

WICHITA STATE UNIVERSITY

Lambda Alpha Journal

VOLUME 25/26, 1994-95

Student Journal of the National Anthropology Honor Society



PEER H. MOORE-JANSEN, EDITOR IN CHIEF

LAMBDA ALPHA Volume 25/26

in Honor of

Lowell D. Holmes

THE LAMBDA ALPHA JOURNAL

Volume 25 / 26

Double Issue

Student Journal of the National Anthropology Honor Society

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Peer H. Moore-Jansen, Ph.D.
Editor-In-Chief, Lambda Alpha Journal
Department of Anthropology
Wichita State University
Wichita, Kansas 67260-0052
MOOREJA@TWSUVM.UC.TWSU.EDU

Greysolynne J. Hyman, Ph.D.
Member for the Southeast
40029 Bamburg Lane
Apex, North Carolina 27502

M. Jude Kirkpatrick, Ph.D.
Member for the Northeast
Department of Sociology and Anthropology
Gannon University
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Sociology
Eastern Washington University
Cheney, Washington 99004

Alana Cordy-Collins, Ph.D.
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University of San Diego
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Marie Elaine Danforth
Member for the South
Department of Sociology and Anthropology
University of Southern Mississippi
Hattiesburg, Mississippi 39406-5074

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The Editor, *Lambda Alpha Journal*, Department of Anthropology, 130 McKinley Hall, Wichita State University, Wichita, KS 67260-0052. Inquiries can also be directed to The Editor electronically.
Internet Address: MOOREJA@TWSUVM.UC.TWSU.EDU

Editor's Note

(Revised)



The Lambda Alpha Journal is back! After a period of unfortunate but inescapable delay, it is with the greatest of pleasure that I submit to you the latest issue of the Lambda Alpha Journal. The current double issue of the Journal comprises volumes 25 and 26 for 1994 and 1995. It also signifies an important period in the life and history of both the Journal and the Lambda Alpha Anthropology Honors Society. Now in its twenty fifth issue (Vol. 25/26), the Journal has served as a forum for student publications in all areas of anthropology for more than a quarter of a century. During this time the Journal has undergone various changes in format and it has also grown in circulation. An endless diversity of student and occasional faculty manuscripts have been filling the pages of the Journal from year to year. When scanning the pages of the past volumes, several author's names stand out - they are the individuals who have continued on in their education and eventually become professionals in the anthropological disciplines. It is especially gratifying to note that the articles published in Lambda Alpha receive nationwide and even international circulation and recognition. During the past months, the editorial staff of the Lambda Alpha Journal has undertaken an elaborate review of the Journal format and it is with great anticipation that we present to you the latest "look". As a result of our efforts, the style and format of the Lambda Alpha Journal have been completely revised, and compliance with the guidelines for the *American Anthropologist* has been more completely enforced. Additionally, the new print format permits more extensive contents to be published in the Journal at little or no added cost. Also new to the Journal, but not included in the current issue, is the addition of notes, essays, and student book reviews of recent publications. It is hoped that this added feature will encourage students to engage actively in anthropological debates and offer individual points of view.

The "new" format does not reflect a change in philosophy on the part of the editorial staff, rather it marks an attempt to live up to the philosophy and standards established by the founders and the previous editors of the Journal. Without them we would not be where we find ourselves today--growing and diversifying. We hereby recognize the efforts of all the previous student participants and editors. In addition, we wish to recognize Ben K. Swartz who has been extraordinarily supportive throughout the years. We extend our thanks to all of you wherever you are, and it is our hope that you recognize the important contribution that everyone of you has made to the success of the Journal.

We especially wish to extend our thanks and appreciation to Lowell D. Holmes, former Editor-In-Chief, Advisor, and Founder of the Journal. As a founding member of Lambda Alpha, Lowell D. Holmes has been one of the driving forces behind the National Anthropology Honor Society, and his contributions to the Journal in his capacity of Advisor and Editor-In-Chief are innumerable. During his editorship, he nursed the Journal from an idea to a reality. For twenty years he oversaw the publication of the Journal and its contents,

and he guided the Journal through some rough economic times. As a result of his efforts, the Lambda Alpha Journal is alive and well with a healthy circulation. Thanks to his efforts, students from near and far were afforded the opportunity to experience the satisfaction of getting their words and thoughts disseminated to other students through the print medium of a student journal.

Aside from his efforts and contributions to the Lambda Alpha Journal, Lowell D. Holmes is a distinguished and universally recognized scholar. He represents a tradition of excellence in research and publication in anthropology and his professional contributions over forty plus years range from thorough re-visitations of earlier studies to innovations in contemporary research. His own research in Eastern Polynesia is expansive and innovative in a multitude of ways and has embraced studies of culture change in both Samoa and the United States. He also ventured into research in the anthropology of aging, Jazz and Blues culture, and many other topics. His research is extensively documented in an extraordinary number of publications and film, for example a recent manuscript that is included in this volume.

Lowell D. Holmes' efforts also touched students through film and through the class medium. As a teacher he captivated student audiences ranging from introductory classes to advanced seminars in anthropological theory, by sharing with them the experiences of his mentors, colleagues, and of his personal research. By bridging the gap between past and present research and by teaching research by example, he managed to put anthropology into a coherent context, meaningful and full of intrigue to the seasoned professional as well as to the novice. As a film maker, he also educated and entertained audiences nation-wide. Though currently retired from teaching, Holmes continues to be actively engaged in research and publication and he still finds time for Lambda Alpha. In recognition of his contributions to the Lambda Alpha Journal, the Honor Society, and to the field of Anthropology, the Lambda Alpha Journal staff, on behalf of our subscribers and readership past and present, dedicates the current volume of the Lambda Alpha Journal to Lowell D. Holmes.

Peer H. Moore-Jansen
Editor-In-Chief *λ α Journal*

Lambda Alpha Journal

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Volume 25-26

1995

Peer H. Moore-Jansen
Editor-In-Chief

Melvin A. Johnson
Erin Kenny
Student Editors

Deborah Kreutzer
Assistant Student Editor

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Lowell D. Holmes
Department of Anthropology
Wichita State University

Adventures in Cultural Dynamics

Franz Boas professed that the study of *cultural dynamics* represented a major priority of anthropology, and Alfred Kroeber (1956:153) has conjectured that Boas might well have originated the phrase. But the study of cultural dynamics was more than just a theoretical interest for Boasians; they also had an interest in the “problems of change, social dislocation, and social disorientation” as they affected “American Indian societies and the underdeveloped and colonial nations of the world” (Garbarino 1977:72). And Herskovits extended his study of cultural dynamics to an entire ethnic population--Afro-Americans--in his classic *Myth of the Negro Past*, which involves a pervasive analysis of slave history and the establishment of a well-researched cultural baseline against which to measure and interpret change.

In 1938 Melville Herskovits published *Acculturation*, a book dealing with a concept which he and a social Science Research Council Committee made up of Robert Redfield (Chairman) and Ralph Linton had defined as pertaining to “those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups” (1936:149).

Herskovits’s interest in acculturation, of course, clearly derives from his training under Franz Boas, the intellectual leader of the American anthropological tradition which has been labeled “historical particularism.” Boas approach to ethnography, according to Herskovits, “was that to neglect the historical component, since it involved cutting oneself off from an obvious facet of the human experience, seemed..preposterous” (1953:67). It is interesting to note, however, that some Boasians, specifically Leslie Spier, while editor of the *American Anthropologist* in 1936, raised the issue at a national meeting as to whether or not acculturation studies had any place in the *American Anthropologist* or whether studies of hybrid cultures should not be left to the sociologists. While a motion was made and seconded to include such studies, the issue ultimately was tabled. From that time onward, however, articles on acculturation appeared regularly in the journal.

No student of Herskovits could possibly have emerged from that experience without a profound interest in and sensitivity to the forces of cultural change. Few Herskovits-trained field workers failed to look for such dynamic forces at work in their society of study as “cultural focus” “reinterpretation,” “syncretism,” and “cultural drift.” And in the general approach to change those of us in the Herskovits (and therefore Boasian) tradition were

constantly aware of the dictum that “cultural change can only be studied and understood as a part of the problem of cultural stability.” It was a principle that none of us forgot, and personally, it established the theoretical frame of reference for my first major publication - *Ta'u: Stability and Change in a Samoan Village* (1957). The study of cultural stability and change in Ta'u village was actually a by-product of my first adventure in researching cultural change and was necessitated by problems associated with a methodological restudy of the “coming of age in Samoa” research of Margaret Mead. In that study, which I carried out in 1954, I realized that the greatest difficulty I would have in any test of the quality of Mead's research (carried out 28 years earlier) was to determine whether differences in findings were due to the processes of cultural change or to other personal or methodological factors. It was my belief that in any methodological restudy the time factor had to be handled with great care. One could not assume that just because culture in 1954 was somewhat different from what Mead reported in 1925-6 that Mead was wrong. In most cases things were probably different because of the cultural change which had occurred between 1926 and 1954. Fortunately, the culture period of the mid-19th century had been well documented by a number of prolific and intellectually able missionaries such as George Brown, George Turner, John Williams and J. B. Stair, and this provided me with an excellent traditional base line for purposes of comparison with Mead's 1925-6 data and my own findings acquired in 1954. There were also observers of Samoan culture contemporary with Mead--such as Peter Buck, William Green, Felix Keesing and Newton Rowe, who had described the culture between the years of 1925-39. Comparisons of the three time periods - mid-nineteenth century, 1925-30 and 1954 were carried out first to document the stability or instability of Samoan culture, and secondly, to provide reality and validity tests for both my 1954 data and for those of the 1925-30 period--principally for Mead. The analysis was applied as follows: where my 1954 ethnographic facts and interpretations were the same as those of the 19th century but did not agree with the 1925-30 data, the factor of change was eliminated and other explanations were sought for the discrepancies. Conversely, where there were agreements between 19th century and 1925-30 data but my 1954 data were different this suggested cultural change or inaccuracies in my data base. These discrepancies could then be investigated by quizzing elderly informants who had lived in the village since Mead's departure or by checking contemporary data with several other informants. The method worked very well in dealing with the time difference between Mead's and my research. A much appreciated bonus was the positive reaction of Margaret Mead to my methodology, considering the fact that she had been somewhat hostile to my project from the beginning. In her revised edition of *Social Organization of Manu'a* published in 1969, she wrote concerning my restudy of her research: “His methodological device was ingenious; the search of the literature and old government documents to establish a 19th-century-base, his own observations and inquiries in 1954, informed, of course, by both the 19th century materials and the materials of the 1920's, with a degree of agreement between his observations and the 19th-century observations made in between” (1969:224).

My diachronic analysis of Samoan cultural change, although originally carried out as a methodological diagnostic device, resulted in the discovery that since the time of first white contact, Samoa had proved to be one of the few Polynesian cultures which had been highly resistant to change. In fact, when I returned to American Samoa in 1962 for additional research, this time on the local and national political system, I was visited by Ben Finney who had just concluded an extensive research project on one of the more remote Tuamotu islands. It was his first visit to Samoa and he was greatly impressed by Samoa's cultural conservatism as compared to the area where he had been working. He maintained that in Samoa it was possible to actually observe and describe traditional culture patterns while in the Tuamotus he had found very little he could honestly label "Polynesian."

This had not come as a complete surprise to me, having made systematic diachronic comparisons. Also, much of the literature referred to the relative stability of Samoan culture. For example, Douglas Oliver had described the island group as "presenting a radically different picture from the usual South Seas spectacle of native peoples cheerfully and unknowingly losing their identity and their heritage in a setting of successful and expanded economy established and controlled by white men." (1961:220). As early as 1943 Oxford and Cambridge University geographers in the handbook titled *The Pacific Islands* had singled out Samoans as a "people with such a conservative nature that... new elements (foreign goods, money, Christianity) have never been allowed to sweep the land with the devastating effects to be observed in some other Pacific island communities" (1943:608).

On the other hand, *The Pacific Islands* records that in the northern Cook Islands, an area where inter-island boats call as seldom as four times a year, "the old types of canoes have completely disappeared.....Houses are now made of sawn timber, and....changes in the culture of the people due to European influence have been considerable" (1943:552-555).

Bengt Danielsson described the Tuamotu island of Raroia in 1956 as having a "material culture....almost wholly Western....The natives use European tools exclusively, dress in the European way and frequently have such luxuries as radios, bicycles and refrigerators" (1956:104). And in places where I have visited, such as Hawaii, Tahiti and New Zealand, it did not take a trained anthropologist in the 1950's to realize that traditional Polynesian culture could only be found in acculturated forms if at all, and then it was most often resurrected only as a tourist attraction. This was not the case in Samoa, particularly in Ta'u village in the Manu'a group where I had carried out my research.

The problem of Samoan cultural stability was a challenging one and one that in Herskovitsian terms could be understood only in the light of the rapid change in other parts of Polynesia. What was it about the nature of those cultures so receptive to change that differed from the Samoan experience?

Felix Keesing had suggested that Samoan conservatism resulted from the islands "smallness, isolation, and tropical climate, together with the political rivalry of the powers and the elements of disunity inherent in the native polity {which} have enabled the native life to stand fairly firm" (1934:477). However, a careful analysis of the data reveals that none of these factors is completely unique to Samoa and a number of them exists in many other highly acculturated societies. Samoa is no smaller in land mass than the Marquesas or

the Tuamotus. In fact Samoa was a very popular area for whaling during the 19th century. History record, for example, that in 1846 seventy-two whaling vessels called at Samoa and many stayed an extended period of time. Traders were also extremely active in Samoa from a very early period, and the largest trading firm in the Pacific, the Godeffroy Company, maintained its headquarters in Apia, Western Samoa, between 1857 and 1878. And Samoa was merely one of many island groups missionized between the years of 1814 and 1836.

F. Allan Hanson concludes in his comparison of acculturation in Samoa and Tahiti that

“The traditional political system of Samoa has been largely retained while that of Tahiti has disappeared...because Samoa experience a relatively long period of independence followed by colonial policies of indirect rule, while Tahiti underwent a colonial policy aimed at assimilating Tahitians to French civilization and French citizenship. While this policy has not succeeded in making real Frenchmen of the Tahitians, it certainly eradicated much of old Tahitian culture, especially the political system” (1973:9).

While the introduction of French civilization and French citizenship may explain pervasive change in Tahiti, it does not explain it in other island groups with similar social and political systems, and it does not explain it in the more remote and untouched (by French nationalism) island areas such as the Marquesas or the Tuamotus. Neither do we find similar political circumstances in highly acculturated areas such as the Cook Islands, Hawaii, or New Zealand.

It is my contention, therefore, that the answer to this problem of differential conservatism between Samoa and other Polynesian islands to the east lies in the nature of the cultures themselves, particularly in regard to matters of social and political organization as well as religious sanction.

This, I believe, is a problem which must be approached from the standpoint of factors initially singled out in the early (1936) statement on acculturation authored by Redfield, Herskovits and Linton. They advised that selection of traits in any acculturation situation depends on economic advantages, social advantages (prestige), and ethical and religious considerations. I believe that all of these must be taken into consideration when attempting to understand the basic conservatism of Samoan culture as it compares with other cultural systems in Polynesia.

In most areas of Eastern Polynesia--Tahiti, New Zealand, the Cook Islands, the Marquesas, Hawaii and the Tuamotus--the traditional social organization was characterized by primogeniture, senior lineages and other forms of stratification. In addition to this, the few elite who profited from this social system were securely protected in their positions of authority and privilege by religious sanctions in the form of manu and tapu. While the bulk of the population may have resented this situation, wherein a select few enjoyed power and prestige, it was difficult to oppose a system which was supported by supernatural sanctions.

When European and America missionaries first arrived in Polynesia their proselytization success was impressive. The white man's god was usually perceived as more powerful than Polynesian deities even by the people of rank, for after all, this foreign god was able to

provide his followers with magnificent ships, beautiful clothing, strong and efficient weapons, attractive trinkets and useful tools.

The white man's god held a special appeal for the masses, who up until the coming of Christianity, believed the gods to be the spiritual guardians of the rights of the privileged. Furnas record that in Hawaii, "the commoner was flattered, perhaps stirred, when the white *kahuna* (priest) finally got around to telling him that any native, of whatever social stratum, had a soul of which Christ was solicitous. Nothing in his pre-white culture had ever led him to consider himself important to anybody" (1948:137).

Homer Barnett has observed that "when cultures meet, the majority of those who switch their allegiances are individuals with the least opportunity for full participation in their society" (1953:404). This was certainly true in much of Eastern Polynesia where power, prestige and privilege went only to the first born in select lineages and classes. In New Zealand, writes Barnett, "the members of ranking families as a group resisted education, whereas those of lesser birth sought it and used it to lay the foundations for a new kind of leadership, one based upon the knowledge of the ways of the foreigner" (1953:405).

The factor which I believe set Samoa apart from all of these eastern Polynesian societies was the nature of the social system, commonly referred to as the *matai* system. The *matai* system is one in which extended family heads are **elected** in middle age to chiefly titles with the responsibility of representing the family unit in the village council. All who are reasonably wise, hard working and loyal to family interests are eligible. But candidates for such leadership roles must also be loyal to traditional cultural values, social procedures and ceremonial obligations. There is no system of primogeniture, no senior lineages and no aristocracy, which can confer status. Each and every male (and in some rare cases, female) is eligible to acquire chiefly status if they will respect tradition and promote the family welfare.

Samoa culture differed sharply from those of eastern Polynesia in that Samoan *matai* were not sacred. Religion did not provide a sanction for chief authority. And since Samoan chiefs were not sacred, the coming of Christianity did not undercut their authority as it did in areas where chieftainship was a divine right. In fact, in Samoa, *matai*, particularly talking chiefs, often enhanced their prestige by holding church office or serving as supply preachers. In general it was possible in Samoa for the people to accept the new religion of the white man without affecting the status or authority of chiefs or without undermining the general structure of the society. Samoan speak of sacred *fono* (village councils) rather than sacred chiefs. The *marae* in Samoa was a village green where the village council met to decide local or regional issues. The *marae* in eastern Polynesia, on the other hand, was a holy place where priests conducted religious ceremonies. What was undoubtedly the most devastating influence for change on most Polynesian cultures--the coming of Christianity--had little effect on the social structure of Samoa, since Samoa culture had less invested in religious sanctions. Samoa had always been ruled by the will of men and not by the will of the gods or by men acting for the gods. Since Samoan chiefs had never claimed divine rights, the loss of traditional deities or religious concepts such as *mana* or *tapu* did little to alter their role and status within the society.

It is interesting to note that while in many respects life in the contemporary American Samoa appears to differ little from life in the United States--with modern restaurants, color television and VCRs, a high percentage of the population involved in wage labor (primarily for the government or two large tuna canneries), enough automobiles to overwhelm the infrastructure and often produce small village traffic jams--the *matai* system still survives, and with nearly the strength that it had in 1954 when I first encountered it. Young men quit good paying stateside jobs to return to Samoa to compete for family titles; one house of the legislature requires that members hold *matai* titles; and family land, which is associated with family titles, continues to be protected by law and reserved for those of Samoan ancestry. The *matai* system has also tended to preserve gift exchange, ceremonial visits of chiefs to other villages for civic or religious events, family responsibility as evidenced by the ubiquitous *fa'alavelave* (family crisis) requests for money by the *matai* for almost any familial obligation. The research my wife and I conducted on the adjustments of Samoan migrants in the San Francisco Bay area in 1977 revealed that even in the United States the *matai* system remains viable and in many cases provided greater security for family members than it does in Pago Pago. Not only do Samoan-Americans maintain a strong and supportive family organization, but they often send considerable amounts of money to their *matai* who maintains the family and household property back in the Samoan village from which they come. Compare this situation to that found in most Polynesian societies such as Tahiti, Hawaii or the Cook Islands. In places such as these there is little in the way of a concept of chieftainship or a well-knit family system that ensure preservation of family land and family prestige.

The 1936 "Memorandum for the Study of Acculturation" published by Redfield, Herskovits and Linton stressed the psychological effects of this changed situation in several respects. It called for attention to be focused on the "personality of the first individuals to accept foreign traits;" "the possible consistencies in personality types of those who accept or reject new traits;" "differential selection and acceptance of traits in accordance with sex lines, differing social strata, differing types of belief and occupation;" and "social behavior and different sets of social sanctions" (1936:152).

In his book *Acculturation* (1938), Herskovits commented:

"The study of acculturation is equally of importance for those concerned with the problems of the development of human personality and culture; and if studies of this type have received scant mention here, this has been because to all intents and purposes they are non-existent. The psychologists who deal with social phenomena have only in recent years come to stress the force of culture in shaping the human psyche, while psychiatry has likewise tended to overlook the importance of the cultural factor." (1939:129).

The challenge of exploring these psychological aspects of acculturation phenomena combined with a general interest in an ongoing debate about the effects of culture change on personality structure was the motivating force for my next adventure in cultural dynamics.

In 1962 I tested 68 senior students at the high school of American Samoa with translated versions of the California Test of Personality, the Edwards Personal Preference Schedule, and the Rogers Test of Personality. The tests were administered by a Samoan male teacher

who also provided personal data on academic success, personal relationships with fellow students and general attitudes toward school and authority figures.

Although I did not initially have a great deal of faith in the cross-cultural validity and applicability of the American created measures of personality, the results of these three tests were remarkably consistent and produced a personality profile which, to a great extent, paralleled impressions I had gained during some 26 months of participant observation and interview in American and Western Samoa. The profile characterized Samoans as having strong tendencies toward *Deference* (accepting the leadership of others), *Order* (enjoying organization), *Abasement* (being timid in the presence of superiors), and *Endurance* (keeping a job until finished). But they have weak tendencies toward *Autonomy* (independence in decision-making), *Dominance* (directing the actions of others), *Exhibition* (being the center of attention), *Aggression* (getting angry or disagreeing with others), and *Achievement* (doing one's best to be successful).

Considering the fact that nine years earlier I had carefully evaluated the reliability and validity of the work Margaret Mead carried out in Ta'u in 1925-26, I was intrigued by the extent to which these test results corroborated the Mead perceptions of adolescent attitudes and behavior.

Finding the use of personality tests to be of great value in the analysis of Samoan personality characteristics, I later utilized the devices in the investigation of another theoretical problem which had intrigued me for several years. In my Culture and Personality courses I had often discussed the fact that there was a major controversy in regard to the effects of cultural change on the personality structure of the societal members involved in that change. Scholars like Hallowell, Spindler, Bruner and others conceived of personality structure as relatively tenacious and that a great deal of change can take place in cultural institutions without a corresponding alteration of the representative, or modal personality. Victor Barnouw and Margaret Mead, however, were arguing that one of the characteristics of modal personality is that it is adaptable to change. For example, Barnouw pointed out that "when the culture of a society changes and it develops new institutions, the members of the society must adapt themselves to the new conditions. Such adaptation may involve changes in personality which may, in turn lead to further changes in culture" (1979:361).

A. Irving Hallowell, on the other hand, believed, on the evidence of a study of 217 Ojibwa subjects using Rorschach protocols, "that in the case of the Ojibwa a considerable amount of acculturation has taken place without any major change in their modal personality structure" (1955:351). George Spindler also maintained that the Blood Indians of Alberta have undergone a great deal of acculturation without a great change in their personality characteristics and he explained the phenomenon by the fact that they already had a psychological orientation compatible with the direction and demands of the cultural change (1968:332). Edward Bruner, in turn advanced his "early learning hypothesis" to explain the impact of acculturation of traditional cultural patterns and personality on the Mandan-Hidatsa of North Dakota. He hypothesized that "that which was traditionally learned and internalized in infancy and early childhood tends to be most resistant to change in contact situations" (1956:194). These views appear to be very compatible with those of the "Basic Personality" adherents--such as Ralph Linton and Abram Kardiner--who in the early 1940's

held that most indoctrination in culturally appropriate modes of thinking, feeling and behaving occurs early in life and that there would, therefore, be great tenacity in traditional personality configurations.

Margaret Mead, on the other hand, stressing concomitant personality alteration with cultural modification in her article "The Implications of Culture Change for Personality Development" in 1947 and in her study *New Lives for Old*, maintained that "there is a systematic correspondence between the institutions of a society and the character structure of the individuals who embody those institutions" (1956:362). Others, such as Anthony F.C. Wallace, in exploring revitalization movements presented examples of situations where a leader with charisma (but frequently a deviant personality) came to power and established a new order--and usually a new national character, in his followers. Margaret Mead's study of the village of Peri described such a phenomenon. The non-traditional leader named Paliau came from Rabaul in 1946 and led the people in a deliberate effort to change the entire pattern of life overnight. The revitalized society with new houses, costumes, ceremonies, social organization and laws is reported to have made a major impact on the personality structure of the Manus Islanders as well. Mead writes:

"Today they are friendly where formerly they would have been harshly competitive; they are actively concerned with the prevention of types of behavior which they would formerly have regarded as natural and desirable, they are relaxed and unworried where they would formerly have been tense; they are rearing their children with a kind of indulgence which would have been unheard of twenty-five years ago." (1956:362).

A number of broad qualitative and impressionistic studies have probed the impact of great historical events even on personality structure. Examples are Jakob Christoph Burckhart's study of the influence of the Italian Renaissance (1958), Erich Fromm's analysis of the impact of Lutheranism and Calvinism (1941), David Riesman and others' examination of American population cycles and national character modification (1950), David McClelland's study of the psychological manifestations of economic growth in "achieving" societies (1961), and Margaret Mead's investigation of the psycho-social effects of an American Generation Gap resulting from differential awareness of the realities of nuclear technology (1978).

What has been desperately needed in order to expand our knowledge of the psychological ramifications of change were systematic, controlled, quantitative studies of culture and personality in societies over extended periods of time. I saw my opportunity in 1974 to contribute to our knowledge in this area and thus I initiated a before-and-after (drastic culture change) study of adolescent Samoan personality. On the one hand, I had the results of the psychological dimensions of results administered in 1962 and described above. Add to this the fact that the years between 1962 and 1974 were ones marked by enormous cultural change in American Samoa. The American government had greatly subsidized island development and education. Twenty-six consolidated elementary schools, three high schools and a junior college were built, and educational and entertainment television was introduced. The American governor expressed great pride in his new "American style" curriculum, but critics were calling it "education for export." There actually was a great deal of migration

to Hawaii and stateside America during this period, and some of the families had returned with young people highly acculturated in U.S. ways. A large hotel had been built on the shores of Pago Pago Bay to encourage tourism, and the airport and harbor facilities had been greatly improved. Two tuna fish canneries were employing large number of Samoans, and with the government employment opportunities, the wage labor force in 1970 numbered 4939 out of a total population of about 28,000. By and large American Samoans had given up agriculture and were importing traditional food from other island nations.

In 1974 I used two of the same personality tests that I had in 1962 with a new sample of American Samoan high school students. Changes had been so great between 1962 and 1974 that I was no longer able to use tests only in the Samoan language. Now an English version had to be used since some of the Samoan students no longer read the native language. With the aid of another Samoan high school teacher I gave Edwards Personal Preference Schedule to 31 subjects and the California Test of Personality to 47 subjects. The results were as follows: The Samoan modal personality had definitely change and in a direction which stressed modern traits more and traditional traits less. Movement toward American norms was noted in 10 out of 15 variables on the Edwards test and on 14 out of 15 variables on the California test. The general tendency was for the strongest Samoan traits--*Deference, Order, Endurance*--to persist whereas the weakest tendencies--*Autonomy, Dominance, Exhibition, Aggression* and *Achievement*--without exception, moved in the direction of American norms.

It was also during this period of rapid cultural change in American Samoa that sociologist Donald O. Cowgill and I formulated the "aging and modernization" theory. In 1962-3 while investigating Samoan village and national political behavior I had developed a distinct interest in the role and status of the elderly in Samoan society. In some respects the society had characteristics of a gerontocracy. The *matai* (family chiefs) who comprised village councils were generally well along in years, the elderly were well respected and cared for, and the old people were generally looked upon as the reservoirs of traditional knowledge. While many of my informants, young and old, volunteered that old age was "the best time of life" there was also evidence that conditions were changing for the elderly and that the brave new world of change might soon prove threatening.

The final adventure in cultural dynamics which I would like to address in this paper involve the conceptualization and testing of the theory of "aging and modernization" which holds that as societies become increasingly modern there is a concomitant decline in the status of the elderly and in their society's commitment to their care and well being. Modernization is a particular kind of acculturation experience involving changes in a culture in the direction of urbanization, industrialization, scientific development, and the establishment of mass education and higher levels of mass communication through mass-media exposure. While modernization is normally thought of as emanating in the West, there are emerging centers of modernization today in Asia, particularly Japan. This hypothesis, put forward in *Aging and Modernization* (1972) was tested cross culturally, comparing 14 different societies representing various degrees of modernization along a continuum running from preliterate (sometimes called "primitive") to peasant (agricultural and animal husbandry), to modern societies. Treatment of the elderly in each of the 14 societies was described in detail by anthropologists and sociologists who had worked in those societies for extended periods of

time. A subject matter outline was provided each of the authors but none was told of the theory that was being tested.

Not only did we hypothesize an inverse relationship between modernization and status of the aged but we cited other concurrent realities associated with aging in such a change situation. These dealt with such issues as how old age is defined, how longevity is affected, how modernization influences proportions of old men and women, how dominant economic patterns and family form (extended or nuclear) influence respect for the aged, and how leadership and religious roles are distributed in regard to age in traditional and modern societies.

Although the data generally upheld the hypothesis, a few exceptions--Russia, Israel and Ireland--provided an interesting and unexpected challenge to the hypothesis and served as a warning that in dealing with matters of cultural dynamics one must never lose sight of historical and psychological dimensions. It is clear that how a society develops under the impact of modernization depends a great deal on the values it held previously. A society whose major religion is Buddhism may be quite differently affected by industrialization and urbanization than one operating under a Judeo-Christian tradition. The same can be said for traditional differences in political or economic philosophy. For example, in Japan, with its age-old ideas of family loyalty and filial piety, modernization has brought about drastic social changes in family organization and ethics but it is still possible for observers of that cultural scene to state that the aged have found a way to live with peace of mind and a sense of security seldom found among the aged in the United States.

To date, the "aging and modernization" theory has inspired better than 40 research projects which have tested its validity and applicability in all parts of the world. Valuable insights have been gained and hopefully we are moving ever closer to the knowledge which will allow us to predict the ramifications of change for this segment of society. The mysteries of how cultural change impacts the many cultures of the world will require extensive study and restudy. Theories will have to be painstakingly shaped and reshaped, tested and retested if effective predictability is ever to be achieved. Some of the bits of understanding of the nature of cultural dynamics which I had the good fortune to discover are but mere beginnings, but hopefully they have been steps in the right direction and will qualify as productive and useful adventures in cultural dynamics.

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John H. Taylor
Department of Sociology and Anthropology
University of Texas - Arlington

Conserving Mesoamerican Stucco Facades Using Three-dimensional Imaging and Computer-assisted Fabrication for the On-site Installation of Replicas

The Late Preclassic masks on the terraces at structure 5C-2nd of Cerros are an instructive example important of stucco in Maya architecture. Erected about 50 BC, these masks represent the sudden introduction or innovation of pyramid decoration, a development coinciding with the public center building program that buried the village surrounding the site. These ornate monuments also show a fully articulated symbol system that predates the Maya system of writing (Freidel 1986:6). In other words, the many symbols that express the world view of the Classic Maya are presented at Cerros and many other sites *before* the development of formal writing. So it is, then, that structures which embody the emergence of Maya civilization and reveal a vital iconography that spans the momentous transition from prehistory to history are presented in that most fragile of building materials, stucco. The Roman poet Ovid observed in *Ars Amatoria* "What is harder than rock, and what is softer than water? And yet, the hard rock is made hollow by the soft water." Ovid's comments came shortly after the completion of the Cerros masks in a world away from Mesoamerica. The challenges of conserving monumental art today, however, confer upon his observations a premonitory tone. In one dramatic example of the accelerated weathering of monumental art, studies centered on the sandy limestones of St. Rombout's Cathedral in Belgium, documents the yearly loss of several tons of stone material washed from the cathedral by rain water (Roekens and van Grieken 1989:272). Monumental art worldwide is suffering such severe effects from pollution induced weathering that models for the synergistic complex of atmospheric pollutants must now be considered globally (Camuffo 1992:247). Sadly, the effects of acid rain have long been associated with Maya sites (Coe 1992:196; Kinoshita 1990:94; Dayton 1989:32).

The need to preserve stucco facades

Mesoamerican stucco facades are also lost to influences other than those produced by acid rain. Monumental art suffers the wet-dry cycle of a torrential rainy season followed by a desiccating dry season, producing a similar stress to the freeze-thaw cycle of other climates (Jones 1992:243). Hurricane Andrew in 1992 showed yet another threat as its produces cracks and fissures, thus creating opportunities for the destructive moisture path crossed the Yucatán peninsula and severely damaged several exposed stucco masks. Earthquakes, common in some areas of Mesoamerica, exact a further toll. Seismic activity penetration of the wet-dry cycle. Volcanic eruption can also rain abrasive ash and sulfuric acid droplets, scouring paint and stucco as at Palenque in 1982 with the eruption of El Chichón (Kinoshita 1990:94). Of all the urgent challenges to the conservation of stucco facades in Mesoamerica, however, there is a certain irony that issues attending tourism present the most significant problem. Beginning with early expeditions, impatient explorers used fires to clear the tangled forests surrounding Palenque thus damaging delicate reliefs (Stierlin 1964:141). In more recent times, the pressures of tourism result in similar compromises in conservation. The corrugated metal shelters at Bonampak, for example, raise the temperature during hot days and lower it during cool nights (Kinoshita 1990:95). Elsewhere, the soot belched by rows of idling tourist buses is blackening the murals of Tulum (p. 97).

Once unearthed and exposed, stucco monuments deteriorate in a matter of years. The fragile, powdery remnants of two-thousand-year-old stucco quickly crumble and fall from facades leaving only the rough-hewn blocks of limestone armature. It is within this context, then, that the economic development so vital to the nations of Mesoamerica has created a dreadful incentive to unearth and display stucco monumental art as it is discovered. Tourist revenues are the single largest source of hard currency for these areas. The result is that priceless monuments, rich in value both to science and to our cultural heritage, are exposed and lost forever to collect the tourist revenues of a few seasons.

The challenge of maintaining stucco

"Once you've found them, you may as well write them off," observes National Geographic Society archaeologist George Stuart. "That is why we want to record them — for all time." Although commenting on Maya murals painted on stucco (p. 97), Stuart's admonition is appropriate for the more exposed stucco of masks and bas-relief. The reasons for this concern lie in the unique properties of stucco. Employed widely in the massive program of monumental art begun in the Late Preclassic, stucco is a fine plaster obtained by firing limestone. When mixed with water, the resulting powder forms a workable paste-like medium. Maya artisans thus spread and sculpted delicate stucco facading over rough armatures of limestone architecture. Although stucco was commonly used as a surface for mural painting, a truly magnificent application was the creation of many large, anthropomorphic masks as a part of their program of public art. The largest yet known of

these sculptures is a giant mask over 16 ft high and 36 ft wide. Despite the splendor of these structures, stucco is nonetheless a material that required of the Maya a vigilant program of regular painting and repair.

Painting is a particularly effective maintenance technique because it fills and seals hairline cracks that otherwise enlarge and let in moisture (Grimmer 1990:119). Since painted murals are frequently recessed as at Chichén Itzá or Tulum and are also found in the interiors of buildings as at Bonampak, there are often detailed traces of the original pigments sealing and protecting the stucco. In marked contrast, masks and other bas-relief, originally painted in brilliant colors are often in a more exposed position. This frequently results in the complete erosion of protective paints and pigments. The original inhabitants of Palenque, for example, would be startled to see their monuments mottled by the stark white of exposed stucco and the black scale of pollution-induced weathering. As the weathering of paint and pigment progresses, the intricate detail of exposed stucco facades is structurally compromised. Most stucco monuments have portions that are seriously eroded or are crumbled beyond recognition. It is not uncommon, for example, for a facade once rich in iconographic information to be reduced to small pieces of rubble. Researchers then have no alternative but to painstakingly sift and sort stucco fragments no more than a few centimeters across (Coggins 1983:22). The reconstruction of a monument after it has fallen would be difficult enough if all the pieces were intact, but fallen stucco faces further problems. The impact often riddles the piece with minute cracks and the subsequent effects of acid groundwater and other destructive forces can result in the dissolution of the piece entirely (Sease 1988:113).

The lack of alternatives for conservation

Clearly, stucco facades are too fragile to display without some form of conservation effort. Conventional options, however, do not hold promise for solutions within the near future. There are, for example, ongoing experiments using silicone solutions to harden limestone against erosion, but it is not yet considered appropriate to apply this technology to carved stone (Jones 1992:244) much less to a material with properties as different as stucco. Similarly, other solutions such as acrylic copolymer resins have been used to consolidate crumbling stucco (Fernandez de Castro 1990), but the long term implications of these treatments are unknown. Indeed, the history of conservation technologies is full of well-intentioned and unexpected results. In the 1960s, for example, the Bonampak murals were injected with silicone to stabilize the walls. The silicone has since slumped and the murals are worse off now than they would have been if left untouched (Kinoshita 1990:95).

More expensive alternatives such as moving the facades involve enormous technical complexity and the process of moving is only the first step before a series of activities in the conservation laboratory (Sease 1988:116). Enclosing facades in a protective building is another possible action, although this introduces problems that range from compromising the general look of the site to temperature and humidity maintenance in remote areas. Both potential solutions, however, ignore economic fundamentals that make it highly unlikely the involved governments would commit precious resources for this type of project.

A final alternative for the conservation of many types of Maya art, one that will very likely dominate conservation efforts of the future, is to produce replicas and install them on location. Again, moving a stucco facade presents significant difficulties, but in many instances these facades can be stabilized to prevent further deterioration. Replicas that have been engineered to match the vapor permeability of the materials they duplicate can then be installed over the reburied originals to preserve both the original facade and the aesthetic integrity of the site. The critical issue in securing stucco facades, and other types of monumental art, is how to effect a high-quality reproduction. One obvious option is to have artisans or craftsmen sculpt the replicas. Efforts to craft reproductions of these subtle and intricate sculptures, however, have yielded unsatisfactory results and instead have confirmed the mastery of the original artists. Perhaps it should come as no surprise that a highly specialized artistic tradition that spanned hundreds of years can produce graceful lines and symmetries that surpass the artistry of modern masonry and its emphasis on the installation of prefabricated elements.

A different reproduction technique is to cast in materials such as plaster, latex and silicone. These have been used extensively on a variety of hard surfaces with good results. In fields such as paleontology and physical anthropology, casts of sufficiently high quality are obtained that the reproductions are of considerable value to researchers. The friable nature of stucco, however, precludes the use of any present or foreseeable casting agent. After attempting to cast in silicone the comparatively hard rock surfaces of petroglyphs, for example, Canadian conservators recently offered their experiences as a warning to anyone attempting to cast petroglyphs. Infrared spectroscopic analysis confirmed that a discoloration of the petroglyphs resulted from the presence of vulcanized rubber silicone (Wainwright 1990:69). Each potential casting technology, then, involves direct contact with the original and many require the surface of the original to be coated with an application of sealers or releases. Even minimal adhesion to the surface of a stucco facade would compromise the structural integrity of its surface. Thus, conservators of Mesoamerican stucco facades face a complex and momentous dilemma. Exhibited facades are subjected to accelerated destruction and yet the very real benefits of tourism and economic development result in the exposure and display of more of these fragile treasures. Unfortunately, the traditional options for conservation are inappropriate for this type of monumental art.

Non-destructive three-dimensional imaging

The idea of applying three-dimensional imaging to archaeological applications is not new. Technical developments in the 1970s and 1980s allowed some scholars to anticipate and experiment with various imaging and reproduction technologies (Dorrell 1989:251; Wainwright 1990:75; Taylor et al. 1987). There are today, then, several technologies that allow the capture of three-dimensional coordinate data and the delivery of that data to a computer. In essence, these devices capture sets of x , y and z coordinates, points in three-dimensional space relative to a reference. A single coordinate may be used to specify or measure the placement of a surface on a part. Two or more coordinates can describe the

orientation of a surface or the distance between two objects. Three or more points can describe planes. Ultimately, a dense enough set of coordinates can describe the surface contours and intricate features of a stucco mask.

The low end of commercially available three-dimensional digitizers captures or produces datasets used in applications such as manufacturing and quality control. Another, more prominent, role is the generation of three-dimensional datasets used in special effects animation sequences for television and film. Some systems use a probe that, when placed on an object and triggered by an operator, measures a coordinate by generating an acoustical, light-based or magnetic signal that is captured by three or more stationary receivers. By computing from the known position of the receivers, these systems triangulate on the signal produced by the probe and calculate its position in three-dimensional space. Other low-end systems illuminate the object to be digitized with points or planes of laser light and use a charge-coupled device (CCD) array offset from the laser source to perform essentially the same triangulations to measure the depth of the object. These systems vary considerably in price, portability, resolution and object size to be digitized. A few of these systems boast accuracies within hundredths of an inch, but the basic configuration of each technology is inappropriate for imaging monumental art. Some systems require target objects to rest on a tabletop rotating platform while others such as operator-triggered systems take too long to capture the thousands of coordinates necessary to render the complex surface of a sculpture.

The high-end of commercially available digitizers includes many truly impressive machines. Generally found in engineering-intensive applications such as the aerospace and automotive industries, these devices are frequently similar to low-end machines with the big difference represented by accuracies to millionths of an inch. Some systems consist of massive stone gantries weighing tons for the isolation of error-inducing vibration. These can profile precision parts for aircraft manufacturing, for example. Other systems are portable enough to check as luggage on an airline and yet accurate enough to use inside NASA rockets for inspecting vital dimensions. Some machines collect a limited number of highly-accurate points of data at a time for such uses as determining correct wing placement on planes. Other devices capture megabytes of scene-wide coordinate data within a several-second laser burst for close-range parts inspection. However, with one or two possible exceptions, this class of digitizer is constrained by tradeoffs in portability, data capture rate or related concerns.

Other technologies that could be adapted for three-dimensional imaging include such diverse fields as photogrammetry and ultrasonic imaging. Although photogrammetry is normally applied to terrain mapping, the contours of hills and valleys are quite comparable to the features encountered in a bas-relief sculpture. Moreover, the accuracy of close-range photogrammetry was used quite early in taking the overall dimensions of monumental art as a reference for future conservation efforts (Badekas 1976). More recently, photogrammetry and conventional surveying techniques were even used to construct a computer model of the Giza Sphinx (Lehner 1992). As with probe-based digitizers, however, the limitations of operator-directed point-by-point capture of data raise questions about how economically photogrammetry can be applied to this project. It should be noted that recent advances in the field hold some promise for increasing the data capture rate. Progress toward the automated

processing of photogrammetric images, for example, argues for a further review of this technology. Another concern involving photogrammetry, however, is the issue of estimates and subjective judgements required of an operator in digitizing certain contours (Wainwright 1990:76).

A second related option, ultrasonic imaging, passes a non-contact transducer or receiver over the surface of a sculpture while image processing software extracts coordinate data from the reflected ultrasonic images. An interesting potential of ultrasonic imaging is the capture of subsurface features such as the configuration of the stone armature beneath stucco. Although an acceptable resolution is possible, however, again the rate of data capture is unacceptably limited. The narrow physical width of the input signal on a high resolution transducer, in some cases but a fraction of an inch, would require too much time to capture a data set on monumental art meters in diameter.

A final potential option, which addresses most of the difficulties outlined above, involves a process known as *moire metrology*. In essence, this is the projection of structured light onto an object, its capture using a CCD array and the use of image processing software to extract three-dimensional data. More specifically, the projection of light through the superposition of two grids of similar period creates a pattern of wavy appearance often popularly called an optical illusion. Known as a moire fringe, this wavy pattern can be quite attractive and is often used in the graphic arts. Its value for archaeological conservation, however, stems from the fact that it is a field-worthy technology that can capture a high-resolution three-dimensional image. Laser holographic interferometry offers a comparable, if more complex, imaging technique. Ironically, it is one measurement method used to document the erosion rates of limestone in one study consulted while preparing this paper (Baedecker et al. 1992:147). Moire metrology, however, offers completely analogous options to laser holographic interferometry at a significant reduction in complexity and, accordingly, cost (Kafri and Glatt 1989:72).

The reproduction process

Following the acquisition of three-dimensional coordinate data, the use of image manipulation software is the first of several important tasks. In very large facades or very deep reliefs, multiple images taken from different angles may be required. Small reference targets placed in each image allow a computer to *mosaic* or *composite* the multiple images into an entire relief. Similarly, superimposing redundant images in a smoothing function is one of several other image processing techniques available to enhance the accuracy of the raw data. The next step involves the use of computer assisted drafting (CAD) systems and rendering software to perform the necessary design work. One important function, for example, is to decide what if any portions of an original sculpture are to be restored in the reproduction. The reconstruction of lost or damaged features is a powerful tool that has important implications for both conservators and researchers. Interestingly, efforts to reconstruct images of Maya sculpture date back around one hundred years as Teobert Mahler trimmed separate negatives to "restore" fragmented monuments (Graham 1990:43).

Similarly, three-dimensional images of sculptural fragments, even those in different collections, can be combined to produce an integrated replica. Draft versions of various restoration alternatives then can be distributed to conservators via disk or modem so that an iterative design process optimizes results. Computer simulation of different lighting schemes can model changing hours or seasons. Different color selections can help with a final design. Scale models can even be produced to preview the design before production begins.

A second aspect of this CAD work, however, is to engineer the structural integrity of the reproduction and its anchoring and fastening systems. Care should be taken in the structural engineering of the replicas and their placement over the monument to protect the original with a minimum of maintenance. Depending on the unique shapes involved and other site specific considerations, fabrication techniques may be modified from one reproduction to the next. Many engineering software tools interface with CAD systems to address this process. At the completion of design and engineering, a numerical control tool-path is then developed to drive machine tools and fabricate a replica. Although multi-axis equipment exists which can mill large prefabricated masonry blocks, a more cost-effective approach is to machine a master mold from an appropriate tooling material. In this way, multiple copies of the replica may be produced. Not only does this mitigate against accidents, mistakes in finish-out and other production challenges, it also offers the opportunity to distribute the cost of production.

Upon completion of a mold, then, several techniques may be employed in the casting of the replica. Interior, sheltered applications may argue for the use of any of several lightweight materials. Expanded polystyrene, for example, can be finished with an appropriate appearance but also enjoys the advantages of easy shipment, storage and installation. For outdoor display, however, a material such as glass fiber reinforced concrete (GFRC) is more appropriate. GFRC is a well-established construction material already used in the fabrication of intricate building exteriors. Because of its high strength, cast panels are thin, lightweight and durable. Not only can GFRC be integrally pigmented, it can be stained in a variety of colors. Another engineering requirement GFRC meets is that its vapor permeability can be controlled to exacting standards with various additives. Vapor permeability reduces the destructive effects of moisture being trapped against the original facade, a central reason materials such as fiberglass are inappropriate for conservation reasons.

Planning for the future

It must be stressed that the appropriate configuration of an imaging system is a product of carefully defining archaeological and conservation-related goals. Part of this specification, of course, deals with the processes that take place *after* imaging, the manipulation and output of various work-products. Project goals, however, also directly affect the imaging process itself because there are several other types of data that can be captured beyond three-dimensional coordinates. The acquisition of these additional images, then, can offer significant advantages at later stages in the image manipulation process. For example, a full-color image of the monument would not only be useful as a reference in the reproduction

process but the color image can also be mapped or merged with the three-dimensional geometries. In this manner, the original colors and textures of the monument's surface can be presented in a three-dimensional model, thus delivering richer information than computer-generated colors and textures.

Other general classes of data that influences both current and future research include specialized imaging techniques involving quantitative color analysis, color fluorescence, ultraviolet reflectance, infrared, infrared luminescence and infrared false-color image capture. Some imaging technologies even involve physical stress analysis that may be useful in assessing corrective measures to prevent the structural failure of a monument.

Finally, the importance of emphasizing both high-resolution and broad-spectrum imaging must be addressed. Given the many constraints facing conservation efforts it is obvious that over the next few years all or parts of many facades will be lost forever. Rather than serving as baseline images for future conservation and research, then, the images captured by this project may be the only comprehensive record of these monuments. It is therefore important to appreciate that the expense of mobilizing equipment and personnel argues for the broadest capture of data possible.

The emergence of conservation imaging

From the 19th-century illustrations of Frederick Catherwood to the early 20th-century works of Adela Breton, thorough and exacting reproduction of Mesoamerican art continue to support serious research. In an ominous portent for the future, however, the more recent contributions of Merle Greene Robertson and Ian Graham, among many others, have quickly become the only detailed records of the works now seriously compromised or lost forever. The dimensional expression of sculptural form, then, is a type of documentation that has been unavailable until very recently. The production of a replica, therefore, should be no more than the starting point in the use of these datasets. For example, a library of three-dimensional iconographic elements presents many research opportunities when combined with the digital image-processing techniques already endorsed by some researchers (Wainwright 1990:75).

Due to widely varying circumstances involving individual sites, researchers, funding sources and governments, each imaging project must also adapt to unique objectives. The fabrication and installation of full-scale replicas may not, therefore, be appropriate for every imaged monument. Remote sites with vulnerable monuments, for example, may be priority candidates for imaging only. An initial task, then, is to broaden the discussion of target projects with interested researchers. Defining project objectives and the work-product to be produced for each monument helps the draft of a comprehensive technical specification, a definition of the equipment and techniques required. As a further guide to establishing the project, similar conservation efforts throughout the world represent valuable resources. Rock art projects, for example, have not had a compelling need to employ three-dimensional imaging but there are a number of shared concerns. Projects in

Canada (Wainwright 1990) and Australia (Ward 1992), as well as endeavors in the United States, are among those that may be profitably consulted.

Another conservation effort more directly involved with imaging, however, is the Conservation Imaging Consortium (CIC). Founded in 1991 and based at the Getty Conservation Institute, the CIC is concerned primarily with the electronic imaging and image processing of two-dimensional art. One particularly relevant effort of the consortium is the Conservation Imaging Agenda, which is designed to orient vendors, consultants, researchers and potential funding agents to the R&D priorities of imaging projects (Mazor 1993:41).

Conclusion

It is not difficult to imagine a day soon when the names Pacal and Shield Jaguar are as well known to school children as are the names Ramses and Tutankhamen. With the ongoing decipherment of Maya hieroglyphics and other advances in knowledge and understanding, public interest and awareness of the Maya and in archaeology's role in telling the story is growing. It is equally true, however, which within a few brief years many examples of Mesoamerican monumental art will be lost forever.

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Laila Aghaie

Department of Anthropology

University of California – Berkeley

Iranian Women and Perceptions of Autonomy

Since the 1979 Islamic revolution in Iran, the number of Iranian immigrants to the U.S. has risen dramatically. The present project is designed to examine how the level of knowledge and use of traditional and non-traditional reproductive health strategies among immigrant Iranian women mirrors and influences individual self-confidence, independence and cultural identity. This report concerns itself with the second phase of this project. In the first portion of my research, reproductive health strategies are examined for a group of Iranian women in California. The findings suggest that a syncretism of traditional and biomedical perceptions of reproductive health care occurs among these women, but the choice of traditional or biomedical forms of treatment is dependent upon the aspect of health care they are dealing with. Also, pride in Iran's medical and cultural heritage, and dissatisfaction with some western medical methods of dealing with women's health care, often conflict with social pressure to accept the biomedical model of the west.

The second phase of the study seeks to understand how reproductive health strategies utilized by Iranian immigrant women in California reflect and affect their social autonomy. A striking feature of the conversations with the women in the study was the openness with which they spoke of this sensitive subject. Men were rarely mentioned in connection to reproductive health choices. The majority of women appeared to be self-confident, well informed and financially secure, warranting a result more in-depth study of whether reproductive autonomy and social freedom go hand in hand among Iranian immigrant women in four communities in California, and whether traditional medicine plays any role in this interaction. One of two major questions of concern addresses the belief in reproductive autonomy among immigrant Iranian women, and to what extent this is associated with social freedom. Indeed, are these goals for them? Secondly, the women were asked if they perceive either the traditional or biomedical system to be more conducive to reproductive and social autonomy than the other? The interviews represent an attempt to understand the attitudes, expectations and knowledge of women's health care among immigrant Iranian women, and how to open pathways of communication leading to improved health services in Iranian communities in California. It is hoped that perhaps a small dent will be made in the lamentable lack of information on the subject of traditional Persian medicine and women's health today.

A third, and broader consideration is that an important source of pride and independence for Iranian women may be brought to light, aiding them in identity formation, the strengthening of cultural ties and the expression of social freedom. Given the large and increasing number of Iranian and other Middle Eastern immigrants to this country, these questions are of growing importance.

History and Theory

Previous studies in the area of Iranian women's health, with a few exceptions (Good, 1977; Good, 1980), have usually been from a public health or sociological perspective. Literature suggests that fertility of U.S. immigrants and Iranian women is influenced by duration of stay (Ford, 1990), socioeconomic status (Paydarfar, 1975), gender inequality (Aghajanian, 1992), and other factors. Other studies show direct correlations between health status and cultural identity (Meleis et al., 1992) and the relation of socio-cultural variables on behavior in relation to illness (Aleami & Mohseni, 1978). In order to understand how medical knowledge and perceptions of autonomy interact in the eyes of Iranian immigrant women, it is necessary to familiarize ourselves with the cultural and historical context of medicine, women's roles and feminist theory in Persian culture.

The literature on the subject of Persian traditional medicine is extremely sparse outside of Iran and is not very accessible. The subject of women's health care is even more limited. Two works greatly assisted in tackling this project. The first is the research of C. Browner and S. Perdue (1988) on reproductive autonomy in a community in Mexico. The second is a paper published in 1978 by Susan Carol Rogers in which she surveys and critiques the approaches taken to the study of women in the social sciences. Browner and Perdue found that, contrary to expectation, access to and control over reproductive knowledge in this community were not necessarily in the hands of women, and did not lead to significant social freedom (Browner, Perdue, 1988). Using the model proposed by Schlegel, these researchers viewed power relationships and sexual stratification in three different forms: 1) power, or the ability to exert control over others; 2) authority, namely legitimized power in society; 3) autonomy, the freedom from control of others. Contrary to most researchers who have assumed that the first is the most powerful, they postulated that autonomy might be a more desirable goal for women. They hypothesized that "*in male-dominated societies, the essence of female autonomy lay in women's ability to control their own fertility, and that reproductive autonomy might also provide women a model for personal autonomy in other societal domains.*" (Browner and Perdue 1988:1). In order to measure social and reproductive autonomy, these authors quantified not only the level of traditional medical knowledge these women possessed, but also the amount of financial autonomy.

The present paper drew its inspiration from the work of the previous studies, but the approach differs somewhat in perspective. The focus of the present research is on how the women perceived themselves, not how outsiders saw them. This study takes a much more qualitative, emic approach, but also used some of the criteria of the past research for determining social autonomy (i.e. financial independence, employment, freedom to move about, etc.) from the etic perspective. Like Browner and Perdue (1988), the present study does not assume that formal power in the public/political domain is the most desired form of power. Rather it explores what these women value, how they define autonomy, and how they measure their own strength. Researchers in the social sciences, especially anthropology, have a long history of assuming that women are universally subordinated to men. As discussed by Rogers, "*with few exceptions, twentieth-century anthropology has treated women as at best peripheral members of society and at worst as nonexistent. Males continued to be viewed as the only social actors.*" (Rogers 1978:126).

Rogers has presented an overview of the different approaches to the study of women in anthropology, focusing on the main approaches of Symbolic Analysis, Behavioral Analysis

and current work on female status and power. Symbolic Analysis, as seen in the work of Ardener, critiques the tendency of anthropologists to accept male perspectives as applicable to the whole culture. Behavioral analysis is represented in the work of Murdock, among others, who is interested in behavioral differences between the sexes and the functions each gender performs for the society. Feminist theory is brought into the picture in the works of Brown and Ortner, who see sex roles as culturally defined. They grapple with the question of what and how things should change to offer women the same opportunities as men. This study looks with intrigue to current work on female status that focuses on different forms of power, but questions some of the assumptions regarding male dominance.

"All of the scholars to be considered here have a feminist perspective in the sense that they reject 'the view of women as passive victims of their sexual constitution...or as formless lumps shaped by their environment'. They assume instead that women are social actors, with goals of their own and the means to achieve them." Rogers 1978:138.

However, there also exists in the works of many feminist anthropologists the belief that the sexes are related hierarchically, and that either men or women are dominant, with emphasis on the former. They further suggest that, even if women in some societies do not see themselves as subordinated, it is because they have not been made aware of the form their subordination takes. While extensive ethnographic evidence exists that women have considerable informal power, this type of power is seen as inferior to legitimated authority. This attitude is much too condescending. One interesting statement for the purposes of the present research is Rogers' observation that, "*...men might regard their activities as predominantly important, and their cultural systems might give superior value to the roles and activities of men...But might not women in some societies perceive their activities as predominantly important and more highly valued than those of men?*" Rogers 1978:143.

There have been several instances reported in various societies, according to Rogers, of men and women seeing themselves as completely different from one another. Signs of mutual antagonism between the sexes is not uncommon. Thus, she questions the assumption that sexual segregation is necessarily discriminatory against women.

"The barring of one sex group from the domain of the other does not necessarily have negative implications for the excluded group. Furthermore, it may not be legitimate to consider one group as more excluded than the other, if neither has access to the other's domains." (Rogers 1978:145).

Rogers (1978) then presents the analyses of other anthropologists who offer alternative definitions of power and status. These authors reject the conventional notion of universal male dominance. They see informal expressions and channels of power as integral parts of the social system, with as much importance, if not more so, than formalized power. The idea that the domestic sphere is necessarily on a lower footing than the outside arena, and that the double association of domestic/woman and extradomestic/man is a given is not necessarily an accurate one. They do not automatically see characteristically female aspects of social life as less valuable (Rogers 1978:153).

Middle Eastern Theory and Women

The representations of Middle Eastern women in the social sciences is addressed in the following. Constance Faulkner (1980) has critiqued the approaches taken to this work, saying that, as in the study of women in the West, they have gone through various stages.

"Work prior to 1960 tended mainly to deal with outstanding women, women as ideal types, women as incidentals to larger areas of concern (e.g., family planning) and in fiction and poetry, woman as seductress." (Faulkner 1980:67).

Later research tended to deal with interpretations of women's status as reflected in the Quran and other legal and historical writings. Most of these reflect an upper class male bias. She then says that the study of Middle Eastern women face two further obstacles. Namely, that interest in the field is relatively new and that there are special difficulties faced by researchers "*steeped*" in the traditions of the West as they try to comprehend the many paradoxes in Islamic culture. Faulkner also criticizes the tendency to assume that Western style women's liberation is a desirable goal for women in the Middle East, and the lack of information on their lives from an emic perspective. This study attempts to address some of these issues. It interprets women's status from their own perspective, while the Quran and other literature are merely background. Also, as a Middle Eastern woman, this author is aware of many of the paradoxes presented in this culture, and thus does not expect Iranian women to assume only Western ideals of feminism.

Amal Rassam (UNESCO 1984) points to the dual image of Middle Eastern women as being, on the one hand, the exotic and sexual harem girl, and on the other hand, the long suffering, silent and invisible "beast of burden" tied to the home, permeates much of the work in this area. She has found that studies on the Middle East share the conviction that women in Middle Eastern societies occupy a secondary and inferior position to men. Ethnographic studies of Middle Eastern societies usually focus on the existence of two separate and sharply differentiated social spheres. Men are associated with the public, and are the holders of legitimized power, while women are relegated to the private domain with the home and children. Men are seen in these works as having all the power, and women are seen as powerless. The work of Nelson and Wrong is seen by Rassam as being particularly helpful in breaking with these assumptions. They and other anthropologists (mostly women) argue that past studies were mostly done by men who had no access to women's viewpoints. They see power as a reciprocity of influences, where men and women inhabit different but complementary worlds, both of which are necessary and important to the society (UNESCO 1984:125).

Also important for this project is the work of Kader, a sociologist. She, believes that the perceptions of the women themselves must be considered, and she questions the assumption that Middle Eastern women are universally unhappy with the strict divisions in the spheres of men and women. "Close scrutiny of the lives of these women reveals that in essence they enjoy extensive power and that existing conditions allow them sufficient leeway to impose their wishes and desires, even if through devious and subtle means." (UNESCO 1984:146). Bauer (1985) developed further the discussion of the ways that working class Iranian women use manipulative and secret ways to achieve their goals. Disapproval of this approach seemed limited to those who hurt other people through their manipulations. Keeping these observations in mind, I want to break with traditional assumptions about Middle Eastern women's power and roles in society.

Logistics

The problems anticipated at the outset of the present research include the concern that the sensitive nature of the subject would make it difficult for the women interviewees to be open with the author. The author prepared for this by interviewing only women with which contact had been established through friends or family members. The first four interviews were begun by asking general questions and then gradually became more specific as the author "felt out" their responsiveness and tolerance level.

Being one-half Iranian, the author was also concerned that "insider" perceptions would blind her to features and behaviors of any of the collaborators that could be important. To prevent this, special effort was made to observe as many details as possible, and three interviews were recorded on videotape to discern any gestures, expressions or environmental factors that might have missed during the initial conversation. It turned out that the author was much more of an "outsider" than initially had realized. So much of the language and expressions, even some of the customs and social rituals, felt new and awkward. The author realized how little contact she had with other Iranians since she left Iran 13 years ago. Thus remaining objective was not as problematic as I had expected.

The informants' attitudes were particularly gratifying. They usually began the conversation slightly confused, but tolerant of the questions asked. As the conversations progressed, the informants usually became indulgent and were then flattered by the authors demonstrated interest in their knowledge. Invariably, they ended up feeling enthusiastic and excited at the information being gathered, and most wanted to see the finished results. Some gave suggestions of other people to speak with, while others asked for advice on how to earn a living with traditional medicine and beauty methods. All but one had no objection to the recording the interview (the one exception was not adamant about it, but seemed shy at the prospect. In this instance careful notes were taken instead). Only once was the author asked to turn off the tape recorder to hear a story about the attitudes of the woman's parents toward sex. This woman was one of the most open of all those interviewed, but she hesitated in talking about her parents' sexuality. The three women that were asked to be videotape agreed, with some shyness at first, but later asked to see the interviews. They all seemed to think it very entertaining and flattering to be on video.

One interesting and unexpected boon came in the form of the author's son. Almost all the women were at first surprised, then happy to hear that the author had a four year old son. They especially liked the fact that he had a Persian name. They all wanted to know if was being taught Farsi, and repeatedly stated the importance of doing so. Conversations about the author's son invariably brought about a greater sense of familiarity. The informants seemed to view the author as "one of them", and felt reassured that she too had experienced many of the things brought up in the interviews. As a result, our conversations became more personal and relaxed.

In order to ensure the validity of the research results, the author used a variety of data gathering and interview techniques. One technique involved asking the same questions in a variety of ways. The research was broadened by re-examining the 30 interviews from the first phase of the research for patterns in language use and perceptions of autonomy that would add to the data.

Research methods and techniques

The research was conducted mainly in three communities in the Bay Area (Berkeley, Marin and Orinda) and one community in Los Angeles (an area nicknamed "Little Tehran" because of the large concentration of Iranians from Tehran living there). The main reasons for these choices were that they represented two distinct areas of California with high concentrations of Iranians, and I had contacts within the communities. The author was usually invited to the homes of my informants. One interview was done on the UC Berkeley campus. The choice of locations was very useful. The informants were easily accessible, and reflected a variety of neighborhoods. Conducting the interviews in many of the informants' homes was excellent; they felt comfortable, with a certain amount of control as hostesses. The interview with an Iranian student, held on campus, was in a cafe and lasted for over an hour. It was very relaxed, if a little noisy. It was the most convenient time and location for her.

The target population consisted of women aged 19-82. The author's dependency on connections made through acquaintances limited the diversity of the respondents. All but two were from an upper or middle class background, and all but two of the ten women interviewed in this portion of the research were Muslim; the other two being Jewish. The table included in Appendix B. represents the breakdown of the sample populations interviewed in both projects. All informants were from Tehran originally. While unavoidable, the author would have preferred to speak with women from other backgrounds to have a broader range of responses. However, representative sampling is an elusive goal at best.

The interview process consists of three elements, including informal initial discussions, formal interviews, and participant observation. To begin with, informal conversations with 4 women who were either acquainted with or were relatives of friends of the author were initiated to learn about some of the basic concepts and categories of knowledge of reproductive and social autonomy. The author also sought to get a feel for the tolerance levels for some of the more intimate questions on birth control, abortion and other sensitive subjects. The questions were mainly survey or "grand tour questions" (Fetterman, 1989) relating to general health care and concepts of autonomy. This was very helpful to the author in easing the process of asking the questions, knowing how to phrase them, and also in translating the responses. The only difficulty was that the amount of material gathered was prodigious. Transcription was, of necessity, limited to specific passages relevant to the ultimate goals of the study.

The first interviews helped design an outline of questions to be asked in more formal conversations in the following ten interviews. These questions were limited in number and closed-ended. The areas of discussion covered: 1) perceptions of reproductive autonomy, 2) financial autonomy, 3) social autonomy, 4) their feelings on the needs of Iranian women in California, and 5) whether traditional medicine or biomedicine could meet those needs.

Throughout this process of interviewing and getting to know members of the community, the author participated in two dinner parties, one birthday party, 4 afternoon visits and 1 shopping spree. The author was also able to interact on a personal and social level with 7 of the women interviewed. The other women were all interviewed in one-on-one situation. The author listened to the informants conversations, took notes after the fact in order to preserve impressions of the interview.

The author observed the surroundings of the informants, their verbal and non-verbal language, and their social interaction, to contextualize the information gathered in the interviews

as much as possible. This information was interesting, but was of limited use as it was not recorded verbatim, but relied on memory. Aside from determining how easily the women conversed with one another, and what subjects they covered, the information was limited. All interviews were recorded on tape to minimize the amount of writing during the conversation. Three of the interviews were also videotaped in order to have a visual record of expressions, body language and other factors in the use of Proxemics to analyze data. The video recordings were most helpful in critiquing the author's interviewing skills and approach. The tapes helped tremendously in reviewing the interviews and noticing things that had been missed the first time. However, since only three women were recorded, only general statements could be derived from the tapes.

Simulations were not used. Simulations of the preparation of herbal remedies were used in the first phase of our research, but it really was not applicable to the second. Summaries were made of each taped interview, on the same day, and a daily diary recorded overall activities. Photographs of homes, gardens, medicinal plants and other aspects of the research were not taken due once again to the fact that they were more useful in the first phase than in the second. Statistics on the demographics and the health strategies were very helpful in simplifying information and came in handy when determining the number of relevant responses in the 30 original interviews.

Study design

A combination of "old" and "new" ethnography were used in this research. The study also combined moderate participant observation in social settings such as parties and informal gatherings, as outlined by Spradley (1980), in order to gain acceptance in these women's social settings. Cognitive analysis of the verbal and nonverbal language (Crane, 1984) used by these women to express themselves and their views of their reproductive choices were key components of my approach. As much as possible, the study employed a Holistic and Humanistic approach to gathering and analyzing data (Fetterman, 1989).

The author is in some respects an "insider" in this community (the author's father is Persian). As in examples cited by Fetterman, the author is interested in the emic perspective. The author also attempts to analyze the information gathered from an etic perspective. To do so, the author asked not only for the women's own perceptions of autonomy, but also for objective financial criteria (such as the information gathered by Browner and Perdue on women's financial holdings and employment). The author noted the interactions of the informants with her and each other to see if they seemed confident and self-sufficient. All of this is extremely helpful in balancing the author's perspective and contextualizing the spoken statements she recorded. Thus this work should be viewed as applied because it may have direct implications for health care and the transition of individuals in these immigrant communities.

The author had sufficient language and cultural knowledge to be accepted readily into the social situations. Most of these women were upper and middle class, usually cosmopolitan in lifestyle, and were very open to the research. Contacts were made through friends, thus personal introductions was the basis getting to all informants. Half of the key informants for this research were women which had been interviewed in the first phase of the research mentioned above, so it felt very comfortable to continue our earlier discussions. The interviews started with the women already known to the author to allow greater comfort ability with the process before meeting with new people. The author viewed and presented herself as both a student and a collaborator,

and as one who was there to learn and share knowledge of traditional medicine and women's issues.

The role of Persian culture in the history of the development of medicine is a common topic among most Iranians in these circles, especially considering that a large percentage of Iranians are either doctors, or have children who are in medical school, or both. In fact, the majority of Iranian students at UC Berkeley that the author had come into contact with are pre-med students. Thus, cultural pride and social interest worked in her favor as she struck up conversations and explained the purpose of her presence.

The initial questions asked were general questions about the home remedies used by women for general ailments. Whenever the informant was sensed to be ready, the author proceeded to ask questions about women's health concerns, such as menstruation, childbirth, birth control, abortion and other areas that came up in the course of the conversation. One subject served very well to "break the ice" and set the tone for the more intimate conversation to follow without intimidating or offending the informant. The topic was menstruation. Most of the women answered questions on this subject with little hesitation and a remarkable amount of openness. The author got the impression that, because menstruation is an experience all women share, they felt more comfortable discussing it. Later interviews were opened with this topic to get the conversation going and to put the women at ease with answering intimate questions on other subjects.

Previous research by the author and co-researchers, not only in the area of traditional medicine, but also in the area of possible cultural implications of the Islamic religion, reviewed the findings of the preliminary research on the subject of reproductive health strategies, the results of which are presented here (Appendix A). All three of these areas of information were invaluable to formulate questions, and to engage in reciprocal exchanges of knowledge.

Traditional Medicine in Iran

According to Good (1978), "three high traditions of medicine - Galenic-Islamic, sacred, and cosmopolitan - provide the underlying structure for the medical theories and therapeutic forms of both the health care specialists and lay persons in Iran." (Good 1977:4). Classical humoral medicine, a core concept among the Greeks, Arabs and the Persians, shapes perceptions of physiology, illness and treatment in Iran. Much as in the West before the advent of modern theories of allopathic medicine, illness was thought to arise from an imbalance in the four humors (blood, black bile, phlegm, yellow bile) or the basic qualities of hot-cold, and wet-dry. Treatment is geared toward restoring balance in the body. The four qualities determine the nature, or "tabi'i" of every person, and treatment is dependent on the individual's nature. All foods and plants have a nature as well, and the use of specific plants and foods is based on this principle.

Conceptions of women's natures is fundamental to their perceptions of physiology. The function of blood is also important to the reproductive processes of women's bodies in this model. The focus tends to be on the polluting and nutritive qualities of menstrual blood and the associated physical weakness of women.

"When women are not pregnant, they are concerned that their menstrual blood will be free flowing...[this] confirms a woman's fertility and is highly valued. A reduction of menstrual flow...is distressful to most women, who view it as a sign of loss of youth, fertility, and physical attractiveness." (Good 1980:149).

This is also seen as potentially affecting their health, for lessened flow means that "dirty blood" (menstrual) has remained in their system and can cause various ailments. In pregnant women, excess menstrual blood is thought to be eaten by the baby (thus having nutritive value) after the first few months. A woman will therefore often feel sick during the early months of pregnancy until the baby relieves her system of the excess menstrual blood. Menstrual blood is also ritually unclean in the context of Islamic beliefs and is one of the categories of "nejasat," or ritually unclean items. Pregnancy and birth itself are seen as therapeutic since giving birth cleanses a woman's system of polluted blood.

In popular perceptions of female physiology, the heart (qalb) is closely associated with women's ailments, and a wide variety of symptoms, including "weak nerves" and anemia, are related under the condition of "heart distress" (narahatiye qalb). "Heart distress is associated with being female - with contraception, with childbirth and raising children, and with being a wife." (Good 1980:151). Many treatments for female conditions are geared toward relieving stress and anxiety. Sacred medicine is based on the religious cosmology of the Quran and the Tradition (Hadith), and includes concepts of the evil eye, spirit possession, astrology, alchemy and divination. In this tradition, healing comes from the power of the sacred words of prayer and ritual. Cosmopolitan medicine is based mostly on the Western model of health care, and is associated with urban settings. Medicine of the lay people in Iran is a blend of these three traditions, and women's understanding of physiology is crucial to our purposes.

"Popular beliefs about female physiology held by most women in provincial Iran have far reaching consequences ... the 'health-related' complications encountered in sustained usage of contraceptive methods such as the birth control pill, the high degree of dissatisfaction with new contraceptive methods and with the clinicians who encourage their use, and the ambivalent feelings experienced by women who practice or consider practicing birth control are more clearly understood in light of these popular beliefs of female physiology." (Good 1980:148).

After coming to power in 1925, Reza Shah instituted a number of health care reforms. Included in these were laws banning the practice of the high tradition of medicine by Hakims (traditional practitioners) that could not pass the Western medical exam. The practice of traditional medicine, except in the case of midwifery, herbalism and bonesetting, went underground and all but disappeared. The political and social changes in Iran since the revolution have been characterized to a large extent by a resurgence in nationalism, and have resulted in a renewed interest in traditional medicine. Bans have been lifted and the government supports research and development in this field of work. There is even a Department of Traditional Medicine in Tehran that investigates the uses of plants in folk medicine.

Islam and Women's Roles in Iran

As Kader writes, "Islam as a creed and religion, and the Koran, the prophet's sayings, and Islamic Shari'i as the source of personal statutes laws have been considered by many as important determinants of the status of Arab women." (UNESCO 1984:141). Islam has been seen alternately as liberating and oppressive for Iranian women. For example, it is argued that Islamic institutions elevated the status of women by limiting the number of women a man could marry, banning female infanticide, providing protective measures for women and

children in the case of divorce, liberalizing inheritance rules and other things. The critics of Islam's affects on women counter that there are fundamental inequalities in the Islamic code, such as in sexual freedom, marriage and divorce laws, and other crucial areas of women's lives.

On the value of the family, Abdel Omran (1992) points out that family is the central core of the Muslim culture. Islam usually sees the family as something innately good and even sacred. The relationship between husband and wife is thought ideally to be based on love, passion, friendship and respect as well as mercy, which is defined as understanding, tolerance and forgiveness. Tranquility is the overriding objective. Within this context, children are highly valued in Islam. The ability to raise children correctly, financially, socio-psychologically and spiritually is an inherent requirement in Islam (Omran 1992:30). Neither abortion nor birth control are forbidden in the Quran (although some restrictions do apply to their use).

During the reign of Reza Shah, the Family Protection Act was passed, granting extended protections and rights to women and children. The reforms affected divorce and marriage laws, matters of inheritance, children's rights and the rights of women. Following the revolution in 1979, many of these reforms were repealed or rolled back, thus severely limiting the legal rights of women and children. Abortion, for example, was made illegal and the legal age for marriage of girls has been lowered to 13. Some of the people most affected by these reforms and their repeal were those who were most able to take advantage of them, namely the middle and upper classes. The mandatory wearing of the veil that followed the revolution was a visible sign of the changing lives of urban Iranian women. These historical, cultural, medical and religious influences must be considered when trying to understand the personal lives and perceptions of Iranian women in the U.S.

Analysis and discussion

The first stage of data reduction in this phase of this research (not counting the initial reduction of data when the research question and design were formulated) consisted of narrowing down the nature of the questions asked after the initial informal interviews. As the interview and observation process proceeded, it concentrated on aspects of personality, social interaction and medical perceptions. Daily summaries of interviews and observations were made, including notes on patterns and themes, as they developed.

At the end of each week in the field, interim summaries were made to bring together the information gathered in that week and compared it to previous notes. The initial 4 interviews were not transcribed verbatim due to their length. Only relevant sections were transcribed. In the final ten interviews, everything was transcribed and the information was divided into the key categories of 1) reproductive autonomy, 2) social autonomy, 3) the relationship between these two, 4) attitudes towards men, and 5) attitudes towards traditional and biomedicine.

The interviews conducted during the first phase of the project were reviewed. The transcripts were reviewed to determine the frequency with which men were mentioned in connection to reproductive health questions, as well as the other issues mentioned above. These quotes and observations were copied along with the information gathered in the later interviews in typed format according to subject. The information gathered was examined for potential patterns. Midway into the analysis, two causal networks of the patterns emerged, helping to crystallize the pertinent information.

Principal findings

Four main findings include 1) three different male/female power relationships as described by these women 2) reproductive freedom is not necessarily equated with social freedom, 3) freedom is seen as both positive and negative, and 4) while education and awareness of health care in general are seen as important, neither traditional medicine nor biomedicine is seen as more conducive to autonomy.

Setting

As mentioned previously, all but two of the women interviewed were from an upper or middle class background, had lived in Tehran, and were very cosmopolitan in their lifestyle. In almost all cases, the women were very stylishly dressed, and wore makeup. Except for four women, two of whom agreed to see me without notice, all the women were well-dressed for the interview in semi-formal dresses and blouse/skirt ensembles (three of the others were in sweats and one was in a robe). Of the seven homes visited, all had a mix of Western and Iranian decor, and the author was treated as an honored guest in all cases, with numerous offers of food and refreshments being made. The food offered was invariably traditional Persian fare, such as special Iranian candies, tea, and cookies. All the women led the author to the living room, away from where the rest of the family was situated. All but three families lived in suburban neighborhoods, and family members often owned houses in the same neighborhood, or near each other.

The conversations with these women always started out with general subjects. Most of the conversations were in Farsi, and they were very interested in author's background. Though fluent in Farsi, the author does have a slight accent, and they were curious about how long she had lived in Iran, whether her parents were Iranian, etc. They also were curious about the author's studies, and most commented on the importance of a college education. They seemed particularly impressed and gratified that the author was making a special effort to learn about Iranian culture.

They also loved the fact that I had a four year old son, and almost everyone asked if I was teaching him Farsi, emphasizing the importance of children knowing their parent's native language. I noticed that being a mother seemed to elevate me to the status of "woman" in their eyes, instead of young student, and they spoke more openly because of it. They often followed personal comments about their body, childbirth or other topics with the observation "as you probably know," or "you know what I mean."

Proxemic analysis showed that the women I recorded seemed comfortable in front of the camera. They responded readily to questions, and made regular eye contact. Our seating arrangements were fairly formal, as were the living rooms in which the three conversations took place. Two of the women wore dresses, while the third was in sweat pants and a Tshirt. This lady was constantly interrupted by the telephone (she owns her own retail business) and her 5 year old son, who was playing with my son at the time. She had no hesitation in yelling across the house for her husband to answer the phone, and never cut off our conversation when he happened to enter the room. The other two were a little quieter, and had fewer distractions during the interview. The only time I noticed any significant lowering of voices or broken eye contact was when the topic of the withdrawal and condom methods of birth control came up. It is interesting that these are also the two forms of contraception under men's control.

Power Relations

The women describe what seems to be a continuum of power relationships with men in the realm of reproductive choices. Family Planning is considered to be up to the woman. It is seen as personal, unless there is a conflict of interest between husband and wife. Then, they can discuss the situation and make decisions that are equally acceptable. However, if the woman feels her needs will be subjugated to those of her husband, she may resort to covert action to obtain what she wants.

Fertility and reproductive health care are considered to be in the realm of women and not an issue for men. There is a sense that birth control methods used by the woman are her concern, not her husband's. Equality may only be an issue when the needs of the two conflict. In other words, as long as the needs of both men and women are being met, fertility regulation is in the woman's hands. This separation between male and female domains is suggested by the fact that men are rarely mentioned by the women interviewed in the first phase of this project. In later interviews, many women explicitly stated that reproductive health care is a woman's responsibility.

In the transcripts of the 30 women interviewed in the first phase of this project, men are mentioned only occasionally. Usually, the women only talk in terms of what they themselves practice, using the terms "I" and "women" when talking about reproductive health strategies they use. Out of 30 interviews, men are mentioned in 12. They usually come up when withdrawal is the main method of birth control for the couple, or when the subject of abortion is mentioned.

In the follow up interviews I conducted, one woman said that birth control was the personal choice of women, unless men did not feel comfortable with the withdrawal method. (All names are pseudonyms).

Faribah, 39:

"I don't think a husband would choose the method of birth control. I don't think it's an issue ... I don't think a Persian man would go to the wife and say "you have to take pills." I think those are what women think are personal things ... I mean, if the man doesn't like to do that (withdrawal method), he may say, "look, this is not acceptable, I am tired of this way." But as long as it wouldn't bother him, as long as it is not affecting him, satisfying his sex drive, I don't think he would care. But if it affects him personally, and he doesn't like something about it, then it might be an issue ... I really believe that a woman's health and reproductive freedom is totally personal to a woman." (Language:English)

When the needs of the man and woman have the potential to conflict, the two may discuss family planning, the number of children, or whether to get an abortion, in an open and equal way. This seems to be the ideal in the minds of most of these women, so that the needs of both husband and wife are considered, and an acceptable solution may be reached.

Faribah:

"To have a child is something that two parties must be, want it. So as long as only one wants it, it doesn't make any difference ... I mean, if the man doesn't want the child and the woman wants to keep the child, it's not gonna ... It has to be a choice of both. It cannot be either woman or man ... Well, my husband wants another one. It's not that I don't want one,

but right now I am working too much. “

For many women, there is a strong feeling that, while they choose the method of birth control, if it is not satisfactory, then it is the man's responsibility to practice withdrawal or use a condom. They make this very clear to their partners.

Shoreh, 45:

“Women do discuss health with men, if they are educated. They try to share. If there is to be equality, they must discuss birth control with men. When I had a second child, I wanted to stop, but I didn't want it to be permanent. My husband had to do it. I discussed this with him. This is your problem, I said, so you do something. I never used the pill, because I told my husband it is his responsibility. I've heard that the pill may be a carcinogen, and my friends have all had bad experiences ... I told my husband, if you think the pill is good, then you take it yourself. He said I should have my tubes closed ... I told him he could close his if he wants to ...Control must be equal between men and women, and the woman must choose.”
(Language:Farsi and English)

Some of the women express sympathy for the difficulties men face in using the withdrawal method of birth control. They take this into consideration when making birth control choices.

Zahra, 82:

“It is hard for men. They must have great strength to do this. They must be strong in the mind, but if he does not want children, they must do this.” (Language:Farsi)

Two other women, 54 and 45 years old respectively, make similar comments, saying "we've always been careful, and controlled whether or not we had children," and "we always agreed on when we wanted children." A 19 year old student, when asked whether Iranian women discuss birth control with men, responds that "yes, usually with the husband ... probably the woman (makes the decision on birth control methods)." These women describe equal interactions with men in family planning decisions. The responsibility is shared, and whenever possible, the physical and emotional needs of both are met. However, these women also see men as uncaring of women's problems, concerned only with their own sexual fulfillment and having more children, especially boys. The assumption seems to be that, given a chance, men will impose their control over the situation. Women counter this overt control with secrecy and covert action in order to achieve their goals. Men are the opposition, the "other" that needs to be manipulated or outdone. This behavior is not only acceptable to these women, it is a sign of strength and is expected. While this is particularly evident in the case of abortion, it can also be seen in other areas of their lives.

Shoreh:

“Men always want to demand. You must be very strong, so they don't always have their way. Let them know they are in charge, but you make the decisions. They must always feel they are the boss. Then they think they can give you a bonus. You are in charge, (laughter) but they don't know it.” (Language:Farsi and English)

This same woman's stepdaughter elaborated on this point:

Noor, 19:

“One woman in the family did it (abortion) to spite her husband. Some women may not tell husbands they are having an abortion, but they know they can't have more kids ... I have two images in mind. One of women in LA for whom it is probably equal (control of fertility). I also have an image of what I think goes on in Iran. There is a big cage made by men. Within the cage, women do what they want. They can do what they want within limits ... He has the power to tell her to or not to (have an abortion) . (In financial matters) The man has to make the ultimate choice or think he has made the ultimate choice. My stepmother has the reins (laughter).” (Language:English)

Other comments made in the first set of interviews, though not as in-depth, are of interest as well. From the comments of six different women from the original set of interviews it can be concluded that most women felt uncomfortable (about abortion). They didn't tell anyone. It was a secret ... If you had money, you could get one (abortion) without your husband's permission ... I had to tell my husband because the hospital required his permission to admit me. But they generally don't think about birth control, their orgasms are more important to them. They want more babies anyway ... The men of Iran don't pay attention. A woman knows she can't take care of more (children) ... Some women have already had a couple of kids, and even if their husbands want another child, they really want to start living their own lives, so they do what they can to miscarry ... We just got abortions. I never told my husband. He wanted more babies ... Birth control (withdrawal) is more likely to be a man's decision. But the IUD would be a woman's decision, because it can be secret.

Reproductive and Social Autonomy

Reproductive and social freedom are not seen as particularly related by most of these women. Nor do they feel that reproductive autonomy has the political connotations that it does in the U.S. Reproductive freedom is seen as a natural and personal part of their lives. As mentioned before, as long as there is no need to bring men into the picture, they are in control. Should the need arise, they have alternative means of gaining what they need. But there are some indications that this may be changing, especially among the younger women I interviewed.

Faribah:

“I think to the Iranian woman, it is a natural thing. They don't look at it as a right. In this country it is different ... We are more liberal than Americans ... I really believe that it is personal. Because this is our body. Like if I go tell a man you cannot have a surgery for something or other in your body. This is my body. A woman's body belongs to a woman, a man's body belongs to a man .. I am in a state of shock to see how such a reaction in the U.S.. I never thought in America I would feel this issue of ERA. This was a total shock. ERA was a shock to me. I never thought someone would come and make an issue over abortion, a political issue. I believe it was a political issue more than anything else, then they blew it out of proportion.” (Language:English)

Another woman described it this way:

Nana, 20:

“Control (of fertility) is really important. I am surprised I feel this way because I never thought about it so much. Right now, it affected me to think of women who have nothing left but their fertility, that is really bad. I think this is a really Western point of view ... I don't feel that I have autonomy over my body ... I feel that the two are related (reproductive and social freedom). Because where else would you start? I don't know to what depth they think of general freedom of women. It's a different set up. They think they have all the freedom at home, and reproductive freedom is the other. I feel that they are not free, but maybe that is my American schooling.” (Language:English)

All the women feel that they should have at least an equal say in their reproductive health choices, but they see it mostly as a natural and private matter, part of a "woman's world," in which men should not interfere. However, several women comment that the level of freedom may be dependent on the woman's level of education, economic and social status. They note that women from the "lower class" would probably not have the freedom that they themselves have. This class consciousness is very prevalent in these conversations. Seven out of the 10 women I interviewed, and 12 out of the original 30 women interviewed, make some reference to the different opportunities available to women from different socioeconomic backgrounds.

Values of Freedom

Social freedom is seen as both a positive and a negative. On the one hand, most of the women feel that freedom is important. However, they also associate freedom with loneliness and lack of purpose. Negative images of the American as an irresponsible individualist tinges their view of what freedom can mean for them.

Toran, 29:

“We don't consider American families to be rich. Iranian women laugh at American women. If they are so strong, then why are they so unhappy, divorced, single. Some men manipulate their wives to work because they don't want them to be lazy or play around all day long. It's important that a woman can control herself emotionally, to not be abused or manipulated. Then they might have to go outside the home to work and the home falls apart ... Iranian women have freedom. Of course, they have a responsibility to the family. They can't go and run off. They can go and visit and do other things, but they must take care of the family ... Freedom is important for individual human beings, not just Iranian women. You shouldn't act like a single woman. Here there is a lot of freedom. There is another issue. People must be so responsible.” (Language:Farsi)

Laleh, 19:

“Not that you necessarily have to be free, like, individual. Not necessarily freedom like in the U.S. where everyone has to be alone, but autonomy is important. You have to balance.” (Language:English)

Zahra:

“It wasn't like here, where each man, each woman, is free. Not like here where women and men sleep together with strangers, without knowing the person. It is not like this in Iran. You have to be careful, responsible.” (Language:Farsi)

Thus, social autonomy is seen as the freedom to be strong within the prescribed roles of women, holding together the family, meeting responsibilities, and not being promiscuous. There is a delicate balance between the positive aspects of being autonomous, and being "free" from important ties to the family and culture.

The Role of Traditional Medicine and Biomedicine

Although education and awareness of health issues are seen as important, few direct references are made to the potential of medical knowledge which might affect the autonomy of Iranian women.

Roudan, 19:

“Information on traditional medicine would be very helpful to Iranian women. It is really good, and not given enough credit. It is also connected to our culture.” (Language:English)

Shoreh:

“Traditional medicine and medicine both are good for women. They must know how to take care of themselves. If they don't, they are foolish.” (Language:Farsi and English)

Nasrin, 50:

“Iran has a long history of medicine. Did you know that the person who discovered alcohol was Persian, and of course Ibn Sinna, who wrote the Canon, he was very incredible and well respected. For thousands of years, they have researched these things. It is very important.” (Language:Farsi)

Cultural pride is reflected in these comments, and knowledge of any kind is seen as important. However, very little connection is consciously made between traditional medical knowledge and personal freedom.

Conclusion

There is a terrible lack of quality literature in the social sciences regarding the lives of Middle Eastern women. The studies that do exist are usually narrow and biased. The Iranian immigrant women I spoke with are far from the subdued and passive individuals they are often perceived to be by outsiders. They have well developed mechanisms in place to achieve their goals in life, and are not dependent on western style feminism.

While they believe that reproductive choices are within their domain, they are able to negotiate and share in decision making processes with their partners when necessary. They also have informal power that assures they are not overwhelmed by men's power outside the home. While reproductive and social autonomy are not usually seen as politically linked by these women, this may be changing as growing numbers of young Iranian women in U.S. colleges are exposed to feminist theories. Knowledge of traditional medical systems does not seem to play a

great role in their lives, but there is pride in Iran's medical heritage and interest in preserving traditional knowledge.

While this research has barely scratched the surface of the lives of Iranian women in the United States, many intriguing questions have been raised. How do men feel about women's covert or informal use of power? How do Iranian women from less affluent backgrounds perceive these issues? Can the preservation of traditional medical knowledge help these and other Middle Eastern immigrant communities maintain pride in their culture, while adapting to their new home? Can traditional medical knowledge play a role in providing quality health care to this growing immigrant population? As an Iranian-American woman, I have found myself torn between the two cultures within which I live. Daily, I find myself bombarded with images of what freedom means in America, and with the harsh judgments placed on women who do not meet the standards set by popular culture. It is necessary to provide some balance to the picture many people have of Middle Eastern women as weak and servile.

Until now, I have not been able to explore the apparent contradictions in Iranian women's lives to any great length. The interest on the part of my informants has encouraged me to continue this project, with the goal of using this information to break down some of the negative stereotypes of Middle Eastern women in the West, to improve health services to their communities in the U.S., and to strengthen their cultural pride and self-identity.

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Appendix A. REPRODUCTIVE HEALTH STRATEGIES

Method	Menstruation	Birth Control	Childbirth	Abortion
Tamarind				3
Henna				29,36
Chamomile	1		2	
Onion skin				23
Saffron				1,6,10,18,23
Parsley				1,6,11,18,23
Anise (licorice)		19		
Spearmint	6,7,10,11,18,27,2,9			
Oregano	7		2	
Bugloss	1,2,3,5,6,8,10,17, 20,21,22,23,27, 29,30,32,33,34,35			34
Coriander				2,6,11
Cardomon	33			
Valerian	1,2,6,22,29, 30			
Dill	33,36			
Fenugreek				12a
"Bride Behind the Curtain"				30
Bitter (Poisons)				11,12a,17,18
Lovage				2
Antimony				29
Tea	1,11,18,19,20,21,22,24,28,30			
Rock Candy	1,5,6,10,11,12,18, 19,20,21,22,23,27,28,30		6	
Hot/Cold Foods	1,2,4,11,12,13,14,17,18,32,33,35,36			
Rhythm Method		1,5,8,11,18,31,35		
Withdrawal		3,9,11,12,16,17,20,21,22,28,29,31,36		
IUD		1,18,19,25,27,28		
The "Pill"		3,7,5,8,9,10,11,13,14,15,16,18,22,23, 24,25,28,32,33		
Condom		1,18,20,26,27,31,36		
Painkillers	2,3,7,8,9,10,12,13,14,16,17,19, 20,21,22,28,31			
Food Avoidance	2,28			
Nursing		5,11,28		
Lemon Juice/Apples	1,6,20,22			
Barberry			6	
Cinnamon			6	
Douche		20		
Sponge		22,28		
Physical Activity				1,3,7,8,9,11,12a, 16,18,20,22,23,24 28,29,30,31,32

Appendix B. Demographics

Interview #	Age	Religion	Origins	Income-Self Defined	Years in US
1	36	Muslim	Tehran	Middle	15
2	54	“	“	“	7
3	45	“	“	“	12
4	28	“	“	“	10
5	45	“	“	“	20
6	45	Jewish	“	“	14
7	50	Muslim	“	“	7
8	46	“	“	“	13
9	46	“	“	“	10
10	41	“	“	“	10
11	48	“	“	“	13
12	35	“	“	“	7
13	60	“	“	“	18
14	35	“	“	“	11
15	21	“	“	“	10
16	46	“	“	“	9
17	45	“	“	“	8
18	36	“	“	“	8
19	50	“	“	“	11
20	47	“	“	“	18
21	21	Jewish	“	“	13
22	18	Jewish	“	“	15
23	41	Muslim	“	“	15
24	65	“	“	“	14
25	38	“	“	“	12
26	36	Christian	“	“	11
27	20	Muslim	“	“	15
28	19	“	“	“	12
29	39	Jewish	“	“	25
30	82	Muslim	“	“	14
31	52	“	“	“	8
32	29	“	“	Lower	5
33	20	“	“	Upper	11
34	40	“	“	“	18
35	50	“	“	“	12
36	22	“	“	“	12
37	60	“	“	“	15
38	19	“	“	“	7
39	33	“	“	“	11
40	27	“	“	Lower	4

Elizabeth Hawthorne
Department of Anthropology
University of San Diego

The Mazatecs Indians' Creation of Linguistic Art Through the Use of a Hallucinogenic Mushroom

The goal of this paper is to demonstrate that the use of hallucinogenic mushrooms by the Mazatec Indians stimulates their artistic creativity, producing chants composed of a special language. To this end, I examine the chemical composition of the mushrooms, the necessity and importance of the shaman in the mushroom ritual and the role of linguistic creation in Mazatec society. The author's interest in the subject of hallucinogens in the creation of art among the Mazatec Indians of northern Mexico was sparked by a study of the phenomenon among their western neighbors, the Huichol. The Huichol Indians of the Sierra Madre Occidental in northern Mexico produce art work inspired by images derived from the use of peyote, a hallucinogenic cactus containing mescaline and other alkaloids. Every year small groups of Huichols are led by a shaman priest, the "mara' akame," to their sacred land of origin, Wirikuta, in order to hunt peyote for use in their rituals. Following ingestion of the peyote, hallucinated visions are perceived by the Huichol, who later "translate" these visions into artistic creations. This paper addresses the question of whether other Indian groups employed hallucinogenic plants and, if so, whether they also awaken creativity and inspire art.

A long standing interest in the Indian groups of Oaxaca prompted the present study of the Mazatec Indians of Huatla de Jiménez. The Mazatec Indians, in fact, do employ a psychoactive plant, the mushroom *Psilocybe mexicana*, in the context of their religious ceremonies, divination and curing. Furthermore, use of the mushroom does invoke creativity. The Mazatec shamans partake of the mushrooms to compose songs and elaborate chants. These compositions are made up of an esoteric language of the gods, the words of which derive from their mushroom experience.

Chemical Composition

The catalyst producing such eloquence is a small, tawny fungal inhabitant of wet pasture lands. In the Mazatec country, it is during the rainy season from June to August when the mushrooms grow. In the early 1950s, ethnologists and mycologists discovered Oaxacan Indians using these "magic mushrooms" and sent samples to the Sandoz Laboratories of Switzerland for chemical analysis. In 1958 the alkaloids psilocybin and psilocin were isolated. The amount of psilocybin and psilocine in *Psilocybe mexicana* is about 0.03 percent in fresh mushrooms and approximately 0.3 percent in dried material. The mushrooms' other ingredients are composed of carbohydrates, proteinaceous matter, mineral salts, and various other compounds. Fresh

mushrooms contain about 90 percent water (Schultes 1979:23). Effects of psilocybin and psilocin include colorful hallucinations, muscular relaxation, occasional hilarity, and alteration of time and space perception.

Mexican mushrooms are reportedly pleasant to consume and produce no offensive toxic reactions such as vomiting or vertigo (Emboden 1979: 91). Important in my research is the fact that the intoxication is not a stupor, but is experienced as a period of new consciousness and new reality. One feels isolated from his environment because he feels he has entered a new plane of existence. It is in this plane of existence that one finds a reality enabling the transcendence of ego, the ability to answer questions, solve problems, and find creativity. The words expressed by one in this period of new consciousness indicate a creative activity neither outside of the realm of reason or out of contact with reality. Reality reveals itself through the experience in words, as if it had found a voice to utter itself (Munn 1973: 114).

Importance and necessity of the shaman in mushroom ritual

While all members of Mazatec society may ingest hallucinogenic mushrooms on certain occasions, they are guided and directed by the shaman. (In the Mazatec language a shaman is equivalent to a curer, thus called a "curandero" or "curandera" if female).

"During an all night ceremony the mushrooms are eaten by the curandera or shaman, her assistants, and the patient, but it is through the chanting voice of the curandera that the mushroom speaks and effects the cure" (Rhodes 1963: 189).

The shaman plays an important role not only in the mushroom ceremony and as the Indians' link to the supernatural world, but also as an artistic catalyst, instigating the creativity of each member of society. The visions of the people are made real by the interpretations of the shaman; his or her knowledge diminishes any fears or doubts of the people which may have arisen from the visions. This capacity of the shaman to provoke and interpret hallucinatory trance is the essence of shamanic art. As Alana Cordy-Collins has written,

"The shaman brings the imagery from the other world into the common world. This act of artistic creation serves two purposes: it validates the shaman's experience as true, while it also lays the foundation for others to experience the same truth during a communal hallucinatory event" (Cordy-Collins 1989: 39).

By a change of his everyday consciousness, the shaman enters the metaphysical realms of the transcendental in order to confer with the supernatural powers and gain an understanding of the hidden reasons of events, of sickness and all manner of difficulty. The Mazatec curers are therefore shamans in every sense of the word: "their means of inspiration, of opening the circuits of communication between themselves, others, the world, and the spirits, are the mushrooms that disclose, by their psychoactive power, another modality of conscious activity than the ordinary one" (Munn 1973: 113). When Mazatecs eat the mushrooms they ask the curer to guide them, because this individual is recognized within their society as an expert in such psychological artistic adventures. Therefore, it becomes the curers' vocation to eat the mushrooms because they are the people of the spirit, of language, and of wisdom.

Linguistic Creation and its role in Mazatec society

Language, in the form of chants or expressive dialogue, is the way in which the bemushroomed person manifests his or her creativity. Words are manifestations of consciousness; language is a vehicle of their relation to reality. By the use of the hallucinogenic mushroom and through the voice of the shaman, the Mazatec society members reveal themselves. Feelings are articulated concerning their past, future and present.

All societies have a need to freely portray themselves and it is through hallucinogens and a shaman that many societies feel secure to exhibit creativity. The experience becomes a psychological and social release. What is spoken of by the shaman is the communal world; even the visions of his imagination must have their origin in the context of his existence and the myths of his culture.

"The subject of another society will have other visions and express a different content in his discourse. It would seem probable, however, that apart from emotional similarities, colored illuminations, and purely abstract patterns of a universal conscious activity, between the experiences of individuals with differing social inferences, the common characteristic would be discourse, for judging by their effect the chemical constituents of the mushrooms have some connection with the linguistic centers of the brain" (Munn 1973: 98).

The language of Mazatec shamans is not ordinary, everyday language, nor is it a controlled verbalization. It is as if one has a special talent for extraordinary articulation.

"Intoxicated by the mushrooms, the fluency, the ease, the aptness of expression one becomes capable of are such that one is astounded by the words that issue forth from the contact of the intention of articulation with the matter of experience. At times it is as if one were being told what to say, for the words leap to mind, one after another, of themselves without having to be searched for: a phenomenon similar to the automatic dictation of the surrealists except that here the flow of consciousness, rather than being disconnected, tends to be coherent: a rational enunciation of meanings" (Munn 1973: 89).

Reports of mushroom use demonstrate the almost impossibility of expressing one's experience and linguistic ability to one who has never been in a bemushroomed state. For example, R. Gordon Wasson, who in 1953 was among the first outsiders to eat the mushrooms and partake in the sacred Mazatec ritual, could only describe his incredible experience as saying "We are entering upon a discussion in which the vocabulary of the English language, of any European language, is seriously deficient. There are no apt words in it to characterize one's state when one is, shall we say, "bemushroomed" (Wasson 1972: 190). Likewise, Wasson also linked the mushroom experience with the creative expression of language in general. He compared the writings of St. John of Patmos in the Book of the Revelation and of William Blake as linguistic expressions of individuals who had just partaken of the sacred mushroom.

"Clearly some poets and prophets and many mystics and ascetics seem to have enjoyed ecstatic visions that answer the requirements of the ancient Mysteries and that duplicate the mushroom agape of Mexico. I do not suggest that St. John of Patmos ate mushrooms in order to write the Book of the Revelation. Yet the succession of images in his vision, so clearly seen and yet such a phantasmagoria, means for me that he was in the same state as one bemushroomed. Nor do I suggest for a moment that William Blake knew the mushroom when he wrote his telling account of the clarity of 'vision'" (Wasson 1972: 196).

However, the mushroom:

"permits you to see, more clearly than our perishing mortal eye can see, vistas beyond the horizons of this life, to travel backward and forward in time, to enter other planes of existence, even (as the Indians say) to know God" (Wasson 1972: 197).

Knowing the importance of language in a society and the role it plays in the mushroom ritual, one must realize the recognition placed on the shaman as chief conductor of language.

The Mazatecs say that the mushrooms speak. From a western point of view no mushroom speaks, only man speaks, but he who eats these mushrooms, if he is a man of language, becomes endowed with an inspired capacity to speak. It becomes the function of the shamans who eat them to speak, they are the speakers who chant and sing the truth, they are the oral poets of their people, the doctors of the word, they who tell what is wrong and how to remedy it, the seers and oracles, the ones possessed by the voice. Mircea Eliade writes that

"the shaman is both singer and poet . This creative aspect of the shaman assumes special importance, for the shaman's songs and music are central to the notion of his power, ritual efficacy, and aesthetic expression" (Eliade 1992: 18).

The shaman becomes the mediator of the expression of language for the Mazatecs. Inherent and thus essential in all Mazatec mushroom rites is the chant of the shamans: The ceremony begins with a low subdued humming on long sustained tones, limited in range to the interval of a fifth with an occasional added tone. This humming often leads into passages of chanting in which the second syllable of "Jesosi", the ceremonial word of Jesus, is repeated in a long series of tones of equal durational value. The reiteration of names is a characteristic common to all the Mazatec chants. The names repeated today by the shaman are holy names of the Catholic Church, whereas in ancient times other divinities were named. The invocation of holy ones inspires religion and creates familiar visions in the reality of the people. Much of the chanting appears to be free in form, ametrical, and structured on texts lines varying in length. However, at certain points the chant becomes formalized into a pattern of alternating phrases, the first cadencing on the second degree of the scale, the second reaching a point of repose on the ground tone (Rhodes 1963: 189). Wasson describes the chant as an essential element to a successful ceremony: " The Mazatec communicants are also participants with the curandera in an extempore religious colloquy. Her utterances elicit spontaneous responses from them, responses that maintain a perfect harmony with her and with each other, building up to a quiet, swaying, antiphonal chant" (Wasson 1972: 198).

The Mazatec shamanic chant becomes a lesson or discourse on the progress of society, integrating every member of the rite into the chant, speaking on a future each individual can relate to and creating a feeling of hope amongst the people. Their indigenous society is being transformed by the forces of history and the shaman remains the peoples' connection to the past, their hope for the future and their outlet to creative expression and the supernatural realm. "The Mazatec curandera in her discourse speaks of the ancient and the modern, of what is happening to her people, peering into the future, she recognizes the inevitable process of transition, of disintegration and integration, that confronts her children" (Munn 1973: 96).

A shaman who in the 1950s received recognition because of the investigation of the sacred Mazatec mushroom rite by R. Gordon Wasson and his colleagues, is María Sabina.

A book has been written concerning her important role as an artist among her people: her chants have linked the Mazatecs to the supernatural and inspired hope for the future. María Sabina first became acquainted with the mushrooms at age six when she witnessed the curing of her uncle Emilio Cristino. A shaman known as "Wise Man Juan Manuel" arrived at her house with a bundle wrapped in banana leaves which he treated with exaggerated care and kept hidden from her sight. The old wise man talked and talked, sang and sang in a language which she did not understand, but which she was attracted to. "One thing that I did understand was that the mushrooms had made old Juan Manuel sing" (Estrada 1981:39). A few weeks later, María Sabina and her sister recognized the mushrooms of Juan Manuel in a pasture and experienced their first taste of the sacred mushrooms.

"After having eaten the mushrooms, we felt dizzy, as if we were drunk, and we began to cry; but this dizziness passed and then we became very content. Later we felt good. It was like a new hope in our life. That was how I felt. Sometime later I knew that the mushrooms were like God. That they gave wisdom, that they cured illnesses, and that our people, since a long time ago, had eaten them. That they had power, that they were the blood of Christ." (Estrada 1981:39, 40).

María Sabina grew older and after two unsuccessful marriages she began to fulfill her destiny as a woman born to cure with the language of the mushrooms. It was in one of her first visions as a curer that María Sabina learned of the "Book of Language". The "Book of Language" has been described as María Sabina's link through the visions to artistic creation. It is in the book that she sees the words to speak, however, this book only appeared in her earliest visions because as her mind opened to creativity, the contents of the book became permanent in her memory. Upon ingestion of the "saint children" (her name for the sacred mushrooms) María Sabina encountered the "Principal Ones" she had heard her ancestors speak of. It is therefore from the Principal Ones "Book of Language" that María Sabina gets her inspiration for words and beautiful, meaningful chants.

"One of the Principal Ones spoke to me and said: 'María Sabina, this is the Book of Wisdom. It is the Book of Language. Everything that is written in it is for you. The Book is yours, take it so that you can work.' I exclaimed with emotion: That is for me. I receive it. Wisdom is Language. Language is in the Book. The book is granted by the Principal Ones. The Principal Ones appear through the great power of the 'children'" (Estrada 1981: 47).

Aware of the art and importance of language, María Sabina uses her creative ability to speak and chant as her only force. "I cure with Language. Nothing else. I am a Wise Woman. Nothing else" (Estrada 1981: 56). The sacred mushrooms provoke creation of beautiful language and chants. The words spoken through the shaman are words as real as the Mazatecs' present reality. The phenomenon most distinctive of the mushrooms' effect is the inspired capacity to speak, making those who eat them people of language, illuminated with the spirit, free to express their creativity.

Times have changed in the Oaxacan village of Huatla de Jiménez since the investigation of the sacred mushroom rite in 1953 by Wasson. Once isolated from the modern world, now roads have been built through the mountains in order to connect the Mazatec community with the world beyond. Not only has the Mexican society beyond their village been brought to the Mazatecs, but, with the advent of modern medicine and the increase in foreign trade, an even

broader world has reached the Mazatecs. Following Wasson's investigation of the sacred mushroom rite and subsequent publications of his research in the 1950s, an invasion of foreigners swarmed Huatla de Jiménez and María Sabina for information and the hope of a "trip." However, the Mazatec Indians have managed to keep the divine mushroom a precious secret, sheltered from desecration by white men. The shamanistic customs and the use of *Psilocybe mexicana* still exist, but shamans are difficult to find. Those who do practice, however, continue to use language to cure and to inspire joy, harmony and hope amongst the people. I find it clear that the use of the mushroom opens a gateway to one's creativity and thus brings forth art in the form of expressive language. The mushrooms are the flesh of language, food of intuition, food of wisdom. Some may continue to feel a certain naivete about the use of hallucinogenic drugs to provoke creativity. Perhaps because as Wasson says "those who have not taken the mushroom are disqualified by total ignorance of the subject!" (Wasson p.191). Although inexperienced in the tastes of "the flesh of the gods", the author has sought to glimpse the beauty found in the mushrooms and illustrate the role of the shaman/artist and the "poetry" he and his communicants create. Language is employed universally to depict one's feelings and thoughts and no matter who the person, the words of his/her imagination must have an origin in the context of their existence and the myths of their culture. Therefore, like the Huichol and the Mazatec, who choose to excite their creativity through hallucinogenic drugs, all individuals in a society may utilize some means to awaken their creativity, "to go looking for the tracks of the spirit", the shamans say (Munn 1973: 89). Does one really need mind altering drugs or plants to chant, speak, cure, draw, sculpt...? Undoubtedly not, but the experience described by the Mazatecs and seen through the present research is an experience which in the mind of the Mazatecs cannot be duplicated by anything other than the sacred mushrooms.

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Maria Curtis Richardson
Department of Anthropology
Georgia State University

A Glance at the Tradition of Midwifery in the Southern United States

In understanding the unique qualities of the tradition of midwifery in the South, it is essential to understand midwifery and women health practitioners in both a historical and cultural context. Also, I must note that in doing research on this topic, I came across at least a dozen terms that referred to the term 'midwife'. The different terms help to differentiate between the different capacities in which women practiced medicine in their respective communities and also the level of communal acceptance they received. The terms used are symbolic in that they evoke the expectations of the communities in which they worked. For example, the term 'nurse midwife' refers to a woman who has been trained by an established medical professional while 'granny lady' or 'lay midwife' refers to a woman whose training has been obtained purely through practical experience. For this paper, I will attempt to define the 'midwife' in her role as birth attendant in various regions in the South. There are, however, some instances in which 'midwives' performed other duties and I will address these in their appropriate regional context.

To be fully aware of the range of various perspectives that persist in the United States regarding midwifery, it is first important to consider the differing ideologies concerning the position of healers and illness in the cultures of the people that settled in this country. The ideologies of the peoples from African cultures contrasts greatly with the ideologies of peoples from European cultures. The ideologies of most of the African cultures held that sickness was a relatively normal occurrence in human life (Watson 1984b). Although illnesses were sometimes believed to be the manifestations of wrongdoing on the part of the sick person, finding a cure was always the desired goal for any malady. A cure could range from achieving an alternate state of consciousness through spiritual ceremonies to concocting a tea made from a particular ground root (Watson 1984b:3-17). Life was seen as a mixture of good and bad and it was essentially up to the individual to maintain a balance between the two. Depending on the particular culture, medical treatment was both sought from women and men. Furthermore, it was believed that the healers were chosen by a God and it was the duty of this chosen healer to distribute his services throughout the community.

The European traditions, that is, before the Reformation of the Sixteenth Century, held a completely different view. The early European ideology held that sickness was punishment from God and that a return to health could be achieved only through prayer. The wealthier classes had access to medical practitioners that were sanctioned by the church and state, which were at this time very much one and the same. These sanctioned 'healers' would often pray and sometimes prescribe rudimentary prescriptions (Oakleaf 1984:75-81). Those that did not have the resources for the services of the clergy often sought medical treatment from the lay women healers in their communities. (These are somewhat oversimplified generalizations and might seem to undermine the notion that human societies vary, however, these are the sorts of ideologies that I found describing the peoples that settled in the United States.) Women healers found themselves in precarious situations as Watson points out:

"...the very act of healing and the belief in demonic possession proved a woman a witch; but if she took as her defense that she really had not healed anyone, then she was a counterfeit witch and worthy of death for deceiving people. The difference between being a witch and a physician was as clear as the difference between being a woman and a man, between being a peasant and a non-peasant, "uneducated" and "educated". The physician, said the church and the state, came from God, the witch came from the devil. The establishment feared that the white witch was narrowing the gap between ruler and ruled in theological, economic, political, and sexual terms" (1984a:80-85).

What is particularly interesting about the American-held views of midwifery is the way in which the varying ideologies played themselves out. At the outset of my research I imagined that in the Northeastern most states, midwifery was generally not tolerated, a testimony to this being the Winston-Salem witch trials. I was wrong, however. The correlation between acceptance and nonacceptance of midwifery seems to lie in the ruralness of the region in question. The further away from a prominent 'establishment', the more likely midwifery was to persist. There exist some rural regions in the North where midwifery of the nineteenth century resembled midwifery in the South, as was documented in studies done in rural Newfoundland and Labrador (Benoit 1989).

During the Colonial days in our country's history, it was accepted that it was a woman's job to assist in the birth of children. In fact, in Maine in 1646, a man was actually persecuted for "acting as a midwife" (Litoff 1978:4). The colonial midwife and a couple of the parturient woman's female kin were the only people admitted to the 'laying-in room'. It was not, at this time, deemed appropriate that the parturient woman's husband be admitted. The entire birth process was viewed as an event that should be left entirely to the handling of women. It is my guess that colonial midwives were allowed this power for several reasons. First, because the people in the colonies were fundamentally different than their European contemporaries in that they were either religious dissenters or from the lower classes that did not particularly adhere to the laws of the church and state in the first place. Secondly, the lack of a formidable, dominating, religious establishment led to more individual freedom, and thirdly because the first townships were 'rural' in that they lay far from one another and were, at this time, underdeveloped.

The single most important event that proceeded to alter the practice of midwifery was the invention of the obstetric forceps by the British surgeon, Peter Chamberlain, The Elder in the early seventeenth century (Litoff 1978:7). Midwives could not purchase the forceps as they were only sold to physicians. A series of other events in this field continued to displace the colonial midwife. Women were not admitted to the prestigious medical schools and in fact many "doctors were convinced that the uterus and the central nervous system were closely connected...(and that) shocks to the nervous system, such as prolonged or intense study might, in turn, prohibit a woman's reproductive organs from growing to full maturity...physicians argued that those women who dared to engage in serious intellectual pursuits, such as the study of medicine, faced the grave risk of being unable to produce normal, healthy children" (Litoff 1978:13). Eventually, the midwife's capabilities began to be viewed as inferior to those of the male physicians. By 1860, urban, middle and upper class Americans had begun to seek the services of male physicians because they began to embrace the idea that "childbirth was a disease that could most properly be controlled by the use of instruments, drugs and surgery "(Litoff

1978:14,21). Men who were believed to be skilled in the use of instruments were summoned to aid in childbirth all the way back to the time of Hippocrates (Suiter 1981:280). It is interesting in this regard to notice that men were associated with tools and the knowledge to manipulate tools. It is precisely from this rationalization of the middle and upper classes that the questioning of the role of the midwife became a class-biased issue. It should be noted that in not all areas of the South did midwifery continue to persist. In fact, significant advances in the field of obstetrics were made in parts of the 'Deep South', for example in 1809 a Kentucky physician named Emphraim McDowell performed the first successful ovariectomy (Litoff 1978:18). J. Marion Sims, often called the father of modern gynecology, was educated at the Medical College of South Carolina and also in Philadelphia, then moved to Alabama where he began practicing medicine. Through experimentation on slave women, he was able to develop a cure for the vesica-vaginal fistula in 1849 (Litoff 1978:18). Dr. Robert Battey of Rome, Georgia was credited with the invention of the "normal ovariectomy" in 1872 because he suggested that "the removal of the ovaries (be done) for non-ovarian causes, such as neurosis, insanity, abnormal menstruation, and practically anything untoward female behavior" (Litoff 1978:18). Although seven of the ten states that currently have legislation enabling midwifery are in the south and southwest, Alabama and Kentucky are not among them (Butter and Bonnie 1988:1162-1163). The information that I have gathered on the regions in the South where midwifery has persisted, have shown that they were all relatively isolated, either racially or geographically, from the trend toward physician-style births.

Although all of the different regions where midwifery survived past 1860 are characteristically different in many ways, there exist some shared aspects. Until the passage of the Sheppard-Townsend Maternity and Infancy Act of 1921, no public funds had been set aside for the training of midwives (Litoff 1978:99). It was around this time that the southern states began addressing "the midwife problem", they realized that midwives were a "necessary evil" because of the fact that it was nearly impossible to expect doctors to travel great distances to deliver all babies in rural areas (Litoff 1978:54,100). Dr. O.R. Thomas insisted that the southern midwives were more difficult to train because they were primarily "ignorant and superstitious Negroes" (Litoff 1978:78). Unfortunately, the funding instituted by the Sheppard-Townsend Act was withdrawn with the onset of the Great Depression.

One very important finding was that most of the practicing midwives originally had no intention of ever becoming midwives (e.g., Litoff 1978:5; Susie 1988:12; Benoit 1989:635; Oakleaf 1984:80; Schaffer 1991:94). The process by which women became midwives was much like that mentioned in Valerie Fennell's article which describes women's social networks in the South in which she states that traditions are generally passed on by "(1) a friend close in age, (2) a kinswoman, often of a different generation, or (3) a friend not so close in age, but one introduced...by a peer-link" (1981:139). Often, midwives in the South were not paid for their services in money, sometimes they were paid in foodstuffs during harvests and sometimes they were not paid at all. It was an unwritten law of the community that midwives were not to ever turn down a patient, no matter who the client. Also, all sources confirmed that midwives stayed on the average nine to ten days with the women whose childbirths they had assisted in. During this period, the midwives instructed the mothers on how to take care of their newborns, kept house for the recovering mothers (i.e., cooked, cleaned, took care of the family's other children,

tended gardens, etc.) and stayed with the new mothers until they were visibly able to carry on their normal household duties.

In addition to this, midwives carried their own sterilized linens and diapers in anticipation that their clients might not have these items. Now I will begin describing some of the various regions where midwifery endured.

I will start with the African American midwives in Florida. Midwives were held in very high regard in the communities in which they served. There were essentially two ways in which a woman became a midwife; one was either the kin of a midwife or one was "asked by God" (Susie 1988:10). Many of the midwives in Florida reportedly became midwives as a result of their older kinswomen not being home, in which case they relied on the information that had been passed along to them in the form of stories and on their limited experience in assisting in childbirth (Susie 1988:10-11). They employed massaging and herbal teas at critical moments to help keep the parturient women's pain to a minimum. As was stated earlier, financial security was never available. The virtual never-ending flow of foodstuffs and animals for services rendered helped ensure the midwives security. Also, midwives were held in such high regard with their clients, particularly those whom they had serviced more than once, that they were always assured subsistence from the community.

Most times when a women's customary midwife had died, they chose to have their children in the hospital rather than to utilize the services of another midwife. The women of this region were only involved in the birth of children, unlike some other Southern midwives who also tended the sick. The midwives in this particular region were, by and large, very religious. It is for this reason that they insisted that they did not perform abortions (Susie 1988:30). From the way that the information was presented on this region, I got the impression that the women did have the knowledge of how to perform abortions but did not because of their religious convictions. The midwives in Florida maintained a somewhat unusual disbelief of the scriptures in the Bible that stated that childbirth was "Eve's punishment and curse of guilt and pain" (Susie 1988:22). The women felt that childbirth was a gift from God and would even go so far as to take in the unwanted children whom they delivered rather than perform abortions. Many of the midwives in this area expressed a desire to aid in the delivery of multiple births. One 'granny', as they are typically called throughout the South, confessed that after having delivered triplets she "could not sleep for joy" (Susie 1988:27). The traditional lay midwifery in the region, as in all other regions of the United States, was revised by physician-style birth practices. Women began to be trained by State medical officials, instead of by the traditional apprenticeship methods which had existed earlier. Florida's midwives represent three distinct cultures: the African American, Native American, and the Latin communities (Susie 1988:viii).

The tradition of midwifery in the Ozarks differs greatly from that in Florida. The people of the Ozark mountain region are primarily of British heritage, English and Scottish to be more exact. This area was so isolated that one researcher in 1964 "found people who spoke of the "old" and "new" Christmas which was changed by the King of England in the eighteenth century and who never knew that there had been a civil war although (some) had been alive during the 1860's" (Oakleaf 1984:71). This isolation from other groups had preserved the notions of witchcraft that prevailed in Britain in the seventeenth century (Oakleaf 1984:71).

The idea of "good" or "white" witches and "bad" or "black" witches existed much the same as it did in Britain. The belief that illicit sexual encounters qualified a woman for being a witch was present in Ozark thought just as it was in Britain," it is believed that a virgin cannot be a witch...moreover, it is thought that a woman often learns the secret of witchcraft from a man with whom she has had sexual intercourse" (Oakleaf 1984:74).

The "white witch" in the Ozarks was said to perform a variety of services for the community: "Often a midwife as well as a healer, the white witch as the person who doctored the village people and their animals, and also delivered the offspring of both" (Oakleaf 1984:74). The main difference between the Ozark people and their eighteenth century British counterparts was the absence of a ruling class. This absence allowed for more personal autonomy on the part of the midwives of this region.

A more recent study has been done on the African American midwives in the Texas Brazos Bottom. As late as the nineteen- eighties, this group was still involved a great deal in delivering children in their communities. The study showed that they functioned more in the capacity of nurse-midwife in that they were, for the most part trained by physicians. This stage of midwifery has evolved, no doubt, as a result of the presence of a medical establishment. The existence of older forms of midwifery traditions was present in the rituals involved in childbirth which will be mentioned later. The nurse midwives were often picked by physicians based on personality traits that were deemed compatible with those of a good midwife. Many times their mothers and grandmothers had been midwives. As a group, they did not provide postnatal care as was typical with other midwives, Schaffer did not mention whether or not this was a recent phenomenon or whether it was something that was not an original component in this regions's traditions (1991:95).

The midwives of this region stressed the importance of performing numerous services since the services did have set monetary prices. These women practiced a higher level of professionalization than did other groups in the South, perhaps this is a result of modernization making living by bartering virtually impossible. These women, especially the older ones, practiced ritualistic burials of the placentas of the newborns they delivered. In certain regions of Africa, the appropriate disposal of the placenta is regarded as very important because it is believed that the body and placenta are joined again at death (Schaffer 1991:95). The standard procedure for the burial of the placenta is to sprinkle it with salt, which preserves it, then to wrap it in a white cloth, then to bury it (Schaffer 1991:95). The midwives in this region did at the time of the study provide clean linens and instruct the patient on what to eat. Their prescribed diet was one that was non-greasy and low in salt. Also, some clays in the region are believed to have nutritional value and was often prescribed as a supplement to the regular diet. None of the women admitted to performing abortions, however, they were all aware of three methods which can onset abortion (1) massage, (2) herbal teas, and (3) the "doctor method" (Scaffer 1991:97).

Notice that the African American women in Florida also had a shared knowledge of massage and teas which soothed the parturient woman. The women were supposedly capable of earning much money performing abortions. The desegregation in the region has incredibly weakened the midwife in the Texas Brazos Bottom. Apparently, many of the midwives' would-be clients are

going to medical clinics because the cultural conception is that it is the 'better' way. Schaffer summarizes the current situation by saying:

"While improved health care aided the health of black youth and women and improved labor force productivity, it also improved the quality of life for a subordinate population that would not have been otherwise possible. This improvement while modest, has some merit when juxtaposed against the current lack of medical services in poverty neighborhoods of rural areas and big cities, where low-weight babies and high infant mortality have become endemic problems" (Schaffer 1991:102).

Another group of European American midwives that were quite successful were those that lived in Rabun County, Georgia. Birth attendants in this region are referred to as either "granny" or "midwife" (Cox 1973:274-303). "Granny" referred to the traditional lay midwives that practiced before the opening of the Rabun County Health Office in November of 1942. The birth attendants that worked at the Health Office, which was a maternity ward, were trained according to the standards of nurse-midwifery. The ward was enormously successful and drew patients from all over Georgia, Tennessee and Alabama. The granny women functioned much in the same way as did the midwives in Florida except that they traveled further distances as their neighbors lived further apart in the rocky terrain of the North Georgia mountains. There was no set price for services by either the granny women or the midwives. Payment was often in foodstuffs and in material items other than money.

The question of performing abortion was never mentioned. The midwives and granny women of this region had enormous pride in accomplishing the goal of an established maternity ward. There was a deep sadness expressed by these women that most couples were choosing to go to hospitals instead of employing the services of a midwife. The sources referred to did not explain why the change to hospital births had occurred. The establishing of the maternity ward was an accomplishment of the community and of the local midwives, but was also a step in the direction of modernization in the field of obstetrics. The Rabun County Health Office is now the office for the Highway Department (Cox 1973:280).

I have attempted to describe some of the midwifery groups of the South in terms of their historical, cultural, ideological and geographical contexts. It is important to note that while midwifery perpetuated itself in the South because of economic, racial and geographical isolation, midwifery in the North persisted among the immigrant groups in much the same way. The dominant cultural groups insisted on lumping immigrants, African Americans and people of the European American lower classes within a framework that they suggested was "backward" and "ignorant". Debra Anne Susie notes that

"...the racial and ethnic makeup of the woman of the lower economical and educational ranks was played upon by the "white" population's prejudices, remaking the midwife into some kind of un-American apparition and casting a suspicious shadow over her character as well as her work. A well-circulated ad depicted three midwives; an Italian woman, a Southern Black woman, and an Irish woman, each dressed in dark, old-world garb and framed against an even darker background- a clear contrast to the slim, fashionable women in the adjoining ads" (Susie 1988:5).

The question of admitting men into the laying-in room was a much debated one in earlier years. While it was true that men were summoned in times of emergencies, the practice of admitting men into the laying-in room did not occur in United States until after the development of the

forceps. Many men felt that it was improper to be present while a woman was giving birth. Other men believed that to be with one's wife while she was giving birth was the only thing a 'good' husband could do: "If he be a prudent man, of good moral force, competent to comfort, encourage and aid in sustaining his wife through the conflict of parturition,...the parties (husband and wife) mutually assist each other, at this as well as other times of matrimonial life" (Suitor 1981:284, quoted Warrington 1854:171). J. Jill Suitor suggests that it is the admittance of male physicians that ultimately made it acceptable for husbands to be present for the births of their children (1981). Suiter also makes reference to physicians that were adherents to "The Botanical Order", a sect of practitioners that was founded in the 1820's (1981:283-84).

The Botanical Order was founded by a farmer named Samuel Thomson who practiced healing which he learned from a "root and herb" doctor (1981:283). Thomson is said to have emphasized self-help and he spoke out against many of the treatments that were commonly prescribed by nineteenth-century physicians such as the use of leaches and bloodletting (Suitor 1981:273). Thomson, as well as many of his followers, favored the use of midwives rather than physicians for normal births ("normal birth" refers to one without medical complications such as prematurity, an obvious disproportion between the mother's pelvis and the infant's head, an unusual presentation of the fetus, or any situation that would necessitate the use of instruments, Suiter 1978:280). Suitor states "Thomson's social class facilitated his popularity with members of the working classes in the South and Midwest" and that some of the principles of The Botanical Order continued being practiced throughout the nineteenth century (1981:273).

It is uncertain whether or not black husbands attended the births of their children. Suitor quotes Engelmann (1880) as saying that "sometimes "Negro" women's husbands participated in births in rural areas of Georgia and Virginia" (1981:1972, quoted Litoff 1978 and Wertz and Wertz 1977). Other authors that Suitor referred to imply that "black women were opposed to the presence of men" (1981:272).

In all sources that I referred to, the only mention of men's participation was that which occurred outside the laying-in room. Midwives told of men summoning them when their wives had started going into labor and that men generally did what they could to help. Most often it was the men that delivered foodstuffs to the midwives in return for their services. Fathers also helped maintain ties to the midwives after the births of their children by doing such things as chopping wood and general household repairs (Cox 1973 and Susie 1988).

One would imagine that through such networks that midwives always maintained a contact with the families that they serviced and therefore watched the children they had helped to bring into the world grow up. Typically, a child who had been delivered by a midwife felt very strongly for her throughout their life and would often employ the same midwife in the birth of their own children (Cox 1973 and Susie 1978).

The midwives in the South did much more than function as birth attendants. Midwives in the South acted as nurse, care giver, nanny, counselor, housekeeper, transmitter of information, folk doctor and many other things. Midwifery persisted as it did in the South, and other regions, due to ruralness or isolation from the trend toward physician-assisted

births. By studying the roles of midwives we can better understand the extent to which human beings relied on both personal and communal knowledge before the widespread use of physicians and hospitals.

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Indiana M. Jones
Department of Anthropology
Arizona State University

Stones and Bones: Do the Lithic Assemblages at the Middle-Upper Paleolithic Boundary Support the Strict Replacement Hypothesis for Modern Human Origins?

In 1829-30, P.C. Schmerling discovered the fragmentary remains of a child's skull in Engis Cave near Liege, Belgium. These fragments were the first Neanderthal remains to be found. This being the pre-Darwinian period and because they exhibited non-modern morphologies, the scientific community showed very little, if any, interest in the find. In 1848, a partial skull from an adult Neanderthal was discovered in a cave located at Forbes Quarry on the Rock of Gibraltar. Like the Belgium skull fragments, the Forbes Quarry skull received scant attention (Klein 1989). It was not until 1856, when workers quarrying in the Feldhofer Cave in the Neander Valley near Dusseldorf, Germany, unearthed the skeletal remains of what appeared to be a human skullcap and several postcranial bones, that people began speculating as to their origins and significance of these odd, non-modern, bones (Klein 1989, Wolpoff 1980).

Since these initial finds in northern Europe, many Neanderthal remains have been found across Europe, as far west as Great Britain and the Iberian peninsula, eastward into western Asia. Remains have been discovered in Russia and former Soviet Union provinces, the former Yugoslavian Republic, France, Spain, Italy, Iraq and Israel (Wolpoff 1980, Tattersall, et al. 1988). The dating of the finds have the Neanderthals occupying Europe and the Near East/Western Asia from ~100,000 to 35,000 years ago, during the late Pleistocene.

The debate: Continuity vs. Replacement

Currently, one of the most controversial debates in paleoanthropology centers around the question regarding the emergence of morphologically modern *Homo sapiens* (MMHs). One of the key issues in the controversy revolves around whether the Neanderthal remains are a link in our evolutionary chain or an evolutionary dead end. Anthropologists, archaeologists, geneticists and other scientists have become embroiled in the debate and are divided on the question, forming two opposing camps. On the one side are the continuity advocates, who claim that the Neanderthals are part of our direct evolutionary past and therefore a distant ancestor. They believe that their data shows MMHs and Neanderthals to differ only at the subspecies level and that they should therefore be classified as *Homo sapiens neanderthalensis*. On the other side, in opposition to this theory, are the advocates of the replacement hypothesis and fanning the flames of the debate, is the often complicated and confusing nomenclature used when discussing and referring to Neanderthals. There is even confusion as to how Neanderthal should be spelled. Traditionally the term Neanderthal has been applied to mean archaic *Homo sapiens* from the earliest part of the Upper Pleistocene in Europe. However, Neanderthal has also been used as a term to mean both a clade and a grade. Clade refers to having features that are shared within a population because of common descent, while grade features are shared because of a common level of organization.

In Europe Neanderthal describes a clade consisting of near modern characteristics, but some workers have used it as though they were referring to grade equivalents in other parts of the world, such as the Far East and Africa (Wolpoff 1980). While the interpretation of the fossil record continues to fuel the controversy, similar discrepancies also occur when examining and analyzing the material record, specifically the lithic assemblages of the Middle-Upper Paleolithic boundary.

This paper's primary focus will be to look at the lithic industries of Western Europe, and the particular questions to be addressed are: If the strict replacement theory of modern human origins is correct, what should we expect to see in the lithic assemblages of the Western European archaeological record, what is actually seen, and how is the material and the archaeological record being interpreted? Does the Mousterian flake industry of Europe belong exclusively to Neanderthals or were morphologically modern *Homo sapiens* also producing the same type of lithic using the same or similar techniques? Did the Middle-Upper Paleolithic Transition boundary of Europe actually see a dramatic change in the lithic industries and manufacturing techniques, or were they gradual? And finally, are these changes, if they are as dramatic as the replacement workers believe, actually reflective of a non-indigenous, subtropical population moving into Western and Northern Europe and totally replacing a group that is well adapted to the harsh climate and living conditions of Europe during the last glaciation?

The Middle-Upper Paleolithic transition

In Western Europe, there are three recognizable lithic assemblages that occur just before, at and just after the Middle-Upper Paleolithic boundary. They are, respectively, the Mousterian, Perigordian/Chatelperronian and Early Aurignacian. The Mousterian has always been associated with Neanderthals and the Middle Paleolithic. At one time, it was regarded as a culture or groups of cultures, but now it is often referred to in its original sense, to the period from the last interglacial through to about 35,000 to 40,000 B.C., or the beginning of the Upper Paleolithic of Europe and adjoining areas.

The Perigordian/Chatelperronian is an Upper Paleolithic tool industry that occurs at the Middle/Upper Paleolithic Transition boundary. The Chatelperronian lithics of Western Europe are often considered to be an equivalent of the Perigordian Phase I of France. Cro-Magnon, an early modern human, is usually associated with these industries, under the assumption that the methods used to manufacture the lithics, were far too advanced for Neanderthals to have mastered and used. However, Neanderthal remains have been discovered in conjunction with Chatelperronian lithics, thereby decreasing or totally invalidating this theory. The Aurignacian is usually dated from between 35,000 and 25,000 B.C. and is an Upper Paleolithic industry, occurring after the Transition boundary. In Western Europe, it evolved out of the Perigordian/Chatelperronian industries (Whitehouse 1983) and is associated entirely with MMHs.

When Harrold (1989) compares the Mousterian and Middle Paleolithic with the Upper Paleolithic he states that the Upper Paleolithic is characterized by an increased complexity in many areas. Furthermore, he contends that the lithic assemblages demonstrate that; the majority of tools found are manufactured using a blade producing technology only, the assemblages contain a greater variety of tools that are more complex than those occurring before the Upper Paleolithic, and that the lithics occur in more recognizable forms. But, this is not entirely true or accurate. For example, in Northern Spain the lithic assemblages of the early Upper Paleolithic

were produced using predominately a flake technology and were not, necessarily, extremely complex in their make-up (Clark 1993, Straus 1992).

Harrold continues by declaring that during the Upper Paleolithic, bone, antler and ivory were worked by methods that were more complex than those of the past and that the methods were distributed and used over a vast area. His statements, and the presentation of his data, imply, explicitly, that Neanderthals were not capable of manipulating bone, antler, wood and/or ivory in order to make tools or other useful objects, because they did not possess the mental or physical capabilities needed for such fine, and often delicate, work. It is not until the transition, and the appearance of MMHs, he claims, that people begin to produce art.

Mobile and parietal art is produced that has very little, if any, utilitarian value other than being made for aesthetic purposes. It is also at this time, according to Harrold, that people begin to adorn themselves with personal art, all of which is supposed to be of symbolic significance. Harold also maintains that the subsistence patterns change and become more complex and sophisticated at this time. And finally, in conjunction with the change in subsistence patterns, there is also a change occurring in the size of the population; it is increasing and the increases are causing a change in the settlement patterns. As noted earlier, Harrold's statements regarding the complexity of the Middle-Upper Paleolithic assemblages and whether one is a flaked based technology while the other is blade based, does not stand up under strict scrutiny. There are places in Western Europe, such as Northern Spain, that have MMHs of the Upper Paleolithic, using the less refined and complex flake technology. There are also places where the more complex, and therefore 'more technically advanced', blade technology is found in conjunction with Middle Paleolithic Neanderthals (Straus 1988; 1990; 1992).

The aesthetic argument is also debatable. It is just as probable that both forms of art were being produced as forms of communication between different groups, distinctive sub-groups within a larger whole, or to record information regarding past events. The art could have been used as illustration to stress important aspects of oral traditions as they were retold and passed on, as part of some form of ceremony, (e.g. to ask for success in future hunts, the continuation of the fertility of game animals and/or significant plants species, in order to ensure successful hunting and food procurement for the benefit and survival of the group), or even the beginnings of religious/mythological rituals. Art mobilier is not an entirely new invention of the Upper Paleolithic. There is some surviving art mobilier from the Middle Paleolithic. The probability that much of the art from the Middle Paleolithic occurred as either personal body decoration or was made out of extremely perishable materials such as wood, ivory, antler or bone, a very likely and plausible possibility. If this is the case, the likelihood of art produced on these mediums surviving in the archaeological record is very small, thereby giving the impression that art did not occur at all during this time and/or that Neanderthals lacked or were incapable of the complex thought patterns needed to produce such objects.

Art, such as cave painting, does not occur at the Middle-Upper Paleolithic Boundary. Instead, it originates and is first seen about 20,000 BP, or approximately 15-20,000 years *after* the transition and *therefore* should not and cannot be used as evidence in the debate to support the Replacement hypothesis, even though it has been used in this manner. The changes in subsistence patterns, population size increases and settlement distribution patterns were also not a 'sudden' occurrence at the Middle-Upper Paleolithic Transition. These changes are gradual and can very plausibly be attributed to changes in climate and resource availability, rather than being indicators of a complete replacement of one species by another.

Lithic industries and the Middle-Upper Paleolithic

Lithic assemblages comprise the most enduring records that modern archaeologists have for the people of the Middle-Upper Paleolithic Boundary. These lithic assemblages have been extensively studied and scrutinized by many workers, In many way, "including experimentation, ethno-archaeological investigations, the development of many classification systems and innumerable descriptive reports (Barton 1990)."

According to Mellars 1989a, there are six main divisions in which the "complex of technological changes (339)" can be defined In a serviceable fashion. With these divisions, he echoes the statements that Harrold made In his paper. If strict replacement is the case for the disappearance of the Neanderthals In Europe, the following divisions, summarized as follows, state the conditions that would apply:

1. At the boundary, the lithic industry should shift from a predominately flake manufacturing technology to one of blade manufacturing.
2. We should see the appearance of well defined styles of both end-scrapers and burins. These are relatively abundant in the archaeological record.
3. There should be an emergence of lithic artifacts which are morphologically new, that differ qualitatively, when compared to types that are seen earlier in Middle Paleolithic contexts.
4. These new artifact types appeared, changed, and replaced previous types and each other, with a speed not seen before In the archaeological record.
5. Similar or almost the exact same features that are seen In the lithic industries, are also seen in tools manufactured from bone, antler and ivory.
6. When compared to the Middle Paleolithic industries, the shaping of the Upper Paleolithic tools exhibit what appears to be a standardization and deliberately imposed form.

However, this is not what is seen in the archaeological record. To begin with, at the Middle-Upper Paleolithic Boundary, not all areas of Europe see a technological shift from flake to blade manufacturing at this time. The Cantabrian area of northern Spain and the Saint-Cesaire burial are evidence of this. Straus has documented MMHs in Cantabria Spain as using the 'cruder', Mousterian flake technology, as opposed to the 'more advanced' Perigordian/Chatelperronian blade tool industry, after the Transition Boundary. At Saint-Cesair, a Neanderthal skeleton, who should have had a less advanced tool-kit consisting of flakes, was found buried with a tool-kit that was comprised of Upper Paleolithic blades, a tool type that has always been strictly associated only with MMHs.

Secondly, Mellars assertion that the archaeological record should 'see' the appearance of well defined styles of both end-scrapers and burins, is not true. A closer re-examination of Bordes' lithic typology for the time frame of the Transition, (albeit of the line drawings only and not the actual tools themselves), demonstrates that these tool types were, in fact, part of the Mousterian, i.e. Neanderthal, tool-kit. Although, not found in great numbers, there is no disputing the reality that Neanderthals were capable of, and actually making and using this 'advanced', more complicated tool form. It is possible that the reason more of tools of this nature are not found, is that they were made out of perishable materials such as antler, bone, wood and/or ivory. It should be mentioned that Bordes' *Typologie du Paleolithique* is very artificial and was derived to

suit a preconceived idea that Bordes has about what types of lithic artifacts should be found on either side of the Transition Boundary.

Third, the Upper Paleolithic, when compared to the Middle Paleolithic, does not see artifacts which are morphologically new or different. Again, close scrutiny of Bordes' typology reveals clear transitional forms from the Middle Paleolithic to the Upper Paleolithic and across the Transition Boundary. Contrary to Mellars' fourth point, the new artifact types did not appear, change, and/or replace each other, or previous types, at a rapid rate. I point to Bordes' typology to illustrate this important detail. Though overlooked by him, and others, and classified as either Mousterian or Aurignacian/Chatelperronian, the transitional types can be observed and recognized as such, when they are approached from a perspective other Bordes'. Bordes believed that the typologies he created were an accurate reflection of the original typologies, those intended by the makers of the tools. This mirrors the European archaeologists' working assumptions and paradigms, that their history and culture is an extension of the past.

Fourth, he is correct in stating that features which are similar or almost exactly the same, are seen in both the lithic industries and in the tools made from ivory, bone or antler of the Upper Paleolithic. He implies, with this assertion, that the people of the Middle Paleolithic were not using these resources for tool manufacture. However, the Replacement Advocates tend to ignore the fact that tools *were* being manufactured from bone, ivory and antler in the Middle Paleolithic and that they had 'advanced' features often associated only with MMHs. Unfortunately, due to the nature of the material, it only under optimal conditions will these types of artifacts survive in the archaeological record. Because of this, a skewed perspective of the archaeological record is preserved and presented.

Mellars' last point to be considered, is the assertion that when comparing the Middle Paleolithic to the Upper Paleolithic industries, those of the Upper Paleolithic exhibit what appear to be a standardization and deliberately imposed form, i.e. pattern. As with some of his other points, this one can be refuted by a close review of Bordes' original Paleolithic typology. Pattern is often looked for in the lithic assemblages of the archaeological record to determine the predomination of flakes over blades or vice-versa, or if they occur in roughly equal numbers, and this is how Bordes went about devising his typology for paleolithic tool types and assemblages. However, the patterns that are seen and described are based upon, and influenced by, the researcher's paradigmatic biases. According to Kuhn 1971, 1974, and Clark 1987, in Clark 1989;

“A wide diversity of opinion exists about what is regarded as 'reasonable to do with lithics.' These preconceptions (or more formally, paradigmatic biases) play a leading role in our capacity to perceive pattern in the archaeological record. They shape the analytical approaches deemed appropriate to use and they influence typologies of all kinds and at all levels to a marked degree.”(28).

Although stone tools cannot directly tell us anything about biological relationships, it is important to keep in mind as one analyzes the lithic assemblages of Western Europe at the Middle/Upper Paleolithic Transition boundary, that they can be used as indicators of certain behaviors and as to whether a new group of beings, in this case a new species, has moved into an area and replaced an existing group, species, or not. The information obtained from the observations of these relationships can then be used to postulate theories and make inferences as to where Neanderthals fall on the line in regards to the evolution of MMHs. The paradigmatic biases of European and American workers greatly influences how the lithic assemblages are interpreted, classified and assigned to specific groups of hominids.

One of the primary differences in the biases noted between Old World and New World Archaeology is how each defines culture. Tied to each one's definition is where, and in what areas, the roots of each tradition were established. These vastly different definitions of culture directly affect how each research tradition views and interprets the lithic assemblages of the Middle-Upper Paleolithic Transition (Table 1).

The Old World paradigm's definition of culture is built upon a sense of nationalism as it developed out of European history. It takes a normative perspective, whereby cultures equal a separate assemblages of traits over space and time. Culture is regarded as resembling a series of steps, a step process, with long periods of cultural stability that are interrupted by short intervals of rapid cultural changes. Old World workers view it as being basically unchanging within analytical levels and as unintelligible. This is because they believe that when cultures changed, they did so abruptly and *en mass* due to **total population replacement**. Within the Old World paradigm, cultures of extinct populations are believed to have existed **at the level** of social, ethnic and linguistic groups with culture being essentially ideational (Binford and Sabloff 1982, Clark 1992a, Jones 1993). This belief arose partly from Old World Archaeology's roots in the Natural Sciences, particularly those of Geology and Paleontology. Archaeology is taught as a separate subject from anthropology and is not dependent upon it for its theories and paradigms.

Table 1. Differences in New World/Old World Paradigm.

NEW WORLD PARADIGM	OLD WORLD PARADIGM
<i>The definition of culture:</i>	<i>The definition of culture:</i>
Developed out of culture area studies	Developed out of European history, nationalism
Received its mandate from social and cultural anthropology	Received its mandate from natural science (esp. geology, paleontology)
Essentially gradualism, emphasized continuity over space and time	Characterized by punctuated equilibrium; emphasized discontinuity in that traits were believed to be congruent with social, ethnic groups
Led to normative (i.e., variety-minimizing) views of culture	Antinormative; cultures equal differentiated packages of traits over space/time
Recognized some vectored change within analytical units	Essentially static within analytical units
Coherent; cultures equated with trait complexes that cohere over space/time	Incoherent; when cultures changed, they changed en bloc and abruptly (because of population replacement)
Existed at a level <i>above</i> that of social, ethnic and linguistic groups	Existed <i>at the level</i> of social, ethnic and linguistic groups
Many definitions of culture; some phenomenological, others ideational	Definition of culture essentially ideational (i.e., norms, values in people heads)

Note: Metaphysical paradigms: major biases and preconceptions of the Anglophone New World (Canada, United States) and Continental Old World (esp. France, Belgium, Spain, Italy) conceptions of culture (based on Binford and Sabloff 1982)(Clark 1992a).

The New World paradigm's definition of culture came about out of the 'culture area' studies conducted in the New World, and elsewhere, by anthropologists trained in American universities. This paradigm received its directive from Social and Cultural Anthropology. Archaeology is also viewed differently in the New World. It is taught as a subdiscipline of Anthropology, with all of anthropology's paradigms and theories. The New World's paradigm is fundamentally gradualistic in its approach to culture change, accenting continuity over space and time, thereby leading to a normative view of culture such as that of variety minimization. Cultures are visualized as being lucid, in that they are matched with trait complexes that cohere over space and time, They are also perceived as existing **at a level above** that of social, ethnic and linguistic groupings. The paradigms under which New World workers operate, contain many definitions of culture, some phenomenological, others ideational (Binford and Sabloff 1982, Clark 1992a, Jones 1993).

These differences affect how European and American workers attach meaning to the lithics. For the Europeans, a great number of them take it for granted that encoded into each lithic tool's form is an element of symbolism, symbolism being defined as the ideal tool form in the mind of people long dead (Clark 1993a). They also assume that if one were to look hard enough, one could imagine that other forms and morphological variations could be separated out. They then translate these supposed elements of symbolism into a prehistoric equivalent of ethnicity (Clark 1989). This concept, or rational, which is based largely upon the fact that European workers assume that the tool typologies, *created* by European workers, faithfully mirrors the typologies of the people who originally made the tools, and have long since died. This makes it difficult for them to accept and recognize that Neanderthals, whom they consider not to be related to MMHs, could and did make complex stone tools. The Replacement Advocates also think along these same lines, forming hypotheses that reflect this concept.

The majority of American workers are at the least leery, and at the best skeptical of the notion that many, if not all, lithic classifications have inherent style and therefore symbolism. Clark expressed this skepticism when he stated, "... even if we grant its [inherent style] existence on a conceptual level, I do not believe it is very easy to isolate on a practical level. I do subscribe to the usefulness of a conceptual distinction between 'style' on the one hand, and 'function' on the other (1989:28)." This dichotomy has also led to what has come to be termed the 'Mousterian Debate'. This debate revolves around the 'culturalist' and 'functionalist' positions. 'Culturalists' perceive lithic variability as being influenced by a cultural convention or technique, while 'functionalist', on the other hand, regard the same variability in the lithic assemblages as being the end results of a combination of how lithics were intended to be utilized by their manufacturers and when they were discarded within their life cycles (Barton 1990, Neeley and Barton 1994). While this is not the definitive dividing line between Old World/New World archaeologists or the Continuity/Replacement Advocates, it is a major factor that influences the ways in which the respective workers view the lithic assemblages.

Another example of the paradigmatic biases that affect the way in which workers view the lithics is "... the impression that most discussions of paleolithic stone artifacts are couch in terms of (implicit) analogies with modern tools, which tend overall to be highly specific in terms of function (Clark 1989:28)." It is this second paradigmatic bias that is most relevant to the Strict Replacement versus Continuity argument.

The Replacement Theory follows the 'culturalist' line of thought, to an extent, and declares form and style of the Mousterian lithics technologically simple and unimaginative. They lack much in the way of diversity. One of the reasons for this interpretation is that they believe the manufacturers of the Mousterian lithics, Neanderthals, lacked culture. I do not believe this to be the case. I am of the opinion that this is just another one of their ways to de-humanize Neanderthals in an effort to strengthen their position that Neanderthals are not part of the evolutionary chain leading to MMHs. At the Middle/Upper Paleolithic Transition boundary, the lithic assemblage of the Middle Paleolithic was not entirely made up of flakes. Nor did the people, i.e. Neanderthals, lack the mental capabilities and sophistication to manufacture blade tools, as the Replacement Advocates would like to have people believe. "There is no empirical or even common sense basis for Dennell's (1985) and Gargett's (1989:187) claim that the manufacture of bone tools requires a different or a more complex conceptualization process than the manufacture of stone tools. As Marshack (1989a:16) points out, there is no conceptual difference between carving or shaping wood and the carving or shaping of bone, and there is abundant evidence for Lower and Middle Paleolithic wood working from use wear analyses as well as actual preserved implements." (Hayden 1993:117).

Since we have evidence of the sophisticated abilities to work at least wood and most probably bone, antler and/or ivory, as far back as the Lower Paleolithic by Neanderthals, why should it seem impossible that they should lack the sophistication, finesse and imagination to manufacture blades during the Middle Paleolithic? The bifaces, along with Levallois points and cores of the Mousterian, exhibit a technological sophistication that is "more than adequate testimony (Hayden 1993:117)" as to the Neanderthals elevated cognitive, intellectual and kinesthetic capabilities that would allow them to be able to manufacture and produce blades. Lubell, in a personal communication to Brian Hayden, states that, "There are 'superb' tools in the Middle Paleolithic, technically difficult to make and which are not at all inferior to Upper Paleolithic stone objects"(1993:118).

Hayden agrees and continues with a further statement regarding the complexity of the Mousterian artifacts,

"The production of Levallois cores is frequently wrongly portrayed in a highly simplified and schematic fashion that belies the difficulty involved. Boeda, who has intensively studied Levallois production, has shown that Levallois production involves a predetermined core shape with two distinct surfaces" (1993:118).

One surface has the restricted function of guiding the fracture front of a pre-planned flake. The other surface is the striking platform for the pre-planned flake. Everything, the angle of the strike, how the striking platform is oriented to the angle of the strike and the force of the blow used, must all be carefully controlled if a proper Levallois flake is to be successfully separated from the core.

“Production of these Levallois flakes requires a high degree of precision, intelligence and training. In my estimation, and in the estimation of other flintknappers, even today, there are few students of lithic technology that ever achieve a Neandertal's level of expertise in producing good Levallois cores of flakes, while the number of contemporary flintknappers that have successfully mastered the technique for producing good Levallois points probably number less than a score (original emphasis)”(Hayden 1993:118).

Blades are not exclusive to the Upper Paleolithic, nor flakes to the Middle Paleolithic, therefore removing one of the supporting theories from Strict Replacement. Blades can often constitute up to 40% of many Mousterian lithic assemblages. Forty percent is a vastly different number than the almost 0% of blades in the assemblages that Strict Replacement states that there is. While the blades that are found are not fancy and were not produced through the use of punches, punching is not all that complicated, sophisticated or intricate of technological advances and achievements (Hayden 1993). This discrepancy can be seen in the Mousterian assemblages of the Leant, which have been found to be dominated by blades as opposed to flakes, and the Upper Paleolithic of Cantabrian Spain, where MMHs were producing a tool kit using the simpler blade technology.

Conclusion

As demonstrated, there is more than enough evidence to refute Strict Replacement's claims that Neanderthals are not in the line of Modern Human evolution. As stated earlier in this paper, whereas stone tools cannot directly tell us anything about biological relationships, it is important to keep in mind as one analyzes the lithic assemblages of Western Europe at the Middle-Upper Paleolithic Transition boundary, that they can be used as indicators as to whether a new group of beings, in this case a new species, has moved into an area and replaced an existing group, species, or not. The information obtained from the observations of these relationships can then be used to postulate theories and to make inferences as to where Neanderthals fall on the line in regards to the evolution of MMHs.

Also, blades are not exclusive to the Upper Paleolithic and Neanderthals certainly had the mental faculties to carry out the production of blades during the Middle Paleolithic, which they did. There was not the drastic revolution from flakes to blades at the Middle/Upper Paleolithic boundary that would suggest that a new group of more advanced **Homo** invaded Western Europe and wiped out the existing Neanderthal populations. Even though the lithics of the Near East were not discussed in this paper, it is interesting to note that in such places as the Leant, the Mousterian, i.e. Neanderthal, assemblages have been found to be blade, as opposed to flake, dominated. Combine this with the fact that there are places on Europe during the Upper Paleolithic, such as the Cantabrian area of Northern Spain, that have flake dominated assemblages, and one cannot help but to doubt the Strict Replacement hypothesis for Modern Human origins.

Furthermore, at the Middle/Upper Paleolithic boundary, we do not see the sudden appearance of new types of tools, such as end-scrapers and burins. These are seen in the lithic assemblages of the Middle Paleolithic, albeit not in the vast quantities that have been observed in the Upper Paleolithic. This does not mean to infer that Neanderthals were incapable of producing such implements, it just means that they probably did not have a great demand or use for them and

therefore, they did not manufacture them in large amounts. There is also the possibility that Neanderthals were not making these tools out of stone, but out of softer, more perishable materials such as wood, ivory, bone or antler, that would not be likely to survive in the archaeological record **unless** the conditions for preservation were perfect; the climate of Europe at the time of the Transition would suggest that this was not the case.

We also do not see in the archaeological record, the sudden emergence of morphologically new or superior types of lithics that *replaced* existing types. When the lithics of the archaeological record of the Middle/Upper Paleolithic boundary are closely examined, a clear progression from one type of form or style of a tool to another can be seen and followed. The transition is a gradual and logical one that intelligent, rational, and imaginative beings would make.

From a strictly common sense point of view, the Strict Replacement scenario does not make much sense. It is difficult to comprehend how a group of beings, MMHs, with their subtropical adaptations, since they are to have come out of Africa and spread across Western and Northern Europe in a relatively short period of time, could totally replace, sans admixture, another group of beings, Neanderthals, who were adapted to the colder and more extreme climates that existed during the Wurm and last interglacial periods.

Not only were the Neanderthals adapted physically to this colder, harsher environment, they also had made **intelligent** behavioral adaptations. They could make efficient use of fire. They had harnessed fire not only for use in cooking, but they also used it for warmth, to heat their shelters. Neanderthals also made efficient use of clothing. Although it may have been crude when compared to the more tailored clothing that MMHs later fashioned, it served its purpose, to keep the body warm and to protect it in the extreme climates that they inhabited. The lithic assemblages at the Middle/Upper Paleolithic Transition do not support the strict replacement hypothesis for Modern Human origins and the demise of European Neanderthals. The neanderthals were one of our ancient ancestors. As Trinkaus and Shipman (1992) express so eloquently, “Seeing Neandertals in context, in the broad sweep of human evolution, is a valuable perspective. But we must not forget that they were neither 'new and improved' versions of *Homo erectus* nor crude prototypes of modern *Homo sapiens*. They were themselves; they were Neandertals - one of the more distinctive, successful and intriguing groups of **humans** [emphasis added] that ever enriched our family history” (419).

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Elizabeth F. Vann
Department of Anthropology
Emory University

Quantum Ethnography: Anthropology in the Post-Einsteinian Era

The present paper proposes that quantum theory provides a source of models and metaphors that can serve as a more neutral and productive foundation for discussing the difficulties of accurate ethnographic representation than those provided by either the postmodernists or the political-economists. A wave-function model of ethnographic representation is more holistic, and therefore more realistic than the models proposed by either postmodernism or political-economy. Understanding social relations as a wave function demands that the ethnographic representation of those social relations include both the material actualities that shape those relations, and the cultural and symbolic ways that people interpret their present condition and how they idealize future social possibilities.

In the aftermath of the paradigm crisis of the 1960's, much contemporary anthropological debate has focused on the best model and metaphor for the construction and production of the ethnographic text. Robert Ulin states that in this debate, there are "two principal competitors: one informed by the meta-narrative of political-economy and its emphasis on the self-formation of the human species through systems of social labor and the other informed by the postmodernist emphasis on discourse and the representation of the 'other' through the writing of ethnography" (Ulin 1991:63). The disagreement between the political economists and the postmodernists focuses on, but is not limited to, the debated over the most representative and accurate models and metaphors for reflexive ethnography. Stemming from the theories of interpretive anthropology, postmodernists such as Marcus, Fisher and Clifford argue for a textual metaphor based on literary criticism that recognizes the ethnographer as author of a cultural reality and which calls for the inclusion of a "plurality of voices" (Ulin 1991:70) within the ethnographic text. Political economists see the postmodern textual metaphor as one that is blind to the wider historical political economic context in which the ethnography is produced. Instead, they call for the use of 'commodity' as the best reflexive, ethnographic metaphor. "Political-economists have come to recognize the commodity form as not only a model for exploitive social relations in capitalist society but also as a model of hegemonic cultural production and reproduction" (Ulin 1991:76).

According to the postmodernists Marcus and Fisher, interpretive anthropology is "the explicit discourse on the doing and writing of ethnography itself" (Marcus and Fisher 1986:16). Clifford Geertz, the most dominant figure within interpretive theory, might not fully agree with this definition or with the direction taken by the postmodernists in regard to the ethnographic text. However, Geertz did focus much of his attention on the construction of the ethnographic text. Ethnography, Geertz argues, is what anthropologists do, and writing ethnography is constructing "thick description" (1973:6). Geertz depended largely on the theories and methods of literary criticism both in his critique of ethnographic writing and in his views of culture and anthropological work. The anthropologist, according to Geertz, is not a scientist, but a cultural interpreter, who interprets culture as one would a text (Marcus and Fisher 1986:26). In Geertz's view, it is not only the anthropologist who interprets; the anthropologists construct their

interpretations based on the interpretations of their informants (1973:15). The result is that the anthropologists, their subjects, and the cultural 'text' they produce are fully immersed in subjectivity and relativism. Anthropologists are not merely recorders of cultural facts, they are the constructors of cultural realities. In this sense, Geertz argues, ethnographies are 'fictions' (1973:15).

In their book, "Writing Culture", Clifford and Marcus adopt Geertz's description of ethnographies as fiction. They claim that ethnographies are works of fiction in that they present "partial truths" (1986:7). "The simplest cultural accounts are intentional creations that interpreters constantly construct themselves through the others that they study" (1986:10). Thus, the ethnographer must be recognized as the author of a specific, constructed reality, rather than merely its observer.

Geertz argues that much of the ethnographer's ability to persuade her reader that she was 'there' in the field, and that she did indeed experience and penetrate another cultural reality is dependent on her successful use of literary devices (1988:6). Thus, the authority of the ethnographic text depends largely upon the anthropologist's ability to establish authority in a literary sense. For this reason, Geertz stresses the need for ethnographic readers and writers to employ the techniques of literary criticism in the ethnographic text (1988:6).

In their book, "Anthropology as Cultural Critique", Marcus and Fisher both continue and intensify Geertz's model and metaphor of textual analysis. They are "calling for a style of ethnography that de-centers the authority of the anthropologist by allowing a multiplicity of different perspectives to emerge in the ethnographic account itself" (Ulin 1991:70). They see the anthropological problem of representation as originating within the actual writing of the ethnographic text. As a result, they view the text as a metaphor for the ethnographic process, and literary criticism as a fundamental model or tool for dealing with the problem of representing the 'other'. Two primary solutions offered by postmodernists like Marcus and Fisher to the problem of writing reflexive ethnographies are: 1.) 'dialogic' writing, which calls for the inclusion of multiple voices within the text, and 2.) the construction of ethnographic 'collages' that mirror the seemingly fragmented nature of modern social reality.

Political economists Polier and Roseberry argue in their article, "Tristes Tropes: Postmodern Anthropologists Encounter the Other and Discover Themselves," argue that postmodern anthropologists, and in particular, Marcus, Fisher and Clifford, have misinterpreted the primary problem in the textual representation of the 'other.' They claim that the postmodern conception of the anthropologist as author and creator of cultural realities, and its use of literary criticism as a conceptual framework, makes it possible to analyze ethnography "just as one would a work of fiction" (1989:249). Instead, they argue that "a radical intellectual task. . . would involve an attempt to dissolve the surface appearance of disconnectedness and fragmentation and re-establish historical connections" (1989:259).

The criticism that many postmodern anthropologists (including Marcus, Fisher and Clifford) do not sufficiently recognize the roles of power and politics in both the field setting and in the production of the ethnographic text is a valid one. However, postmodernists do acknowledge that these elements shape the ethnographic process. Political-economists, like Polier and Roseberry, are not as willing to accept the validity of perspectives other than their own. Their article, "Tristes Tropes", makes this all too apparent. Their solution to the very real problem of textual representation is simply a regurgitation of their old idea - that focusing on the historical, political-economic context will provide ethnography with all the

relativity it needs. Their solution is to replace the postmodern textual metaphor with the metaphor of 'commodity'. "For the political-economist. . . wage labor and production exclusively for exchange have transformed labor itself into a commodity, and with the maturity of capitalism, this form has been generalized to all social relations" (Ulin 1991:76). But this alternative is no more of a solution to the problems facing anthropology than is the idea that culture is simply a 'text' and that ethnography is merely literature. Rather than a solution, the commodity metaphor is simply a shift to another issue within the problem of representation.

What becomes obvious is that the political-economists are not speaking the same language as the postmodernists. In fact, it seems that they are not able or even willing to take part in this dialogue. Marcus, Fisher and Clifford are attempting to point out that the ethnography is a text that is produced by the anthropologist; it is not, and indeed cannot be, a mirrored representation of cultural and social reality. Although they do not adequately or accurately represent the political-economic circumstances in which the text is produced, they recognize that these issues are part of the problem of representation. Conversely, Polier and Roseberry choose to be blind to the important literary aspect of the ethnographer's work.

Obviously, literary criticism is not the solution to all the problems that plague contemporary anthropology. However, the point made by Marcus, Fisher and Clifford (a point that was also made by Geertz, whom Polier and Roseberry cites as an ally) is valid. The ethnographer uses more politics and power to construct her text - she also uses literary devices. Just as the anthropologist must recognize the position of her ethnography within its larger political and economic context, so must she recognize the literary methods that she employs in order to make her text convincing.

The two reflexive solutions provided by postmodernists - the 'dialogic' writing and the construction of texts as 'collages' - focus on only one part of the problem of representation. The postmodern idea that reality is ultimately and absolutely relative and fragmented suggest that the possibilities of representation are limitless. This idea is reminiscent of what Clifford refers to as "ethnographic surrealism"; specifically, Marcel Mauss' idea that, "ethnography is like the ocean. All you need is a net, any kind of net; and then if you step into the sea and swing your net about, you're sure to catch some kind of fish" (Clifford 1988:134). Postmodernists, like Marcus, Fisher and Clifford, take pride in the similarities between the French ethnographic surrealist attitude of the 1920's and the beliefs of contemporary postmodern ethnographers. However, the problems of the French ethnographic surrealists are also problems within postmodernist theory. Comparing ethnography to the ocean and the members of a society to the fish in the sea results in an unrealistically relativistic view of both anthropology and of societies. If ethnography is like the ocean, then no viewpoint is superior to, or even differentiated from, other theoretical viewpoints. Even the postmodernists would disagree with this idea, since they see their viewpoint as being superior to that of the political-economists. Secondly, to compare the members of a society to the generic fish in the sea is to deny both the hierarchy of status and power between individuals within a society, and to deny their interrelationships with each other and with the larger historical, political and economic processes. In other words, postmodernists recognize the fact that a reflexive ethnography must acknowledge and represent the voices and opinions of individuals other than the ethnographer. The problem is that they do not seem concerned with which other voices they include in the text, or how they go about including them. When everything is relative and fragmentary, methodologies and models become arbitrary and useless.

Like the textual metaphor supported by the postmodernists, the commodity metaphor of the political-economists does not fully address the problems of ethnographic representation. Rather than focusing on dialogue between individuals, as the postmodernists do, the political-economists seem to leave individuals out of socio-cultural processes altogether. For political-economists, it is modes of production, rather than culture, that condition the human consciousness (Ulin 1991:74). Political-economists view the commodity as the best metaphor for ethnographic representation because they believe that both cultural products and social relations have taken on the form of the commodity (Ulin 1991:76). They believe that intersubjectivity and reflexivity within the ethnographic text are best represented through an understanding of how social labor is commodified. "Marx argued for a view of labor as praxis, or a synthesizing of subject and object, in that its formative activity upon the world was simultaneously a moment of human self-transformation. . . [he] believed that labor is thoroughly socialized and socializing, that is, intersubjective to the core" (Ulin 1991:75). Like the textual metaphor of the postmodernists, the commodity metaphor leaves out vital elements of socio-cultural reality. While the postmodernists replace context with dialogue, the political-economists focus entirely on context, leaving out human voices altogether. In their effort to place human interaction in its wider historical, political and economic context, they fail to represent the human interaction they are trying to clarify.

Stemming from these debates, I will attempt to provide a language and methodology not only for critiquing ethnographic texts, but more importantly, for constructing them. The language and theories will, however, not be drawn from literary criticism, but rather from modern physics. Such a hybrid theoretical perspective is both possible and useful for three reasons. First, the paradigm crisis that began for the social sciences and the humanities in the 1960's and continues today is a relatively recent event when compared to that of physics. Physicists have been dealing with their paradigm crisis since the publication of Einstein's theory of relativity in 1905. However, physicists no longer view the rejection of the Newtonian paradigm as a crisis within their discipline; rather physicists have learned to accept relativity as an inherent part of the new physics - quantum mechanics. Despite the sixty years that separated the two paradigm crises, both share the same essential dilemma - relativism. Secondly, the post-paradigmatic or postmodern era has left much of academia without a common language or set of metaphors with which to discuss their common problems. Quantum mechanics may provide anthropology and the other social sciences with language and metaphors to facilitate {further debate, currently} complicated with much of the postmodern and anti-postmodern jargon. While this proposition may seem radical, it is by no means original. The language and metaphors of quantum physics are already being employed in psychology, economics and literary criticism. Thirdly, both quantum mechanics and anthropology share, as a fundamental goal, the discovery and understanding of the patterns and forms of reality. For anthropology, that reality is approached through the study of cultural, social, political and economic relationships. Quantum physics, on the other hand, turns primarily to the sub-atomic world. As different as these disciplines seem, anthropologists and quantum physicists share more than a topical interest, they also have similar methodologies. Like physicists, anthropologists are concerned with the contexts of time and space, and they are interested in the relationship between the microcosmic and macrocosmic levels of organization and interaction. Physicists share with anthropologists an understanding that the observer is never detached or objective - she always effects and is affected by the observed.

Perhaps the most fundamental assertion of quantum physics involves its description of the nature of matter (the term 'matter' will be used in this essay to refer to both matter and non-matter - the ambiguous 'stuff' that makes up the subatomic world). According to quantum theory, matter is inherently dualistic - that is, it can be described equally well either as solid particles or as waves. This concept is referred to as the Principle of Complementarity. Both theory and experiment show that not only does matter behave as light (wave), but that light behaves as matter (particles). Therefore, at the subatomic level, matter and non-matter are indistinguishable. The nature of matter is described as complementary not because waves and particles are different, but complementary ways of representing the same phenomena (Pagels 1982:75). The Principle of Complementarity, produced by Danish physicist Niels Bohr, was combined with the theory of another physicist, Werner Heisenberg, called the Uncertainty Principle. Heisenberg's Uncertainty Principle states that while all aspects of matter are necessary in order to grasp its true nature, only one quality - in this case, either wave or particle - can be known at any given time. Furthermore the **known** quality is dependent upon the method of measurement which is employed. Thus, the fundamental nature of matter is indeterminate. Two major assumptions about the nature of reality resulted from the Copenhagen Interpretation. First, it suggests that quantum reality is statistical, not certain (Pagels 1982:76); that is, its nature can only be understood in terms of probability. Secondly, it suggests that "it is meaningless to talk about the physical properties of quantum objects without precisely specifying the experimental arrangement by which you intend to measure them" (Pagels 1982:76). Thus, the Copenhagen Interpretation rejects two fundamental assumptions of Newtonian physics - determinism and objectivity. It rejected determinism by accepting instead the statistical nature of reality, and it rejected objectivity by accepting that material reality depends in part on how we choose to observe it (Pagels 1982:77).

The dualistic nature of matter was demonstrated by physicist John Wheeler in what is referred to as his "delayed choice experiment" (Zohar 1990:45 - See Appendix A). In this experiment, two slits are cut in an opaque screen. Two particle detectors are placed to the right of the screen, behind the slits. When a photon (a discrete 'packet' of light) is released from the left of the screen, it appears to travel through one of the slits and strikes one of the two particle detectors. Thus, the photon clearly behaves, in this experiment, as a particle. However, if the experiment is altered by placing a detector screen between the slits and the particle detectors, the results of the experiment are very different. In this experiment, when a series of individual photons are released, each photon appears to travel through **both** slits, resulting in a wave-like interference pattern on the detection screen. In this experiment, the photon clearly behaves as a wave. The nature of the photon, therefore, is largely dependent on the way in which it is measured or observed.

The confusing and paradoxical nature of reality as described by the Copenhagen Interpretation was perhaps best illustrated and explained by physicist Erwin Schrodinger's metaphor of the cat (see Appendix B). In Schrodinger's hypothetical experiment, a cat is sealed in an opaque box. This box contains a flask of lethal poison, a radioactive isotope and a Geiger counter. The radioactive isotope has a 50 percent chance of decaying. If the Geiger counter detects radioactive decay, it will set off a trigger that will release the poison, and the cat will die. Outside the box is a physicist, who wants to know whether the cat is dead or alive. However, because the Geiger counter (the measurement device) is inside the box, she cannot know the absolute status of her cat. Instead, she can know only of its two possible statuses - dead or alive. Thus, she can only refer to her cat in terms of probabilities. Because the status of the cat has not

yet been observed, the cat must be described as being both dead **and** alive, simultaneously. The cat's status is ambiguous because its fate is dependent on a reaction at the ambiguous, subatomic level. The radioactive isotope is subatomic, and its nature - decayed or not decayed - is (according to the Copenhagen Interpretation) dependent upon the measurement or observation.

The Principle of Complementarity, the Uncertainty Principle and Schrodinger's Cat - appear, at first glance, to have no relevance to the problems that anthropologists face when constructing an ethnographic text. With this in mind one can re-examine the three quantum theories in anthropological terms. The Principle of Complementarity tells us that matter is inherently dualistic - it has both particle and wave properties simultaneously. Such an understanding of the nature of reality can be useful in clarifying the claims made by both the postmodernists and the political-economists regarding the nature of human realities. Postmodernists like Marcus, Fisher and Clifford claim that modern reality is fragmented and disconnected. Ethnography, they believe, can best reflect that reality by using literary methods such as 'dialogue' and 'collage'. Conversely, political-economists like Polier and Roseberry claim that the disconnectedness and fragmentation that the postmodernists recognize is not true reality, but merely parts of larger, structured historical, political and economic processes. Both perspectives, are correct in a way; however, they are both incomplete explanations of reality. A more accurate description of reality, both at the microlevel of subatomic matter, and at the macro-level of human existence, can be constructed using the Principle of Complementarity. The descriptions of reality given by the postmodernists and the political-economists are actually descriptions of two different realities - the reality of individual human behavior and interaction, and that of the processes of which humans are a part. The two realities described by the postmodernists and the political-economists are very similar to the two properties of matter - particles and waves. However, according to the Principle of Complementarity, matter is not waves or particles, it is both, simultaneously. The same, is proposed to hold true for human reality. Postmodernists and political-economists cannot agree on the nature of human reality because their different methods of observation (like the physicist's use of different measuring devices) determines, in part, the nature of the reality they observe. As in the double-slit experiment, the method of observation determines whether the physicist (or anthropologist) will recognize photons (or humans) as random, individual particles, or as part of structured, wave-like processes. Reality then, becomes a matter of perspective.

Unlike the textual metaphor proposed by the postmodernists, the quantum metaphor does not suggest that reality has an unlimited or disconnected set of possibilities from which the ethnographic text may be constructed. However, it is also unlike the commodity metaphor in that it recognizes that human reality cannot be adequately described in terms of global processes. The Principle of Complementarity demands not only that the micro and macro levels be given equal ethnographic attention, but that the two levels must be recognized as interdependent and mutually constructive. In essence, neither level can be viewed as preliminary. For the postmodernists, this means that an interpretive text that focuses on the micro-level cannot be 'corrected' simply by placing a 'dialogue' between the ethnographer and her representational 'others' into a larger, processual context. The Principle of Complementarity reminds us that human behavior and interaction is, at every level, part of larger systems and processes; humans are not merely participants in those systems and processes, they are also their creators. A quantum ethnography must pay attention to the ways in which individual humans act both within and upon larger systems and processes. For political-economists, this means that ethnographies that do not include human behavior and interaction at the micro-level misrepresent

the systems and processes that are their focus. A purely processual analysis fails to acknowledge that the processes of which humans are a part are simultaneously being created and carried on by humans themselves. Humans continually reshape and reinterpret the processes that guide and shape their lives. These changes at the micro-level can in turn affect the larger processes themselves. A failure to understand the reciprocal relationship between micro and macro levels of human organization lessens the ethnographer's ability to provide an accurate representation of reality. Furthermore, the double-slit experiment reminds us that while particles often behave like waves, they also can behave like particles. Political-economists often fail to recognize diversity within, and deviancy from, structural and processual norms. Political-economic ethnographers might do well to ask: how do individuals at the micro-level work against the systems and processes of which they are a part; and how does that behavior effect (or not effect) the micro and macro level structures and processes themselves?

Heisenberg's Uncertainty Principle states that "we can measure the exact position of ... an electron when it manifests itself as a particle, or we can measure its momentum when it expresses itself as a wave, but we can never measure both, exactly, at the same time" (Zohar 1990:26). Like the Principle of Complementarity, the Uncertainty Principle sheds new light on the debate between postmodern and political-economic ethnographers. The postmodern understanding of human reality is characterized by fragmentation and disconnectedness. Political-economists deny that those qualities characterize the essence of human reality. Fragmentation and disconnectedness, they argue, are merely false perceptions of a fully structured and processual reality. A quantum ethnographic model shows that the perspectives of the postmodernists and the political-economists are both correct and yet incomplete. According to the Uncertainty Principle, "we can never know a particle's place and motion at the same time" (Talbot 1986:18). This degree of uncertainty, however, "is not merely the result of some clumsiness in our ability to measure it. It is a quality intrinsic to the subatomic world and . . . its effects can be perceived on our own level of existence" (Talbot 1986:18). The quantum ethnographic model rejects the postmodernists' claim that reality itself is fragmented and disconnected. According to quantum mechanics, there are very real and complex connections between everything. However, the existence of those connections does not make the claim by political-economists - that a processual model can accurately represent those connections - a true one. The statement by physicist Neils Bohr, that "it is wrong to think that the task of physics is to find out how nature is . . . physics concerns what we can say about nature" (Pagels 1982:67), has strong implications when applied to the practice of anthropology. The political-economists are correct in stating that human reality contains very real structures and processes. However, the fragmentation and disconnectedness is not, however, a quality of reality itself, but of our observation of reality. This distinction seems to suggest that the political-economists are correct, and that the postmodernists are simply incapable of seeing past their own methods of analysis. However, quantum theory tells us that this is not altogether true. According to quantum theory, ontology and epistemology are indistinguishable. In other words, the quantum model suggests that it is wrong to think that the task of anthropology is to find out how humans are; rather, anthropology concerns what we can say about humans. This understanding of anthropology seems to support the postmodern idea that ethnographers 'create' cultural realities, just as authors create the fictional worlds of their characters. This is not however, what a quantum model for anthropology proposes. Recognizing that ontology and epistemology are inherently interrelated does not mean that reality is no more real than the world of a fictional novel. What it **does** mean is that anthropologists are wrong to believe

that any one model (or any combination of models) can represent or explain all of human reality. This does not mean that anthropologists should no longer use models. Instead, it demands that anthropologists recognize that **what** they know (that is, what aspect of human reality they clarified) is defined and determined by **how** they know (that is, what method of analysis they have employed). For postmodernists, this means that an interpretive analysis at the micro-level results in a better understanding of that micro-level. A micro-level analysis cannot claim to replace a macro-level analysis. For political-economists, this means that a macro-level analysis of structures and processes must not be considered a way to supersede micro-level analysis. Neither method of analysis can be made holistic by **secondarily** including the other. In other words, a micro-level analysis cannot be made holistic simply by placing it into an historical, political-economic world context. Similarly, a macro-level analysis of world processes cannot claim to be holistic simply by including, within the ethnographic text, random examples of micro-level human interaction. Because neither micro-level nor macro-level events and processes are preliminary or distinct, a text that treats one level of analysis as superior to, or independent from the other is necessarily an inaccurate and misleading representation of reality. Furthermore, any attempt to merge the methodologies of interpretive and political-economic anthropologists (such as the experimental texts examined by Marcus and Fisher in their book *Anthropology as Cultural Critique*) will necessarily produce 'fuzzy' ethnographic results. Just as physicists cannot measure the exact position and momentum of a particle simultaneously, neither can an ethnographer fully and accurately represent the micro and macro level realities of humans within a single ethnographic text. This does not mean that ethnographic analyses should not attempt to deal with both micro and macro level events and processes. It simply means that anthropologists must admit, both to themselves and to their readers, that an ethnographic text can never present a mirror-image of reality.

A quantum ethnographic model demands that the ethnographer make both her epistemology and ontology clear within the ethnographic text. This means not only explaining her methods of analysis, but also explaining what useful methods were not employed. Ethnographers must recognize and define what **kind** of text they are producing. Every analysis begins with different goals and assumptions, and anthropologists should make both the advantages and drawbacks of those perspectives clear both to their readers and to themselves. Recognizing inadequacies within the ethnographic text may superficially undermine textual authority, but it also works to make the analytical foundation stronger by reinforcing what kind of accurate information the text does provide.

Schrodinger's cat metaphor shows that the acts of measurement and observation collapse a wave function, or probability wave. Physicist Nick Herbert suggests that a quantum wave function is better described as a wave of **possibilities** than one of probabilities (1985:96). The Copenhagen Interpretation asserts that quantum reality is statistical rather than certain; that is, what will occur can only be surmised by its probability of occurring. However, probabilities at the subatomic level cannot be calculated like the odds in a craps game. In other words, quantum realities cannot be predicted statistically. Quantum events can be represented statistically only after they have occurred. This point is very important for understanding the quantum model for ethnography. A quantum ethnographic model does not call for a statistical representation of human realities. Rather, a quantum ethnography, like quantum mechanics, should represent possibilities, not probabilities, within human realities.

Postmodernists argue that ethnographies can best reflect human realities if they include a plurality of voices. Political-economists criticize this multi-vocal textual model, arguing that simply including other voices within the text does not take into account the power relations and the systems of social labor form which those voices speak. Again, the debate between postmodernists and political-economists parallels the particle-wave dichotomy. Schrodinger's cat metaphor, however, offers another method of representing cultural 'others' within the ethnographic text. Rather than trying to establish textual intersubjectivity by including the 'voices' of individual 'others', or focusing solely on political-economic structures and processes, it is possible to represent intersubjectivity using the wave-function model. In quantum theory, a wave-function represents possible realities or actualities. Socio-cultural relations and realities can also be expressed in terms of possibilities. Any network of social relations involves multiple competing social realities - different possible interpretations and idealizations of social actualities. In other words, social relations (including political, economic and cultural factors) can be understood as wave-functions. Each group of individuals believes that their interpretation and idealization of reality is both correct and the best one. Neither postmodernism nor political-economics is adequately sensitive to the possibility wave, or wave-function qualities of social relations. By including certain voices within the text without clarifying the political, economic and cultural interests that guide those voices, postmodernists inadvertently collapse the social wave-function. That is, they present certain **versions** of reality as representative of an entire, diverse socio-cultural group. Conversely, by focusing solely on economic and political processes, political economists represent only **material** reality. Reducing "symbolically mediated social action to the instrumental process of labor" (Ulin 1991:64) denies the fact that people construct interpretations and idealizations of their actual and potential social realities. Michael Taussig argues that political-economists relegate "human subjects and the cultural meanings they produce to the margins of history in spite of their claim to cast light upon those normally left in history's shadow" (Ulin 1991:77). In a critique of the political-economic texts produced by Eric Wolf and Sidney Mintz - *Europe and the People Without History* and *Sweetness and Power* - Taussig "contends that concrete human subjects, the key producers of culture and history, are subordinated by Wolf and Mintz to the univocal narrative of capitalism. Taussig hence believes that we learn very little from either about micro populations and how their cultural products both resist commodification and yet are subject to its penetration" (Ulin 1991:77).

In essence, a wave-function model of social relations would represent entire alternate realities that are integrated within a network of social relations. Anthropology is an attempt to understand and represent human reality to others. The paradigm crisis, which Marcus and Fisher refer to as the "crisis of representation" (Marcus and Fisher 1986:7), has forced anthropologists, including both postmodernists and political-economists, to become aware of the power they hold as cultural representors. Nowhere is this power more obvious than in the writing and production of the ethnographic text. While both postmodernists and political-economists are aware that there are problems involved with ethnographic representation, neither seems capable of producing an ethnographic model that reflects human reality. Postmodernists begin with the assumption that reality is fragmented and disconnected. As a result, their models for reflexive ethnography reflect those assumptions; in other words, they produce fragmented and disconnected ethnographies. Political economists, on the other hand, cling to the reductionist models of the modern era. All of human reality, they argue, can be explained using models such as modes of production and the commodification of social labor.

This essay has sought to demonstrate how the models used by postmodernists and political-economists do not reflect reality. They fail to do so because each perspective is simply that - a perspective. Independently, neither model is representative of the complexity of human reality. As Neils Bohr stated, "While formerly we conceived these models as photographs of the system itself, now they become alternate understandings, depending upon the experimental viewpoint" (Cline 1987:211). Furthermore, hybrid models (such as those cited by Marcus and Fisher in *Anthropology as Cultural Critique*) are inadequate and misleading if they begin with the assumption that one model - one perspective – is preliminary. Quantum theory provides an alternative model to those proposed by postmodernists and political-economists. While its foundation (physics) is a radical one for anthropology, its methods and applications allow presently used theoretical perspectives, such as postmodernism and political-economy, to be reshaped and reinterpreted using different, more accurate assumptions about reality.

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