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Manuscripts, reviews, or commentaries are being accepted on a continuing basis. All articles must be in WordPerfect or ASCII-Text format and should be submitted on a 3 1/2 inch diskette, including any tables and list of references cited. Any plates or figures can be submitted separately, but must meet the general journal specifications and format. The diskette version of the article must be accompanied by one original printed copy complete with any plates, tables, or figures. No page limit is enforced, but it is suggested that manuscripts not exceed 25-30 pages in length. All literature citations must be correctly documented with the author’s name, date of publication, and the page number, e.g. (Doe, 1969:340). A list of references cited should comprise only citations referenced in the text. For guidelines for the submission of book, article or film reviews, please see the current issues of the American Anthropologist. Authors are encouraged to adopt the format and style established for Lambda Alpha Journal Vol. 27 onward. Manuscripts or inquiries should be sent to:

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LAMBDA ALPHA PUBLICATION GUIDELINES

Lambda Alpha Journal, the official student journal of the National Lambda Alpha Anthropology Honors Society, is published regularly at Wichita State University, Department of Anthropology, 1845 Fairmount, Box 52, Wichita, KS 67260-0052. Professional, avocational, and student manuscripts, and book reviews of recent publications are welcome. Lambda Alpha will consider manuscripts for publication in any field of Anthropology. All papers submitted to Lambda Alpha Journal become the property of Lambda Alpha.
As the Editor-in-Chief, I am pleased to announce the completion of the twenty-ninth volume of the Lambda Alpha Journal, a publication of the National Anthropology Honors Society. The Journal continues to be a publication of student papers and contributions and is the result of contributions made by Lambda Alpha members from throughout the United States. The publication is made possible through the efforts of the Journal editorial staff residing at the founding chapter, Alpha of Kansas.

The Lambda Alpha Journal is a freestanding publication of the Lambda Alpha National Honor Society and continues to be a non-profit publishing medium for Lambda Alpha student members. The Journal is produced at no cost to the society. The funding for the Journal is obtained through subscriptions and from a continuing sponsorship by the Wichita State University Student Government Association. The Journal is student peer-reviewed and student submissions and award competitions are considered for publication each year. The Journal is available through selected library subscriptions and we look forward to any new institutional subscribers interested in receiving the Journal. We continue to provide subscriptions for overseas subscribers and we encourage both Chapter and individual membership subscriptions.

This year's volume presents six papers ranging in nature from biological to socio-cultural and archaeological anthropology. Volume twenty-nine opens with an article by Harle addressing issues of progressive social complexity using examples of hunter-gatherer societies. Immediately following, McDowell discusses the role of women artisans in traditional Japanese societies. In her paper on disease and anemia in childhood, Quave addresses issues of nutritional and medical anthropological nature and the effects of global efforts in health matters in the developing world. Rivers' contribution from a study of historical archaeology evaluates the application of dating techniques using window glass to determine temporal affiliation of historic structures. The debate over the origin of language is addressed by Cunningham in her paper *Language and Evolution*. She addresses issues of anatomical and physiological capacity of language among the hominine subfamily based on morphological evidence of comparative primate anatomy and from the fossil record. The volume closes with an article by Lynch addressing psychosocial issue in family planning matters.

This year's journal concludes with an updated list chapters and advisors, followed by a recognition of past award recipients of the National Scholarship Award competition and the National Dean's List Scholarship.

Lambda Alpha continues to grow as a society and we hope to grow with the society. The Journal staff welcomes all of the recent chapters and all new members to the society and we take this opportunity to congratulate this years award winners wishing them success in their future endeavors. As a chapter sponsor and Journal Editor, I wish to extend my appreciation to all of the advisors and officers of the Lambda Alpha chapters across the nation and on the behalf of the special greeting to Dr. Swartz at the National Executive Office for his service to the society. Finally, I wish to thank the contributing student authors, the student editor, Ms. Carrie Luckey, and Ms. Amy Rosario and Mr. Mark Shirley for their contributions to the completion of volume twenty-nine.
Background of Hunter-Gatherer Complexity

Archaeologists separate hunter-gatherers into two camps "simple" and "complex." Recently there has been heated discourse as to the "nature" of complex hunter-gatherer societies. While some say it is a transitional phase between foragers and agriculturist, others argue it is an independent phenomenon. Likewise there has been some argument as to the catalyst of social complexity. Some argue that it is environmental factors while others argue it is internal ones. Yet, maybe the best possible answer is a blending of the two. Through two case studies it may be demonstrated that it could be a fallacy to elevate one factor while ignoring another.

The classic view of hunter-gatherers is that they are small, mobile, and egalitarian. In general hunter-gatherer societies are described as having a high level of individual autonomy in which every individual has equal access to resources. Richard Lee popularized this view with his work on the San (1993).

Many have taken exception with this view and have argued that anthropologists depend too heavily on peripheral groups whose survival is based on the grace of living on marginal lands. Although in the ethnographic present most hunter-gatherers, with the exception of some northwest coast Native American groups, tend to fit the picture that Lee describes, it would be suspect to assume that this is because it is an inherent tendency and not an affect of environmental conditions.

Archaeology is an important tool in that it allows us a glimpse of the wide diversity of hunter-gatherer societies across space and time. Insights into ancient hunter-gatherer societies show that the prevalent hunter-gatherer societies in the past may not fit the mold of a nomadic, egalitarian society. These societies have often been termed "complex hunter-gatherers" marked by formal leadership, reorganization of labor, and a more sedentary lifestyle (Price and Brown 1985). One of the most significant aspects of complex hunter-gatherers is their increase in intensification of foodstuffs, meaning an increase in productivity and production due to technological advances, food storage, and the diversification of resources exploited (Kelly 1995:303).
The definition of cultural complexity generally refers to aspects of a culture that have the greatest effects on material or archaeological remains. These include prestige items, monumental construction, and larger settlements, which suggest social and economic inequalities, and a centralization of political power (Hayden 1997:8). Increasing complexity has been associated with a variety of factors including, environment, resource availability, subsistence, sedentasism, technology, storage, population, exchange, conflict, and cooperation (Price and Brown 1985). Price and Brown (1985) separate these factors into three categories: the preconditions that foster complex hunter-gatherer societies, the consequences and characteristics of greater complexity, and the causes of this complexity. Placing these factors into distinct categories is not as easy as one would expect. One archaeologist’s conditional factor is another’s consequential factor. Perhaps by focusing on two hunter-gatherer societies living in two distinct environments and studied by different archaeologists it will be possible to determine a more congruent explanation of hunter-gatherer complexity.

Preconditions of Hunter-Gatherer Complexity

The preconditions for hunter-gatherer complexity suggested by Price and Brown focus on environmental and demographic factors. One of these is an environment where population movement is limited due to natural barriers (e.g., mountain ranges, bodies of water), or social barriers, such as neighboring groups. Price and Brown contend that because limited mobility, significant stress, such as times of food scarcity, cannot be handled by emigration, and therefore, means of solving stress must be developed internally (Price and Brown, 1985:8).

Resource abundance is also given as a condition of complexity in hunter-gatherers. This abundance can take on various forms such as richness, stability, diversity, or seasonality (Price and Brown 1985:10). In fact, Hayden argues that hierarchical groups are rarely tolerated when resources are stable but limited, fluctuating, or vulnerable to overexploitation (Hayden 1994:226).

Likewise, population growth has often been given as a conditional factor in that it causes a resource imbalance forcing societies into greater intensification. One supporter of population growth as a conditional factor is Cohen, who argues that there is an inherent characteristic of populations to grow exponentially (Price and Brown 1985:13). When considering this argument it is important to note that simple hunter-gatherers have been able to keep population low. It can also be argued that only after hunter-gatherers begin to intensify are they able to support a greater population, and therefore, population
growth would be a consequence rather than a precondition of hunter-gather complexity.

Consequences and Characteristics of Hunter-Gatherer Complexity

As for characteristics of complex hunter-gatherer, archaeologists point to evidence of growing intensification in the archaeological record. Subsistence equipment becomes more diverse in form, more specialized, and more abundant. Analysis of flora and fauna suggests that the food quest becomes more diversified and specialized. Certain resources become more important to the diet particularly nuts and shellfish. Likewise, resources that would have been previously avoided become incorporated into the diet. Some archaeological sites have even shown the occurrence of occupational specialization (Price and Brown, 1985:11).

This could possibly be the first step in the emergence of social differentiation (Price and Brown 1985:11). Increased territorial behavior was identified by increased boundary defense. Warfare may have become a consequence of this boundary defense. Finally, there was also the rise of a hierarchical system that was often denoted by wealth and dietary differences (Price and Brown 1985:12).

Causes of Hunter-Gatherer Complexity

Causal analysis poses the most difficult of all questions. Marquardt distinguishes between two camps with which archaeologists usually align themselves. First is the evolutionary-ecological approach to cultural change, which was heavily influenced by Julian Steward, who wrote that agricultural proficiency, population density, settlement patterns, social complexity, and technology were all interrelated (Marquardt 1985:63). With this argument a new crop of archaeologists in the '60's and '70's attempted to explain cultural processes in adaptive and evolutionary terms with the goal of making law-like generalizations (Marquardt 1985:63). Archaeologists who use this approach generally refer to major environmental shifts that led to new resources that are assumed to require greater intensification of procurement. For example, environmental causality is frequently discussed in terms of the end of the Pleistocene and its associated climatic changes (Price and Brown 1985:13, Marquardt 1985:63, and Henry 1985:378).

Likewise, Marvin Harris discusses the importance of demography in causal analysis, which he describes as the general evolutionary process of "settling down". He argues that a shift in resource base, especially the disappearance of large ungulate herds at the end of the Pleistocene, lessened the
need for high mobility. He suggests that increased sedentism and population led to a shift from a dependence on a broad spectrum of resources to a more specialized one (Price and Brown 1985:14). The problem with Harris' argument is that a change in food resources does not occur in all areas. Also, archaeological evidence points to a broader resource base not merely dependent on a few specialized resources (Price and Brown 1985:15).

The second line of argument comes from historical materialism, which is influenced heavily by Marxist concepts. Many archaeologists have extended the concept of class exploitation to noncapitalist societies (Marquardt 1985:65). Causes of change are argued to come from internal changes rather than external changes. They argue that, although environment and demography may play a role in "kicking the system into operation," food surplus carries with it an inherent potential for manipulation for certain people to gain a higher status. Production of surplus and competition feasts served to perpetrate these inequalities (Kelly 1995:306). Some archaeologist such as Bender argue that the switch to a society based on a hierarchical system is inevitable and abundance only serves to accelerate this process (Bender 1985).

Hayden writes that unlike animals, humans have the technology, culture, etc. that enables us to convert excess resources into other desirable goods and services. He contends that abundance of resources leads to potential competition to try and monopolize new resources. Hayden (1994:227), however, puts a sociobiological spin on his explanation for he explains that those who are most able to successfully exploit resources will have better genetic success. He contends that individuals may be willing to relinquish their autonomy if there is the potential to provide the society with a larger and more secure support group and with greater resources in times of stress.

Many, such as Price and Brown disagree with these explanations, citing that they are not well rounded nor do they necessarily reflect the archaeological record. They also call for a more systematic way of collecting data. Price and Brown (1985:15) write, "Current perspectives lack both the theoretical robustness to encompass the examples of increasing complexity among foragers and the data adequate to properly evaluate hypotheses." In response to this argument, Marquardt calls for a blending of both theoretical approaches in which researchers draw from scientific data and empirical historic based data, an approach he calls synthetic procursion (1985:70). He writes, "Humans respond not only to physical environmental determinates but also to sociohistorical structures, values, myths, class relations, and so forth that are as real to them as air, gravity, heat, and water, are to rational scientific analyst (1985:67)." Marquardt's argument for a need to find a middle ground may be just what we need in establishing a more sound explanation in the causal analysis of complex hunter-gatherer societies. However,
as will be demonstrated in the following two examples, this may not be accomplished with ease.

**Hunter-Gatherer Complexity at Keatley Creek**

Hayden conducted an excavation in the Middle Fraser Canyon in western Canada, which is adjacent to one of the greatest remaining salmon river runs in the world. In this area a number of large prehistoric housepit villages are located in the Lilloet region. The largest is Keatley creek, dated at approximately 3,500 -- 1,000 years ago, about 25km upstream from Lilloet, British Columbia. Keatley Creek is a large seasonally reoccupied semi-sedentary community. The housepit structures are semi-subterranean houses with timber roofs covered with earth and sod. The village contains a wide range of house sizes, from ones barely 5m in diameter to houses almost 22m in diameter (Hayden 1997:6). Like most complex hunter-gatherer societies, population size was estimated to be relatively high. Hayden estimates that the 25 to 50 individuals associated with simple forager bands would equal the number of residents in a single medium sized housepit at Keatley Creek. The community of Keatley Creek at its height could have been sixty times larger than a simple hunter-gatherer band (Hayden 1997:13).

Hayden suggests most of the evidence for social stratification is in the form of two distinct types of housepits and their specific layout. Large housepits as a group separate from the others, which indicates the presence of inequality (1997:49). The occurrence of large storage pits in some houses but not others provides an important clue as to the nature of past social and economic organizations at the site. This seems to indicate the residents of larger houses had a great deal more surplus food than residents of smaller houses (Hayden 1997:53).

Hayden, also, found the presence of roasting pits marked by shallow depressions usually filled with charcoal or ashy material, as well as fire cracked rock. He suggests that these pits may represent large-scale food preparation for unusually large gatherings of people at feasts. He speculates that most if not all the roasting pits are associated with feasting activities (Hayden 1997:54).

Another example of social complexity is the presence of what he considers prestige type items that seems to suggest some level of private ownership. He does admit, however, that there was not a large amount of evidence to this effect, but there were a few items made of precious stones. One such example is nephrite that has the look and feel of jade and happens to be one of the toughest stones to cut. It takes about an hour to cut a groove in nephrite only 1-2 millimeters deep, and would require hundreds of hours for a simple adze.
Hayden writes, "The unusual effort involved in procuring or manufacturing these items makes sense only in a society where these items are privately owned" (Hayden 1997:74).

Archaeological evidence from Keatley Creek suggests that the inhabitants exploited a wide range of resources (Hayden 1997:94). It also suggests that there were differential eating patterns dependent on status. The relative diversity of plant remains in various houses demonstrates that occupants of smaller houses used a far narrower range of plants than the occupants of larger house (Hayden 1997:100). Moreover, whereas small housepits used exclusively pink salmon, which is the smallest, weakest and easiest to procure, larger housepits had a mix of salmon types. They had pink salmon but they also had a substantial amounts of the more desired and highly valued sockeye and spring salmon (Hayden 1997:104).

As for the cause of social complexity at Keatley Creek, Hayden describes machiavellian type of individuals, who he calls "aggrandizers," who used food for their own personal gain and who excelled at developing schemes to use other people's surplus to increase their own wealth. He writes that these schemes could take the form of contractual agreements of debts (Hayden 1997:113). He argues the although these "aggrandizers" existed throughout human behavior, it wasn't until resources became abundant, and the means to store these resources developed, that allowed for the essential condition for complexity (Hayden 1997:111). Hayden contends that evidence of this comes from the indication of large feasts having taken place at Keatley Creek that suggests control of surplus food or wealth could be demanded under the guise of needing them for special events such as these feasts (1997:117). Also he writes that evidence of prestige like items "make sense in terms of feasting activities meant to lure others into debt". He argues that at the beginning there was a high instance of "transegalitarian" elite, yet as time progressed those who were more "genetically" adept at manipulation were able to gain more power until those who had power were only a few individuals (1997:116). In his words, "it appears that elites became established by creating a broadly based privileged group with benefits wildly shared. Only after such groups were created could "aggrandizers" then progressively let go of less useful or productive families with out significant repercussion" (Hayden 1997:117).

Hunter-Gatherer Complexity at Levant

In the Natufian example archaeologist, Donald O. Henry focuses these complex hunter-gathers as a transitory step between simple foraging and agriculture. Whereas Hayden focuses on a single occupation of Keatley Creek,
Henry explains change through time from the simpler hunter-gatherer groups the Kebaran and Mushabian to the more complex Natufians. Likewise, as opposed to Hayden who focused on the sociopolitical struggle that manifested from the abundance of resources, Henry solely focuses on environmental changes and their impact.

About 14,000-10,000 years ago, in Levant, near the Jordan valley in modern-day Israel, simple hunter-gatherers, gave way to complex hunter-gatherers. Simpler groups of the area display relatively thin cultural horizons, low artifact density, and occupy a wide range of areas. On the other hand, Natufian sites are often quite large with thick, rich cultural deposits with evidence of semi-subterranean houses and storage pits (1985:372).

Henry compares the complexity of the Natufians and in particular the site of Lavant to their simpler foraging predecessors the Kebaran and the Mushabian. Henry writes that this growing complexity appears to have been related to the intensive exploitation of wild cereals (emmer, wheat, and barley), and nuts (acorns, almonds, and pistachios). This reliance on storable resources is thought to have led to a more sedentary life (1985:371).

Artifact analysis suggests a greater intensification of food procurement. For example, tool analysis show that the Natufians become increasingly dependent on plant processing. Querns, grinding slabs, mullers, pestles, and mortars all found at the sites have been shown through ethnographic study have been shown to be used as implements of grain and nut processing. In fact, a study of dental diseases and attrition suggest a greater reliance on these processed plant foods (Henry 1985:372).

Demographic analysis suggests that although the Natufian’s transitory sites contained thirteen to twenty-six occupants, the larger sites could have contained upwards of one hundred and fifty individuals. There is also evidence of the Natufian moving into less productive, marginal, Mediterranean environments. Henry writes that this suggests an internal growth in the core Mediterranean zone (Henry 1985:374).

Although Henry does not go into detail about social organization he does write that analysis of burial patterns such as position, orientation, and context of burial within the site, identified a number of attributes that are commonly related to nonegalitarian societies. Burial paraphernalia, such as the presence of grave furniture that crosscuts sex, specific symbolic artifacts, and the association of elaborate grave goods with children, may give evidence of inherited status and perhaps subgroup differentiation (Henry 1985:375).

As for casual analysis, Henry takes his cue from the ecological approach to change. Henry argues that the most satisfying explanation is dependent on climatic and environmental changes at the end of the Pleistocene and its impact on the distribution of cereals and nuts. He writes that it was only when
cereals and nut bearing trees colonized the Mediterranean hill zone that they could achieve the density and predictability to allow for a more sedentary lifestyle. Henry suggests that the development of an intensive procurement strategy and sedentary settlement pattern would have resulted in rapid community expansion (Henry 1985:378).

Analysis of Two Case Studies

Although the Natufians and the people of Keatley Creek cover different time periods and environments, they have much in common. Both areas are abundant in their resources. Both show evidence of storage facilities, but it is unclear, whether it was a way of producing surplus for the purpose of ensuring inequalities, as Hayden contends. Evidence from Keatley Creek that storage pits were centered around larger housepits would suggest the latter. Likewise, both show evidence of at least semi-sedentary occupation. Although both show evidence of higher populations neither discuss evidence that would support nor refute Cohen's argument.

Henry's conclusion that hunter-gatherer complexity was an outcome of change in the environment due to the end of the Pleistocene ignores the fact that hunter-gatherer complexity crosses temporal and spatial boundaries. For example, evidence of hunter-gatherer complexity at Keatley Creek occurs some 7,000-9,000 years after the close of the Pleistocene. Likewise, hunter-gatherer complexity crosses environmental zones from the temperate zone of the Natufians to the semi-arctic conditions at Keatley Creek. Furthermore, recently there has been discussion as to whether the change in environment was that substantial at the end of the Pleistocene. Braidwood studied the identification of the physical effects of plants and animals and the documentation of the environmental events between 10,000 b.c. (the close of the Pleistocene) and the appearance of "settled village life." This Study allowed Braidwood to conclude, "It seems most unlikely that there was any significant differences between then and now in general land-forms and rainfall patterns" (Binford and Binford 320).

Also, Henry's almost random explanation as to the rise of complexity seems simplistic. Even if abundance becomes available, it does not necessarily mean that social stratification will suddenly arise; after all, although the establishment of a hierarchical system has certain benefits it also has costs, such as loss of autonomy. Henry does not address why egalitarian societies would be willing to relinquish their autonomy. In fact, Henry seems to skirt the issue of the rise of inequality completely. Henry makes no claims of evidence of feasting or of differential access to resources. Nor, does he mention evidence of an increase in boundary defense, as some have argued
mental in growing complexity in hunter-gatherer societies. It is not clear, however, whether this is because of lack of evidence or mere oversight.

If Henry ignores issues of internal sociopolitical factors, Hayden can be faulted for ignoring environmental considerations. He does not go in depth as to the environmental factors that would foster a complex society. Although he does say the rise of a hierarchical system is dependent on food abundance, the only abundance of resources he mentions is the proximate location of the salmon runs. Yet, salmon is a seasonal abundance and not a year round one. Of the two, however, Hayden's explanation seems more convincing, if not for the sheer fact that it can be applicable to any time period and environment. Furthermore, he explains why social stratified systems develop even if it is at a cost. Kelly writes, "People do not acquire prestige, they are given it by others" (306). This may be true, but it is more likely that, given the cost, individuals would only surrender their autonomy by lure or coercion, and not simply by a random act. Hayden explains how this can occur through cultural practices such as feasting.

Henry (1985) is on the right track, however, in that he looks at change through time. If we are to better understand cultural complexity it is imperative that we understand the progression of social complexity. Clearly, if there is going to be a unification of theories as Marquadt has called for; there must be better recovery techniques. It seems that both archaeologists were looking for evidence that would support their own theoretical approach. Archaeologists must look for both environmental and internal factors as well. If we are able to rectify these gaps in the archaeological record, it may be demonstrated that Marquadt's idea of synthesis of sociohistorical and environmental factors, is the best explanation in that it covers all aspects of the human condition.

References Cited


This paper will discuss Japanese women and their involvement with the traditional craft movement and production within Japan. In order to understand Japanese women and their relationship to this movement, one must look at the social context and historical placement of women throughout Japan's lengthy history. Starting with the Tokugawa or Edo period (1615-1868), a strong sense of proper place within society and community was instilled in men and women living in Japan.

Historically and contemporarily, the family, which is an extended part of the community, ranks first in a woman's obligation and overrides other more individual pursuits such as the arts. Within traditional craft and fine craft production communities, women's roles still reflect the idea of community harmony through cooperative work. Most traditional craft and fine craft products cannot be produced by one individual alone and, oftentimes they require several different stages for the final product to be made. Thus, it is women who fill the niche in the craft movement by processing of clay, lacquering paper, or the weaving of fine fabrics for the making of kimonos. This does not mean that women do not themselves produce traditional and fine crafts in Japan. Several women have been named National Living Treasures for their knowledge of and production of various crafts in Japan.

Women hold apprenticeships with master craftsmen, placing them within the forefront of craft production, if not the producers of the final products. It is the final showing of the craft piece in a gallery or department store with the main artist's name on it that shapes the worth and personality of the art work, hiding the multiple hands that shaped the actual piece into its final form. At the same time, there is a contradiction between the appreciation of those products produced by women and some women's status as National Living Treasures.

Historically, women have had little access to the Japanese world of art, or have only been exposed to certain types of art thought fit for women to produce. Few women have broken free from their social obligations as wives and mothers to immerse fully in artistic endeavors.

During the Edo period (1615-1868), Japan was ruled by a series of shoguns from the Tokugawa family. This particular family provided Japan with
more than 250 years of peace and security after the country's civil war. This security led to the "... stimulation of Japan's industry and commerce, led to the growth of large urban centers and a materialistic culture, a trend that had begun in the preceding Momoyama period of 1568-1600" (Fister, 1988). Townspeople and artisans soon became prosperous and were able to find a consumer base for their products. Early in the seventeenth century, Tokugawa Ieyasu enforced the division of the populace into four major social classes from the highest rank of the samurai, then farmer, artisans, and lastly merchants. Mobility within this system was restricted because it was felt one was born into a class. The peasant farmer held the highest ranking after samurai because it was thought of as the only profession that truly made something. Artisans merely changed the form of goods already produced by peasants. Merchants were ranked below the artisans because artisans provided goods for the samurai class, such as weapons and military supplies. (Sheldon, 1958: 25-26). The second ranking of farmers within the system was in title only, as farmers led rather oppressed lives under feudal lords who controlled the land on which they worked. "It was quite common for peasants to supplement their meager incomes by handicraft work done in their homes. Although the authorities did their best to see that this domestic industry did not interfere with the peasants' primary task of cultivation of the fields, this type of cottage industry eventually surpassed the output of artisans in the castle towns and cities. Some peasants even engaged in trade in the countryside" (Sheldon, 1958: 26-27).

Artisans and merchants enjoyed great prosperity even though they were regarded as lower classes. Merchants developed what was called the "putting-out" system in which merchants made advances on raw materials and equipment rather than pay money to producers. Provincial merchant and peasant landholders adopted this system to industrialize the farm communities with subcontractors supervising the subsidiary handicraft. "In trades where operations were both complex and numerous, the merchants assumed responsibility for dividing the work in its various stages among the producers. This system produced large amounts of raw silk, cotton and silk textiles, paper, mats, lanterns...by the end of the Tokugawa period" (Sheldon, 1958: 83).

The position of women within this four-tiered system remained low, with little legal or social freedoms. The feminine image suffered with the introduction of Buddhism, Confucianism, and the growth of feudalism. The religious movements in Japan, including Shinto, have contributed significantly to the development and maintenance of separate gender roles and gender inequality. "These religions have encouraged these people to accept a notion of ethics which proclaims that people are born with differing abilities
and into different status's within society, thereby serving to maintain the prevailing social order" (Haruko, 1995: 16).

"Many Buddhist texts taught that women's nature was inherently evil, associating them with attachments to the sensual world as opposed to the spiritual realm" (Fister, 1988: 10). Because of a woman's supposed evil nature, they were given very little freedom to explore themselves. At an very early age, a girl learned that she would be taking care of her own family and later the family of her husband. Women had to follow three obediences, in which they had to obey their fathers as a daughter, obey their husbands when married, and obey their son if widowed. Women could not become independent under Buddhist teachings, and those promoting these teachings did not wish for them to be. Nunneries in Europe were usually thought of as a place where women could find educational freedom. Faced with either marrying or getting a religious education, some women chose not to get married, but in Japan even the nunneries were places of male domination. "The nunneries had such a dependent status that they were referred to as the 'laundry room of monasteries' in the Ninon sando I jitsuroku, a record from the ninth century (Haruko, 1995: 19). The nunneries were subordinate to the monasteries and the nuns were expected to serve the monks. The monastery and nunnery relationship paralleled that of the ie, or Japanese household or family system. "While the monks lived atop the holy mountains conducting various religious affairs in service of the nation, their wives, mothers, and sisters resided in a separate community called satobo at the foot of the mountains under the protection of the monks, leading a religious life and performing their assigned roles -- sewing and washing the monks' clothing and preparing their meals" (Haruko, 1995: 22-23).

With the introduction of Confucianism, women's status within the Japanese society dropped even lower. "From the seventeenth century on, the Tokugawa government fervently promoted Confucian teachings which generally regarded women as inferior to men, reinforcing the doctrines of Buddhism" (Fister, 1988: 10). Sentiments that women were lower than men originated from the Chinese patriarchal society were. These notions of male superiority over female inferiority surfaced in the elements of Yin and Yang. Yin and Yang through their interaction created the universe. Yang embodies the positive, bright, male principle and yin the negative, dark female principle. A husband and wife symbolizes this union of yang and yin or heaven and earth. Women are to regard their husbands as heaven. (Fister, 1988).

The samurai class mainly carried out the doctrines of Confucianism. Women within these classes were supposed to set examples for women in other classes. Therefore, women in samurai classes, even though they were considered higher on the social ranking, had even less freedom to deviate
from their roles as good wives and mothers. Women from the other social classes were given greater responsibilities within the families' occupations. "They were often called upon to assist in running the family business and at times went beyond merely helping their husbands and became imaginative entrepreneurs" (Fister, 1988: 11).

The influence of various religious teachings, as well as the strict structures set up for people to live, shaped Japanese thought and identity. An individual consciousness became subordinate to that of the group consciousness. A general lack in the ability to make decisions as an individual permeated the culture, instilling a sense of community reliance that is prevalent within Japan today. In Japan, "... there is a tendency to accept and try to harmonize both the good and the bad rather than to seek to make clear the differences. Within this milieu individual qualities and abilities are often ignored. Social pressures encourage people to be as similar to others as possible and to maintain the status quo rather than seek to change it" (Haruko, 1995:26). Women had little choice but to join other women in their prescribed roles. This sense of community and lack of individuality still persists in Japanese society today, in which children in kindergarten are taught to see their classmates as equals. This trains children for their future roles in Japanese workplaces, and female children as mothers taking care of the family and community.

During the Tokugawa period, even with these religious setbacks, women's participation in the work force increased. Between the early eighteenth and early nineteenth centuries within all of the social classes, "... the rural peasant, the urban merchant and commoner, the samurai in town and city -- women were doing more work and, for those who worked for wages, being paid more for their labor" (Howland, 1995: 18). Women of all classes were also responsible for producing their family's clothing. This process was long and involved, often requiring the carding, spinning and weaving of cotton; raising of silk worms and then spinning and weaving silk; and, lastly, sewing the clothes. Shoes, tabi socks, kimonos and mosquito netting were produced by hand and expected to be produced by women (Howland, 1995). The growth of the commercial economy during the Tokugawa period tended to bring more women into the Japanese work force, increasing the amount of time women devoted to working outside of the home. Commercialization made available certain household items that in the past had been hand made. Firewood, charcoal, candles and rope became available, giving the housewife more time to work in factories. Maid servants were also hired to take care of house work, "... thereby diverting rural wives' labor into other activities and freeing women of all classes to concentrate on the enterprise that at least in the household unit, continued to be the centerpiece of a wife's labor: spinning, weaving and sewing" (Howland, 1995: 19). A shogunal ordinance in
1649, proclaimed that a peasant wife's duty was to work at the loom. The more influencing patriarchal system within the samurai classes also urged women to concentrate on the art of sewing. The act of women weaving and sewing during the Tokugawa period serves as an indicator of social standing and placement of women within the Tokugawa work force. "The 'iconicity' of women at work, then, points to several discourses in Tokugawa society that include working women among their objects, and which . . . were in part concretized in specific literary genres" (Howland, 1995: 20). Moral instruction books were written during this time giving rules for how men and women should live. All were based on Chinese versions, the earliest written during the Han dynasty. Primarily women in China wrote these moral instruction books, but in Japan they were written by men who reinforced a woman's duty to the home and caring of their families and the pursuits of certain labor. (Fister, 1988).

Professional artists during the Edo period were by and large males, since women were supposed to fulfill certain household duties before leisure activities. Two exceptions to this rule were Kiyohara Yukinobu (1643-1682) and Sasakishogen (active late seventeenth-early eighteenth century) who both became famous for their painting and calligraphy (Fister, 1988). "For the wives and daughters of the upper class (shogun, court nobility, and daimyo), personal artistic interests could be indulged only when they did not interfere with family duties, but we know that some of these women did devote considerable time not only to reading but also to writing poetry. Women born into high-ranking families were likely to receive training in calligraphy and in composing the traditional Japanese form of poetry known as waka, [composed of thirty-one syllables arranged in five lines of5-7-5-7-7]" (Fister, 1988: 26). One of the most prestigious positions for a woman of samurai class was a lady in waiting for the imperial palace in Kyoto, or in one of the many castles in Japan. Families competed for these positions to secure for their daughters prestigious placement for marriage and to strengthen political and economic positions within the family. Women within these positions also had the benefit of being surrounded by cultivated women and could devote a certain amount of time to artistic pursuits. Waka became the most suitable written form for women, and during the seventeenth century several female waka poets were recognized.

Otagaki Rengetsu (1791-1875), was one such woman who was a member of the elite samurai class who had connections to waka and other artistic pursuits. She is most known for her unique pottery that she inscribed with poems. After being married twice, she decided to become a nun. She turned to pottery to support herself, creating utensils for use in the Chinese-style form of tea drinking know as sencha. She seems to have been self-taught, crafting
her pots by hand and adding her own waka. It should be noted that pottery is not considered even presently as something that women do in Japan at the master level. Louise Cort has pointed out that Rengetsu's popularity was linked in part to her identity -- the fact that she was a woman rather than one of the countless professional male potters. Her success was also not in her pottery per se, but in the waka she inscribed on the pieces. The waka made the pieces unique from other artists' pottery, making them desirable for ceramic collectors.

During the Meiji Restoration in 1868, when Japan opened its doors to the Western world, the governmental systems and the social systems in Japan were altered in favor of women. "The abolishment of the feudal system meant the dissolution of the samurai class and the establishment of basic legal equalities for all people" (Fister, 1988: 14). This general equality should not be mistaken for equal rights between men and women. Women in Japan did not receive the right to vote until after World War II, and still were tied to the basic assumptions of the proper placement of women within the society. Women began to formalize groups during this time under government encouragement. The government, wishing to give women more life options, started to allow them to attend school, and created art societies for them to attend in their leisure time.

Following the political revolution called the Meiji Restoration, named after the Emperor Meiji, who ascended the throne in 1868, the members of the once privileged samurai class now had to find work elsewhere. During the nineteenth-century and twentieth-century, few things changed for the rural farmwomen as it did for the women of other previous classes. Farm women helped earn the household income through "... hard physical labor at cultivating wet and dry fields, through less strenuous work at by-employment such as silk worm raising, spinning, weaving, and straw sandal-making, and through domestic tasks such as cooking, laundry, cleaning, preparing the bath, and childcare" (Uno, 1993: 39). These patterns of employment and tasks have followed women of both rural and urban residence into other employment.

The individuals within Japanese communities often work together to accomplish certain goals, such as the care for shrines and other sacred places. (Hendry, 1987: 62). I will argue that within the traditional craft community it is only through group effort that a finished craft is made. Illustrations from the eighteenth century of works within Pomeroy's text of particular craftspeople give clues into the crafts associated with men and women, and the ways in which these crafts were made. Craft production contributed to by women were the cordmaker, paper maker, fan maker and potter. The plaited cord was supposedly the invention of women. Cord making is a simple form of
weaving in which threads are weighted for uniform tension and twisted together in a repetitive pattern. "The craft had its commercial beginnings in Kyoto, the account continues, when a certain thread merchant in that city began to employ women in his shop to plait thread into cord to the order of his customers, who could wait and watch the work being done" (Pomeroy, 1967-68: 30). Weaving, as mentioned previously, traditionally has been a female task. This is partly due to the associations with the sun goddess. "Myth and legend in Japan give high place to the figure of the weaving girl, and she is still honored with a festival of her own on the seventh of July: the celebration known as Tanabata" (Pomeroy, 1967-68: 36).

Other illustrations within Pomeroy's text depict this continued complementary work between men and women to finish a final product. The paper-making illustration depicts a man and a woman, presumably husband and wife, performing the complicated art of making Japanese paper. "The woman, with her kimono sleeves held back by a band that goes around her shoulders, dips her mold into a vat filled with pulp. After shaking the mold back and forth to make the fibers in the pulp to form a sheet, she removes the sheet and places it on the stack at her right" (Pomeroy, 1967-68: 42-43). Few illustrations depicted women working alone. Those crafts associated with women often are transferred directly over from household activities, such as weaving or fan making, because it is seen as a delicate work requiring dexterity and a delicate touch. This is also related in the painting of contemporary Kokeshi dolls within factories because the face demands a delicate touch, of which only women are capable.

In the depiction of the potter's wife, she does not actually get to throw the pots, but carries a basket filled with lumps of kneaded clay ready for the potter's use (Pomeroy, 1967-68). The distinctions between delicate work and heavy labor add to the conflict within the Japanese craft movement. Women straddle two identities in which they gain a certain amount of personal freedom helping out in the communities, but at the same time are still considered to be the ones who take part in the delicate art works, as in the past use of waka.

The lines between fine art and craft are blurred within Japan, and it is difficult to make a distinction between the two. "During the early part of the Meiji period (1868-1912), not only was the distinction between 'art' and 'craft' blurred in Japan as it was in Europe at the beginning of the nineteenth century . . . the Japanese also failed to distinguish between 'craft' (kogei) and 'industry' (Kogyo). It was only the development of modern industry in Japan that gave rise to the gradual autonomy of the two latter concepts, while the distinction between 'art' (bijutsu) and 'craft' (kogei) for the most part followed western precedent" (Moeran, 1997: 13). Japan's contact with the western
world also influenced, in particular the pottery community within Japan, exploration of the craft traditions and the creation of unique styles based on old traditions. "Those concerned with the development of Japan's crafts realized that not everything they had borrowed from western culture was necessarily better than that which they themselves could produce. It was this attitude that facilitated the construction of museums, the formation of associations promoting Japanese arts, and the publication of the country's first art magazine, *Kokka* (in 1889)" (Moeran, 1997: 14).

What is called the Mingei art movement, and later Mingei crafts themselves, was started by what Brian Moeran terms nostalgia for the traditional past or the *natsukashisa*, a very particular Japanese trait. A link with social organization and folk art, as mentioned previously, also contributed to this sense of nostalgia for the dwindling traditional ways of life and the crafts associated with them. The Industrial Revolution not only effected the ways in which art is seen, "... but the rise of industrialism, and its concomitants, urbanization and mechanization, has led many of us to look with a certain nostalgia either back in time to those forms of art or craft which evoke a pre-industrial, golden age of simplicity, or across in space to objects produced in other, less 'civilized' cultures" (Moeran, 1997: 17). Traditional crafts themselves also denote ideals of a past time because they are generally handmade, intended for everyday use rather than decoration, made according to traditional ways with natural, often self-grown materials, and produced by collective and simple techniques. These notions of tradition, though, are giving way to individual craftspersons who earn a name for themselves because of the uniqueness of the product they produce.

The Mingei craft movement and the appreciation for handmade crafts came largely under the encouragement of Yanagi Soetsu (1889-1961), who was, in turn, influenced by the loss of traditional forms of art due to rapid urbanization and a shift from hand to mechanized methods of mass production. "The whole idea of 'folk art' first received public recognition in Japan in the late 1920s, when Yanagi published his first book, *The Way of Crafts (Kogei no Michi)* (Moeran, 1997: 25). It can be said that Yanagi's interest in Japanese folk art in general came initially from his interest in Korean ceramics from the Yi dynasty. He discovered that much of this pottery was made by unknown craftsmen much like the pottery in his own country. "He thus became interested in what initially he called 'people's art' -- for the way in which it accorded with his ideals of beauty" (Moeran, 1997: 25). The term *mingei* was applied to things that were functional, used in people's everyday lives, 'unpretentious', 'pure' and 'simple'. "Yanagi argued that mingei was characterized by tradition and not by individuality. Art should not be associated with the individual creator; it should be unassuming, the work of 'non-
individuality'. Beauty could exist 'without heroes' " (Moeran, 1997: 26). Yanagi started the Folk Craft Association to promote his ideals of true folk craft and to promote the folk crafts themselves. This knowledge about crafts spread to people living in the urban and industrial centers of Japan, who in turn started to buy handmade folk crafts. This was called the 'mingei boom' and continued until about 1974-75.

The average craftsman, however, was not interested in the philosophies of mingei but in making money. In addition, the craftsmen, while admitting the beauty of what they created, saw the essential functionality and usefulness. At the same time, while Yanagi characterized "artists" as exalted, the craftsmen themselves felt that their productions were from all the community. Several problems arose within the Mingei movement in which artists who wanted to develop their own styles broke away from the Mingei movement. The debate between Yanagi's ideals of beauty and the artists' concept of functionality started to run against each other, causing stress within the movement and difficulty in trying to capture all that was meant by Mingei art. After Yanagi's death, the Folk Craft Society itself developed financial problems. The magazine published by the Association was called *Mingei*, and was published monthly in 1980, with distribution to about 5,000 people. It became evident that people were not really reading the magazine. "Rather, subscription was a form of passive membership; craftsmen, in particular, took the magazine to keep the 'people of Tokyo' happy" (Moeran, 1997: 29).

The most active participants in the Folk Craft Association were women. They would travel around the country visiting craftsmen's workshops and would purchase their works. "Yet many will argue (and they are men, of course) that the housewives do not understand the meaning of 'true' mingei and cannot appreciate 'proper' beauty. It was perhaps not surprising, therefore, to find that -- at the time of my research [Brian Moeran's research] -- the mingei potters and other rural craftsmen dismissed the Mingei movement as another urban elitist fashion whose followers had failed to come to grips with their problems" (Moeran, 1997: 29). It is evident that the Mingei failed in some ways and has continued to fail by not looking at the actual reality within the rural communities and the individual folk artist's relationship with the craft community on a whole. Two dichotomies exist within the discourse for speaking about craft communities. On one hand, there is the individual breaking away from the traditional collective craft community, and, on the other, there is the collective whole of the craft community working together toward a common product. The reality is that each is linked to the other and does not carry on a separate dialogue.

The rural craft community is seen as a unique enterprise cut off from the rest of Japan and encouraged by the government to be isolated and to main-
tain its traditional past. Women within these communities are also seen as the purveyors of a traditional past oftentimes locked into roles that do not represent the reality of the contributions given to the craft community. Much of the traditional craft forms still rely on traditional products and years of apprenticeship to acquire the skills to make them. Currently in Japan, the crafts are still seen as a link to Japan's traditional Japanese past, but few outside of the rural communities in which they exist are willing to take the time to produce them or learn how to produce them. It is because of this phenomenon that both individuals and craft forms are honored and protected within Japan. These people are known as "Holders of Intangible Cultural Properties" or Japan's living treasures. The community emphasis has been shifted to that of the individual master of a particular craft in which seventy individuals and twelve groups within Japan are recognized as living treasures. (Fontein, 1982).

Interestingly, it is not the Japanese government who saw the need to protect its dwindling craft tradition. After World War II, Army General Douglas MacArthur, commander of the Allied occupation forces in Japan, was appalled by the wartime destruction of priceless works of art. He persuaded the Japanese government to safeguard those who carried on the creative traditions (Fontein, 1982). This runs parallel to that of Yanagi's movement to educate Japanese people in an appreciation of Japanese traditional craft forms over modern western art forms. These educational practices, though, often treat individual craft-makers and whole communities as anomalies and amusement parks to be visited on vacations. Japan's often forced traditional past is isolated from modern Japan, and, at the same time, is integrated into everyday-use items produced by the craft communities. The communities themselves, out of economic necessity or pride in their unique heritage, play to the tourist industry and promote the prefectures in which they live as holding unique wares not found any other place in Japan. So-called modern Japan and traditional communities in Japan, though promoted as being different and separate, are not. It is because traditional crafts are crafts of the people, and are linked to specific cultural events during the Japanese year and daily use in the Japanese homes, that the two are dependent on each other for existence.

The *ie*, or the Japanese household, provides an important locale for cooperative craft making and craft product making. The *ie* is not just a nuclear family. In agricultural villages, the *ie* has been seen as the fundamental unit of Japanese rural society. The word *ie* refers to the Japanese house, but it also refers to the social unit within the household. The structure of the *ie* remains the same regardless of the people involved. It is also a "... political and economic unit, whose members work together on land, making use of
common property and of the household’s right to irrigation water. .." (Moeran, 1997: 63). Traditionally, the most important person in the ie was the head of the household. "The head used also [sic], to hold absolute authority over the affairs of all members of the household, but this is no longer legally permitted. Nevertheless, in rural society, he still has enormous influence in the running of the household and over activities of its members" (Moeran, 1997: 63).

Changes within the ie structure have increased over the years to keep up with the decrease in fanning and the increase in craft production in tourist trade within the rural areas of Japan. Not only have women gained a more prominent place in the ie, they have also been recognized within their communities as contributors to specific craft productions. Of the seventy individuals considered living treasures of Japan, eleven are women. The most well known of the women living treasures is Ayano Chiba (sic), recently passed on, a weaver and dyer who worked in traditional indigo-dyed cloth. In order to produce this product, Ayano Chiba grew her own indigo plants and hemp plants for fiber and dye production. Growing the stock herself insured quality of the finished product. Ayano Chiba relied on the help of her daughter and other family members to help her spin and process the hemp. The whole process to produce her dyed fabrics required many steps and she herself admitted that no one would want to do it today because it is so difficult and time consuming. (Fontein, 1982: 5) Ayano Chiba’s daughter-in-law still carries on this work today.

Like many of Japan’s traditional arts, public support and personal satisfaction is necessary to continue the long process of procuring the raw materials for and the assemblage of traditional forms of art. To make the one-of-a-kind kimonos, the kimono maker uses a stencil. The papers used to make these stencils are in themselves works of art because it requires years of training to paint on the persimmon tawoin that gives the paper strength and waterproofness. Yoshimatsu Namba, a stencil cutter, recounted that, [t]he woman who made these stencil papers worked with a quick and steady hand, carefully brushing the three-layered sheets of soggy paper neatly and smoothly onto the long pine boards” (1982: 51). Women make up the often unseen though appreciated work force behind the craft movement in Japan. In the ceramics communities, women process clay at every stage until it is ready to be thrown. Women rarely throw pots, though, because it is not considered women’s work. Women within pottery communities spend much of their time fanning, so the production of the actual ceramics rarely enters into their set work schedule. In the art of paper making, women strip the bark off of mitsumata branches. They then stack the cleaned fibers for a twenty-four-hour soaking then boiling and multiple rinsing processes. The finished sheets
of paper are gently picked up and placed on a stainless steel griddle that is steam heated, allowing the paper to dry in minutes. The woman's skill lies in the way that she brushes the sheets of wet paper onto the griddle and the quickness with which she does it (Fontein, 1982). Women contribute on a personal and collective level to the production of traditional Japanese crafts. They as individuals have continued traditional women's craft forms such as weaving and have incorporated into their everyday activities the processing and making of the core materials that go into making traditional craft products.

The making of traditional Japanese dolls is a good example to illustrate how women have been seen as producing prestigious handmade dolls and factory dolls which are not deemed as prestigious. Handmade goods fail to simulate the consistency of the machine made goods. "Yet precisely because of this, they are seen by some to be more serviceable... hence the marks of hand labor come to be honorific, and the goods which exhibit these marks take rank as a higher grade, than the corresponding machine product" (Veblen, 1925: 159 in Moeran, 1997: 214). This placement of the handmade over the machine-made places women in two conflicting positions within the craft movement. It is the finished product that is considered of value by the consumers, not the smaller products that go into its production. Women who make the stencils, process the clay, and weave the cloth sent to a master crafts-maker are overlooked in their connection with the all more important production processes within a particular crafts' life. Also, it is the factory which has a predominately female workforce, which produces the less prestigious machine-made crafts like Kokeshi dolls. Women must also fight against contradictory representations of who should and who should not be producing certain crafts. "Most of the amateurs devoted to doll making as a hobby are women. As it is difficult to master the art of carving heads in wood and of applying gofun, these amateur doll-makers have contrived a method of making heads and hands by the use of a dough-like paste called shiso (Yamada, 1955: 156). The above would suggest that women do not participate in the art of wooden carved dolls, but Ryujo Hori, one of the seven women designated as living treasures, carves dolls by hand. She goes out into the forests herself to collect kiri or Paulownia wood for her dolls that often take up to ten years to complete. (Fontein, 1982)

It is true that men produce most traditional dolls within Japanese society. It is this association of male production and that of handmade construction that draws prestige to the object. The Kokeshi doll illustrates that it is often the "maleness" of an object that denotes prestige. Men are seen as completing the final stage in craft production and creating the complex or simplistic designs that hold the appeal of the crafts. The three ways of making
this type of wooden doll involve hand-turning the doll on a lathe or factory machine construction. Certain factory-made Kokeshi do merit high prestige by the Japanese art communities because their design and esthetic beauty are appreciated. It is the design, though, and not the production of this product that is appreciated. Other factory Kokeshi do not have the complicated designs, and are more readily produced for the sale abroad or in very touristy areas of Japan. Men design the award winning Kokeshi and make the lathe-turned Kokeshi. It is only women who put together the machine-made Kokeshi; their main purpose is to paint on the pretty face and add the text or flower decorations that accompany the dolls. These types of activities mirror the social ranking of merchants during the Edo period, the merchant class being ranked lower than the farmer class because they just acquired and sold products already made by another social class. Women within the factories do not produce the designs for Kokeshi dolls, so they are not ranked highly in their efforts, nor are they considered artisans in their own rights.

As with many social rules, this runs parallel to the production of ceramics in which women who procure the products to make the ceramic pieces and who process the clay are viewed as one portion of the labor force. They are not perceived to be the true artist when it comes to making the ceramic items. Ceramics produced in rural Japanese communities are utilitarian devices utilized in everyday living. It is outside communities who place a value on the ceramic pieces and dictate their decorative worth. The craft community sees effort by all members of the household as contributing to the production of a ceramic item; the outside community seeks out the individual for praise in producing a unique art form. In reality, the naming of individuals as living cultural treasures fails to compensate for the lack of recognition for those who help and produce particular portions of what will become the finished product.

Japanese society has always placed boundaries around what is considered the social unit such as the *ie* as being *uchi* inside and *soto* outside of the social unit. "Tradition is seen to grant a local community strength in communal participation and action by providing the locality with a sense of solidarity and unity. In other words, in the Japanese 'folk' theory of traditionally, community-wide activities are both indicators and products of the power of the community which (in turn) is still based on its 'past' legacy" (Ben-Ari, 1998: 84). The rural communities of Japan, whether or not they still hold on to their traditional ways of life are associated by urban and city dwelling Japanese as the holders of traditional truths and antiquated life styles. It is only by going to these particular communities that one can get a sense of what truly is Japanese. As Ayano Chiba pointed out, "I'll explain our work as many times as you like, but you'll never understand it until you do it. People
can read about it, watch it, but they still don't get it. I say, better than trying to learn it, do it" (1982: 15).

The *uchi* and *soto* system also keeps women in a state of being outsiders themselves within their own communities. Historically, as in the example of nunneries, women hold a position separate from men in the *ie* which is transferred when they become an outsider residing in their husband's *ie*. Insider and outsider knowledge within women's worlds and men's worlds contributed to the engendering of specific craft items, or the inaccessibility of certain craft production to women. Outside of the craft communities, women still duplicate the traditional *ie* system in that they are responsible for taking care of the family. Roles are changing slowly within the family structure in Japan, with men contributing more to household and family care and women entering into the full time positions with companies. The *ie* system and associations with *soto* and *uchi* still prevail as a primary system of seeing the world.

The structure of the traditional household has changed in some respects from that of the entire unit acting to produce the same products. With the decline of farming and the economic necessity of survival, rural communities have turned to traditional crafts and performances to draw the nostalgic Japanese public into their communities. Now, a collective effort is put forth in the production of craft items for tourists. The passing of farming techniques is still prevalent. Its educational approach has been used by those in the craft movement who continue the apprenticeship model of passing on certain cultural skills and techniques in craft production. Women often do the bulk of the work in preliminary craft production. And, since the full knowledge and mastery of each craft item requires years of work and observation, it could be said that women will soon fill areas where men used to reside as the prestigious repositories of the actual knowledge and expertise. Still, women's contributions to raising the family and farming have blocked many women from fully participating within the craft movement. Women find that when they no longer have the responsibilities of childcare that they can explore traditional art forms.

Women historically have been the main element in the preservation and continuance of certain traditional art and craft forms within Japan. These women tend to be of middle class origin with grown children who wish to get back in contact with their traditional roots. "The traditional arts such as *chado* are popular ways for women to spend their leisure time because these arts affirm traditional views of women as nurturing and supporting others in society. At the same time, they allow women to pursue personal goals of self-expression, artistry, the development of managerial skills" (Mori, 1996: 117). Changes within the Japanese family structure and household duties,
such as in the Edo period, have encouraged women to look to the traditional arts for personal growth and enjoyment. "The traditional arts have a special appeal for middle-class women in that these arts advertise themselves as providing self-improvement and educational opportunities that enhance a woman's abilities as wife, mother, and hostess. Women are encouraged to take up traditional arts in order to learn Japanese cultural practices and pass [them] on to their daughters" (Mori, 1996: 120). Traditional crafts and arts again are seen to symbolize that of a proper and past way. It is this relationship which complicates women's relations to traditional crafts in Japan and the society's overall assessment of the relationship that women have with craft production.

Though women in rural communities reliant on craft production lead different lives from women who live in urban settings, the same rules set up in the beginnings of the Tokugawa period still apply to them. The outside community's interpretation of women's worth in their production of tradition craft items contributes to the lack of acknowledgment of women's true contributions to the craft industry. The inside dynamics of the craft labor system incorporate women's activities into the collective process of craft production emphasizing the process over the item. Japanese women still tend to gravitate towards traditionally female-based crafts or do not make the actual finished craft items. When women do excel at making a certain craft product, they are elevated to high status, but often ignored as achieving status with their male counterparts. It is the Japanese system of separate worlds of men and women and the social structure that dictates what women can and cannot do, placing them in an uneasy relationship within the craft world of Japan. What needs to be examined is the relationship between outside urban influences based on traditional values and inside rural perspectives also based on traditional values, and how they collectively place women in contradictory roles of producing and not producing craft items within Japan.

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It is estimated that of the 265,000 flowering species of known plants, only 1% have been thoroughly studied for their chemical composition and medicinal value thus far (Schultes et al. 1995). This medicinal value or chemical "richness" is the result of a long evolutionary process of development of specific host defense systems, or allelochemicals, which function to protect species from their predators—be it herbivore or microbe. Indigenous groups around the world have been aware of the medicinal applications of many of these chemically potent plants for centuries and it has only been in the last 50 years that a concerted effort has been made by the Western world to learn from their experience and knowledge. Modern advances in mechanisms of chemical analyses in the past few decades have made further detailed study of these potent secondary metabolites possible. It is from the extraction of such active organic molecules as alkaloids, non-protein amino acids, cyanogenic glycosides, glucosinolates, and amines that important drugs such as quinine, digitoxin, atropine, ipecac, morphine, and codeine have been discovered and applied towards the advancement of pharmaceutics and "modern" medicine as we know it today.

Tragically, the Amazon basin, which has been estimated to have the greatest overall biodiversity in the world, now faces certain destruction as logging companies, the oil industry, and local "slash and burn" agriculturists destroy this unique habitat in acquisition of natural resources. Along with this gradual change in the environment, rapid cultural changes are occurring within the tributaries of the Amazon. With the push of government influence for "modern health care" in rural communities, the people of this region are abandoning traditional medical and religious practices. The twist to this introduction of "modern" Western medicine is the fact that the government "health promoters" stationed in the villages have little if any training and even less experience. This fact, compounded with the scarcity of even the most basic medicines, has brought many communities to a state of dependency on a system of medical provision that can often offer more than aspirin and antibiotic ointment. In addition to this problem, the government reinforced ideology of the inferiority of local healers' abilities to provide medical care has pushed away prospective apprentices. Thus, with each shaman that...
dies without an apprentice centuries of medical and botanical knowledge collected and passed down through oral tradition among this select group are lost forever.

The purpose of this paper is to analyze the conflicting roles of traditional and Western medical systems and the part that they have played in the case of childhood parasitosis and anemia in rural NW Amazonia. This will be achieved by first evaluating the relationship between helminthic infection, specifically that of hookworms, and the rise of iron-deficient anemia in children. Secondly, an analytical description of the two primary systems of medical treatment - Western biomedicine and shamanic healing - will be made.

Intestinal parasitosis is indeed an important problem in rural areas of the tropics. There are multiple ramifications to undiagnosed and untreated helminthic infections, from increased morbidity and mortality to poor growth and developmental delay. During the span of a six-week research expedition in a rural region of the Peruvian Amazon in the summer of 1999, I had access to the past 6 months medical records from a small health clinic charged with the care of 11 villages. The total population of this health jurisdiction was 2,777 as of a January 1999 census. These records provide data for a cross-sectional analysis of treatment frequency for helminthic infection and anemia with Westernized medicines in children under the age of 15. Extensive interviews were conducted with two indigenous healers and 73 mothers distributed among 11 villages in an effort to assess the means of diagnosis and treatment of the aforementioned childhood ailments via use of the local forest flora. Hypotheses regarding the cultural mores and behaviors that influence the status of this long-standing endemic condition are suggested.

Significance

Chronic Parasitic infection affects millions of children in developing countries. Helminthes such as *Ascaris lumbricoides* (roundworm), *Strongyloides stercoralis*, *Trichuris trichuria* (whipworm), *Enterobius vermicularis* (pinworm), *Ancylostoma duodenale* (hookworm), and *Necator americanus* (hookworm) are endemic in human populations of the rural, humid tropics (Branwell et al. 1978). Transmission is facilitated in these rural regions by the lack of clean water supplies and sanitation management systems. Intestinal parasites can lead to such health problems as malnutrition, anemia, growth retardation, diarrhea, vitamin A deficiency, cognitive deficits, and immune compromise in developing children (UNICEF 1998).

Hookworms, which infect approximately 1 billion people worldwide, are closely associated with the development of anemia (Warren et al. 1993). The
development of iron-deficient anemia depends on daily iron intake, iron stress, and the intensity and duration of helminthic infection. Woman and developing children comprise the group at greatest risk because they usually have the lowest iron stores (Layrisse et al. 1964). This condition leaves them more vulnerable to developing iron-deficiency anemia from chronic blood loss due to hookworm infection. For example, a moderate hookworm infection can deplete 2.3 mg of iron per day. This approximately doubles the iron intake requirement of a normal menstruating woman (FAO/WHO 1988).

The transmission of hookworm is facilitated primarily through skin contact with contaminated soil. The extent of infection depends on three factors: concentration of fecal material in the soil, accessibility of a warm and humid environment for egg survival and larvae development, and the duration of contact with human skin. After the initial entry into the body, they migrate through the circulatory system to the lungs, pass through the alveolar system up the trachea, then are swallowed and deposited in the intestines where they can live for a period of 2-3 years (Banwell et al. 1978). Hookworm infection leads to anemia through chronic intestinal blood loss. Adult hookworms attach to the lining of the small intestine, feeding on tissue and blood. The parasite changes its feeding site roughly every 4-6 hours, leaving behind it sites for further blood loss from the damaged mucosal lining. Although people of all ages are susceptible to helminthes, the prevalence of infection is concentrated in school-age children who have frequent contact with soil during play.

Symptoms and signs of early infection may include inflammatory diarrhea, abdominal distension, and epigastric pain, which is commonly known as "colico" in the region under study. Iron-deficient anemia may result in hypoproteinemia, skin depigmentation, shortness of breath, and general weakness (Fauci et al 1998). Hookworms can be eradicated with several safe and highly effective antihelminthic drugs, including mebendazole and pyrantel pamoate. Severe hookworm disease with intestinal malabsorption and protein loss necessitates nutritional support, oral iron replacement, and deworming.

Description of Region

The Tamanco Jurisdiction consists of 11 rural villages located on the banks of the Napo River in Northeastern Peru (see map in Appendix). The Napo River region makes up one of the Amazon’s largest tributaries and is known for its extensive span of flooded forests. Water levels undergo drastic change throughout the year and may contribute to the high incidence of seasonal malaria in this area. The majority of people living in this region does
not belong to a set tribal group and are largely identified as "riberenos", or river people. Travel is by dugout canoe. The language spoken is a dialect mixture of Spanish and Quechua. The average number of children per household currently ranges from 6 to 7. Many of the younger women interviewed were either involved in expressed interest in the government family planning programs and hoped to have a maximum of 2 to 3 children. The government population census for January 1999 shows a heavy concentration of school age children with low distribution in the youngest and oldest age groups (see Figure 1).

Homes are constructed as palm-thatched huts built on stilts near the river. Chickens, infant monkeys, and sloths are common household pets and are raised until maturity, then eaten. Food is acquired primarily through net fishing and farming of yuca, maize, banana, chickens, and some rice. Hunting for monkeys and capybara, large forest-dwelling rodent, is done occasionally as an alternative protein source. All but one village in the district lack latrines and sewage pits. Water is taken directly from the river and is generally never boiled or chlorinated for purification.

Each village has a government-established primary school and small pharmacy, or "botica" where Western medications such as aspirin, iron supplements, and antibiotic ointments may be purchased. The supply of in-stock medicines as well as the training of local health promoters varies greatly from village to village—though in general, medical supplies are limited and health promoters have minimal training and experience. In the first half of 1999, health records document that respiratory ailments affected 54% of children under the age of one year and were a major cause of infant mortality. Intestinal parasitosis is an endemic condition in all children aged two and older. According to parents, most children in this region are treated with an antihelmintic such as mebendazole or albendazole once every 1 to 2 years. This treatment regime is quite hazardous to child health and development because dewonning in this high-risk environment is actually needed every 4 months in order to interrupt the parasite transmission cycle, thus keeping the parasite load at an acceptably low level (Sanriso 1997). Most children in the region, however, actually maintain an extremely high parasite load as a result of inadequate treatment and are brought to the clinic for treatment only after acute signs of anemia and illnesses of immune compromise develop.

**Subjects and Methods**

I conducted my study from June, 3 - July 17, 1999. I began the project by interviewing approximately 7 mothers in each village of the Tamanco Jurisdiction (N=73), focusing on concerns they had for their children's health.
From these interviews, I found a high frequency of diarrheal illness, respiratory ailments and an increased prevalence of malaria in late June and early July.

My two primary informants in the collection of data from January July, 1999, were Senor Vargas, the government "sanitario", or health official for the Tamanco jurisdiction and Don Antonio Montero Pisco, an "auahuasquero" or indigenous healer. Although Senor Vargas has limited medical training and is lacking in the supply of many necessary medicines and diagnostic equipment, he is an excellent record keeper and devoted to providing all of the medical care that he can offer. As the primary medical provider in the region, he stays busy with a heavy daily load of patients and keeps detailed hand-written records for each person seen. In my initial review of his records, I found that people living closer to his clinic visited more frequently. For some villages, it is an exhausting 3 to 4 hour canoe trip to reach the clinic. People from these villages generally make the trip only for acute emergencies. Thus, most cases of intestinal parasites and anemia are left untreated in these villages until the condition becomes acute. My data set for the use of a Westernized medical system is therefore somewhat biased towards those individuals with easier access to the clinic.

Don Antonio is employed by the Amazon Center for Environmental Education and Research (ACEER), the research organization through which my study was conducted. Most of his time is devoted towards the care and maintenance of his large medicinal garden and the education of visiting scientists and tourists on the uses of plants in traditional healing. His training and education in this field began at the age of 7 under his family's strict tutelage. Now in his mid-50's, Don Antonio is working to preserve the ethnomedical knowledge passed down to him by his parents by teaching his own children. Unfortunately, he spends little time actually practicing medicine in the nearby villages both due to restrictions imposed by hi employers and the disappointing trend of local community reliance on the small government medical stations. Data acquired from interviews with this informant are descriptive in nature and include information regarding traditional shamanic healing practices, modes of diagnosis, and treatment of parasitosis and anemia by use of medicinal plants.

Results

Figure 2 presents data on the number of individual children who went to the main health clinic and were diagnosed with intestinal parasites and/or anemia during January – July 1999. Diagnosis of intestinal parasites was high during January – April, falling in May for children aged 1-4 years. Di-
agnosis of anemia, on the other hand, was low January-March, peaking in April for this younger age group. Diagnosis of intestinal parasites was high January-April; peaking in March, and falling in April for children aged 5-14 years. Diagnosis of anemia was high January-April falling in May for this older age group.

Table 1 demonstrates that no infants under the age of 1 were diagnosed with either anemia or intestinal parasites. During this six-month period, 2.7% and 16% of children ages 1-4 were diagnosed with anemia and intestinal parasites, respectively. Whereas, 11.2% and 24.8% of children ages 5-14 were diagnosed with anemia and intestinal parasites, respectively.

**Discussion**

The results well illustrate cyclic environmental change. Documented monthly flux of disease may reflect the changing water levels of the region (see Figure 2): the high water season, which results in mass flooding of many of the villages, occurs during the months of February through May. An observable decline in the treatment of helminthes and anemia is shown from the end of May through July as the water levels begin to recede. The patterns may well reflect an increase in transmissions of helminthes due to the sanitation hazards of water heavily contaminated with fecal material that floods huts and is used in cooking and drunk without prior purification. In addition an increase in canoe travel to the clinic is probable as the high water opens up small streams through the forest that are otherwise dry during the low water season. The relationship shown here between hookworm parasitosis and iron-deficient anemia has been well documented by case studies in areas such as Kenya, Sri Lanka, India, and Venezuela (Layrisse et al. 1964; Stephenson et al. 1998; Tshikuka et al. 1997). In my evaluation of the public health condition of the Tamanco Jurisdiction in Peru, I found a high prevalence of both endemic helminthiasis and anemia in the pediatric population, particularly in children aged 5-14, but not in infants < 1 year old. In addition to this, chronic health problems such as respiratory ailments, throat infections, and dermatitis were common. While the temporal associations found here do not indicate a casual link between parasitosism anemia, and developmental delays, they do support consideration of the importance of parasitosis treatment in the health and well being of children in developing countries. Specifically, these data provoke reconsideration of the effects of Western medical intervention into indigenous health.
Local Historical Perspective

Many of the problems that contribute to this high frequency of hookworm transmission in the Tamanco district are due to social factors that have developed as a result of Western influence in the area. In the past, medicinal plants were used and obtained from local medicine men, or shaman, in the region. Plants such as "oje", or *Ficus insipida*, were readily available in each village for the treatment of intestinal parasitosis. This method of medical provision was quite beneficial in the aspect that people had easy, predominantly cost-free access to medical care near home. Thus, with higher frequency of treatment, the parasite load intensity was kept low in children and effectively prevented the development of extreme cases of iron-deficient anemia.

When the Peruvian government Ministry of Health took action to "improve" the system of medical provision in its rural regions, they also introduced a stigmatic belief if inferiority of the local shaman to the government health promoters. In the beginning of this governmental program, the village clinics were well supplied with medicines. However as time went on, these supplies were depleted and a lack of further government support has left many villages with nothing more than a few oral rehydration therapy packets. Unfortunately, during this period of transition, the once respected shamans were unable to find apprentices to pass on their extensive knowledge of the local medicinal flora. With time, these natural pharmacists and health providers have died and centuries of knowledge have gone with them. Thus, the well-intentioned government plan for the improvement of rural health has actually accomplished the opposite effect. It has led thousands in this region alone to dependency on a system of medical provision that is severely lacking in both medicines and trained health providers. The jurisdiction clinic is difficult for many to reach and access to a hospital is impossible for most.

Goals in Global Infection Control & Management

The eradication of hookworm infection is a long-term goal for countries and regions where the parasite is endemic. However, past community efforts to permanently rid hookworm from the area have failed due to frequent reuni-fication. These past failures have contributed to a decline in funding and support for eradication programs in the last twenty years (Mascie-Taylor et al 1999).
More recently, the programmatic focus has shifted from eradication to control. Due to the intensity-dependent relationship between iron-deficiency anemia and parasite load, a reduction in the intensity of infection alone will help control the development of anemia and other disorders resultant to this problem. Current control efforts are now focused on reducing infection load and transmission potential in an effort to reduce morbidity associated with the disease (Giles, 1985). Such efforts employ a combination of antihelminthic drug therapy and education programs for safe sanitation management.

The most commonly used antihelminthic drugs for these control efforts are the benzimidazoles (albendazole and mebendazole) which cover a broad-spectrum of helminthes and can reduce prevalence and intensity of hookworm with >90% effectiveness (Fauci et al. 1998). Studies with Kenyan preschool children have shown that treatment with antihelminth drugs are associated with measurable improvements in physical growth and fitness (Stephenson et al. 1989). In addition to chemotherapeutic management, sanitation programs provide latrines along with education programs for the use of the facilities and treatment of human waste prior to agricultural use as fertilizer. The use of footwear is also promoted through these programs and can reduce the intensity of infection by decreasing the frequency and duration of skin contact with contaminated soil.

**Recommendations for Local Helminthes Control**

As with other globally implemented programs for helminthes control and management, a multifaceted system of education, chemotherapy, and iron supplementation is necessary. Behavioral changes must be made in order to make a significant difference in the frequency of transmission. Such health-promoting behaviors would include the use of safe human waste disposal systems, purification of all water ingested by either boiling or chlorinating, and the use of protective footwear. Unfortunately, these changes will most likely not be made with ease. Approximately 90% of the mothers I interviewed were quite aware of the risks associated with providing raw, unpurified, water for consumption to their families. While all initially claimed to purify their water, further questioning revealed that they do so "some" of the time, complaining of the inconvenience of the task and dislike for the taste of purified water.

In addition to these changes in health-related behavior, two options that emerge from efforts to combine Western and traditional medical systems: One option, which could make use of the existing government rural health program, would be a scheduled whole village deworming every 4 months. This could be accomplished by having the sanitatio travel to each village on a
scheduled date to deworm all children and adults suffering from intestinal parasitosis. A broad-spectrum antihelminthic such as mebendazole would be most appropriate as it can be provided at the low cost of $0.03 per dose (Mascie-Taylor et al. 1999). This would enable treatment of a large proportion of the population who could not otherwise afford to make the long trip to the district clinic. In addition to this mass deworming, ferrous sulfate should be provided to the village "boticas" to assist in the maintenance of sufficient iron levels specifically in women and children with low-intensity helminthiasis.

A second option, which could possibly function to bring traditional medicine back into practice in many villages, would be to utilize local plants such as Oje and Papaya for annual treatment of parasitosis. This regimen would, like the western program, need to follow a four-month treatment cycle in order to disrupt the parasite life cycle. Both Oje and Papaya have proven to serve as reliable and effective regimens for treatment of this ailment. In addition to this, both plants are fast growing and sustainable harvest of their resin and are carried out for several years. This program, which should be lead by local healers knowledgeable about the correct dosages of the plant resin, would be available at an extremely low cost and supply of the medicine would be ample. The only disadvantage to this option is that it is not as safe a treatment as the benzimidazoles for young children under the age of four.

These data illustrate the dramatic effects that well-meaning international efforts have had on health in the developing world. The rise in parasitic infections among children in this region, coupled with the rise in malarial incidence recently documented by the World Health Organization, result in 1 in 4 children with anemia. The significant negative effects that anemia has on behavioral and cognitive development have been well documented and the statistics are concerning in terms of the long term effects of the functional capacity of adolescents and adults in this region. Future healthcare efforts that partake of indigenous practices and beliefs together with modern approaches may be the next generation's best hope for health. This observation illustrates the importance of anthropological investigation in international health efforts and clarifies the central role that ethnography and basic research has for future intervention programs.
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The Gower House (15Lvl78) is a historic tavern and hotel located in Smithland, Livingston County, Kentucky at the confluence of the Cumberland and Ohio Rivers. A town with a rich historical background, Smithland’s economy was built upon steamboat travel and trade in the nineteenth century. The Gower House was occupied from the early nineteenth-century until the 1960s and it now stands empty and awaiting renovation. In an attempt to salvage the archaeological record before renovations destroy the deposits surrounding Gower House, Dr. Kenneth C. Carstens and his students at Murray State University have undertaken extensive research at the site. Thus far, the research team has conducted a surface survey of the inlot area, begun salvage excavation of a detached kitchen area, and located the foundation of a razed structure which had mirrored the standing portion of Gower House. The survey and excavation of the detached kitchen area revealed historical artifacts reflective of a tavern and hotel. Ceramics, bone, and glass make up the majority of the assemblage indicating food service and preparation. Window glass makes up a great deal of this assemblage.

Excavation of the Gower House detached kitchen area has characteristics which should be noted. First, the units thus far excavated have been excavated by a number of people. Unit I was excavated by natural stratigraphic levels. The remaining four units of the detached kitchen area were excavated at 10 cm intervals. These excavations were conducted by supervised volunteers from local high schools and Introduction to Archaeology classes at Murray State. A recent flood in Smithland collapsed the original test pit walls, making accurate profiles elusive. It also should be noted that excavation. Unit 4 has been excavated only to four levels because it is almost entirely filled by the stone foundation of the kitchen. It is believed, however, that window glass analysis at this point is valid because original window glass should be deposited at a time of demolition or repair, not at construction and thus the original glass already should have been excavated.

While these problems serve to complicate the matter of artifact analysis, they also increase the need for it. Studying window glass is well worth the effort if it can reveal anything about the stratigraphy of the detached kitchen
area. It also may allow for a better estimate of a date for the levels still being excavated.

**Objectives**

For archaeologists, the value of window glass is related primarily to its potential to provide dates for a site. This makes window glass particularly valuable at Gower House because the earliest records of Gower House, including documentation of its construction were destroyed in a fire in 1831 (Berryman 1997). While many dates have been proposed for the construction of Gower House, none have proven definitive. Thus, the objective of this study is to determine construction date, and to explore other characteristics of window glass that may provide additional information about the Gower House.

**Obstacles**

There are obstacles facing the window glass analyst that must be outlined at the start because they are what determine research methods and analysis. Flat glass has two very frustrating variations: thickness and color. What makes these elements frustrating is not that one cannot make scientific assessments about thickness and color, one certainly can. The problem is that the implications of variation in color and thickness, while they are certainly valuable are also difficult to sort out.

For example, the problem of color is that there are an infinite number of tints that glass can exhibit. How, in such a situation, can one create categories in which each artifact can fit? More often than not, the line between green tinted glass is as blurry as any distinction can be. Some pieces of glass are definitely tinted green and others are certainly blue. It is all of the hundreds of pieces that are some combination of the two that make classification so difficult.

The source of the dilemma lies in manufacturing. The one unifying characteristic of all types of window glass manufacture is that glass is made in batches. Each batch contains the needed raw materials and chemicals, but until the twentieth-century, there was no way to be certain that each batch contained the same amount of each ingredient. As a result, every batch resulted in glass with unique characteristics. Thus, an archaeological assemblage of window glass is not the type of thing that definitively can be divided into a few distinct color categories.

Thickness is much the same. During most of the nineteenth-century, window glass was made by hand. This created inevitable variation in thickness
not only between batches, but also within each pane of glass. Nevertheless, thickness and color do have chronological implications in window glass assemblages, and given that window glass is one of the most common artifacts on historic sites, it is well worth the effort it takes to make sense of it.

Window Glass Manufacture

In order to create any kind of typological scheme for window glass, one must first understand how it was made. This summary will focus on the period of the Gower House, the nineteenth and twentieth centuries.

Crown Glass

In 1800, the predominant type of window glass in the United States was crown glass. Crown glass is made by the creation of a globe of glass at the end of a blow pipe which was then opened at one end and spun until it formed a great disk attached to the blow pipe at its center (Frank 1982:25; Rogers and Beard 1938; Wilson 1976). This method dominated glass manufacture until about 1840 when it was replaced by the more economical cylinder glass, which will be discussed later (Ison 1990). Crown glass is extremely thin, said to range in thickness from 0.92 mm (0.036 in) to 1.14 mm (.045 in) (Ison 1990). However, there is a great deal of variation in crown glass thickness. According to Wilson (1976) an ad for crown glass made in Boston in the late 1700s describes it as "good and brilliant glass that was quite thick and strong," indicating that thickness was a favorable trait. Frank (1982), however, says that thinner glass was more desirable because it let more light flow through the rather dark colored glass of the day. Thus, it is unclear whether the higher quality glass was thick or thin but it is certain that there was variation. In addition, each disk made contains its own variation between thickness at the center versus thickness at the perimeter. The only way to determine the degree of this variation would be to study a sizable assemblage of whole disks.

Cylinder Glass

Cylinder glass is made by again creating a bubble of glass at the end of a blowpipe. Then swinging it to lengthen it into a cylinder, which is then cut and heated to lay flat (Rogers and Beard 1938:141; Wilson 1976). Cylinder glass is thicker than crown glass by about 40 percent (Ison 1990). This is probably because the stress put on it by swinging would not allow it to be extremely thin without breaking. This glass type should have an average thick-
ness of 1.28 mm (0.050 in) to 1.42 mm (0.056 in) and the thickness did increase through time as thicker glass became more desirable (Ison 1990).

**Plate Glass**

Plate glass did not become dominant until its production was mechanized in the 1930s when large factories could roll it out and polish it in mass quantities (Ison 1990; Rogers and Beard 1938). Variation of plate glass is not nearly as significant as in cylinder and crown glass because mechanization stabilized both thickness and color. Plate glass still dominates the window glass industry today.

**Composition**

The chemical composition of glass has changed throughout the past two hundred years primarily in an effort to attain a perfectly clear color. Unfortunately for the archaeologist, color changes resulting from new chemistry innovations do not necessarily coincide with changes in manufacturing techniques and no universal rules exist connecting particular times to particular colors. Sufficed to say that as time passed, manufactures were able to come up with chemicals, which made glass clearer, and so a general trend from darker to clearer glass exists (Ison 1990). This certainly should not be applied in such a way as to place two pieces of glass side by side and declare the darker one older, but when whole assemblages of window glass show a trend in color change from one archaeological level to another a pattern exists which does have chronological implications.

**Discussion**

Because the nineteenth century is dominated by two very different types of window glass manufacture the application of a single linear formula to the whole century would be to disregard the 40% increase in thickness of cylinder glass over crown glass. Both types of glass did increase in thickness over their own periods of production, but they still need to be separated when dating formulas are calculated.

**Donald Ball's Dating Formula**

In 1983, Donald Ball developed a linear formula for dating window glass based on the theory that thickness increased throughout the nineteenth-century. (Ball’s formula states that:
D = M - 1.00mm + 1800
0.0286

Where D is the date and M is the mean thickness in millimeters of the glass assemblage. This formula was originally designed to apply to sites from 1800 to at least 1870 (Ball 1983). Ball (personal communication 1997) has revised that statement, however, and now says that the formula is close to the actual date until 1840 and becomes inapplicable after 1845. This makes sense given that 1840 is the date given for the beginning of cylinder glass domination (Ison 1990). Thus, the Ball formula applies to a specific type of glass within a specific date range. For those sites, which were built between 1800 and 1840, Ball’s (1983) formula has proven to be very close. An example is a study done by Carskadden and Morton (1988) on the glass from a Muskingum Valley site of known occupation from about 1816 to 1820. This study produced a date about a year earlier than the documented date of construction (Carskadden and Morton 1988).

What implications does this have for Gower House? Ball’s (1983) formula, because it is accurate for only the first half of the nineteenth-century, is only applicable to the first quarter of Gower House’s occupation. But it is that early quarter of deposition that this study is attempting to date.

**Color Analysis**

Some analysts have divided glass into three-color categories; clear, blue, and green (Ball 1983; Ball and Baer, 1997; Carskadden and Morton 1988). These categories however, encompass an extremely variable assemblage of artifacts when applied to Gower House. As previously mentioned, the distinction between blue and green glass can be very subjective. Thus rather than dividing the glass assemblages into color categories, each sample of glass from each unit level was examined as a whole for overall color characteristics. Generalizations were then made and added to the notes describing the whole sample in terms of dark, medium, or light tines. These assessments were made based upon the tint as it appeared relative to the whole glass assemblage.

While this method is very general, the application of a few color categories in an assemblage with so much variability could be misleading. Many different tints of glass were often produced simultaneously. The chronological overlap of color tints makes a particularist approach illogical. Thus because the trend from dark to clear glass is a very general one, occuring over a very long period. The Gower House glass was examined for general trends that might correlate the color of glass with stratigraphy through time.
The result of this analysis is what would be expected: the deeper the level, the darker, and thus color the glass (Table 1).

**Thickness**

The thickness of each window glass fragment was measured to the nearest hundredth of a millimeter with an electronic micrometer. Some analysts have measured each piece of glass three times, and averaged those measurements to account for thickness variation within each piece (Roenke 1978). Each fragment in the Gower House sample, however, was measured only once at the center of the piece according to the advice of Grosscup (1979) who felt that "one measurement on each sherd would be sufficient as long as the sample is fairly large and we are dealing with modal distributions." These measurements were entered into a spreadsheet to facilitate the calculation of a mean thickness measurement. This measurement was then plugged into Ball's (1983) formula to determine a date for the sample from each unit level.

Although panes of glass are replaced as they break, and it is very possible that the original glass of Gower House's windows could be found in all levels, it is expected that as depth increases, the mean date of the glass should decrease. The resulting dates do not conform to the rule that as the level deepens, the date becomes older, however (Tables 2-6). Instead, the dates show a general trend towards older glass being below newer glass (Figure 1). This is especially true of Units 1-3, which are side by side and have been excavated to the same level (Figure 2).

**Results**

The latest date given for a sample of glass at the site is 1833, which came from Unit 3 Level 8. For a site which was inhabited up until the 1960s, clearly these dates are very low. This is probably because the adjustment has not yet been made to account for Ball's (1983) formula becoming inaccurate after 1845. A typology will need to be created to separate the pre-1845 glass from the post-1845 years.

**Typology**

Crown glass is more transparent than cylinder glass. It has a better finish because it is never laid out on any surface, and concentric circles can sometimes be seen on it (Ison 1990). The wear that a piece of glass obtains while in use and while deposited in the ground, however, can alter it enough to make it look like every other piece of scratched up flat glass. Additionally,
overlap between thin cylinder glass and thick crown glass prevents the use of a thickness measurement to accurately sort the two types. The best one can do is determine a minimum number of pieces of crown glass.

According to historical literature, cylinder glass was not made as thin as crown glass, which averaged from 0.91 mm (0.036 in) to 1.14 mm (0.045 in) (Ison 1990). Thus for purposes of separation, all pieces of glass below 1.14 mm were counted and classified a crown glass. It is not sound to apply Ball's (1983) formula to those pieces of glass determined to be crown glass by this study because 1.14 mm is an experimental cut off, not a determination of theology. It is a given that some of the glass from the sample in what will be labeled "other" should be included in the application of the formula and not to include them would be to create inaccurately low dates.

One can also count a minimum number of pieces of modern plate glass. Around 1860 a standard thickness for glass was developed through mechanization which began with a thickness of about 1.70 mm (0.070 in) (Ison 1990). In order to account for some overlap and to make sorting easier, a cut off of 2.00 mm was used to separate the newer standardized glass from other types. All pieces of glass falling between 1.14 mm and 2.00 mm were designated as "other" because this group should contain thick crown glass, cylinder glass and this plate glass. Counts were made and percentages were figures for each unit level (Tables 7-11). This study revealed that all of the units excavated to 80 cm or more exhibited a dominance of crown glass or a major rise in crown glass towards the bottom of the excavation units (Figures 3-7).

The lower levels at Gower House exhibit a dominance of glass used before 1845, which means that Ball's (1983) formula can be applied to these unit levels. This legitimizes the dates already calculated for the lower levels of each test unit.

Unfortunately for the Gower House, it is precisely these levels that have the smallest sample size of glass, so the results lose some power, but the combination of these dates provides a decent approximation of a date for construction of the Gower House detached kitchen which will be discussed in the conclusion.

Unit 1

It is beneficial to take a closer look at Unit 1 because it was excavated by natural levels and did show some unique characteristics (Figure 8). Of particular interest is Stratum 4 with the largest sample size of any level by nearly 100 artifacts at n=263. These pieces of glass are also strikingly similar in tint and thickness indicating that the sample is a result of some type of demolition where many of the same window types were deposited at once. Stratum 4 is
described as ash fill with charcoals (Stottman 1996). Stottman (1996) notes that, "A higher frequency of window glass would be expected with demolition type activities or repair activities," and that Stratum 4, "may actually represent clean-up and repair activities to the structure." The date calculated for this unit level is 1809. It is believed that this sample is representative of the deposition of the original detached kitchen windows and that 1809 is a strong candidate of construction.

The other units were examined to look for a correlation of this hypothesis. A check of the levels which would have included this elevation in Units 2-5, however, illustrates that the window glass sample is not nearly as large, and Unit 1 appears to be a concentration.

**Discussion and Conclusions**

It is very difficult to make scientific assessments of window glass on sites with a long period of occupation. The ideal time to analyze window glass is when one is studying a site of limited occupation which happens to fall somewhere in the time range and region of a dating formula such as Ball's (1983). Occupations over a long period of time which extend into the nineteenth and twentieth centuries require much more understanding in order for the window glass to be accurately assessed, and in this case the study becomes less scientific and more intuitive.

The application of Ball's (1983) window glass dating formula to the Gower House assemblage is only partially valid because the Gower House was inhabited long after the temporal usefulness of the formula. Any glass, which may have replaced windows in the Gower House after 1845, can not accurately be dated with Ball's (1983) formula. This was examined for patterns in stratigraphy. Because the lower levels of the test units illustrate a rise in crown glass and a decline of other types of glass, it is believed that the resultant dates of Ball's (1983) formula from these levels is significant. The dates of level seven and eight from each unit were averaged, resulting in an 1812 DATE (Table 12). The mode date of all unit levels is 1811, and as previously mentioned, the significant Unit 1 Stratum 4 resulted in a date of 1809. Thus the result of this analysis is a date for the construction of the Gower House detached kitchen of approximately 1809-1812, a very feasible date given all that has already been learned about this site.

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“It may reasonably be supposed that there is a limit to the degree of complexity of behaviour and cultural life which may be transmitted without language” (Tobias, 1991:836).

Introduction

Human language is a complex system of communication composed of distinct components, one of which is structured verbal communication. This component is unique to humans and involves a large lexicon tied together by grammar-governed sentences. These sentences contain words based on phonemes that combine to produce morphemes (Wolpoff, 1996). Wolpoff (1996) asserts that there are two basic differences between human language and non-human primate communication systems: (1) human language allows an infinite combination of phonemes into arbitrary morphemes, and (2) it also uses a hierarchical system of syntactic rules that create sentences from thoughts, allowing the listener to regenerate each sentence they hear. While non-human primates also rely on vocalizations and paralinguistic features for communication, their system is rudimentary compared to that of humans. Since both modem African apes and humans evolved from a common ancestor roughly five to eight million years ago, and spoken language is considered a derived (occurring since the ape-human split) characteristic (Noble and Davidson, 1991), it is reasonable to assume that our hominid ancestors passed through ape-like communication stages, progressing steadily toward the linguistic capabilities of modem humans.

Just when and how language came about has long been a subject of speculation and controversy. In the nineteenth century, three “ingenious but unprovable accounts” of language origins were put forth: the bowwow theory, the pooh-pooh theory, and the ding-dong theory (Salzmann, 1998:113). The bowwow theory postulates that the first words early humans uttered were an attempt to imitate animal sounds, the pooh-pooh theory contends that the first speech was in response to pain or other strong feelings, and the ding-dong theory holds that “the peculiar ring each substance in nature possesses came to be vocally represented in the first human words” (Salzmann, 1998:113). However, such hypotheses, as Salzmann noted, are untestable via the scientific method.
How is it possible to determine when hominids graduated from an ape-like communication system to true language? Theories of language evolution like the three listed above or those involving hand gestures, blending, and duality of patterning cannot be tested in the fossil record since no evidence of them can fossilize. What does fossilize are bones, and these can provide anatomical evidence for language capacity, as we shall see below.

There are two schools of thought on the timing of the origin of human language: (1) language appeared early in our evolutionary history, at least by the beginning of the Pleistocene, and (2) language appeared very late in human evolution, maybe only 40,000 years ago (Walker, 1993). Evidence cited by adherents to both schools is gathered by analyzing hominid vocal tracts, central nervous systems, brain size, brain structure and asymmetry, and also by looking at the complexity of the archaeological record, evaluating language development in children, and assessing the language capabilities of non-human primates (Walker, 1993).

In order to appraise the linguistic ability of fossil hominids, I have focused on some of the morphological evidence. During the course of this research I discovered that the literature available on the topic of "Language and Human Evolution" is vast; many books and dissertations have been written on the subject. In fact, Mellars (1996:387) writes, "it is tempting to suggest that there are almost as many views of the possible origins of language as there are linguists, psychologists and paleoanthropologists who have written on the issue." It is impossible to exhaustively deal with all of the various evidence and theories in such a brief paper. My goal is to focus on evidence for language capacity from the vocal tract, brain, and hypoglossal canal, and then to discuss this morphological evidence in the genera *Australopithecus* and *Homo*.

Language is extremely useful to humans. Liebennan (1992) writes that human speech allows the transmission of complex ideas much more rapidly than could occur through non-linguistic means. While sign language can do the same, the hands are not free for other tasks. "Vocal language represents a continuation of the hominid evolutionary trend towards freeing the hands that followed from upright bipedal locomotion" (Liebennan, 1992:134). Therefore, vocal language, once developed, became a key part of hominid evolution.

**The Vocal Tract and Language Capabilities**

The vocal tract, which includes the pharynx, larynx, laryngopharynx, oropharynx, and nasopharynx, is not only involved in the production of sounds and speech, but is also essential to breathing and swallowing. A brief de-
scription of the linguistically relevant anatomical terms and their functions follows.

At the proximal end of the esophagus, the muscular tube which transmits food from the oral cavity (mouth) to the stomach, three anatomical regions of the vocal tract are connected: the nasal cavity (nose), the oral cavity, and the larynx (voice box) (Aiello and Dean, 1990). This connected area at the top of the esophagus is called the pharynx. The area of the pharynx that opens opposite the larynx is the laryngopharynx, the area which opens opposite the oral cavity, is the oropharynx, and the area which opens opposite the nasal cavity is the nasopharynx. The larynx prevents food from entering the opening of the trachea (windpipe) during swallowing, and also closes during extreme muscle strain so that the thorax can act like a rigid framework, thereby easing exertion (Aiello and Dean, 1990). In addition to these important functions, the larynx contains vocal folds (cords), from which speech sounds originate. These folds vibrate as air is pushed through them. The pharynx, oral cavity, and nasal cavity modify this sound in order to produce the many sounds necessary in human speech (Aiello and Dean, 1990).

Laitman (1993) found that the position of the larynx is important in determining how an animal vocalizes, breathes, and swallows. He described two anatomical patterns in the position of the larynx: the basic mammalian pattern, and the older (over two years old) human pattern (see Figure 1). In the basic mammalian pattern, the larynx is found relatively high in the neck, approximately opposite the first, second, and third cervical vertebrae (Laitman, 1993). This position lets the larynx link with the nasopharynx, providing a direct passageway for air between the nose and the lungs. This position allows mammals, excluding older humans, to swallow liquids and breathe simultaneously; while the animal is breathing, the liquid flows around the side of the interlocked nasopharynx and larynx though the piriform sinuses to the esophagus and stomach (Laitman, 1993). Human babies are able to do this as well, as this is a necessity for successful nursing. Although this anatomical pattern allows simultaneous swallowing and breathing, it also limits the multitude of sounds that the animal, or baby, can produce. Since the larynx is so high in the throat, the space allowed for the pharynx is limited. Therefore, its ability to modify sounds produced by the vocal folds of the larynx is also limited. Because of this, most mammals rely primarily on the oral cavity and its surrounding lips to modify the laryngeal sounds (Laitman, 1993).

Once a human reaches about the second year of life, the larynx descends into the neck, reaching its final position at the fourth to seventh cervical vertebrae (Laitman, 1993). This has many implications for the human's way of breathing, swallowing, and vocalizing. This position does not allow the larynx to lock into the nasopharynx in order to separate the swallowing and
breathing passageways. Now, the trachea and esophagus cross above the larynx, increasing the possibility of choking on food lodged in the windpipe. Additionally, adult humans cannot drink and breathe at the same time without choking. However, since the larynx is so far down in the throat, the pharyngeal area above the vocal folds is expanded, allowing a greater modification of laryngeal sound (Laitman, 1993). Laitman (1993:58) writes, "the expanded pharynx is the key to our ability to produce fully articulate speech."

Laitman (1993) was able to correlate the shape of the basicranium (bottom of the skull; forms the roof of the upper respiratory tract) with the position of the larynx, thereby allowing the position of the larynx to be evaluated in fossil hominids in which the basicranium is preserved. He found two anatomical configurations: a flat basicranium and a flexed basicranium. The flat basicranium is seen in non-human mammals and is associated with a relatively high larynx. The flexed, or arched, basicranium, is seen in older (over two years old) humans and is associated with a relatively low larynx (Laitman, 1993).

The Brain and Language Capabilities

Two issues in brain anatomy are frequently discussed with reference to the speech capabilities of fossil hominids: the speech cortices called Broca's and Wernicke's areas (see Figure 2), and brain lateralization. The mammalian brain is divided into two symmetrical halves: the right and left hemispheres. The left hemisphere is most involved in speech and contains Broca's and Wernicke's areas. "Wernicke's area appears to generate the basic structure of sentences, which are then encoded in Broca's area; the articulation of sounds is directed by certain motor areas of the cortex. Comprehension of speech takes place in Wernicke's area after acoustic signals are transferred there from the ear by the auditory cortex" (Salzmann, 1998:36-37). While Broca's and Wernicke's areas are traditionally thought of as the most important neural parts for speech production, Lieberman (1998) writes that deep subcortical neuroanatomical structures and pathways are also required for language production. However, since brain tissue does not fossilize, paleoanthropologists must be content to study the development of Broca's and Wernicke's areas from endocasts.

Brain lateralization is considered to be another important component in the capacity for language. Human language is lateralized; that is it is controlled by one side of the brain, usually the left. However, Lieberman (1998) writes that brain lateralization is a primitive (plesiomorphic) character, which, by itself, cannot indicate whether or not language was spoken. Other creatures that do not possess language, like birds and frogs, have lateralized
brains, indicating that this feature was present in the mammal-reptile ancestor. However, Wolpoff (1996) considers brain lateralization a significant aspect of language ability, and writes that while other primates show cerebral asymmetry, it is not on the same scale that humans do. Although Liebennan (1998) may question its use, brain lateralization is frequently assessed in the context of language capability of fossil hominids.

The Hypoglossal Canal and Language Capabilities

The hypoglossal nerve, or cranial nerve XII, is responsible for supplying nerves to the muscles of the tongue. Kay et al. (1998) found that the hypoglossal canal, through which this nerve runs, is absolutely and relatively smaller in African apes (chimpanzees and gorillas) than it is in humans. They infer that the human tongue has a richer supply of nerves than the non-human primate tongue, and postulate that canal size may indicate the degree to which fossil hominids had motor coordination of the tongue, and therefore, command of language.

Evidence for Speech In Australopithecus

The genus Australopithecus consists of several species known from sites in Africa. Our earliest ancestors, these creatures lived approximately 4.4 to 1 million years ago.

Laitman (1993) found that generally the basicrania of australopithecines was unflexed, and has reconstructed the position of the larynx as high in the neck. While australopithecines could most likely breathe and swallow simultaneously, they probably could not produce the sounds found in modern human speech patterns. Liebennan (1998) concurs, writing that the australopithecine basicranium does not differ significantly from that of an unflexed chimpanzee. He concludes that australopithecine speech anatomy is similar to that of chimpanzees (Liebennan, 1998).

Holloway and De La Coste-Lareymondie (1982) studied brain endocasts of forty-one fossil hominids. While they found that hominid brains are more asymmetrical than pongid brains, they write that their sample of Australopithecus cannot support this conclusion. They suggest that the human pattern may have emerged sometime between the time of Australopithecus and Homo erectus. However, Tobias (1983 as cited in Walker, 1993) has claimed the presence of Broca’s, but not Wernicke’s, area in A. africanus.

Kay et al. (1998) found that the hypoglossal canals of Australopithecus fall within the range of African apes, which are much smaller than modern
human canals. They conclude that the vocal capabilities of australopithecines were not significantly more developed than apes.

Liebennan (1975:159) hypothesizes that "the initial language of the australopithecines ... may have had a phonetic level that relied on both gestural and vocal components. The system may have become more elaborate as factors such as tool use, toolmaking, and social interaction became more important". And Laitman (1993) postulates that australopithecines probably had a communication system more advanced than modern great apes. However, these hypotheses are not testable via the fossil record. It does seem, however, based on the morphological evidence, that australopithecines probably did not have human-like speech capabilities. We can only speculate about their communication system.

Evidence for Speech in Homo

The language capabilities of three species in the genus Homo will be evaluated: Homo habilis, Homo erectus, and Neandertals.

Homo habilis

The species Homo habilis has traditionally inspired controversy among paleoanthropologists, mostly over whether specimens conventionally attributed to H. habilis comprise one species or two. This paper will not address that discussion, and will not differentiate between the larger and smaller morphs of H. habilis. H. habilis is known from East and South Africa, and first appears in the fossil record 2.4 million years ago (Junnain et al., 1997).

Unfortunately, only a single specimen of H. habilis (OH 24) preserves the basicranial area. Tobias (1991) writes that, while Laitman and Heimbuch (1982) assert that OH 24's basicranium displays flexion consistent with the degree seen in orangutans, the specimen is distorted making their measurements unreliable. Therefore, basicranial flexion cannot be properly evaluated in this species.

Tobias (1991) described the endocranial casts of H. habilis as possessing prominences corresponding to well developed Broca's and Wernicke's areas. Since these "are the two most important neural bases for language abilities in the human brain ... it is reasonable to accept that the occurrence of these well-developed prominences on the endocasts testifies to the presence of the neurological basis of articulate language in the brain of H. habilis" (Tobias, 1991:836). Tobias (1991) also found that both the frontal and parietal lobes of the brain of H. habilis exhibit asymmetry and concludes that "the occurrence of both a strong inferior parietal lobule and a prominent motor speech
area of Broca in the endocasts of *H. habilis* represents the first time in the history of the early hominids that the two most important neural bases for language abilities appear in the paleoneurological record" (Tobias, 1991:730)

Kay *et al.* (1998) analyzed hypoglossal canal size from probable *H. habilis* specimens and found that they are much smaller than those of modern humans are. They conclude that the speech capacity of *H. habilis* would not have differed from that of African apes.

Tobias (1991) contends that *H. habilis* had the capacity for speech, and also had a complex culture. "This culture was of an order of complexity and reflected a level of intelligence that virtually demanded spoken language for the transmission of the culture to the young" (Tobias, 1991:839). However, the basicranial and hypoglossal canal evidence contradicts Tobias's (1991) assertion.

**Homo erectus**

*Homo erectus*, the predecessor of modern humans on the hominid evolutionary tree, was a widely distributed species known from sites in Africa, China, Europe, and Indonesia. The latest dates suggest that this species first appeared approximately 1.8 million years ago, and lasted for at least one million years (Junnain *et al.*, 1997).

Laitman (1993) analyzed the basicrania of various *H. erectus* specimens and writes that some of the skulls show incipient basicranial flexion, indicating that the larynx might have started its descent down the throat in this species. Liebennan (1992) concurs, writing that it was with *H. erectus* where the human-like supralaryngeal vocal tract started evolving. However, Walker (1993) contends that there is no direct support from reconstructing the upper respiratory tract for the presence of speech 1.5 million years ago, during the time of *H. erectus*.

Begun and Walker (1993) analyzed the brain of the famous "Nariokotome boy" (KNM-WT 15000), a near complete *H. erectus* skeleton discovered in 1984 in Kenya. The brain endocast of this specimen indicates that Broca's area was present and the asymmetry between the lobes is pronounced. However, the authors treat this evidence with caution, and point to the fact that Broca's area is also involved in non-linguistic activities such as motor programming. They conclude "that enlargement of Broca's cap, or of the area in its immediate vicinity, should occur at the same time that stone tool assemblages with complex typologies appear in large numbers is suggestive of some sort of causal linkage" (Begun and Walker, 1993:357), thereby giving Broca's area credit for increased cultural complexity. Asserting that the cause
of this complexity lies more with hand control and other fine movements rather than language ability.

Kay et al. (1998) also examined the Nariokotome H. erectus boy, and concludes that he had a small hypoglossal canal out of the human range. However, they concede that this could be because the boy was young when he died.

It seems, based on the available evidence that support for speech in H. erectus is lacking. The brain evidence may point to the capacity for speech, depending on how much credit one is willing to give to Broca's area, but the respiratory tract reconstruction seems to preclude the possibility for articulate spoken language as we know it in H. erectus. The hypoglossal canal evidence is inconclusive.

Neandertals

Neandertals are well represented in the fossil record. These hominids lived in Europe and the Near East from 130,000 to 35,000 years ago (Jurmain et al., 1997). Whether or not they are ancestors to modern humans is a topic hotly debated among paleoanthropologists.

Laitman et al. (1979) analyzed the basicranial flexion of some Neandertal specimens, discovering that the upper respiratory structures of three specimens were similar to a subadult human. While the larynx was not as low in the throat as in modern humans, it was low enough to allow for some pharyngeal expansion. They write that this differed greatly from the primitive australopithecine condition. However, another Neandertal specimen, La Chapelle-aux-Saints, was significantly different from the other specimens. It had upper respiratory structures more like a two to four year old human child, with a much higher larynx than the other specimens (Laitman et al., 1979). It seems that the Neandertal upper respiratory tract presents a mosaic of conditions, perhaps in transition. They conclude that "classic Neandertals had the potential for greater sound modification than australopithecines, [and] they probably had a more restricted vocal range than that of modern adult or subadult humans... What we emphasize here is that Neandertals probably had a different, narrower, range of vocalization available to them than do modern humans" (Laitman et al., 1979:31).

Lieberman (1998) also discounts the possibility that Neandertals could have had a human-like vocal tract. He writes that the length of the Neandertal mouth, which can be measured between the incisors and basion, was too long for them to have a long pharynx without placing their larynges in their chests (see Figure 3). He concludes that the Neandertals had less efficient speech communication than modern humans, and that "they represent an in-
termediate stage in the evolution of human speech" (Lieberman, 1998:95). He contends that the classic Neandertals of Europe were the last to retain the non-human supralaryngeal vocal tract (Lieberman, 1992).

However, in 1983 a partial skeleton of a Neandertal was uncovered at Kebara Cave. The remains include a hyoid bone, a bone in the anterior portion of the throat, which provides muscle attachments for muscles involved in swallowing and speaking. The Kebara hyoid is morphologically identical to that of a modern hyoid, and Arensburg (1989) writes that this bone indicates that it and the larynx were relatively low in the throat. He concludes that the Kebara Neandertal was just as capable of speech as modern people (Arensburg, 1989).

Holloway and De La Coste-Lareymondie (1982) found that Neandertal brains showed the same asymmetry that modern human brains do. However, they stop short of inferring that Neandertals were capable of speech, and contend that the asymmetrical patterns present in the brain endocasts cannot prove the existence of language in any pre-human hominid group.

Kay et al. (1998) found that the hypoglossal canals of Neandertals are significantly larger than those of African apes and are within the range of those of modern humans. They believe that the vocal capabilities of Neandertals were modern by 600,000 years ago.

Mellars (1996:390) sums it up nicely when he writes that "no one would seriously question that Neanderthals, as well as much earlier hominids, must have possessed a reasonably effective form of vocal communication... the question is simply whether Neanderthal language was of essentially modern form, or... fundamentally simpler in its basic grammatical and syntactical structure". The morphological evidence seems to indicate a transitional condition in the Neandertals. While exact human-like speech probably was beyond their capabilities, they likely had a complex communication system that heavily relied on the spoken word.

Language Origins and Cultural Complexity

While this paper has focused on the anatomical capabilities of our hominin predecessors to articulate spoken language, Noble and Davidson (1991) assert that morphological evidence by itself is not sufficient to support the contention that the hominids analyzed used language. Since language is a behavior, and behavior does not fossilize, it cannot be directly inferred from a human skeleton (Noble and Davidson, 1991). These authors recommend investigating the origins of language from the perspective of the archaeological record, from which they claim modern human behavior, such as language, can be inferred. They maintain that since language is the symbolic use of
signs, evidence of symbol usage in the archaeological record is the evidence that must be looked for. They find no such symbolic evidence before 32,000 years ago (Noble and Davidson, 1991).

However, Tobias (1991) believes firmly that H. habilis, at 2.4 million years ago, was not only capable of speech, but actually had much to talk about. He asserts that the complex culture associated with this species "reflected a level of intelligence that virtually demanded spoken language for the transmission of the culture to the young" (Tobias, 1991:839). He argues that the culture of H. habilis exceeded that of the australopithecines in its "lithicultural" achievements, and that the manufacture of these stone tools required intelligent behavior. To sum up his argument, he contends that H. habilis not only had the anatomy necessary for the production of verbal language, but also possessed an advanced culture which needed spoken language in order to transmit it to the next generation. This occurred over hundreds of thousands of years via social transmission, the most effective means of which is spoken language (Tobias, 1991).

Although H. habilis is the evolutionary predecessor of H. erectus, Begun and Walker (1993) and Walker (1993) do not readily assign language to H. erectus as assuredly as Tobias (1991) does to H. habilis. Walker (1993) seems to concur with Noble and Davidson (1991) that the earliest signs of language can be uncovered in the archaeological record, and that there is no substantial evidence for an early origin of human language. He writes that Tobias's (1991) idea that H. habilis required language for cultural transmission is testable, and suggests an experiment in which people are asked to make stone tools either by following verbal instructions, or by following an example. He believes that the example would be easier (Walker, 1993).

Mellars (1996) contends that the Neandertal archaeological record called the Mousterian or Middle Paleolithic, lacks evidence for symbolic behavior or expression. This is based on a lack of well documented decorative or artistic items in Mousterian contexts; a lack of any obvious symbolic component in most Middle Paleolithic tools; and a lack of convincing evidence for ceremonial burials... No one would question, however, that elaborate symbolic thought and expression is one of the defining hallmarks of all fully developed languages. The virtual lack of convincing evidence for symbolism in Mousterian contexts is at least consistent with the lack of highly developed language in Neanderthal communities, even if it cannot be take as concrete proof of this (Mellars, 1996:389).

He goes on to allege that it is at the Middle to Upper Paleolithic transition where modern human language appeared, and ties this to cultural advances
which occurred in the Upper Paleolithic. These include an elaborate toolkit and a shift in economic planning strategies which, he writes, would demand a structured and relatively advanced spoken language (Mellars, 1996).

Conclusion

The anatomical evidence seems to indicate that it was *H. erectus* who began the morphological transition from an ape-like communication system to a modern one. The evidence for speech prior to the time of this species is equivocal. The Neandertals present a variety of morphologies, indicating that they too were in transition, but were likely less removed from modern capabilities than the earlier members of the genus *Homo*.

However, as Noble and Davidson (1991) maintain, morphological evidence is insufficient to confidently assess the linguistic capabilities of early hominids. They claim that symbolism in material artifacts, meaning something that conveyed a meaning, is not seen until 32,000 years ago. In Germany such signs are manifested as the repetition of arbitrary signs and iconic sculptures, and in France, similar clusters of iconic and non-iconic figures were discovered. Noble and Davidson (1991) support archaeologists who have claimed a revolution in cultural complexity beginning in the Upper Paleolithic, roughly 40,000 years ago.

It seems that we can confidently state that while early hominids likely possessed a more advanced communication system than non-human primates, the morphological and archaeological evidence for modern language is not incontestable until fully modern members of our species, *Homo sapiens*, came into the evolutionary picture. Even though Tobias (1991) asserts that *H. habilis* spoke, I tend to concur with Walker’s (1993) assessment that the cultural complexity of this species could be transmitted via example and did not require spoken language. Modern human language seems to have appeared roughly 40,000 years ago.

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Natural family planning (NFP), a basic human right, is more than a way to avoid or achieve pregnancy, it is thought by many to be a way of life. The World Health Organization defines it as, "methods for planning and preventing pregnancies by observation of the naturally occurring signs and symptoms of the fertile and infertile phases of the menstrual cycle, with the avoidance of intercourse during the fertile phase if pregnancy is to be avoided," (World Health Organization, 1993, 2). This couples-oriented approach to family planning requires a strong relationship as well as open and honest communication between partners if it is to work effectively. With proper instruction on method use and education on fertility and basic human reproduction, NFP can be used by anyone with proficiency. NFP is promoted by followers and instructors as a healthy and ecologically safe form of family planning, a way to strengthen relationships, and by the Catholic Church as a morally and spiritually sound way to space children. Regardless of the reason it is used, many are finding benefits from this holistic approach to reproductive health.

In order for NFP to be followed correctly and therefore reach its full capacity for effectiveness, with about ninety-five to ninety-eight percent accuracy rates (WHO, 1986), a healthy relationship between sexual partners is both vital and necessary. In many less developed countries around the world, there is no real sense of partnership within the relationship and many decisions are one-sided, including those relating to sexual and reproductive health issues. For instance, it is not uncommon for men to hold supreme authority within a couple; in doing so, the woman is relegated to an inferior and submissive position in which she lacks the authority to express her own opinions or desires. In these circumstances women feel the ability to have any say in the reproductive decisions with less frequency than in populations where women enjoy a greater autonomy. The objective of this research was to identify potential barriers preventing effective use of NFP. This includes involving men in a more active and positive role within the use of NFP. Once these issues have been identified, it will then become easier to incorporate changes into counseling and teaching guidelines which will then help couples handle relationship problems surrounding NFP use more effectively.
NFP requires the involvement of both men and women, each playing a crucial role and having a large effect on its outcome as a method by which one is able to naturally avoid or achieve pregnancy. The more aware and knowledgeable both partners are concerning matters of reproductive health, the more likely it is that this method of family planning will be used effectively and have a high continuation rate after the initial training. The motivation for this particular research stems from an interest in current methods of NFP and the counseling they provide as well as a concern over gender inequality and violence against women. The choice, or use of, family planning is often linked not only to reproductive health but also to the overall societal view of women. In order to make NFP more effective for a given community; it is necessary to understand the undertones, beliefs, and attitudes of the particular culture.

**Background Information On NFP**

Natural family planning can be used as a way to either achieve or avoid pregnancy; it is a method that emphasizes fertility awareness and a greater understanding of the importance of both sexual and reproductive health, as well as including changing the dynamic of the overall lifestyle and behavior. As such, no artificial chemicals are needed and thus no side effects are experienced. This form of family planning targets couples through the reliance on cooperation to identify fertile signs, and allows the relationship to grow stronger through a new and more open form of communication. Some of the goals of NFP include the building of love, respect, and understanding between the partners. NFP adds to self-awareness and understanding through the fact that it relies on looking at signs from the body to determine fertile and infertile periods of a woman’s cycle. The increased knowledge that the woman gains often leads to more self-respect and an increased sense of autonomy as she begins to feel some control over her fertility.

NFP, also known as a ‘fertility awareness method,’ incorporates an understanding of the body and self-awareness. In order to observe the natural fertility signs and symptoms of the body, it is necessary to understand how the body works. For instance, it is important to realize that men are always fertile and sperm can live anywhere from three to five days inside of a woman. On the other hand, women are only fertile for a small amount of time each month and the egg can only live for a day or two. Couples must be willing and motivated to observe the woman’s fertility signs (Family Health International, 1998, online), as well as to remain abstinent during the fertile times. While several methods of NFP are taught, they are based on either the cervical mucus secretions, or a combination of the secretions and the basal body
temperature (BBT). Both the Billings Method and the Creighton Model of NFP are based on the monitoring of cervical mucus to determine the fertile phase. A series of codes or colors is used to keep track of the different types of mucus. For instance, red is often designated to menses; green can be used to designate dry days; yellow can be used to designate sticky, white, cloudy, infertile mucus; and white can be used to indicate wet, clear, slippery, fertile mucus. By using these techniques to keep track of secretions, both the man and the woman are able to clearly see when the woman is entering her fertile phase and abstinence is required. The Sympto-Thermal Method combines the observation of cervical secretion with the BBT.

Sexual Health Rights and Gender Roles

Natural family planning involves more than just recognizing infertile and fertile days of a woman’s cycle; it entails general sexual health, a basic right for all humans. "Sexual health should aim at the enhancement of life and personal relations," (Family Care International, 1995, 16). The International Women’s Health Coalition has written the following concerning this subject: "Sexual health means having a responsible, satisfying, and safe sex life. Achieving sexual health requires a positive approach to human sexuality and mutual respect between partners," (IWHC, online). Sexual health goes further than the physical to the spiritual, emotional, and psychological issues that men and women must grapple with in their relationships; to live a healthy sexual life depends on the cooperation between men and women. Women need to be more empowered in their sexual life in order to have more say in family planning decisions; fertility awareness can serve as a starting point. The social context and societal view of sexuality can influence an individual’s decisions and understanding of his/her body as much, if not more so, than any other factor. In this way, one must attempt to understand the gender, power, and sexual dynamics within a culture before beginning any sweeping reform in family planning.

Gender roles vary greatly around the world, but the term itself refers to socially determined characteristics created by the community and found within a particular culture (Williams et. al.) Because these roles are socially prescribed, they are subject to change rapidly. Individuals are born men or women in the biological sense, but the terms female/feminine and male/masculine are learned over time, passed on from generation to the next. The attributes and behaviors that are deemed appropriate for each particular gender become the gender identity and roles that the individual is expected to follow (WHO, 1998, on line). "Women and men are defined as different types of beings, each with their own opportunities, roles, and responsibili-
ties," (WHO, 1996, online). Creating and sustaining a family planning program of any type relies upon the knowledge of the influence that gender roles play on the lives of men and women, especially in terms of reproductive issues.

In the past, few family planning programs have acknowledged the role of men in contraceptive decisions, yet this ignores half of the equation. The different roles that men and women play in societies around the world have a large impact on the overall health of the individual. Social conditions, especially diseases and sexually transmitted diseases (STDs), impact men and women differently. This is due in part to the different levels of access to health care. "Patterns of health and illness in women and men show marked differences," (WHO, 1996, online). Several United Nations documents refer to access to family planning as a universal human right, yet many of those who need it the most lack access. "Having access to safe, effective, affordable and acceptable contraceptive choices can influence nearly all...aspects in a woman's life," (FHI, 1999, online). Family planning has the ability to improve the overall health of women through child-spacing, reducing mortality rates of women giving birth and their infants, as well as increasing women's empowerment and control over their own body. Family planning falls with sexual rights in that it is a human right of women to "have control over and decide freely and responsibly on matters related to their sexuality, including sexual and reproductive health, free of coercion, discrimination, and violence," (FCL, 1995, 17). The more recent Beijing and Cairo conferences have recognized that women's reproductive needs and overall sexual health are a matter of human rights, and must be treated as such.

**Violence Against Women**

Violence against women is not a concern that can be limited to the private sphere; it is a matter that reflects the general health of a population and thus needs to be addressed as a public health issue. Nor is this a problem that is limited to one particular group of women; instead, it reaches across all social, racial, and age lines. "Violence against women is a public health issue that must be negotiated on a global and local scale," (IWHC, online). This line of thinking, that family planning, reproductive health, and domestic violence are often intimately linked is fairly recent. Physical, verbal, economic, and psychological abuse act to diminish women's control over their own sexuality and decrease protection from STDs and unwanted pregnancies. "Sexual abuse...has significant effects on women's reproductive health," (United Nations Population Fund, online). Psychological/mental abuse can be more damaging that the physical, and can have a lasting impact on the lives of
women increasing suicide rates and other self-harming behaviors. In many societies violence against women is deeply imbedded in the culture; because of this, it makes it hard to fight. For instance, some cultural norms socialize women into submissive roles; any who stray from these traditional roles risk violence and/or punishment," (UNFPA, online). "Deeply imbedded attitudes about male-female relations, social taboos against discussing 'private matters' in public, and the lack of a 'technological fix' all work against a solution." (Heise et al., 1994, 1). Educated health care providers can play a vital role in preventing violence in the home, acting as a link between the private and the public sectors and challenging gender roles and power relations within a community.

"Stereotypes about 'appropriate' male and female sexual behavior operate at the individual level to fuel sexual coercion," (Population Council, online). Not only can psychological forces affect a person's sexual behaviors, but so can social structures and larger cultural values. In many cases, violence has been accepted and tolerated to such a degree that it often appears natural and nonnal (Cabaraban, 1995). Stereotyped gender roles, socioeconomic differences between men and women, and societal gender-biases against women can add to this growing problem; "Authority is legitimated and culturally prescribed," (Cabaraban, 20). Many women learn not to fight back against their husbands for fear of a greater amount or severity of abuse. "All societies have forms of sexual violence that are socially proscribed and others that are tolerated, or in fact encouraged, by social customs and norms," (Heise et al., 1995, 20). There is a certain amount of social acceptance of male violence stemming from the [false] belief that men are more naturally aggressive and violent than women; this traditional view ignores the role of culture and socialization and the immense impact that can have on adult behavior. "Significantly, sexual conquest and potency appear as repeated themes in many cultural definitions of manhood, placing women at increased risk of coercive sex," (Heise et al., 1995, 27-28). Until men no longer feel the need to control women and their fertility to ensure their own 'manhood,' violence against women, often related to reproductive issues, will continue to be a problem around the world. To begin to eradicate the problem, sexuality and violence need to be examined together.

"Violence against women is an extremely complex phenomenon, deeply rooted in gender-based power relations, sexuality, self-identity, and social institutions," (Heise et al., 1994, 29). Many women are afraid to mention any form of contraception to their partner for fear of abuse, abandonment, or accusation of infidelity. Add to already present problems alcohol abuse, and what was already a bad situation can escalate into a disaster. Under the influence of drugs or alcohol, aggressive tendencies can increase dramatically. If
a woman has little control of her sex life when both partners are sober, her controls over her partner's actions if he is drunk are none. In some ways, NFP places women in this category at risk for more violence. The requirement to abstain during the fertile time, when she is most likely to conceive, may create problems between the sexual partners. Her refusal to have sex is likely to anger someone under the influence of alcohol much faster than otherwise; it is then that she is at a higher risk for rape, violence, and abuse. "Studies have found that domestic violence and nonconsensual sex are realities in the lives of many women," (Gupta and Weiss, 8). The underlying problems, particularly in regards to domestic abuse and alcohol abuse, must be addressed prior to any counseling on NFP. The ultimate goal must be voluntary and safe sexuality for women and a more positive role in reproduction for men.

Male Involvement

Cultural factors influence the varying relationships that men have with the private, family sector. Men's roles, often vague at best, need to become more concrete and proactive in order for women to gain the empowerment that they need to become more autonomous. "Women's empowerment begins in the household with equality, autonomy and respect. Achieving equality between men and women in the family is the foundation on which empowerment in other areas is based," (UNFPA, on line). Cultural barriers that emphasize the traditional belief that only the woman belongs in the home must be confronted on a large scale. Both parents play a critical role in the family, and this need to be understood by a broader audience. "Reinforcing the parent-child link is critical to efforts to empower women and promote gender equity," (UNFPA, online). Family policies need to include sexual responsibility in messages that promote gender equity. By reaching a younger, adolescent, audience it becomes easier to change the traditional beliefs that presently keep men from actively participating in home life on a daily basis; from this, a new idea of fatherhood would emerge.

Data shows that while men represent roughly half of the world's population, they account for, at the highest, one-third of contraceptive use, (AVSC International, 1999, online). Both men and women need to be educated about reproductive issues in order for family planning decisions to be made effectively. "Numerous studies have shown that a supportive and informed male partner can greatly improve the use of safe and effective family planning methods," (AYSC, 1999, online). Most health clinics and family planning services typically exclude men from their service-delivery. In order for men to assume a greater responsibility in reproductive health it is necessary to de-
velop programs that seek men as a larger audience, instead of a side note to women. Men should be viewed as important targets for family planning services, (Danielson et al., 138-144). Programs aimed exclusively at men or women tend to be less effective than those that cater to both; bringing men and women together comfortably in family planning clinics is of high importance. "Men's and women's needs should not be dealt with in isolation, since most sexual, family planning and child-bearing decisions should ideally be a joint affair," (International Planned Parenthood Federation, 1998, online). The realization must be made that men can have a positive effect on women's health, particularly through preventative efforts, support and encouragement.

Counseling

Implementing changes in an area where tradition rules cannot be done quickly or easily. Perhaps central to increasing the awareness and understanding of sexuality and fertility are the health workers who also serve as educators. With the proper instruction and patience, NFP can be taught to any willing individual, regardless of economic or educational level. The first step involves finding qualified and enthusiastic individuals who are committed to the issues involved with reproductive health. Counselors and instructors need to know the technical aspects of human reproduction, which includes basic physiology, and knowledge of all contraceptive forms. They must also, however, be understanding, caring, good listeners, good communicators, unbiased, and respectful of their clients needs and concerns. Clients have a basic right to make a free and informed choice based upon balanced information that they are given by the instructor. A counselor/instructor must be careful not to inflict their own values or judgments upon a client and must be able to talk comfortably about all issues in a simple language. Privacy/confidentiality and trust must be emphasized between the instructor and client in order to build an open and effective relationship that will best meet the needs of the client.

Family planning counselors/instructors need to be well educated about sensitive issues that include sexual health and domestic violence. They must understand non-verbal as well as verbal communication, and be able to recognize situations that would place a woman in a dangerous situation. The quality of the care that the client receives is crucial to helping end precarious situations and ensure better sexual health. Being aware of cultural needs, beliefs, and practices is primary before effective and efficient treatment! Counseling can begin. Family planning is a continuous life process that involves more than just reproduction, but also indicates approached to general life. "The only realistic way to treat family planning education is with the
context of the whole range of new skills and attitudes relating to all aspects of daily life," (EI-Bushra and Perl, 15). Health workers have "a responsibility as practitioners to be cognizant of issues around women’s safety and to be aware of the role that abuse may play in the etiology of certain reproductive health complaints," (Population Council, online). Providers must be able to provide support, lend an understanding ear, and to give referrals when necessary. Instructors/counselors can act as avenues for to create or improve communication and open the doors for the education of the larger community.

One of the barriers to family planning, particularly natural family planning, is the lack of access for those who need it most. There is an Ulunet need for family planning in developing countries around the world. In order to reach a larger majority of the people within a community, certain steps need to be taken. Firstly, mobile clinics are able to travel to places where community members have no easy form of transportation by which to reach the larger health centers. Secondly, respected community leaders can be trained as NFP instructors as a way to gain the ear of more people in the community and ease the burden on the medical community. Thirdly, support from public officials and community/religious leaders can serve to create a path of access for health practitioners to the larger and more isolated public.

Various forms of communication can serve to spread the messages of sexual and reproductive health while reaching broader audiences. Mass media and public advertisements have proven to be effective ways of getting reproductive health information to a wider and more diverse range of people within a society, especially when those ads are targeted towards specific groups. For instance, it has been found that family planning and sexual health information with messages targeted at men can be shown during sporting events to reach this specialized audience more effectively. There are several communication channels that have been shown to work in different circumstances. They include interpersonal, mass media, small media, traditional media, and new communication technology (WHO, 1997, xix). In addition to physical, economic, cognitive, and administrative access being improved, it is also important to improve psychosocial access. This can be improved by "making family planning and reproductive health services socially and culturally acceptable within a society, among policymakers, community and religious leaders, and extended families," (FHI, 1998, online). By maximizing access to and quality of family planning and other health services, all levels of society can reap the benefits.
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