinking is not the exclusive
privilege of the child, of the poet, or
of the unbalanced mind: it is consub-
stantial with human existence, it comes
before language and discursive reason."
--Mircea Eliade

The following work is an introduction into the folkloric beliefs of a
village, concerned with the process of conception, procreation and regeneration.
By "folkloric" beliefs I mean beliefs that have been transmitted orally through
generations of Barbadian history in the form of stories, customs, myths and
sayings. Within the context of this paper, these folkloric beliefs are inter-
pretations and explanations of the unceasing process of fertilization and
regeneration in which man is swept. The folklore presented in this paper in-
volves the use of symbols in order to identify, relate and unify elements which
may not seem compatible, but become cohesive images when pieced together properly.

Ultimately, these images create a "world view" in which man is able to
explain the environment and his place within the environment. The following
text, then, explains the cycle of fertility and procreation in Barbados, within a "cosmological" or "world view" framework. It reveals a way in which man
seeks to incorporate himself into the rhythms of the environment through certain
biological functions and cultural values. By mirroring the movements of
nature, man acquires a sense of "oneness" with the environment which justifies
his existence in the environment.

This kind of cultural-environmental study is particularly important in a
rapidly changing country like Barbados. Development and modernization directly
affect the cultural "lore" of the island. People in Barbados are becoming less
dependent on the land and environment due to this modernization of lifestyle;
consequently, the folklore which is rooted in the awareness of nature no longer
holds the same significance in one's life. As a result, traditional folklore is
becoming diluted with modern ideas or it has disappeared all together.

As far as can be determined, a study of this kind has not been done in
Barbados previously. I have relied on ethnographies and cosmological works
done in various other countries and cultures as models for the organization and
presentation of the material. I have also done some comparative research con-
cerned with concepts of fertility, procreation, moon-lore and others. Al-
though time did not allow this work to be as extensive as I had hoped, I was
able to discover some interesting cross-cultural similarities which offer many
implications for future work.
Methodology

Location:

This project is based on information collected in Barbados during a three month period. Most of the data was gathered in the village of Bathsheba. I chose Bathsheba primarily because it is situated in an area of the island which has been less affected by development and modern influences than other parts of the island. It seems, generally, that the further away from the capital of Bridgetown one travels, the more traditional lifestyles have remained. Bathsheba lies thirteen miles from Bridgetown on the east (Atlantic) coast of the island. Although there is a direct bus route to and from town and a road that runs along the east coast facilitating access to Bathsheba, the way of life in the village has remained relatively unchanged over the years.

Situated on the coast of Barbados, Bathsheba began as a fishing village. Today fishing is still a primary source of employment in the village, along with farming, stock-breeding and tourist-oriented enterprises such as inns and restaurants.

Informants:

Due to the broad scope of the project and the short amount of time in which to complete the research, the bulk of interviewing was limited to informants from one particular age group, mainly men and women whose ages ranged from sixty to ninety. I believe that it is within this age group that folklore in its "purest" form is retained. Although the folkloric beliefs presented in this paper reflect the beliefs held in each generation of people in Barbados, an increased mixing of traditional and modern beliefs appears proportional to the decreasing age of the informant.

Most of the older informants, on whom the research was focused, had little or no income of their own but received checks from the government or relied on their families' income. These men and women lived in traditional wooden houses (chattel houses), some with modern items such as electricity, running water, stove and refrigerator, and some without. Many had been fishermen, farmers, cane-cutters, stock breeders, or midwives. Most of these informants have lived in Bathsheba or in a village close by their entire lives and now only travel out of the village on special occasions.

These informants spend most of their days at home attending to daily chores. The women wash, clean, cook, and tend to their gardens or stock, while the men work the land, keep the stocks, loiter around the rum shop, and watch the younger men fish. These daily responsibilities aided fieldwork considerably because informants were at home with much time to spare and seemed pleased to have some company during the day.

Due to the ethnocentric belief that the subjects of fertility, conception and procreation were extremely sensitive ones, I was hesitant to approach men in the village about these topics. Therefore I thought it would be best to develop a certain amount of rapport and trust with the women in the village, hoping that these relationships would strengthen confidence in myself and in the research, and would ease the inevitable "confrontation" with the men.

---

1 I also spent time in the villages of Chalky Mount and Lakes where some information was gathered. Throughout the paper I refer to the folklore as being "Barbadian." This is only used as a convenience in writing the paper. I am not asserting that the folklore presented necessarily reflects the beliefs of all Barbadians, but only those in the village of Bathsheba. (See map of Barbados).

2 Stock refers to pigs, cows and sheep which were kept and raised for breeding and slaughtering.
Most of the interviews took place inside of the informants' homes, and lasted from thirty minutes to a couple of hours. Each visit to an informant's home was considerably longer, however, as the interviews inevitably merged into friendly chats.

Field Experience

The most important aspect of the fieldwork research was the opportunity to live in Bathsheba throughout the duration of my project. By moving into Bathsheba in mid-September, the chance arose to learn the physical layout of the village and make myself known as 'a student' before my fieldwork actually started. I came to meet a few people during my first few days in Bathsheba -- at church, on the bus and sitting outside the shops -- who became interested in the fact that I was a student from America and would be there for a few months. It was from this handful of people that I came to meet all of my informants. I was referred to grandmothers, grandfathers and old women who knew a lot "about those kind of woman things."

I tried to take part in the daily rhythms of life in Bathsheba as much as possible. Like my neighbors, I rose with the sun and went down with the sun. Each morning I jogged in the same clothes, on the same route, at the same time so that people I passed would eventually come to remember my face and could predict my coming every day. I attended church, although I was careful not to let myself be associated with a particular group of people within the village. I visited informants and other friends in the village as much as time allowed; women cooked meals for me, afraid that I would starve because I did not know how to cook Bajan food.

Living day to day with the people of Bathsheba, I came to understand and appreciate the meaning that the folklore I had collected held in their lives.

By the exchange of jokes, reminiscences, songs, personal services, knowledge, confidences, happiness and sadness, the collecting of folklore becomes a part of a much larger experience -- the formation of deep human relationships...one collects more than folklore, one collects the people who create, shape and transmit it (Goldstein, 1964: 141).

Introduction to Barbadian Folklore

All naturally flowing waters have their rhythms perhaps following the course of the day, perhaps keeping in time with the longer seasonal rhythms...everywhere liquids move in rhythms...countless rhythms permeate the process of nature.

--S. Redgrave

This statement refers to the cosmic energy of the environment. Much of this energy is manifested in patterns of natural phenomenon such as the rising and setting of the sun, seasonal change and tidal movement. Man has recognized, calculated and grown to depend on these occurrences for his survival on earth and it is around these kinds of natural rhythms that man
times during the month which are most important, therefore, are the new moon, the first quarter, the full moon, and the last quarter. One informant explains, "everything does not like the same moon -- each state (phase) has its own work to do" (interview, Nov. 19). For instance, the new moon is the best time for farmers to plant (or harvest), while the fishermen have a difficult time when the moon is new because the fish swim very far from shore at this time.

The notion that each phase of the moon "has its own job to do" implies an autonomous functioning with the moon as a whole body. It should be suggested that this "independence" of the moon's phases is perceived by men and women in Barbados as a model by which they should follow in their own lives, particularly in the relationships with those of the opposite sex. An article written by Constance Sutton and Susan Makieskay-Borrow (1977) reveals the considerable amount of independence a Barbadian woman holds compared with women in other -- particularly developing -- countries. This female autonomy is, in a large part, rooted in the West Indian family forms. Very often a woman has children by several fathers, raises these children, takes care of a home and has a job to support herself and her children. Unlike other cultures, this kind of domineering independence is looked upon by Barbadians as a desirable characteristic in women. This comparison of the autonomy of the moon's phases and the striking autonomous characteristics in Barbadians is an example of the way in which man incorporates the rhythms of nature into his own cultural life. This cosmology of folkloric believes, then, is rooted in Barbados' unique social structures.

Moon Symbolism

The moon is seen as a female element and is believed to be made up of "white water." The expression that the moon "carries its water" refers to the moon's shape as it increases to its full state. When it is full, looking "round and watery," it releases its water into the clouds and disappears (interview, Sept. 30). The full moon, then, brings rain.

Sometimes the rain does not immediately fall after the moon, however. This is because the water from the moon falls directly into the clouds where it is stored until the clouds are blown overhead. The clouds then release the rain onto the earth. One informant explains, "when the moon is full of water, you may not get it then but at night or in the morning" (interview, Oct. 3). However, rainfall is not limited to the full moon. On any night during the month when the moon has a circle of mist around it, rain is sure to fall. When the moon is clear and bright so that it "lights up the whole earth," it is a sign of good weather and good luck to come. It is interesting that folklore from Wiltshire, England reveals that "country men believe weather changes with the new moon, and when the moon is seen with its horns up, like a saucer, it is believed that the moon is holding water" (Whitlock, 1976: 159). There is, of course, the possibility that Barbadian Folklore was influenced by British lore as a result of the Colonial settlement of Barbados in 1625. The West African slaves which were brought to Barbados to work for these British "Planters" may well have picked up some lore from their "masters" and incorporated into their own African Folklore. The result of this mixture through many generations may have resulted in the folklore existing on Barbados today.

This water-substance of the moon becomes an extremely important element in the folklore of this fertility cycle; it is used symbolically and manifests itself as several other natural liquids. The embryotic fluid which is "released" sometime before childbirth is referred to as God's water -- also a name used to
state. This release of its liquid substance may be expressed as a cleansing process which purges its built-up substance in order to replenish it a few days later. This lunar rhythm may be looked upon by Barbadians as a model for unceasing life and regeneration. The moon's rhythmic cycle is a physical, observable and predictable manifestation of the entire cycle of fertility, growth and regeneration on earth. It becomes important, then, for man to internalize this lunar rhythm so that he may also be a part of the cycle of birth and re-birth. By mirroring the moon's process, man seemingly becomes "one" with the environment which surrounds him.

Women share a cycle very similar to the moon's own cycle. Each month women shed their "womb lining" in order to replace and replenish the loss with a new lining. Needless to say, this natural process is a very important function, not only physically, but psychologically and spiritually, throughout a woman's life. The release of blood each month reaffirms a woman's place in nature because she is functioning with nature. As Mary Harding explains,

Many primitive societies have menstrual taboo rituals where women go off for days alone in the environment where they are in close touch with the force that dominates them. This illustrates physically the idea that woman is closer to nature than man (Harding, 1955: 71).

Sexual intercourse and menopause are two physical functions which are perceived as processes of releasing, cleansing and replenishing. Also, pregnancy, childbirth, breastfeeding, ingestion of bush teas as well as menstruation are life long processes which are interpreted as reflections of the lunar cycle.

In order to fully comprehend the central role of the moon in this regenerative cycle, its dualistic character must be explained. For not only is the moon empowered with fertility and growth forces, but it also brings infertility, lunacy and death into this life cycle. This dual characteristic of the moon can be observed in ancient Chinese religion, where the female principle of Yin -- described as everything "dark, cool and feminine" -- is symbolized by a tiger who is "waiting to leap on prey with claws and fangs but who is sleek and gentle-looking" (Harding, 1955: 34). It is important to remember that only with the "death" of the moon each month, can a new moon be "born." The full moon is a particularly powerful time which may disrupt one's bodily fluids and destroy one's physical equilibrium. Women have "bad trouble" with childbirth during the full moon, some people go crazy with the full moon as a result of blood or nature rushing to their heads and many older people are "carried away" at the time of the full moon.

The Moon: Fertility

All women are believed to reach the height of their fertility at the time of the full moon, regardless of their varying menstrual cycles.

When the moon is full, women don't like to mix up because the quicker they will get it (interview, Nov. 16).

She's gonna get trouble with the full moon (interview, Nov. 2).
in the folklore concerned with fertility. The fishermen of Bathsheba navigate by certain lights from houses on the island rather than relying on particular stellar patterns and positions. They are forced to remain within view of the shore when they are night fishing. However, one informant did mention a constellation called the Seven Stars which was not used by the fishermen, but by farmers. When this constellation is seen in the sky over the oceans, "The sky must be bright, then the crops should be picked soon" (interview, Nov. 19). One can infer from this statement that the constellation is observed at the time of the full moon because the sky is brightest at this time of the month and most crops are picked at this time when they are "full and ripe" like the moon.

Informants explained that a shooting star signifies that a baby has been born and that someone has also just died: "When a star 'pitch', it will carry people" (interview, Nov. 18). Another informant explained this phenomenon with a slight variation saying that when a star "pitches" in the sky, it indicates that a British ruler has died; a reign has ended and a new one begins. Within both of these explanations is the notion of simultaneous birth and death, an end and a beginning reflective of the moon's rhythm in her monthly death and rebirth.

The Earth

"Earth"

The earth is another thread which must be weaved into this complex cosmological web. Like the moon and the ocean, the earth is perceived as a feminine element and holds an important place within the fertility cycle. The earth's function is two-fold: it is an inexhaustible source of food for strength3, and it is empowered with the ability to heal sickness and to turn bad into good. The earth is described as having a sucking action which "takes in" and creates food for life. The earth, for instance, sucks in the rain from the moon which it mixes with the seeds in the soil and eventually produces a plant which is eaten by man or animal. A tree will grow and eventually bear fruit if it receives enough strength from the earth just as a woman will bear children if she too receives enough strength from the earth through the food that she eats.

Informants agree that natural fertilizers such as cow dung, garbage and dead organisms are best to use on crops. Plants grown with the help of these fertilizers will produce foods that provide more strength than foods grown with artificial fertilizer. In the case of stocks, people say that a cow that eats only grass and bush, rather than man made grain mixtures, gives the sweetest milk.

Great importance is placed on burying the dead -- both humans and animals. Also, the placenta of a woman or animal is always buried in the earth immediately after the birth. There are several reasons for this action; one explanation is the notion of allowing the earth to take the goodness from it in order to produce strong plants and tress. The earth is also capable of "taking in bad," which in some cases, results

3 Strength used throughout the text means reproductive energy.
with which offspring are conceived. Nature is a "white, watery" liquid -- reminding one of the moon's substance -- which is created indirectly from the earth and its levels in all things is controlled by the moon. Nature is also explained as an innate sexual urge. As one informant clarifies:

Nature is when you look out in the field where the sheep are eating and drinking and you see the tiny newborn sheep trying to get up on top of one another -- but it is all right -- that is nature (interview, Oct. 20).

It is believed that heightened fertility in animals and humans is revealed in a heightened desire for sexual contact. This urge is brought on by the various phases of the moon.

All stock (animals) are "carried out" to their mates on the change of the moon or two or three days before or after this change. Each animal has its own unique way of announcing its increased desire. Pigs "swell" and turn reddish. It is noteworthy that the word "swell" is used also to describe the moon, pregnant women and a seed as well as this animal, all in the context of the moon's increase and its implications on fertility. The cows "holler" and sheep "wave their tails when touched on their backs." There is a direct link here between the sheep's back and its heightened desire to mate in that the sheep's "nature" is kept in its back. Informants say it is best to wait a day after they are at their height because "when they are too ripe and strong, it is hard for them to prove conceive" (interview, Nov. 11). Again, this expression of being too ripe is also used in terms of fruit, children and the full moon. The idea of being too strong to "prove" refers to the nature of one animal overpowering the nature of its mate and therefore making conception impossible. This also holds true for human conception:

One must be strong and one must be weak, you can't have two strong natures...it's like two men fighting -- they can kill each other. Usually a man's nature is stronger because it is thicker, but sometimes a woman can be very strong. Then the man should have weak nature if they want anything (interview, Nov. 11).

Nature is fed by one's blood; if one's blood is strong, so their nature will be strong also. Blood is strengthened by the foods a person or animal eats throughout its lifetime; and the best foods to eat are from the earth. An informant explains:

Poor women breed fast. They don't eat enough and their nature is weak -- the man is strong and can get his nature in quick (interview, Nov. 10).

There is a connection made between nature and breastmilk. Both are white liquids that are "fed" by one's blood. Informants explain that breast-fed infants of poor women often acquire a condition called mirazmee due to the

4 mirazmee -- form of malnutrition which leaves the infant skinny, pale and results in baggy skin.
Nature may also be dangerous if too much is produced as a result of eating many "strong foods." One informant told a story about his neighbor who loved to "lie with women" and ate a lot of "strong foods" to ensure unceasing "strength." "One day his tail (penis) wouldn't go down, wouldn't go down -- and killed him" (interview, Nov. 11). There is also a hazard in having too much intercourse. Besides decreasing one's supply of nature and therefore making a person feel "weak," intercourse with many different partners can make one's nature "sick" and as a result, may turn one's blood "bad." This "bad blood" is exposed by a darkening of one's skin, such as the case of the man previously mentioned who suffered from venereal disease.

Intercourse, then, is seen as a healthy purging of one's nature in order that it may be replaced with an equal amount of nature which was released. This maintenance of an equilibrium of nature is extremely important as is revealed by the beliefs that too much nature will "make you go mad," while too little nature is considered weak and unhealthy. This balancing of one's bodily fluids guides one's sexual behavior in that one will limit one's frequency of intercourse or indulge in intercourse more often, depending upon the level of nature in their own bodies.

An interesting relationship between the head, back and genitals of a person is revealed through this examination of nature moving in a human body. Nature is produced and stored in the spine, but rushes up to the head or down to the genitals. These three parts of the body become important elements in the process of release and regeneration as an all encompassing cycle. Mary Douglas writes about this kind of image in her book entitled Natural Symbols:

One of the most obvious forms of religious behavior is the use of bodily symbols to express the notion of an organic social system...bodily control is the expression of social control...the human body is always treated as an image of society...what it (body) symbolizes naturally is the relation of parts to an organism and the whole (1970: 39).

The folklore related by this author suggests a concern for a personal, internal control of bodily liquids such as blood and nature. This control is maintained in two different ways. First, a person experiences several processes of release and replenishment such as menstruation, menopause, childbirth and sexual intercourse which cleanse and replenish the body through one's lifetime. At the same time, one must be sure to maintain a certain level of liquids in one's body at all times. This balancing of fluid is expressed, for example, in the case of nature which becomes dangerous if too much or too little is present in one's body. Bodily control, then, is not an external control of one's movements or actions, but an internal balance kept by each individual in society. Perhaps this personal control is related to the presence of the high level of individual autonomy and control over one's own life in Barbadian society. Personal control over one's own bodily liquids enhances the value of one's own control over his or her behavior, feelings and relationships with others. Also, this constant bodily control through the natural processes of release and replenishment is symbolic of the moon's cycle of death and rebirth, therefore expressing the organic character of the Barbadian society. Thus, symbolism of bodily parts permeates three levels of existence: that of self, society and the environment.
There is a certain way a woman should be -- she can look but don't pity. The baby will take it on (interview, Sept. 14).

An example of this phenomenon was told by several women in the village:

There was a woman who lived up near the woods where there are plenty of monkeys. She watched them and felt pity for one of them...when her child was born he looked and walked funny -- just like a monkey (interview, Sept. 30).

There is a similar story told about a pregnant woman who mocked the "baah" of a sheep. Her child "took it on" and "now moves her head queerly from side to side like a sheep" (interview, Oct. 31). Another story describes a different experience:

My sister had twins -- a girl and a boy. The boy was born a moffrie 5. The only reason she could think of for this to happen was that she remembers looking out from her house and seeing two dogs mating and they got stuck together and she laughed at this (interview, Sept. 29).

A woman "with child" should also be aware of certain cravings that she feels during pregnancy. It is thought that a child will be born with marks on its skin which resemble the food that the mother craved but did not eat. A nurse at Queen Elizabeth Hospital in Bridgetown reported a case of a woman who craved calcium and began to eat pieces of the wall in her cement house (interview, Sept. 15). Birthmarks may also be a result of the mother eating something that she did not want at all and then touching a particular spot on her body. For example, an informant showed me a dark spot of skin on her ankle and explained that her mother had been forced to eat souse and pudding by her aunt and as she bent over to spit it out, she touched her ankle and left the mark of the pudding (interview, Oct. 1).

The mother can always predict the sex of the foetus while it is inside of her. Women say boys are heavy and strong and this causes the mother's ankles to swell and their kidneys to ache. If the mother's stomach looks long and pointed, it will be a boy. If the stomach is big and rounded, it is a girl. These beliefs are almost universal: the pointed stomach symbolizing a phallus, the round stomach resembling the roundness of a woman's figure and the full moon.

Barbadian men assert that they can tell if they have gotten a woman pregnant because they feel the symptoms common after conception such as morning sickness and dizziness. If a man sees another man walking down the street spitting, he jokes, "who you got pregnant now?" referring to the vomiting or spitting up of a pregnant woman (interview, Nov. 11).

---

5 Moffrie - a person who has both male and female genitalia.
6 Souse and pudding - a traditional Barbadian dish. The souse is boiled pig's knuckles and the pudding is a large sausage made from yams and pig's blood.
may come to see or play with the newborn.

An important part of the birthing process is the removal of the placenta of "birth" from the mother's body. This birth can be very dry as a result of drinking too much ice water or because the mother was weak and had an insufficient amount of nature. Thus, nature manifests itself at childbirth as the "slime" which surrounds the newborn. In order to ensure a complete purging of the afterbirth, green tea is given to the mother to help loosen it. Any part of the "birth" left inside the woman can cause great pain and is apt to make the woman sick. If left inside of the woman, the "birth" is considered "bad blood" and pollutes her body until it can be removed.

After the delivery of the child, the afterbirth is immediately taken out of the house and buried in a hole in the yard:

You dig a hole two or three feet deep, drop the birth in, put a rock on top and then the dirt. Then put another rock on top to keep it safe (interview, Nov. 2).

There seems to be several reasons for burying this afterbirth. Some informants explain that it is merely to keep the dogs from "spreading it all over." Others stress the importance of the birth being put into the ground where it arose originally in order that the earth may take the goodness from it. A few informants admitted that if the birth was not buried properly, the mother could become ill. Someone could use this birth in order to perform some kind of obeah[8] on the mother. When asked if the birth could also bring harm to the child, the informants answered "no," that the birth was only a part of the mother.

The umbilical cord, however, is considered a part of the child, as one ex-midwife explains:

When the child comes, the cord easily comes away from the mother. It now belongs to the child -- you don't have to cut it from the mother it just fall out like a rip fruit falls easily from a tree (interview, Oct. 20).

Here the child's birth is compared to a tree bearing its fruit.

Like the afterbirth, the umbilical cord must also be disposed of carefully. The cord must be burned as soon as it falls off the baby. This usually happens between four and six days after its birth. If the cord drops on the ground before it is burned, the baby will feel pains in his stomach and will not be able to pass water (interview, Oct. 6). Also, some say that one could use the cord to perform a kind of obeah on the baby, for, as quoted earlier, it has become a part of the child, just as the "birth" is considered a part of the mother.

There was very little explanation offered regarding abnormal deliveries such as stillbirths and twins. It seems stillbirths are primarily caused by falls taken by the mother during pregnancy. In one instance an informant described a young woman who had become so afraid when she heard that her midwife could not be present for the delivery that she died of fright during the

---

[8] Obeah: a traditional form of "black magic" practised in the West Indies.
Women also believe that menses flow much heavier if it comes at the time of the full moon.

Men seemed to hold a different attitude toward menstruation, perhaps out of fear of the unknown or because of their own feeling of inadequacy in not having this natural cleansing process. Male informants over fifty years old explained that they would not "mix up" with a woman who was sick (menstruating) because of the illness that the bad blood could bring them. The women would also agree that the blood still inside of them is "bad" and is dangerous to themselves as well as to men. Younger male informants felt that "mixing up" while a woman was seeing her menses was just messy but were not afraid of getting sick. Others "want sex anytime -- even when she is that way" (interview, Nov. 10).

There are some slang expressions used by both men and women which express these various attitudes toward menstruation: "the rent man coming for his rent," "sick," "not proper," "red light" and "I have eyes." This last term is especially expressive. "I have eyes" refers to the presence of red lines on the whites of one's eyeballs.

The colors red and white are involved in menstruation and menopause. For instance, women said, "You have to see both red and white for it to be healthy" (interview, Nov. 10). In this context the woman was referring to the female ovulation cycle which releases both white (corpus luteum) and red (menstrual blood) liquid from a woman's vagina during the course of a month. "I have eyes," the, refers to a healthy menstruating woman. During menopause both the blood (red) and the nature (white) "turn upside down" and create a traumatic physical and emotional change to a person. Perhaps this presence of red and white reflects the cosmological relationship between the sun (red) and the moon (white). Although both blood and nature are dependent on each other, each has its own job to do, reflecting the autonomous relationship between the sun and the moon (or man and woman).

Menopause

Menopause is a time in life which clearly symbolizes a unique relationship between blood and nature. Menopause is referred to as a "change of life"; it is a time when "the blood turns upside down" and "one loses strength [nature] because the body gets the drain" (interview, Oct. 1). "Like menses comes to you when you're young, it goes when you are old" (interview, Oct. 1). In both males and females, this purging of youth takes the form of decreased nature and the consequent inability to conceive. Menopause becomes especially traumatic for a woman because she loses her menstrual periods at this time. Aside from the physical turmoil, the woman must deal with the loss of this cleansing process -- an occurrence which linked her so closely to the rhythm of the moon -- as well as childbirth and in some cases sexual intercourse. Men also must deal with the loss of sexual intercourse as a process of cleansing and replenishing. Only after one comprehends the importance placed on these bodily functions throughout the lives of Barbadians, does one begin to understand how difficult a time, physically and psychologically, menopause can be.

Some people, particularly women, have trouble with their change of life because the blood moves too suddenly. Sometimes, "the blood rushes to the head and causes brain damage, strokes or bad nosebleeds." In a woman, "the blood could also rush down and flow like a heavy menses" (interview, Oct. 5). The movement of blood during this time mirrors the flow of nature through one's
References


Sutton, C. *Interview, New York City, January 1982.*


CALL FOR PAPERS: Papers are currently being accepted for review for publication by the editorial staff of the New York University Journal of Anthropology. Primarily papers of a research nature are desired.

Manuscripts should be double-spaced and typed in black ink on white typing paper. All charts, tables and text-figures should be on separate pages, and all captions should also be on separate pages. Line drawings are preferable to photographs, and no color photographs will be accepted. The printing of photograph reproductions could incur extra cost, which would be passed on to the author.

All papers accepted for publication will become the property of the New York University Journal of Anthropology; however, until papers are formally accepted, they will remain the sole property of the author. No papers accepted for publication may be printed elsewhere. Contact the Coordinating Editor for further information (see inside front cover).