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Neighbors in Ho Chi Minh City, Vietnam

Galit Govezensky, Bar Ilan University

ABORTION AND THE THREE BODIES: AN INTERPRETIVE UNDERSTANDING OF BARRIERS TO ABORTION ACCESS IN SOUTH AFRICA

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Abstract: This research challenges the formal legalization of abortion in South Africa by examining the nature of local religious and cultural resistances to abortion. These limitations persevere in the dependence on unsafe abortions; inevitably, making a life threatening procedure to be an easier option than having to deal with self and socially-inflicted abortion stigma. By utilizing the theoretical framework of the Three Bodies, the situation of abortion in South Africa is analyzed through three modalities: the Body Politic, the Social Body and the Individual Body. It, thus, discusses the complexities surrounding the decision to abort and the multiplicity of meanings concerning that which is, in essence, an individual choice over a relatively simple medical procedure.

Introducing the Case: Abortion, South Africa, and the Choice on Termination of Pregnancy Act

Worldwide statistics demonstrate that an estimated 46 million pregnancies end in induced abortion each year of which approximately 20 million are anticipated to be unsafe (Sigcau 2009, 1). In addition, approximately 13 percent of pregnancy-related deaths occur due to complications from unsafe abortions (Ibid). According to the W.H.O, an unsafe abortion is defined as, “a procedure to terminate an unintended pregnancy undertaken either by individuals lacking the necessary skills or in an environment that does not meet basic medical standards or both” (Singh 2006, 1187). During its apartheid era, South Africa was known to have one of the highest cases of maternal mortality in the world, of which the greatest contributor was unhygienic and unsafe abortions (Guttmacher et al. 1998, 192). South Africa’s 1989 estimates indicate that of a total of 43,000 abortions, 42,000 were illegal (Sigcau 2009, 1). Approximately 400 women died in public health facilities from septic abortions in 1994 and estimates of the number of clandestine abortions were dramatically larger, ranging from 120,000 to 250,000 per year between 1975 and 1996 (Guttmacher et al. 1998, 192).

Against the political backdrop of apartheid, little was done to counteract maternal mortality or cater to the needs of the African black population in general. However, after South Africa’s political independence in 1994, its institution of democracy allowed for the guarantee of greater equality across South Africa. Accordingly, the Choice on Termination of Pregnancy (CTOP) Act was instituted in 1996 in an attempt to lower maternal mortality by democratizing South African women’s right to abortion and, in turn, reduce their reliance on unsafe, backstreet abortions (Guttmacher et al. 1998, 192–3; Patel and Myeni 2008, 738).

The CTOP Act ensures legal termination of pregnancy on request during the first 12 weeks of pregnancy with no parental or spousal consent required for minors or married women (Sigcau 2009, 1). From 13 weeks onwards it only permits conditional termination, such as: if the pregnancy resulted from rape or incest; if it affects the woman’s socioeconomic status; or if it threatens the health of the woman or the fetus (Ibid). Indubitably, the government’s efforts in calling attention to abortion policy have been successful. As a result of policy revision, the infection rate attributed to illegal abortion has been significantly lowered and maternal morbidity due to unsafe abortion practices between 1996 and 2000 was reduced by 91% (Cohen 2007, 4).

However, despite these successes, there is still evidence of a significant number of South African women who have restricted access to safe abortion services and as a result succumb to complications associated with unsafe abortion practices.

Debates concerning the acceptability of abortion have been hotly contested for a number of centuries. Historically, these debates have been predominantly politicized and contest: if women have the right to decide to have an abortion or not, the cultural beliefs about the role of women, the role of the state as a moral agent, the sanctity of human life, the right to privacy, and society's obligations to women (Sigcau 2009, 9). Accordingly, macrostructures around the world, such as, the state and/or religious bodies have been dominant in deciding whether women are allowed formal access to abortion or not. This point is exemplified in both the Roman Catholic Church's long standing equation of abortion as a form of murder (Sigcau 2009, 17) and about a quarter of the world's population living in countries where the state actively prohibits abortions (Kumar, Hessini, and Mitchell 2009, 2). On a community-based level Pro-choice and pro-life activists constantly dispute whether the woman has the ultimate say in the decision to abort or whether the right of life of the fetus should hold precedence (Sigcau 2009, 19); such standpoints are undoubtedly influenced by the larger political, religious, cultural and moral considerations regarding abortion. With this in mind, while the legalization of abortion procedures in South Africa may have removed abortion restrictions at the macro-structural level, cultural and religious constraints at the individual and community level continue to exist-as significant barriers to women's access to abortion. Subsequently, women in South Africa have to contend with and negotiate multiple individual, familial and community religious and cultural moralities in deciding whether they should or should not avail the provision of legal abortion services by the State.

Through the use of secondary data analysis, this paper focuses on the reasons as to why South African women resort to unsafe or 'backstreet' abortions despite having access to legal abortion services. It pays attention to restrictive access to abortion services in South African society with a special emphasis on social stigmas against abortion. Hence, it primarily strives to demonstrate the power of stigma in limiting South African women's access to safe, legal abortions, and how this stigma emanates from individual and community levels as well as from health care practitioners providing abortion services. To a lesser extent, this paper also highlights the insufficiency and the lack of knowledge of abortion services provided by the State and the role it plays in restricting access to abortion. Moreover, in this paper I utilize an interpretive, meaning-centered approach to demonstrate that ensuring legal access to abortion does not simultaneously ensure a transformation in local values or an increase in abortion services, which can prove to be as great a barrier to abortion as can the criminalization of abortion practices.

Research Setting: South Africa

My research focuses on South Africa, a country located on the southern tip of the African continent. According to South African Government Online, the country has a total population of over 50 million people with 79.4 percent consisting of African blacks and the rest being of Indian/Asian and Caucasian ethnicity (South African Government Online 2011). The country consists of nine provinces, namely: Free State, Eastern Cape, Gauteng, KwaZulu-Natal, Northern Province/Limpopo, Mpumalanga, Northern Cape, North West and Western Cape (Ibid). Socio-economic development is primarily centered on the cities of Johannesburg (the administrative capital), Cape Town, Port Elizabeth and Durban; beyond these, development is limited and poverty is prevalent. The country has a predominantly Christian affiliation (79.8 per cent) with

Hindus, Muslims, Jews and Buddhists emerging as secondary religions (Ibid).

Structuring the Case: Ethnographic and Theoretical Precedent

Over the past decade there has been a growth in anthropological literature concerning abortion in South Africa; however, few studies have focused on the social effects of abortion in South Africa and the stigma it invariably entails. I draw on concepts from Anuradha Kumar, Leila Hessini, and Ellen M. H. Mitchell's work entitled *Conceptualising Abortion Stigma* (2009) in which they provide a working definition for abortion stigma as well as elucidate the manner in which stigma originates from five distinct levels in society. As well as concepts from Sharon Ngomane and Fhumulani Mavis Mulaudzi (2010), Cynthia J. Patel and Manqoba C. Myeni (2008), Nomakhosi Sigcau (2009), and Louise Vincent (2011) who illustrate how religion and culture are the most significant in influencing decisions against abortion despite the prevalence of legal abortion services.

Moreover, Rachel K. Jewkes et al. (2005), Sigcau (2009), and Vincent's (2011) works are imperative in exemplifying how abortion stigma manifests itself at the individual and community level as well as at the level of health-care practitioners. In addition, the work of Christine A. Varga (2002) and Sigcau (2009) are used to illustrate how decision-making surrounding abortion is not an autonomous one and that family and partners are significant in emerging as barriers to abortion. In particular, Varga (2002) identifies the importance that paternal decision-making holds in determining whether abortion is an option or not in South Africa. However, Patel and Myeni (2008), Sigcau (2009) and Varga (2002) also note how the conditional acceptance of abortion is frequent such as in cases of rape or when it affects the life of the mother. Consequently, by grounding my analysis in the aforementioned literature I hope to indentify several major themes that arise as potential barriers to South African women's access to safe and legal abortion services. Moreover, in using their work I also hope to provide a holistic picture of the situation surrounding abortion in South Africa since each of these authors' works have focused on one or more provinces within South Africa.

I plan on primarily utilizing a meaning-centered lens through which I will analyze my secondary data. Meaning-centered medical anthropology allows an analysis of, "everything that makes up the health arena, from the experience of pain to the training and functioning of healers, as a set of systems for creating, experiencing, and communicating meaning in human life" (Singer and Baer 2007, 33). Accordingly, I rely on Arthur Kleinman's (Varley 2011) interpretive medical anthropology in order to view the subjective experience of abortion restrictions and stigma in South Africa. Within this broad theoretical paradigm, I intend on understanding abortion restrictions in South Africa primarily through Scheper-Hughes and Lock's (1987, 7) "Three Bodies." The "Three Bodies" rejects the idea of Cartesian mind-body dualism (Ibid, 9) and puts forward, "sickness...as a form of communication through which nature, society and culture speak simultaneously" (31). In light of this study, instead of sickness, I intend on viewing women's choices to abortion as a form of communication between three interconnected domains and how these choices express moral, cultural and political tensions within South African society.

Consequently, the "Three Bodies", comprising of the individual body, the social body and the body politic, is the key conceptual and theoretical tool through which I will analyze restrictions to abortion and abortion stigma in South Africa (Scheper-Hughes and Lock 1987, 7).

The individual body is the, "lived experience of the body-self" (Ibid). Thus, it is the relationship of the individual to society and the individual as an entity whose "rights are only limited by the

rights of other equally autonomous individuals” (14). The social body is, “cultural constructions of and about the body [that] are useful in sustaining particular views of society and social relations” (19). The social body views the body as a canvas on which ideas of society, culture and nature are projected, that is, the body as a cultural artifact (Varley 2011). The social body illustrates how individuals are “dependent on, and vulnerable to, the feelings, wishes, and actions of others” when making decisions about their body (Scheper-Hughes and Lock 1987, 21). Lastly, the body politic views the body as an artifact of social and political control (Ibid, 6). The body politic illustrates how macrostructures such as the government control “reproduce and socialize the kind of bodies they need” through the policies they institute (25).

Abortion and the Three Bodies

As stated in the aforementioned sections I will be viewing access to abortion services through the Scheper-Hughes and Lock’s (1987, 7) analytical framework of the “Three Bodies.” In context to abortion in South Africa, the social body can be identified as South African cultural and religious norms against abortion and the body politic as the decision of the South African state to democratize women’s right to abortion. Consequently, the “Three Bodies” is significant for it permits an understanding of the individual body, or the “lived experience” of availing abortion or not, as reflective of tensions between the social body and the body politic (Ibid). Hence, abortion is not viewed as an “isolated event” but as a means through which the individual body is seen as the “most immediate ... terrain where social truths and social contradictions are played out, as well as a locus of personal and social resistance, creativity and struggle” (31).

Drawing from Kumar, Hessini, and Mitchell’s (2009, 4) article, *Conceptualizing Abortion Stigma*, I have defined abortion stigma as “a negative attribute ascribed to women who seek to terminate a pregnancy that marks them, internally or externally, as inferior to ideals of womanhood.” Moreover, with the assistance of their article I will indicate how this abortion stigma is perpetuated against women from five distinct levels in South African society; at the broadest level it develops through popular abortion discourses and mass culture and then narrows down through the governmental or structural level, the organizational or institutional level, the community, and finally at the individual level (Ibid, 6).

Body Politic

Scheper-Hughes and Lock (1987, 7) refer to the body politic as the “regulation, surveillance, and control of bodies (individual and collective) in reproduction and sexuality.” In 1869, the Roman Catholic Church stated that life begins at conception and hence, abortion is equal to killing the child after birth (Sigcau 2009, 17). Consequently, by taking a standpoint on abortion and refusing to give women a right over decisions concerning their own bodies, the Catholic Church effectively sought to control women’s bodies. As a result, the very notion of women having a choice in the matter entailed a rejection of their faith (Ibid). Accordingly, the concept of fetal person-hood, which involves the ascription of “feelings, sentience, desires and other facets of autonomy” and “attributes of innocence, purity, vulnerability and filial love” to an unborn fetus, has been adopted by the Catholic Church to regulate and control its female population while at the same time ensuring the continued growth of members of the Catholic Church (Kumar, Hessini and Mitchell 2009, 7).

However, it is not only the Catholic Church that ascribes to such sentiments, Christian ethical beliefs in general deem abortion as wrongful for it “interferes with God’s creation and rejects the divine origin of humanity” (Sigcau 2009, 18). Since a vast majority of the population

in South Africa has a Christian affiliation their attitudes against abortion are significantly influenced by the anti-abortionist stance founded in Christian precepts (Ibid).

Moreover, the State of South Africa has a long history of using policy measures concerning reproduction to control women's bodies. According to Scheper-Hughes and Lock (1987, 27), Foucault terms this "regulation and control not only of individuals but of populations, and therefore of sexuality, gender and reproduction" as "bio-power." Under apartheid, the Afrikaner-dominated, National Party government instituted separate population policies for whites and blacks (Guttmacher et al. 1998, 191).

By implementing such policies they anticipated to curtail the growth of the black population and increase the growth of the white population in order to ensure South Africa's continued existence as a Christian and Western country (Ibid). Although they did not succeed in doing so, many blacks began to oppose abortion as it was a painful reminder of apartheid oppression (Ibid, 193). Sigcau (2009, 3) also reports that for many population groups in South Africa abortion was associated with the apartheid regime. Such attitudes only serve to fuel the stigma associated with legal abortion services and increase the prevalence of clandestine abortions or "back street abortions with the help of untrained midwives or lay practitioners" (Ibid).

Under the 1975 Abortion and Sterilization Act, women in South Africa were seemingly given greater freedom to avail abortion services (Guttmacher et al. 1998, 192). However, the narrow conditions and approval demands specified under which abortion could be obtained favored the female white population as opposed to the blacks since they had a greater access to resources (Ibid). Consequently, despite the provision of legal abortion services under the Act, the incidence of clandestine abortions continued to rise and admissions to gynecological wards and maternal morbidity and mortality was amplified due to incomplete and septic abortion procedures (Ibid).

In light of such events, in the 1994 elections the African National Congress stated that a liberal abortion reform was necessary "as a means for creating greater gender equality as well as furthering women's rights" (193). Thus, in 1996 the COTPA Act was instituted in South Africa amid considerable opposition by religious and professional organizations (Ibid). However, as Kumar, Hessini, and Mitchell (2009, 7) articulate "policy and law are reflections of ideology." Thus, when seen through the lens of Scheper-Hughes and Lock's (1987, 8) body politic, the COTPA Act can be interpreted as a means by which the South African state sought to use political policy to control the individual. Consequently, while the South African government allowed for greater freedom and women's choice on issues concerning reproduction it instituted such a law in an effort to endorse its ongoing political ideology. By narrowly promoting abortion during the apartheid era, the South African government ensured a sustained control over women's bodies. Accordingly, by consenting to a liberal abortion law, the new South African government furthered its political image as a thoroughly democratized state that permits women to have the greatest flexibility over decisions concerning their bodies. The social production of the South African woman's body as one where she has full rights over her body mimics ideals of democracy and equality that the new South African government is trying to depict both nationally and internationally. Through the perspective of the body politic it is evident that through this democratization of women's bodies the South African state is "socializ[ing] the kind of bodies that they need" by means of liberal abortion laws (Ibid, 25).

However, the South African government has not fulfilled its promise of providing continued access of safe and legal abortion services. A number of researchers have commented

about the severe dearth of abortion services especially in rural areas. Guttmacher et al. (1998, 193) affirm that there has been “no comprehensive outreach and educational campaigns to inform women of their newly acquired reproductive rights and to reduce the stigma associated with abortion.” Moreover, Varkey, Fonn, and Kethapile’s (2000) work is especially helpful in detailing the lack of legalized abortion information and services provided by the government. Their results indicate that 60 percent of women 15–19 years of age, 68 percent of women with no formal schooling, and 61 percent of rural women did not know that abortions were legal (Ibid, 103). Moreover, their work highlights that 99 percent of abortion facilities were concentrated in large cities or towns where 75 percent of first trimester procedures are conducted. While almost a quarter of these facilities located in rural areas, have limited or no access to safe abortion facilities (104).

Sigcau (2009, 68) also testifies that the public requires more knowledge about the CTOP Act and that “lack of knowledge about the Act limits access to the service for women who want to terminate unwanted pregnancies and may lead to them resorting to back street abortions post legalization of the Act” (85). Additionally, Jewkes et al. (2005, 1241) also argue that lack of information about the COPT Act is one of the major barriers to the use of designated abortion services in South Africa. Interestingly, Sigcau (2009, 70) also mentions that her participants wanted to know the government’s rationale for introducing the law. Accordingly, her work is instrumental in indicating that while community knowledge about the content and conditions of the CTOP Act is steadily growing (Ibid, 85), people’s attitudes toward the Act remain ambivalent because they feel that the government is imposing “yet another oppressive law about which they have no say” (70). Their sentiments are in sharp contrast to the South African government’s motivation for implementing the Act which was to further women’s rights and promote “greater gender equality” (Guttmacher et al. 1998, 193). The subsequent section provides greater details about the South African population’s attitude to legalized abortion services and about the generation of abortion stigma.

Social Body

The social body perceives the body as a “natural symbol for thinking about relationships among nature, society and culture;” the body is, regarded as a screen on which ideas of society, religion and culture are mapped (Scheper-Hughes and Lock 2009, 7). In South Africa, religious and cultural values and beliefs are fundamental sources for the generation characterized by abortion stigma. Therefore, using the social body as an analytic framework enables an understanding of how South African values and beliefs are embodied in the social lives of South African women seeking to terminate their pregnancies.

In the same way the religious body influences the morality of political policy, religious precedent also greatly influences those aligned with “pro-life” decisions. The nature of being pro-life is the belief that one opposed the idea of abortion on the grounds of preserving the sanctity of life; a notion that is strongly influenced by religiosity. (Sigcau 2009, 17–18). Patel et al.’s (2008) work is imperative in illustrating how attitudes against abortion are strongly influenced by religion. In their study conducted on female university students in the province of KwaZulu-Natal, South Africa, they found that 75.8 percent of participants described themselves as religious and approximately 46.8 percent of this group would not consider abortion in case of an unwanted pregnancy (Ibid, 745). Even so, findings from this study cannot be generalized to the whole of South Africa since it focused on a small minority of educated, urban women. In contrast, Vincent’s (2011) work is helpful in providing figures applicable to a majority of South

African population. Her work identifies that 48 percent of South Africa's population believes that abortion is morally wrong and only ten percent consider it a woman's right (Ibid, 265). This information is also corroborated in Sigcau's (2009, 4) study which recognizes that Africans (54 percent) were three times more likely to see abortion as morally wrong as opposed to whites (19 percent). Thus, Vincent (2011, 265) reflects that the support for the State's legalization of abortion services is significantly low and this is largely because the citizenry exhibits high levels of religiosity and an adherence of traditional belief systems that are not favorable to the idea of abortion.

In addition, Sigcau's (2009) dissertation notes similar findings that link religion with anti-abortion beliefs. As stated earlier, due to preconceived abortion stigma as a result of Christian precepts, women are greatly hindered from availing abortion services since their religion interprets abortion as "a sinful act originating within the individual and contrary to the will of God" (Ibid, 74). In South Africa, religious attitudes continue to influence public opinion concerning the acceptability of abortion and support for legalized abortion tends to decrease with increased levels of religious service attendance (17). Moreover, Sigcau (2009, 75) also notes that religious beliefs have an influence on culture as well due to which there is a general belief within South African culture that life is sacred.

Sigcau's (2009) assertion is supported by Vincent's (2011, 265) study which highlights the prevalence of traditional belief systems that are unfavorable to the idea of abortion in conjunction with high levels of, primarily Christian, religiosity. Furthermore, the results of Ngomane and Mulaudzi's (2010) research in the province of Limpopo, South Africa also validate this information and demonstrate the pervasiveness of cultural resistances to abortion. Ngomane and Mulaudzi (2010, 3) state that indigenous beliefs in South Africa perceive pregnancy to be an honor, which should be preserved and the rights of unborn infant should be protected. Additionally, for Niehaus' (2002, 192) participants, abortion "polluted the earth, caused drought, and prevented the maturation of crops." Moreover, his participants stated that women who undergo an abortion cannot not to come into with children and have to participate in special rituals in order to become a pure member of the community again (Ibid, 201). While it is evident that South Africa is culturally diverse and that such beliefs cannot be generalized across the whole of South Africa's population, Ngomane and Mulaudzi's, (2010) and Niehaus' (2002) work serves to indicate that negative attitudes to abortion are engrained in local beliefs and values. These values may stem from either traditional or religious belief systems; nevertheless, they are indicative of the fact that reservations to abortion continue to thrive at the societal level.

It is apparent then that beliefs against abortion in South Africa are upheld by religion as well as by cultural constructions regarding pregnancy. Scheper-Hughes and Lock (1987, 19) state that, "cultural constructions of and about the body are useful in sustaining particular views of society and social relations." Not only do the people of South Africa equate abortion to murder, but abortion itself is also perceived as leading to a degradation of cultural values and beliefs (Sigcau 2009, 48–49). In the following section I seek to evince the manner in which religion and culture factor as significant moral barriers in women's access to safe and legal abortion procedures in South Africa.

According to Kumar, Hessini, and Mitchell (2009, 4), "abortion stigma—rather than a universal truth—is a social phenomenon that is constructed and reproduced locally through various pathways." Religious and cultural values against abortion are some of the factors that lend legitimacy to abortion stigma and are indicative of abortion stigma that is perpetuated at the discursive level (Ibid, 6). Kumar, Hessini, and Mitchell (2009, 6) define discourses as,

“communication that intends to shape public opinion [that] link women to a set of undesirable characteristics that form a stereotype.” One way in which religion and culture in South Africa contribute to negative discourses about abortion is through the ascription of fetal person-hood (7). This is consistent with religious notions of protecting the sanctity of life of the fetus and South African cultural notions of protecting the unborn fetus (Ngomane and Mulaudzi 2010, 5; Sigcau 2009, 17). However, the aforementioned attitudes are not perpetuated in a vacuum; they are propagated by “systems of unequal access to power and resources” (Kumar, Hessini and Mitchell 2009, 4). Studies indicate that South African women have a widespread lack of access to power and resources due to which perpetuating stigma against them is easier (Varkey, Fonn, and Kethapile 2000, 107). In South Africa, abortion stigma primarily manifests itself at the fourth level of society: the community (Kumar, Hessini and Mitchell 2009, 8). Abortion stigma is enforced by local communities who discourage women from seeking legal abortion services (Varga 2002, 288–89) and tends to make women’s parents and partners disregard legal abortion services (Ibid, 290; Jewkes et al. 2005, 1238; Sigcau 2009, 59). In addition, abortion stigma at the community level also manifests itself in the negative and judgmental attitudes of health-care workers. (Jewkes et al. 2005, 1237; Sigcau 2009, 66). I will illustrate these aspects in greater detail in conjunction with Scheper-Hughes and Lock’s (1987) social body in the following paragraphs.

Scheper-Hughes and Lock’s (1987, 21) social body also views bodies as being “dependent on, and vulnerable to, the feelings, wishes, and actions of others.” This aspect of the social body enables an understanding of decisions regarding abortion as situated within the larger context of social relations instead of as an “isolated event” (31). A number of medical anthropologists have shown how abortion decision-making is a group process and not always an individual choice. Varga’s (2002, 290) work is especially pertinent in this case for it illustrates how decisions to abort are influenced by parents, partners or both. In some cases parents and partners serve to constrain women’s access to abortion since they feel abortion is “morally and culturally unacceptable” and her participants often cite religious reasons as to why they are against abortion (Ibid, 292). However, even in cases when mothers or boyfriends decide the woman should have an abortion they often resort to ‘backstreet’ and clandestine modes since they do not “want the community to know what they are doing” (288). Likewise, Sigcau (2009, 59) also mentions that abortion decision-making is a group process and that multiple actors needed to be involved; in particular, she finds that parents often advise against abortion. In the case of partners, Sigcau (2009, 61) notes that men dominate decision-making and generally abortion would be an option only if the father decided against the pregnancy. Jewkes et al. (2005, 1239) corroborate this information with a description of an incident where a woman was coerced into an unsafe abortion by her partner. Consequently, Sigcau (2009, 80) states that the “involvement of the family and the partner acts as a deterrent to [safe] abortion as they are gatekeepers.” As a result, family and paternal decision-making about abortion are seen to severely constrain women’s access to safe and legal abortion services.

A woman’s right to abortion in South Africa is also restricted at the level of health-care providers. Sigcau (2009, 66) observes that negative attitudes by health-care practitioners serve to constrain women’s access to safe and legal abortion services. Nurses are “rude” and they “harass” and “scold” women seeking abortions, which often motivates these women to turn to unsafe procedures in an attempt to terminate their pregnancies (Ibid). Even without legally restricting women from abortion services, the perception of negativity from practitioners poses a considerable barrier in accessing safe abortion services. Other works also document how health

professionals create obstacles to safe abortion services in South Africa (Vincent 2011, 266; Jewkes et al. 2005, 1237). Since nurses and health professionals are also located within the broader community that views abortion as morally wrong, they are often seen to provide their personal rationale to women against seeking abortion (Vincent 2011, 266). Varkey, Fonn, and Kethapile (2000, 105) also confirm that that nurses often told women that abortion was immoral and sinful or gave them misleading information on their eligibility for abortion. Moreover, nurses were also seen to call women “murderers” and ask them why they want to “kill” their child (Jewkes et al. 2005, 1240). In addition, Jewkes et al. (2005, 1240) indicate that 17 percent of their participants did not avail legal abortion services due to the anticipation of hospital staff rudeness and, in similar vein with Sigcau (2009, 66), stress that as a result of such negative attitudes by health care provider’s women seek alternative methods to abort that are often unsafe.

Consequently, it is evident that abortion stigma is expressed in its greatest concentration at the level of community and social networks. Its perpetuation by various local groups is significant in hampering women’s access to legalized abortion services. South African women’s social bodies are thus canvases on which tensions between nature, society, religion and culture are manifested. In deciding whether to opt for legal abortion or not, South African women must negotiate with these tensions and make crucial decisions about conflicting values which entails continuing with an unwanted pregnancy or dealing with the social repercussions of having a legal abortion (Kumar, Hessini and Mitchell 2009, 8). For a number of women this choice forces them to risk their lives with unsafe or ‘backstreet’ abortion procedures. Unfortunately, due to the lack of women empowerment, this choice is also extended to a woman’s parents and her partner, who may not give her the option of choosing a “backstreet” abortion, let alone a legal one (Varkey, Fonn, and Kethapile 2000, 107).

However, research also indicates that despite the presence of such sharp resistances to abortion there are instances when abortion is accepted and sometimes even thought of as necessary by communities, parents and partners. Sigcau (2009, 52–3) terms this as the “conditional acceptance” of abortion, that is, “situation-specific” abortion that is permitted only on the grounds of certain situations. In most cases, abortion is accepted when it endangers the life of the mother such as when complications arise in the pregnancy (Ibid, 53–4) or in cases of rape (14). However, at times abortion is also accepted when the mother is incapable to caring for the future child due to physical or financial constraints (53). Varga (2002, 290) also demonstrates similar reasons as to why abortion is at times accepted despite a general trend in considering it as morally wrong. In such cases, the meaning of abortion changes; abortion is viewed as saving a life rather than as ending one (Sigcau 2009, 54). Thus, the “conditional acceptance” of abortion signifies that attitudes against abortion are not static and unyielding; the meanings surrounding abortion are varied and dependant on different individuals and situations and are permitted to change respectively (Ibid, 52).

Individual Body

Scheper-Hughes and Lock (1987, 7) define the individual body as the “phenomenological sense of the lived experience of the body-self.” Through the individual body “the patient’s subjective experience” of abortion is realized, analyzed and comprehended (Ibid, 10). While the processes by which women interpret and rationalize their abortion experiences are diverse, Kumar, Hessini and Mitchell (2009, 8–9) evince that the “most destructive locus of abortion stigma” is when abortion stigma permeates into the mind of individual women. Sigcau (2009, 65) also maintains that abortion includes defying societal values as well individual moralities,

resulting in an expectation of a mother's feelings of post-abortion guilt. Although she finds that some post-abortion women feel relief and an improvement in their mood (Ibid, 24), her participants state that such feelings are only short-term and feelings of guilt, unhappiness, and blame develop in the long run these feelings are also compounded by community reactions to abortion (65). Additionally, Kumar, Hessini and Mitchell (2009, 9) assert that organizations opposed to abortion promote feelings of guilt and shame by posing guilt as a necessary response to the abortion procedure rather than as consequence of societal scorn. This internalization of abortion stigma expresses itself in feeling of guilt and shame since women feel they are defying long-held, cherished ideals of motherhood and womanhood (Ibid). Self-inflicted abortion stigma stemmed from societal pressure and emerges as another deterrent to women's access to safe abortion procedures in South Africa.

The very nature of the individual body forces us to reconcile the "fundamental opposition between spirit and matter, mind and body" (Scheper-Hughes and Lock 1987, 8). In South Africa, abortion is not only seen as a medical practice; instead, the multitude of religious and cultural resistances to abortion forces us to appreciate that abortion also involves the mind to a substantial degree. Women in South Africa are constantly forced to contend with tensions regarding morality and abortion stigma at the community level and with their parents and partners. Even if they somehow manage to resolve these issues they must face a lack of abortion services from the State and further pressures on their decision to abort from health-care professionals. Such tensions persistently play on their minds and, for some, dealing with the matter themselves through unsafe abortion procedures is the best way to escape these barriers to safe abortion services. Abortion, thus, involves a modality of thought processes that force the mind to grapple with, what in medical terms would be described as a relatively simple procedure. Accordingly, abortion is not just a simple biomedical procedure nor is it just a discourse; it incorporates both these elements and actively influences experiencing individuals and their surroundings.

In South Africa, the lived experience of being a woman facing an unwanted pregnancy is one that has to be negotiated and contended with the image of the 'free' body put forward by the State or the body politic, and that of the culturally and religiously-defined social body. The tensions and inconsistencies between the social body and the body politic manifest themselves in the individual body by forcing women to confront and conform to two fundamentally opposed images of the body. The COTPA Act has succeeded in transforming women's rights and providing full access to abortion, but only in name, since there still remains considerable barriers to access still present at the local and service level. For the South African woman, in conforming to the South African political image of the body and exercising her right and choosing safe and legal abortion services, she makes herself vulnerable to abortion stigma perpetrated by her community, family, and even her partner. In conforming to the image of the social body she respects her cultural and religious beliefs. However, she is forced to struggle with the emotional and physical burden of continuing with an unwanted pregnancy. It is therefore evident that the provision of an act guaranteeing the legal status of abortion does not imply a transformation of local values and beliefs. Consequently, the individual body is the prime site for the manifestation of tensions between the body politic and the social body.

Conclusion

By means of an interpretive medical anthropological perspective it is apparent then that a marked resistance to abortion still prevails at the local, societal level in South Africa. While the

South African government may have increased access to abortion through the COTP Act, it has not succeeded in removing the prevalence of anti-abortion sentiments among the South African population. Abortion stigma at a community level continues to remain one of the most significant barriers to safe and legal abortion services. In order for the government to ensure that safe and legal abortion services are available for every woman across South Africa more needs to be done to improve access to abortion services.

However, the presence of strong religious and cultural anti-abortion sentiments reveals that, unless under special circumstances, the women's right to abortion is generally not favored. The right of life possessed by the fetus outweighs the right of women to make decisions about their body. Moreover, the lack of access to power and resources means that women often have other individuals making decisions about their bodies. Scheper-Hughes and Lock (1987, 26) state that "cultures are disciplines that provide codes and social scripts for the domestication of the individual body in conformity to the needs of the social and political order." Through their decisions regarding abortion women in South Africa are expected to conform to a divergent political and social order; a political order that favors their right to decide and a cultural order that does not allow them to voice their concerns regarding unwanted pregnancies and stigmatizes them when they do so. As a means to further political ideology through reproduction and women's rights, the State actively defies and opposes the opinions of the community, who ultimately view abortion as "immoral." These conflicting meanings are then embodied in the lived experiences of women who terminate or are seeking to terminate their pregnancies. These women are forced to challenge the multiplicity of meanings regarding abortion.

After the implementation of the COTP Act in 1996, the second Confidential Enquiry Report into Maternal Deaths in South Africa reported a 90% reduction in maternal morbidity from abortion (Sigcau 2009, 4). However, for many South African women the adequate provision of safe and legal abortion services perseveres as an illusion. The purpose of this study was not to provide a justification about whether abortion should or should not occur; rather, its purpose was to analyze and comprehend the complexity of meanings surrounding abortion in South Africa and demonstrate that the legalization of abortion does not ensure the removal of all barriers to access. Through a meaning-centered analysis, this study also provides reasons as to why the motivation to choose unsafe abortion procedures continues to exist despite the presence of legalized abortion services. As with many other countries, abortion continues to remain a volatile issue in South Africa; however, there is a lack of medical anthropological literature concerning abortion in South Africa. The aim of this study additionally, was to assist in providing an overview about barriers to abortion access in South Africa by utilizing a range of secondary material concerning abortion in the different provinces in South Africa. Nevertheless, more research is necessary in locating the multiplicity of reasons as to why women continue to avoid utilizing safe abortion services. In addition, due to the variety of cultural differentiation present in South Africa specific data needs to be generated about the meaning of abortion to different cultures and indigenous groups. On a final note, research also needs to be undertaken about abortion attitudes of minority religious groups in South Africa and their reasons as to what extent, if any, should women have access to abortions.

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AYAHUASCA SHAMANISM IN THE PERUVIAN AMAZON: CONTEMPORARY INDIGENOUS KNOWLEDGE, BIOSCIENCE AND INTELLECTUAL PROPERTY

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Abstract: This paper focuses on the various medicinal, spiritual, and ceremonial uses of the ayahuasca vine by indigenous shamans, healers, and people in the Peruvian Amazon, specifically Iquitos, Peru. In addition to the medicinal and spiritual uses, I introduce the concept of Intellectual Property (IPR) and consider some of the difficulties in establishing indigenous ownership over knowledge, as well as some of the concerns that arise in the decontextualization and simultaneous recontextualization of ayahuasca in the international drug development market.

Introduction

What are the consequences and implications of recent efforts to internationalize medicinal use of the ayahuasca vine, an important plant in indigenous knowledge systems of the Amazon? What happens to indigenous medico-botanical knowledge itself when it travels and becomes recontextualized? What happens to the people and the place from which this knowledge was extracted? Whose knowledge is this and how does one claim ownership over the plant and information about its spiritual and medicinal uses? These are some of the main questions that arise in the debate over ayahuasca and its internationalization. Patents and intellectual property are sought out by biomedical scientific researchers looking to isolate and reproduce the compounds from plants in indigenous medico-botanical healing systems; thus, contemporary indigenous medico-botanical knowledge—in all of its complexity, nuance, context, and relationship to the land—interfaces with biomedical sciences, which have an invasive approach, and seek to extract the plant and the knowledge from its social, cultural, historical, and epistemic contexts.

In this paper my aim is threefold: first, I will describe the ayahuasca vine, noting the various medicinal and spiritual uses by shamans in the Peruvian Amazon. While many different indigenous groups in the Amazon use ayahuasca in ritual and spiritual ceremony, in this paper I will focus on the indigenous healers and users of ayahuasca in the urban slum of Belén on the eastern side of the city of Iquitos, Peru. This allows me to focus in on the complexities of one group and its relation to the ayahuasca vine, while reading more broadly to gain an understanding of regional variations and the generalities that may exist across groups; second, I will present some of the main ethical issues that have come to the fore as a result of biopiracy and the actions of biomedical researchers and entrepreneurs who seek to locate and extract indigenous medico-botanical knowledge. Often the aim is to isolate compounds and reproduce them in a laboratory setting, later obtaining a patent and rights to the distribution and flow of use of the product; third, I will attempt to destabilize some of the common assumptions about ownership and intellectual property, considering the extent to which knowledge can be owned, if at all, and the difficulties that arise in trying to force a Western policy on a sacred plant that has been used in medical and spiritual contexts for hundreds of years by trained shamans and knowers. In addition to answering the central questions raised at the beginning of the paper, I seek to introduce and develop the following argument: the concept of intellectual property and the U.S. patent system are ideological constructs that exist within a Western-epistemic domain.

As such, they do not do justice to protection, ownership, and concerns of authority over knowledge that exist within some indigenous healing systems, such as ayahuasca shamanism in the Peruvian Amazon. This is a complex healing system with variants among indigenous groups throughout the Amazonian rainforest; it involves an entire epistemic, methodological, and ontological framework that is intricately enmeshed with the land and people and presents ethical and functional concerns when it is extracted and recontextualized by biomedical entrepreneurs¹. Social scientists that examine the disconnect between sacred knowledge and Western policy can help to untangle the different threads of understanding that exist in these two realms. What remains clear is that we must adopt new ideologies and frameworks for thinking about the protection of indigenous medico-botanical knowledge that involve the people they seek to protect and rest upon the methodological and epistemic concerns of that group.

My research engages a number of sources including ethnographic texts by anthropologists who document their experiences with ayahuasca shamanism through participant observation (literally taking the various preparations of the ayahuasca vine, either in tea or as part of a concentrated tincture) and structured/semi-structured interviews that seek to obtain the knowers' perspectives on the vine, as well as some of the views of the indigenous peoples in the village that use the vine routinely for spiritual and medicinal uses. The texts that most centrally inform my analysis here are: "A Hallucinogenic Tea, Laced With Controversy: Ayahuasca in the Amazon and the United States" by Marlene Dobkin de Rios and Roger Rumrill, where I draw upon the authors' ethnographic work in the Peruvian Amazon, as well as analysis of current issues in the scientization and recontextualization of ayahuasca as a patent drug; "Singing to the Plants: Mestizo Shamanism in the Upper Amazon" by Stephen Beyer, where I draw upon his analysis of shamanism as a complex and multi-layered system of knowledge; "Antipodes of the Mind: Charting the Phenomenology of the Ayahuasca Experience" by Benny Shanon, which I utilize in order to help explicate the various visions and hallucinogenic manifestations that have been recorded; "Contesting Space and Time: Intellectual Property Rights and the Indigenous Knowledge Systems Research in South African Universities" by Mogomme Masogoa; and "Beyond Patents: The Culture of Native Healing and the Limitations of the Patent System as Protective Mechanism for Indigenous Knowledge on the Medical Use of Plants," by Ikechi Mgbeoji. Additional critical essays and shorter works that I draw from in this paper are listed in the Bibliography.

Part I: The Plant and its Context

Iquitos, Belén, and indigenous healers

The Peruvian city of Iquitos is located approximately 2,300 miles inland from the mouth of the Amazon River. The city is home to many farmers markets and the majority of residents engage in agricultural work. Belén is an urban slum near the eastern border of the city and is a community of approximately 12,000 people where indigenous healers, known locally as *sacerdotes* and *curanderos*, may be found with knowledge of the ayahuasca vine and its various spiritual and ritual uses.

Ayahuasca tea: preparations, properties, and components

¹ To be clear here, the diuretic property of the ayahuasca vine is that which biomedical entrepreneurs seek to make transposable to a wider public.

Ayahuasca is a drink that is made from the boiled stems of the ayahuasca vine, *Banisteriopsis caapi*. Most often, ayahuasca is prepared with other plants in addition to the ayahuasca vine, but sometimes the ayahuasca vine is used alone. The three most common admixtures are known as the *compañero* plants—such as the shrub chacruna, *Psychotria viridis*; a shrub closely related to chacruna known as *sameruca*, *Psychotria carthaginensis*; and a plant known as *ocoyage*, *Diploteris cabrerana*. The ayahuasca vine itself is woody, light brown in color, and weaves its way around tropical flora of regions of the Amazonian rainforest in Peru, Colombia, Ecuador, Brazil, Bolivia, and Venezuela. It has a striking double-helix pattern that resembles a strand of DNA. In addition to these plants, as many as 55 other different plant species may be added to the mixture; however, the final product is still called ayahuasca and it invariably contains at least some amount of the boiled stems of the ayahuasca vine (Beyer 2009:4).

Diet taboos

The ayahuasca experience is not merely about ingestion of the plant substance, but also involves complex diet-related rules that are culturally imbued. As a result of the purgative and diuretic properties in ayahuasca, preparation before the experience involves dieting—primarily consuming bland foods low in salts, oils, and fats. As Beyer draws to our attention, the term *la dieta*, used with respect to the food restrictions and beliefs followed by many indigenous ayahuasca shamans, is much more comprehensive than its equivalent in English. In addition to food restrictions followed by healers in the days preceding a healing ceremony, *la dieta* encompasses social isolation and sexual abstinence. Other prohibitions may include avoiding the sun by keeping oneself indoors and trying not to be seen by strangers. Spicy foods may also be avoided in the ayahuasca diet (Beyer 2009:56). As one can see from the limitations, the healer's diet is bland, to prepare for the intense purgation involved in taking ayahuasca and learning its ways as a form of medico-botanical knowledge. Knowers have been in contact and actively using and learning about ayahuasca for years. Thus, *la dieta* becomes essential in maintaining health and strength through the violent purge that the body endures with each ingestion of ayahuasca. Bland foods, such as rice and beans, constitute the bulk of the shamans' diet in the Peruvian Amazon.

Spiritual uses of ayahuasca

The ayahuasca vine has been a sacred plant in many indigenous cultures of the Amazon for nearly 8,000 years, allowing them to communicate with spirits of the dead and spirits of the earth (Beyer 2009:132). The stems of the plant can be pounded together and boiled in water to make a tea known as ayahuasca—this is a Quechua word meaning “spirit vine”, “vine of the souls”, or “vine of the dead”. The vine has many different names throughout various indigenous groups of the Amazon. For instance, in Colombia the ayahuasca tea is referred to as *yajé* and contains a mixture of the ayahuasca vine as well as complementary herbal additives. Prophecy is one of the main reasons that indigenous people seek out ayahuasca intoxication (Dobkin de Rios 1984:8).

Ayahuasca preparation is often elaborate and varies from region to region; however, the process that I describe in the following paragraphs is that of the shamans in Belén of the Peruvian Amazon. First, the vines are obtained in the rainforest, usually among low-lying shrubs, and are cut into foot-long pieces. The portions of the vine are then brought back and boiled in water, along with several other herbal admixtures, such as *Psychotria viridis* (*chacruna*). Once the preparation is boiled and cooled, the resulting liquid is ayahuasca tea that is ready for

consumption and use (Dobkin de Rios 1984:132).

Mapping the phenomenology of the ayahuasca experience

The phenomenology of the ayahuasca experience is complex and varied and depends greatly upon the context in which the preparation is taken. In addition, individuals' experiences with drugs are highly subjective and dependent upon variables specific to that person's genetics.

Despite these factors, certain aspects of the ayahuasca experience seem common to a majority of people, which I now will describe and map out. The first sensation that ayahuasca produces is disgust. Sometimes, those who take it will even vomit or produce expressions of revolt directly after drinking the mixture. Within the first few minutes, the aspect of force is experienced, and this is known as "when the force strikes, usually occurring around, forty minutes after consumption, many are prone to vomit. It is a vomit like no other—drinkers often feel that they are pouring out the depths of both their body and their soul" (Shanon 2002:57). Additionally there are other aspects common to the experiences of many drinkers, such as the general and unspecific feeling that one's body and perception is different during inebriation. Some describe it as if a cloud was within their bodies, or that some force was moving their body over which they have no control. Usually the harshest effects of ayahuasca inebriation occur during the first 90 minutes following the ingestion. Throughout this time, and mounting in intensity leading up to 90 minutes, visions can be extremely intense, often frightening. The next period is often more manageable for people, and generally lasts for two hours. In this stage, drinkers may truly come to understand and enjoy the ayahuasca experience. It is in this period that a person may begin to become more introspective, "present[ed] with moments of exhilaration and great wonderment" (Shanon 2002:57). The final stage of the ayahuasca experience is the most mellow and is sometimes accompanied by feelings of profound relaxation, serenity, and extreme peace of mind. It is during this stage that people also generally feel a great "love for fellow men and women and deep affinity to nature and to all existence" (Shanon 2002:58). Although the inebriation lasts four to six hours, the sense of revelation, and inner peace may remain with the drinkers' spirits through the following day, described as an "afterglow" (Shanon 2002:58).

There are a number of other important aspects of ayahuasca visions that should be mentioned here. First, *beautification* articulates that under the inebriation of ayahuasca colors may seem brighter or more saturated. Additionally, people sometimes perceive that there is an all-encompassing harmony within the landscape around them and may even see objects fuse together into one. *Meaningfulness* is another important and often-reported feature of the ayahuasca experience, in which things seem to have profound meaning and significance. It is with this type of appreciation that new understandings and realizations are reached (Shanon 2002:60).

In addition to the spiritual enlightenment and interconnectivity that may come as a result of taking ayahuasca tea preparations, the vine has profound purgative and diuretic effects that can be particularly useful to some people in areas where intestinal worms are more common, due to unclean drinking and bathing water. For example, in "Singing to the Plants: Mestizo Shamanism in the Upper Amazon" Beyer argues that the ayahuasca experience is simultaneously mental and irreducibly physical. The body is the instrument through which the shaman evokes certain spiritual changes and realizations in patients which are accompanied by very intense bodily excretion: "nausea, vomiting, diarrhea, sucking, gagging, belching, blowing, coughing up, spitting out; sharp sweet smells, rattling, whispering, whistling, blowing, singing, the taste of tobacco and ayahuasca, the imagery and ritual of the body, conflict, mess" (Beyer

2009:44). Here, Beyer communicates the extent to which the ayahuasca experience is profoundly metaphysical, and puts the mind in touch with body such that purgative properties of the ayahuasca accompany, and in a sense, complement the often immensely profound spiritual and ideological revelations that take place on the emotional and sensory levels.

The mechanisms and principles that underlie the use of ayahuasca as a medico-botanical plant with curative capacity are fairly simple: the intense purgation rids the body of any illness or unclean spirits, which is accompanied by intensely profound spiritual and intellectual enlightenment and auditory/visual hallucinations. Despite this seemingly straightforward underlying principle, shamanic use of the ayahuasca vine is complex and varied. For centuries, practitioners of indigenous knowledge have used the vine to heal as well as to bewitch enemies. The visions that accompany the tea help the shamans do battle with the enemies from other tribes, as well as predict the future. Further, social anthropologist Stephen Hughes Jones “points specifically to the ambivalent nature of the shaman in Amazonia; shamans may use their power for good or evil” (Beyer 2009:45). Anthropologist Mary Douglas calls this the theory of the unity of knowledge—that those who can cure can kill (Beyer 2009:45). This type of knowledge construction is an important part of ayahuasca shamanism among indigenous people in the Amazon, as it acknowledges the power and responsibility that come with being a healer.

As with any healing system, there are various systems of belief held by practitioners and patients which legitimize the medical practices and give them relevance within specific cultural and epistemic contexts. Various forms of medico-botanical knowledge are no different, and involve complex systems of belief and power hierarchies of knowing and believing, where knower, healer, patient, and community are all interwoven in a nexus of shared belief and mutual legitimization. French anthropologist and sociologist Claude Levi Strauss developed the theoretical concept that there are three basic layers, or levels, of belief within any type of ethnomedical healing system (Levi-Strauss 1963). First, the healer must believe in him or herself and the power and knowledge that s/he holds regarding the medicine, the illness of the patient and their overall confidence in the methods that they have practiced and perfected through years of apprenticeship type training; second, the patient must believe in the power and knowledge of the healer to heal; and third, the community, or larger general culture in which the healer is practicing, must acknowledge the legitimacy of the healer by believing collectively in the methods practiced. These three layers of belief are mutually reinforcing, co-functional, and sustain the healing practice within the community. For instance, in “The Sorcerer and His Magic”, Levi-Strauss describes a situation in which a Zuni boy is accused of sorcery, but in the process comes to feel a sense of power and trust in himself through belief by the community that he possesses supernatural powers.

At times [the boy’s] face became radiant with satisfaction at his power over listeners...The girl recovers after he performs his curing ritual. The boy’s experiences during the extraordinary ordeal become elaborated and structured. Little more is needed than for the innocent boy finally to confess to the possession of supernatural [healing] powers already acknowledged by the group (1963:128).

The three layers of belief are clearly expressed in this narrative, where we see the power of shamanic constructions of knowledge and the interplay between patient, healer and a community of believers.

In ayahuasca ceremonies, the healing is communal, with many people (sometimes up to

thirty) taking the tea at one time, and frequently the healer takes the mixture as well; however, his or her job is often quite complex and he or she may decide to take only a small bit of the substance to accompany patients on the journey while retaining certain faculties in order to make use of the knowledge and “perform” the healing ritual. In the ethnographic text “Singing to the Plants: A Guide to Mestizo Shamanism in the Upper Amazon”, Stephen Beyer draws our attention to the extent to which shamanism and indigenous medico-botanical healing systems are often performative and involve a number of aspects which establish the knower as legitimate and worthy of performing the healing ritual. For instance, Beyer notes “Historian Ronald Hitton puts it this way: all shamans are performing artists. If shamanism is partly a craft and partly a spiritual vocation, it is also an aspect of theater” (Beyer 2009:25). Further, Beyer delves into some of the complexities and conflicts of interest that can potentially arise within the shaman-patient relationship: “The shaman’s task is to constitute all the participants into an active presence with which a dynamic relation can be created. The shaman keeps the audience active and interested by providing enigmatic commands and riddles, mysteries that engage the audience” (Beyer 2009:26). Thus, the shaman must negotiate a persona within the ceremony such that he or she is simultaneously performing and participating alongside those drinking the brew.

The healer-patient relationship is of chief importance; however, the shaman maintains a clear distance and sense of removal from the participants in order to negotiate the performance and draw upon a wide range of knowledge and skills. A seeming paradox emerges, wherein the shaman must guide and help participants through the ayahuasca experience, but at the same time must maintain distance, ambiguity, and mystery.

Part II: The Internationalization of Ayahuasca

What happens to a sacred plant that is extracted from its context and made transposable to consumers across the world? What types of ethical concerns emerge with regard to protection of knowledge? Beginning in the late 1950’s and early 1960’s, botanists and anthropologists began exploring and recording experiences with ayahuasca, soon raising the question of whether it could be commercialized, in turn bringing up ethical issues of knowledge protection, ownership, access, and rights. Power is an essential concept to introduce into this discussion, insofar as indigenous rights to knowledge and epistemologies are subject to the power differential that privileges Western bioscience. For instance, in his article “Contesting Space and Time: Intellectual Property Rights and the Indigenous Knowledge Systems Research in South African Universities”, Mogomme Masoga discusses Intellectual Property Rights and Indigenous Knowledge Systems in South Africa, arguing that

[w]hen one looks at the IPR (Intellectual Property Rights) and IKS (Indigenous Knowledge Systems) Research – the question of power remains, and probably will always. The current IKS Research in South Africa vividly displays a lack of space. The indigenous epistemological world has been invaded and occupied apparently without any ethical consideration (2002:1).

Here, Masoga draws our attention to the importance of considering power inequalities in the conversations (or a lack of conversations) that take place between bioprospectors in Western bioscience and indigenous healers within shamanic medical systems. Power garnered by Western bioscience, he argues, allows for the invasion of the indigenous epistemology world. Further,

Masoga contends:

In short, there is need for local critical mind space (cf. mapping local knowledge) in looking at the IPR and the Indigenous epistemologies research. The glossary to be used in this process should be locally oriented – directed and controlled by custodians of local knowledge and wisdom. Further, there is a need to suspend, for a while, dominant language formulations and to allow local perspectives or voices to become dominant in the debate on IPR and IKS research. As indicated earlier on, it is not helpful to use dominant discourses in protecting local discourses (2002:6).

This helps elucidate the extent to which protection of indigenous knowledge must have a locally-oriented glossary and be constructed within the epistemic context of the indigenous people in order to take fully into account how they conceptualize rights, access, and benefit sharing.

This conception of locally-determined policies that acknowledge the epistemic concerns of the group resonates with Linda Tuhiwai Smith's text "Decolonizing Methodologies: Research and Indigenous Peoples". She argues for a revamping of research methodologies that ask questions in a different way and approach issues within the epistemic and methodological framework of the indigenous group of knowers. For instance, near the conclusion of her text, Smith argues that "[e]ngaging in a discussion about research as an indigenous issue has been about finding a voice, or a way of voicing concerns, fears, desires, aspirations, needs, and questions as they relate to research. When indigenous peoples become the researchers and not merely the researched, the activity of research is transformed" (1999:193). In a similar manner, the approach to protection and ownership of indigenous medico-botanical knowledge (such as that which I have documented in this paper through the various uses of ayahuasca in the Amazon) must take into account local meanings of ownership and incorporate them into policy that protects indigenous plant knowledge in a way that is relevant to the knowers, producers, and users of this knowledge.

In his article "Insurgents at the Gates? Patents, Biopiracy and the (re)Emergence of Indigenous Peoples' Knowledge in Contemporary International Law", Ikechi Mgbeoji articulates the importance of analyzing the key institutional actors within the realm of international law that deals with the appropriation of indigenous knowledge but privileges the white, European mindset.

In recent times, this attitude, as reflected in both international and domestic law, has witnessed a slight change. Modern international law instruments such as the Convention on Biological Diversity (CBD) now recognize the empirical and scientific character of indigenous peoples' knowledge. Similarly, some states have begun to enact domestic laws protecting traditional knowledge" (Mgbeoji 2004:7).

Key Institutional actors include TRIPS (Trade-Related Aspects of Intellectual Property Rights), which seeks to develop effective intellectual property rights that do not serve as barriers to international trade, and Risk, Access, Benefit Sharing (RABS), another important force involved in the implementation of international policy regarding the use of medico-botanical knowledge, which determines how knowledge is protected and what access people have to it, as well as where benefits (monetary or other) go (Shiva 2000). The issue, however, remains the same: IPR must be articulated by the indigenous people whose knowledge it attempts to protect. As scholar

Vandana Shiva attests “the globalization of Western intellectual property rights will inevitably diminish the world’s biodiversity because Western intellectual property regimes place no value on the communal knowledge of indigenous societies” (Shiva 2000:13).

In addition to this invasion of indigenous epistemic space and continual epistemic violence—wherein indigenous ways of knowing have been/are discredited and disavowed—the structure, language, and underlying concerns of IPR are currently unable to accommodate the complexities of establishing ownership and authority on a sacred plant that is part of an indigenous healing system. For example, in “Beyond Patents: The Culture of Native Healing and the Limitations of the Patent System as a Protective Mechanism for Indigenous People on the Medicinal Use of Plants” by Ikechi Mgbeoji, it becomes clear that there are numerous dimensions and complexities to consider in attempting to use a Western-derived patent system in the protection of indigenous plant knowledge. The main thrust of Mgbeoji’s argument in this text is: the patent system, a form of IPR, is “theoretically and operationally incapable of accommodating the peculiar demands of native healers” (2006:2). In other words, the epistemic context in which concerns are raised and addressed through the patent system does not resonate with indigenous forms of protection/ownership of medico-botanical knowledge. He goes on to offer his advice for coordinating better, more effective mechanisms of protection for indigenous medico-botanical knowledge.

Tinkering with dominant intellectual property regimes perpetuates the colonial mindset that indigenous peoples did not have autochthonous and effective legal regimes for the propagation, transfer, sharing, and alienation of knowledge. The better view, in my opinion, is to revitalize pre-existing rules and sanctions by which traditional knowledge of the uses of plants by native healers were protected (2006:10).

In considering the internationalization of the ayahuasca vine, different approaches arise that are worth considering in the context of differing epistemologies/methodologies among biomedical scientists and indigenous healers. First, it becomes clear that indigenous plant knowledge systems and biosciences “know” the plant differently. For instance, while indigenous knowledge systems often focus more on additiveness and multiplicity—looking particularly at the multiple uses and synergistic effects of plants—the biosciences tend toward reductiveness and the isolation of various compounds that can then be produced synthetically in a laboratory setting (Augusto 2004, IPR slideshow p. 3). However, this type of approach advances its own ideological presuppositions, as Professor Chidi Oguamanam notes in Mgbeoji’s text: “the emphasis on active ingredients...advances not only the Western scientific culture but also advocates ‘mercantilism’ and ‘extractivism’, with which Western science and its intellectual property allies have besieged indigenous knowledge systems” (Mgbeoji 2006:7). Here, we see the extent to which the fundamental approaches to obtaining effective medicine differ in indigenous knowledge systems from biomedical ones.

The concept of “drug tourism” is one that has gained relevance in recent decades and is an example of some of the more potentially dangerous ramifications that may result from the decontextualization or extraction of indigenous knowledge from its social, cultural, and physical environment, and subsequent transposition of knowledge in a new context for recreational consumption. Consumers from developed nations, primarily in the West, have sought to arrange special vacations and experiences in which they experiment with indigenous uses of medicinal and hallucinogenic plant substances. This concept finds resonance in the text “A Hallucinogenic

Tea, Laced with Controversy,” in which Dobkin de Rios and Rumrill report that

[u]nscrupulous practitioners who exploit the tourists abound, and they are conscious of the farce they perpetrate. In Amazonian cities, middle-class men become instant traditional healers without undergoing an apprenticeship period... They give tourists mixtures of 12 or more different psychedelic plants to help them mystically become embedded in the universe (2008:70).

What is perhaps more alarming is that some seduce and abuse patients under the influence of the drug, or obtain other forms of personal power and control over those who are intoxicated. Another interesting point that Dobkin de Rios and Rumrill raise concerns the role that anthropologists have played in inadvertently drawing attention to substances and their various spiritual and medicinal uses, as a result of studying the plants in ceremonial contexts and using ethnographic methods to document their own experiences and the experiences of others.

In the process of examining esoteric drug rituals, the anthropologist and other social scientists must take responsibility, at some level, for the outcome of their work. There has been an increase in drug-related tourism... by unsuspecting men and women who are seeking help for their psychological problems (2008:71–72).

This is an example of a darker side of globalization, in which indigenous knowledge becomes commodified, decontextualized, and, in a certain sense, abused.

Conclusion

To conclude, this paper has asked and attempted to answer a number of central questions circulating through the Intellectual Property/ayahuasca debate. This paper has also put forth and defended an argument: the concept of intellectual property and the U.S. patent system exist within a Euro-Western episteme. As such, they do not do justice to protection, ownership, and concerns of authority over knowledge that exist within some indigenous healing systems, such as ayahuasca shamanism in the Peruvian Amazon. Additionally, IPR does not take into account communal ownership of knowledge within indigenous healing systems, and, as a result, cannot accommodate the nuance and complexity of plant knowledge in indigenous healing systems.

What remains clear is that social scientists and those involved in development studies, as well as scientific/biomedical researchers, must adopt new ideologies and frameworks for thinking about the protection of indigenous medico-botanical knowledge. Intellectual Property Rights cannot be stretched, strained, or truncated in a way that will aptly fit the extreme variety and specificity of indigenous knowledge systems and notions of protection of medico-botanical plant knowledge. These regimes must involve the people whose knowledge they seek to protect and must/should use a local glossary and epistemic context in which relevant questions are asked and effective policy regarding protectionism is developed and put into action. Still more questions may be asked if we are to approach a better model for the protection of indigenous medico-botanical knowledge: is it possible to develop an intellectual property-type regime that is sensitive to the communal aspects of knowledge in some indigenous cultures, where information is shared and transferred through apprenticeships and close relations? If medico-botanical plant knowledge is extracted, reduced, and made transposable to a wider public through bioscience and laboratory production, is the original cultural context from which the knowledge came at all

degraded or changed? How do we account for power inequalities across cultures in the context of intellectual property rights?

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Traditional farmer plowing his fields in the highlands of Ethiopia

Galit Govezensky, Bar Ilan University



A storekeeper selling basic items in the marketplace in Axum, Ethiopia

Galit Govezensky, Bar Ilan University

TRANSITIONS IN SMALL MEDIUM ENTERPRISES: CAUSES, EFFECTS, AND RECOVERY

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Abstract: Small middle enterprises, or SMEs, are a vital aspect of the western economy and culture, but many fail to become successful and establish a well-known place in the corporate world. Start-ups, new businesses, and small companies constantly struggle to maintain a balance with the world around them as well those within them, especially when their products and services are innovative in nature. Due to these circumstances, they constantly undergo both significant and minor transition periods, resulting in company growth. Anthropology is essential in understanding how transition periods work to create the hegemonic influences, hierarchies, ideologies, and behaviors that make up the community within these businesses as well as works to build an understanding of relationships that are constantly being negotiated in these firms. By examining the internal events resulting from the transitions, anthropology can be used to help understand the problems common to smaller transitioning and growing organizations. The following essay probes the worlds within one particular business using different ethnographic and anthropological methods to dissect these issues and identify how transitional periods help an organization grow and interact with the internal processes that make smaller establishments unique.

Introduction

Most agree that the definition of a small business becomes relative to the company in question and will vary to reflect industry differences (U.S. Small Business Administration, April 4, 2013). Some describe them as the amount of employees or the amount of money the company makes in a year, (Day 2000:1034) and (Huang and Brown 1999). Because the company considers this information confidential, I cannot give away the money they typically make per year, however, according to these standards, Digital Advertising Co. are considered a small but growing business. Because of their huge role in the capitalist economy the importance of understanding the behavioral dimensions of small firms as well as the events and transitions that cause these behaviors and difficulties typical of smaller but growing businesses, is emphasized. In 1998 small businesses provided the majority of the new-net jobs added to the economy and employed over one-third of private workers in high-tech occupations as well as having accounted for 55% of all the innovations (Day 2000:1034). Still today the capitalist economy, heavily influencing American cultures, is replete with small businesses (Day 2000:1034). Therefore, the increasing numbers of these evolving businesses affects the way those in the Western world come to understand their roles within the capitalistic economy.

However, most of these small businesses do not pursue growth because their products are already successful in the market, which includes grocery stores, laundromats, and restaurants (Hurst et al. 2011:74). DAC is different from these businesses in that it is a particular organization that has an innovative and digital product, making it a perfect subject to focus on. Organizations with innovative products and services are perfect for focus to study the transitions and growth, all of which are factors of Digital Advertising Co., whom I discuss in this paper. In fact, it is growing at an astonishingly fast rate. In the two years I have worked there, they have doubled the number of their employees and more than quadrupled the number of clients they have.

This essay will engage the internal issues that occur as a result of significant transitional periods in small medium enterprises. Internal complications have to do with events that occur within the business such as employee relations, social hierarchies, organization, etc. Such issues are particular to start ups or SMEs because they are still finding solutions to how their particular businesses run. Narratives created by small medium enterprises with innovative products and services, give insight into what the future of digital media may hold as well as provide answers to other businesses following in their footsteps. DAC, which has unique internal processes of production and successful functioning, is a great example of a company whose narratives do this kind of work.

Methods

Focusing on a company I had two consecutive summer internships for while an anthropology student, named Digital Advertising Co., or DAC, I use varying methodologies in my search to understand the transitional periods in small, growing businesses. These methods include ethnographic work; outside research using published journal articles, media forms and statistical research, as well as theoretical research. The ethnographic work was done by conducting a series of interviews and by participating in many conversations with employees from both DAC as well as with their clients and investors, as well as being a participant observer as an intern in the company.

The ethnographic research of this essay will work to explore, analyze, and describe the social processes that distinguish the employees' experiences. The employees felt comfortable relaying their thoughts and feelings about the company to me because of the time I spent as a fellow and dedicated employee, and eventually became the informants for this body of work. Younger employees – all GenY, or born after 1980 – tended to relay personal insight and opinions, whereas the older executives focused on the factual performance of the company by relaying information in an objective fashion, (MacDonald and Coffield 1991:42). As a result of my research I was able to get two very different views of the company's social and political discourses that define the company as unique and a great subject of study.

Background

Digital Advertising Co. works in uncharted territory due to their work with innovative products and services. For confidentiality reasons, I cannot relay the specific products of the company, however, I can say that they provide services to make digital advertisements interactive and more effective to target audiences. Considered an entrepreneurial company because DAC renders aging digital technologies and processes obsolete, takes risks, and their employees, with the exception of the executives, have become "jacks-of-all-trades" in the sense of having a broad skill set (Hurst et al. 2011:74). However, it is inevitable that they will be dealing with many kinds of problems internally. The young company must be careful; they are overly sensitive to their environment, which includes the economy, reputation, and even seasonal fads (Hurst et al. 2011:73). They need to constantly answer and re-answer questions such as "why should people buy their services if they have never needed it before?" They must be careful when trying to solve for external problems because they must be constantly aware of internal issues which are equal to - and sometimes more important - to the external ones.

For the purpose of this text, complications considered external to the company are ones that pertain to the acquisition of profits, clients and investors, or anything that deals with people that do not work directly with the organization. Discourses concerning internal complications are

ones that pertain strictly to people directly involved in the organization such as employees, cultures, politics, organization, hierarchies, etc. of the company. This paper focuses on internal discourses and problems that commonly appear in small young companies going through transitions and growth. Transitional periods that occur in smaller businesses result in specific organizational and hierarchical patterns, social business practices and ideologies, employee identities, and community building. This struggle includes the need to overcome an almost endless list of problems that can and will occur. Small businesses, or late stage start-up companies, are fragile and employees show an unusual dedication to the success of the company.

Growth, Organization, and the Problems that Follow

In a young company one of the most important goals is to grow. As growth increases so do the complexities and frequency of the problems the company comes across (Adizes 1998:3). An organization may only be without problems when no change occurs, thus the goals of a growing company are not to be free of conflict but instead to trade simple problems for complex ones (Adizes 1998:3). Adizes (1998) describes two categories of problems an organization will encounter in its development; productive and destructive. Productive problems are solvable with the business' own internal energy and include issues that are expected and common for a growing company, as well as those that are not expected and happen during transitional periods (Adizes 1998:6). An example of a productive problem might be hierarchical misunderstandings among employees or organizational disruptions. Destructive problems require external and professional intervention; the same problems repeat themselves for longer than expected periods of time and attempts to resolve them only produce other undesirable effects (Adizes 1998:6). They can be considered complexities, which often stymie the organization's development (Adizes 1998:6). During my stay I came across both productive and destructive internal problems. First, I suspected that these problems were destructive, but upon deeper understandings and with the help of my friends within the company, I discovered most of the complexities were a common issue of a growing company.

Organization

One productive and standard complexity resulting from DAC's most recent transitions concerns employee organization. Digital Advertising Co. owns two floors in an office building located near Madison Avenue, the center of New York City's advertisers; the two floors separate two distinct cultures of the office. Other sub-cultures are also seen within the different employee groups, or teams, within the organization, which are linked to how the organization is structured internally. It may be common for small organizations to adopt a decentralized team or group-based and distributed structure (Ahuka and Carley 1999:741). For the majority of DAC, employees are grouped into teams such as the Business Development team, the Research Team, the Video Team, and three Design Teams. Every team was grouped geographically together in the office for the most efficient communication. The executives, or the "higher-ups," as their employees call them, are all located on the eighteenth floor, the first floor DAC owned. Each executive works in their own private office, but they have glass walls and doors so privacy can only be reached at an auditory level. Additionally, there are other teams on the eighteenth floor, which include finance, office management, business development, research, communications, and one design team. When I was an intern at the company, the design team on this floor was the most secluded from the watchful eyes of the higher-ups. This allowed for creativity to run somewhat more comfortably than if they were under the constant watch of the executives,

though still had to adhere with the office etiquette. Now, however, there are plans to move this design team down to the seventeenth floor where the rest of the designers are. Along with these teams, the three formal meeting rooms are on the eighteenth floor; this space appears much more professional and clean than the more recently acquired and spacious seventeenth floor.

The lower floor consists currently of the Video Team and what used to be known as the design teams, but they have now been combined and renamed the Development Team. Floor seventeen has a lot more open space than the one above due to the fewer number of employees and lack of private offices. The design and video team residing here are set up so they can easily communicate with each other, usually facing or sitting next to each other because these teams interact the most closely in order to create the company's products.

The Big Transition: The Cause, Result and Recovery

In the recent past Digital Advertising Co. has gone through a rather significant transition affecting everyone in the company. It is unclear to me what triggered the transitions exactly, but through conducting several interviews I was able to map out the events leading to the transition and what happened afterward, which allowed me to document the company's stage of development, management hierarchies, issues declared important by the executives, and the conflicts standard to transitioning small companies.

Indirect Client Control

Before the large transition, distinct events transpired that might have triggered the changes, the most significant being the acquirement of DAC's most important client to date. Clients holding large sums of money over the heads of struggling businesses can hold a lot more power over smaller companies in contrast to the power they have over larger ones due to the growing company's inflated need of financial support. Since small businesses often experience a need for immediate cash, clients can gain power over the company by offering them secure financial income (Lepoutre and Heene 2006:263). Thus the acquisition of Digital Advertising Co.'s first big-time client convincingly could have triggered the changes in the company's goals and structure. Lepoutre and Heene (2006) support the hypothesis that DAC lacked a specific enough goal to satisfy their powerful client and therefore may have compelled the altering their goal specifications in the founder's mind.

The alteration of the company's goal had the largest effect on diverse aspects of the company. For example, within the time-span of two weeks DAC dropped the creative aspect of their products, meaning they no longer create their own media but instead offer services that plug in a client's footage or information into algorithms to automatically create interactive advertisements. Another reason why the company went through this dramatic and sudden shift occurred could be explained by Adizes (1998), who argues that companies commonly change their direction due to the necessity of narrowing down the product type created in a particular market so a profit can be made (Adizes 1998:52). The constant need for immediate cash prevents smaller and growing companies from building financial reserves, which make them susceptible to the influences of their clients who force production processes. In turn employee attitudes and production processes may shift dramatically in order to better target the market for the purpose of profit gains (Lepoutre and Heene 2006:263). This kind of change is typical when a young company is not drawing profits because their goals are too broad. In the case of DAC and according to their employees, a new client that had the potential to greatly contribute financially to the corporation was understood to coax the great transition.

Changes in Employee Organizations

Also what comes along with transitions appears to be the need to take another look at how a small company is organized. Sometimes when a company takes on new goals, they need to consider new processes to reach these goals. Conversely, reorganizations in these SMEs may cause upheaval, but it is difficult to tell if it is destructive. In fact, the upheavals may be productive and may be necessary, especially if they are sudden. It is also important to keep in mind the changes that the employees may rebel against could be congruent with what the company is trying to accomplish. Because of this, the fairly recent reorganization undergone by Digital Advertising Co., dubbed the “re-org” by their employees, becomes difficult to analyze and to see how it might affect the company and the effectiveness of the work they do.

Problems within the separate design teams triggered the large organizational change. The three separate design teams disintegrated to become one large Development Team, which unfortunately, stripped the creative work from the company. This triggered not just a shift in job descriptions but also the ideologies of the development team, who now all occupy the seventeenth floor with the Video Team. Each individual’s purpose changed; they had to work to redefine themselves within the company and among their peers, which was difficult to do let alone process. The employees who previously thrived on doing creative work now had completely different job titles; a change which drove many to quit, including two team leaders who worked for DAC for several years. Dubbed the “Re-Org” by employees, the shift also affected whom the business development team targeted as potential clients and caused some of these employees to be asked to resign due to their loyalties to previous clients.

The re-org included other changes as well; several people from the development team were fired because, according to an employee, “they were not pulling their own weight when the rest of us were staying until sunrise and working our tails off.” Issues like these created tensions because the employees, already overworked and tired, were working extremely long hours to finish the work in order to keep up with the executive’s expectations and to stay on schedule. The employees that were fired were not replaced, upsetting the team because there was even more work for each employee to do after the others left. Some of the design team went to their team leaders to complain, but there was nothing they could do. The executives gave their orders. This situation opened up the issue of the lack of communication efficiency concerning how job categories shifted, how the products are sold to clients and how employees understood the company’s goal.

Communication Issues

The reorganization of the company was in part a solution and a cause of communication issues. First of all, the re-org was an attempt to solve the communication issues occurring between the teams and the several levels of employees. While I was an intern, I had conversations with several employees who I was asked to help. I noticed that certain important aspects of the company were common knowledge to some but were a complete mystery to others. Before the transition, I was helping the Research Team create documents for the president’s pet-project, a database hub to be called “*Creative Intelligence*.” There has always been a buzz about how *Creative Intelligence* would change how the company could put together experiences because it contained every minute detail about every campaign the company launched including performance and demographic targets, among other things. However, when I asked people outside of the Research Team about what they knew about the hub, they either

knew nothing about it or just knew it was something they did not have time to investigate. I thought it was curious how something of the highest importance to the executives and founder, could be completely unknown to other employees. Communication needed to be mended. After I left, the company took steps to mend this issue, including the re-org.

The reorganization of the company was a solution to communication problems insofar as increasing the flow of information through the developers of the company. Before there was one Development Team united under one leader, there were three separate autonomous design teams with three leaders who all had unique social practices, identities and ideologies. Essentially, they were secluded “cliques,” all loyal to each other and unfamiliar with what was going on outside of their mini-corporate family. Their ignorance to each other’s duties created loyalties that caused problems when people got moved to different teams. By completely dissolving the teams into one large Development Team, this complexity was overcome without the help of any outside force, making this problem classified as productive (Adizes 1998:6).

The reorganization also *caused* communication intricacies as well. When I asked the president of the company, Daniel, about how employees were reacting to the transitions in placement, he let out a laugh and excused himself while he closed the door. Since I was having a phone conversation with him I could not see exactly what was going on, but given we were speaking in the early morning, I knew from my time involved with the company that not a lot of employees were around, so this struck me as curious. I did not have time to ask him why he closed the door, because when he sat back down to talk to me again, he spoke in a serious and demanding tone.

Daniel: “Employees tend to react to changes with a lot of uncertainty, and that has been the case here. It causes people to ask what their roles have become and small companies in transitions need to reassure people on a consistent basis throughout the transition.

Hopefully they are motivated to ask a lot of questions. You don’t want people gossiping in the corner about what is going on.”

Me: “Why do you not want people gossiping?”

D: “Gossiping just isn’t healthy behavior because they don’t know what is happening and management must be more proactive and let them in so they can feel secure and relaxed about the safety of their jobs. Gossiping can lead to people getting upset about something that may not be even real- it is unhealthy. The past few months have had some of those reactions.”

M: “What did you do to stop people from gossiping?”

D: “Our solution is what we have called ‘Town Hall Meetings’ where everyone in the company gets together and senior management talks about the different things in the company and the changes that are happening. We have had them two or three times and occur on a bi-weekly basis. It is an update for the company to feel connected, which it has not been in the past. These meetings allow people to see the connection of their jobs to the bigger picture and larger goals at hand. Hopefully these will continue to occur and help communications clear up.”

The president's comments about the problem and solution show his adeptness for dealing with problems in transitional periods. He expresses these "Town Hall" type meetings as a way to prove to the employees that their assurances are true, as well as a tool used to prevent gossiping. Trust is an integral part of effective work, communication, and satisfaction, and without it, the effectiveness of the company would potentially plummet. These meetings help employees gain trust for their superiors and peers. Based on what I have seen, the meetings have done well at achieving their purpose, and in the coming months I predict the level of trust and devotion to the company will rise, and in turn, so will productivity.

The importance placed on the town hall meetings expresses the importance placed on avoiding gossip between employees. In my own interviews alone I have seen that gossip is a way that employees try to wrestle with the changes that happen in transition periods. I have seen contradicting ideas of what has been going on with the company from the designers and other Gen-Y employees, which can be destructive to the production processes and even company loyalties. Many employees have left or even been forced to leave because of gossip, and the town hall meetings are meant to reduce the effects from gossiping and ease the thoughts of employees to regenerate internal stability.

Hierarchies within the Company

Transitions in companies naturally shake the foundations of how processes of production are understood. Oftentimes this results in changes in positions and employee hierarchical statuses. Therefore social practices, identities and dominance concepts are challenged. Within the company today, several official and unofficial types of hierarchies are identifiable, according to the interviews and conversations I have taken part of. First, the most official hierarchies are based on a person's job title. At the top of the list is the Founder, then the President, followed by other executives on the same level as investors, below them are team leaders, and lastly are the team employees. Then, there are the hierarchies in-between the teams, which are less official since those in higher positions recognize them but lack titles associated with them. Some employees are seen as more "important" than others due to their skill sets or their time with the company. Unique to Digital Advertising Co. is how the floors of the office separate the definitions of these hierarchical structures. For example, the official hierarchies are clearly defined on the eighteenth floor, however they become muddled on the floor below, especially since there is a large amount of people who are theoretically equal and all under the direction of one leader. Levels of power within the development team are negotiated informally by the praise received by the authoritative figures, the progress of their individual duties and social structures built on friendship as well as their ease of compatibility. The hierarchies tend to get tangled even further when certain clients are taken on and groups working with more important clients are given more attention. Unofficial hierarchies include those created when investors and clients start to have more influence in what the company does as we saw previously in client control; in this case clients can tell the president what to do and become part of the hierarchical system. This happens when big clients are taken on and the company feels like it must do everything it can to keep them happy, no matter what it takes.

Key issues were revealed as the re-org occurred. Hierarchies, for example, had not been eliminated or significantly altered, especially within the Development Team, which might have resulted from the absorption of the three teams into one. One of these issues concerned how hierarchical systems happened to be the tools employees used to build definitions of themselves as employees, which were definitions they relied upon to distinguish who they were and their

importance as an employee. Now that these definitions were rendered spent, how they thought of themselves as a part of the company became unclear; instead of three distinct creative development teams with a clear and structured hierarchy, one big group was created with one leader for them all. Reality for them was contorted. According to the several interviews conducted, everyone working under Jane theoretically has the same hierarchical status despite there being an unspoken value placed on individuals with specific talents and experiences with certain clients as well as the influences of the previous groupings influencing internal hierarchies. Inherently, because of the awareness of these values placed on particular people, an unofficial value was placed on particulars within the teams. Many noted they felt the responsibilities of these pressures, which made them harder workers; others take advantage of their own high value given to them and treat others as less important, which can be detrimental to other employee's moral. Both of these behaviors have adverse and complimentary reactions. People with more value placed on them are either inspired to work harder, or become lazy since they already have the approval of the executives. Those who don't have as much value given from the higher-ups may be further inspired to prove themselves as worthy or may see no purpose in working harder because the higher-ups have already made up their minds about them.

Unique Hierarchical Models

There are interesting hierarchical models that are specific to DAC because of its unique rapport with their employees. One example of this unique relationship concerns the leader of the Video Team. Employees I have spoken with agree that the Video Team leader is the most important person on floor seventeen, as well as the most entertaining. He is important not because he has a high status but because he has been with DAC since it first began creating content and knows everything there is to know about video production and everything the company has ever produced. In several of my interviews with DAC employees who were not part of the video team identified him as a person the company could not live without. However, he could be quite disruptive; he constantly yelled out profanities about the mysterious problems on his computer screen and what he heard through his headphones. Nonetheless no one complains because of his high value in the company and they all willingly put up with him. Why would someone who is so distracting, rude, and careless be one of the most valued employees? Answering this question reveals some of the more interesting cultural values of growing business.

Some people have told me that DAC expanded to the seventeenth floor so that the Video Team leader would not bother the executives with his "shenanigans." In one conversation, a veteran employee informed me that there was a "conscious decision to not create conflict with [the Video Team leader]." Further into the conversation, the value placed on certain employees was revealed to be due to the fear of the executives of losing seemingly irreplaceable skill sets and experience. Especially in a small company where the employee relations to the company and each other are so tight-knit there is difficulty in finding a replacement with the correct combinations of skill and will to do as much heavy lifting as an employee who has been around for many years. Fear of loss motivates employees to endure certain behaviors, no matter how insulting they may be.

The Video Team leader served another purpose as I observed; he was the comic relief for the seriousness of office life, particularly for the seventeenth floor. The first year I worked for DAC, I was afraid of his obstreperousness, but in my second summer, I found him entertaining.

Once, during a celebration of Jane's return from maternity leave, he bought me a beer when he noticed I was the only "legal" intern and encouraged me to chug it before I left the office, which I did not do. Unfortunately through this incidence I learned another aspect of the seventeenth-floor culture the hard way. Because most of the people on this floor spent the most hours in the office, often staying until two or three in the morning, the social lives and office lives of the employees are tightly knit. By not drinking the beer at the celebration I distanced myself from the social center of the floor and the video leader was not quick to forget my actions. Unlike the video team leader however, there are those in the office whose behavior was seen as credited towards the worth the higher-ups have bestowed on them. The seventeenth floor is evidently a lot less business-formal than the eighteenth, and a lot more socially driven.

The cultural values of this floor which were motivated by entertainment levels should be addressed in the future, though values placed on entertainment may not be directly influential in deciding to keep a disruptive employee rather than searching for one that would potentially fit the work environment better. However, it is my hypotheses that every person placed on floor was there because of the work they do, though this requires more study. The video team and the development team work the longest hours of the company and they are the most in need of a reprieve from stress, which the video leader then provides. In these ways small companies create unique hierarchical structures based on the importance of various individuals traits and skills within the organization.

Results

Small medium enterprises account for a large part of the United State's economy, and therefore it is important to understand how they work. Those SMEs with innovative products and services seek to grow their business, like Digital Advertising Co., and are especially integral to the market. By using ethnographic work as well as outside research, this essay analyzed the social processes that distinguish the uniqueness of DAC's employee experiences. As companies like DAC are sensitive to their environments, they need to constantly be negotiating questions about the effectiveness and sale of their products and services along with the relationships to their investors and clients. Focusing on the internal processes of the company, the transitional periods in SMEs can be better understood.

Two types of problems a small company will encounter are productive and destructive, which can be difficult to differentiate at first, but at second glance it appears that productive challenges are more common and help the company to grow. For example, one productive problem seen in DAC was ineffective employee organization. The answer was simple, to reorganize, and could be solved within the company but also caused many other internal problems. However, as we have seen in Digital Advertising Co., sometimes these problems resulting from a solution are necessary to reach the goal of the company and to allow for growth.

Through several interviews, the significant transition DAC went through can be mapped out effectively. Certain events, such as the acquisition of important clients, as well as the need to specify a product or service, can trigger fundamental changes in a small company's goals and structure. When an organization's goal is too broad, they may not be able to draw on the amount of profits they need to grow.

Transitions also bring questions of employee re-organization in order to fit the new goals of a company, though it is difficult to measure the effectiveness objectively when considering the dense opinions and feelings from the employees interviewed. Problems within the different teams of DAC may have triggered the need to reorganize, though it upset the balance of the

employee's understanding of themselves as parts within the company. In an effort to discover where they now would fit in the organization's new goals, issues concerning communication became more pronounced, even if the reorganization was in part done to solve for some communication problems. By merging the three Development Teams into one, there was a solid form of communication that would ensure the same information would reach all the developers, while also trying to eliminate the "cliques" and estranged loyalties to different leaders that were established under the separate teams and hindered the production process. Since the reorganization disrupted the flow of understanding, the start of what the president named "town hall meetings," started where everyone in the company would get together to answer questions and reassure the employees of their positions in order to stop harmful gossip.

Transitions, as seen in DAC, can shake the hierarchical foundations of an SME. Two kinds of hierarchies, official and unofficial, get jumbled up in a mess until time passes and finally settles. Values placed on employees by those of higher official hierarchical status helps to create the unique unofficial social hierarchies are seen in DAC's developers, which in turn can shape the behaviors of certain people. Smaller companies value certain employees more than larger ones because of the more personal relationships had between the two. Sometimes, when the employees are split up in such a way to create privacy for creativity to flow more easily, as it does on the seventeenth floor of DAC, different employee relationships are formed based on social values and the need for comic relief due to being overworked.

Conclusion

Innovative businesses targeting fast-paced technology trends have transcended the basic description of providing a service and/or product. The survival of their company depends on the effective delivery of their advanced technological products. For DAC, the ability to deliver their product depended upon company growth. Naturally, when a company tries to grow while simultaneously still developing as a distinct company, internal conflicts occur which interrupts the developments of their own processes of knowledge production as seen with Digital Advertising Company. Their original technological products take them into a world no other company has had the chance to deal with, which makes studying how these organizations interpret and resolve the complications integral to our understanding of how businesses survive in a brutally competitive economy as well as how they pave the paths for other businesses to follow.

While gaining an understanding of the inner workings of the NDA and understanding the way that their company interacts with the market as a whole, it became apparent that their transitional problems were not atypical for a technology-based organization going through an expansion phase. The intricacies of these smaller organizations make them important to study such as how they tend to create unique methods of segmentation of their work force that is fundamental to their success (Day 2000:1034). When the systems that organize the employees are altered, their social practices and identities are disrupted and new ones are created, as we saw with DAC and the employees' many struggles to find their place within the company. Studying how these organizations interpret and resolve complications related to growth is integral to our understanding of how businesses survive in a brutally competitive economy.

As a company is forced to initiate internal organizational change to survive in an evolving market, the employees within that company are forced to change their perspective. Hierarchical change irreversibly alters the systems that they have relied upon for survival in the company and that same choice is presented to each employee that was presented to the company:

adaptation or dispensability. As we saw with both DAC and their employees, there is an identity struggle that occurs at this decision to change.

DAC provided unique context for the path of an American business going through expansion. For example, simple accomplishments such as accumulation of clients having the potential to expand a business's client base extravagantly can alter the entire company. In addition, the value of profitability pushes executives to realize the need for service specification and production process alteration because of a small company's reliance on financial support. The power a client has over small agencies causes tensions and alters how the executives of the small agency place value on their employees. Lastly, DAC provided an example of how these values were placed on some employees with the addition of powerful clients who have conscious and unconscious power over their small and growing counterparts.

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CANNIBALISM IN THE PALAEOLITHIC: AN EVOLUTION OF SYMBOLIC MEANING

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Abstract: Cannibalism has long been part of our prehistoric past. Though often difficult to prove definitively, there have been several instances in the archaeological record that suggest this practice was widespread throughout the Palaeolithic, regardless of species. Though starting off as a form of dietary sustenance, cannibalism took on a symbolic and cultural meaning in the Upper Palaeolithic as concepts of the body became central to thinking. Multiple types of evidence will be cited in this paper to assert that cannibalism has played a distinct role in anthropological history. It will begin with a description of how cannibalism can be evidenced in the archaeological record, observed using alternative forms of evidence for the practice, and, finally, reviewed with important cases of possible symbolic cannibalism.

Prehistoric cannibalism has long been an issue of fascination for academics and the public. Though certain cases are often debated, a range of multi-disciplinary studies attribute the practice to several of our hominin ancestors. The archaeological record points to clear instances of hominin bone processing by other hominins throughout the Palaeolithic, suggesting that the disarticulation and ingestion of hominin flesh was a continuous practice. Although cannibalism may have been initially adopted for a variety of reasons, this paper asserts that over time cannibalistic behavior became a part of an evolving mortuary tradition with an emphasis on body fragmentation. Therefore, practices such as defleshing and cannibalism may be considered indicators of symbolic behavior. This is particularly applicable at Middle and Upper Palaeolithic burial or deposition sites, where evidence of cannibalism can often be reasonably interpreted as examples of mortuary cultural practice.

Recognizing Cannibalism in the Archaeological Record

In anthropology, cannibalism is often defined as the regular, culturally encouraged consumption of human flesh or tissue (White 2001). When classifying cannibalism, anthropologists categorize the behavior by the relationship between the consumer and consumed, and by the motivations behind consumption (White 2001). For example, endocannibalism refers to the ingestion of persons within a group, whereas exocannibalism alludes to the ingestion of outsiders. Motivation classifications include starvation-driven survival cannibalism, “regular” diet based gastronomic cannibalism, and tradition based ritual cannibalism (White 2001). Out of these motivation classifications, only the last directly involves symbolic behavior.

Archaeology has become the primary means of studying human cannibalism in prehistory. Most archaeologists recognize and accept evidence of defleshing and other forms of intentional hominid bone processing in the archaeological record, and often associate this evidence with cannibalism. Motivations behind such customs are much harder to infer, and cannot be definitively proven.

As archaeology has progressed a particular set of indicators have become the standard for the scholarly recognition of cannibalism. When studying skeletons, both peri-mortem and postmortem activity are often recorded in the form of observable modifications to the bone. For example, the removal of tissue from bones leaves a record in the form of bite marks or fractures.

In the case of human processing, these modifications follow certain damage patterns which are consistent with tool use (Pettit 2011).

To recognize cannibalism the archaeologist must call upon a wide range of osteological and contextual evidence. For example, the archaeologist must look for patterns that are commonly associated with human processing. There are several patterns that are commonly viewed as evidence of hominid processing. Some common processes include cutting, crushing, chopping, hammering, scraping, peeling, and burning (White 2001).

In cutting, incisions or slicing marks are evident on the bone (Fernandez- Jalvo et. al 1999). Cutting is often employed in processes such as dismemberment. In crushing, pressure is applied to remove fat from tissue attached to bone, creating fracture lines and flakes. In chopping, sharp stone tools were used by hominins to remove muscles and tissue as well as to disarticulate heads. This modification leaves deep, wide, v-shaped scars on the affected bone (Fernandez- Jalvo et. al 1999). With hammering, or percussion blows, the bone is often placed on an anvil and then struck forcefully, exposing bone marrow and breaking the skull. Whereas chopping is employed when the bone is still covered by soft tissue, hammering is applied directly to the bone leaving pits as well as rough and irregular markings. These “percussion pits”, as well as striations caused by the anvil, best indicate hammering. In scraping, tools are used to file off muscles. This is evidenced by striation marks on the bone’s surface. Lastly, peeling occurs when a bone is fractured and then peeled apart. Peeling is demonstrated by a roughened surface with parallel furrows or a fibrous texture (Fernandez- Jalvo et. al 1999).

In later sites, particular burning patterns can be interpreted as incidents of roasting, and may provide insights on cooking customs (White 2001). However, the presence of one of these markings is not enough to determine that cannibalism occurred at a site, as many taphonomic explanations can be posited to explain solitary instances of hominid bone processing. Most agree that cannibalism can only be proposed as an explanation for processing with the occurrence of multiple modifications or if other requirements are met. It is also important to note that the amount of time elapsed between death and processing impact the amount of markings left on the bone. The more time that soft tissue has to decay, the less evidence modification will leave on bones (Bello et. al 2011).

Then, the observant archaeologist should note the position of the modifications and the types of bones modified (Fernandez- Jalvo et. al 1999). Modifications patterns on areas attached to nutritionally valuable tissues, such as brain tissue and bone marrow, may demonstrate a conscious dietary preference for these nutritious body parts (White 2001). Contextual evidence can also be important. For example, when the patterns of butchery on faunal remains at a specific site match patterns on hominid remains at that same site, one can reasonably infer that group processed both animal and hominid bones (White 2001). Biochemical studies reconstructing hominid diets are also significant. For instance, traces of hominid myoglobin in coprolite samples provide concrete proof for the consumption of hominid flesh (White 2001). In conclusion, all of these varied sources of evidence at a site are consequential in recognizing cannibalism.

Other Sources of Evidence for Palaeolithic Cannibalism

Genetic research has also contributed to our understanding of cannibalism’s role in our hominid past. Studies regarding susceptibility to kuru disease within the Fore peoples of Papua New Guinea have proven particularly significant. Historically, the Fore were renowned for their mortuary endocannibalistic feasts, during which the group would consume the body of a

deceased loved one (Goldfarb *et al* 2004). These groups were plagued by kuru, a degenerative neurological disease, from the late nineteenth century until the feasts were ended in the 1960s (Goldfarb, *et al* 2004).

Later genetic research strove to understand this relationship between kuru and cannibalism, as well as patterns of susceptibility within the group. These studies asserted that kuru was contracted with the brain tissue consumption of an individual with Creutzfeldt–Jakob disease (also referred to as CJD), a similar degenerative disorder (Goldfarb, *et al* 2004). Susceptibility depended on heterozygosity at codon 129 of human prion protein (PRNP 129), which offers relative protection from the disease (Mead 2003). It is believed that the introduction of CJD through cannibalism (specifically of brain tissue) created a deviation from the Hardy-Weinberg equilibrium of constant genotypes, leading selection processes to favor the heterozygotic resistant allele (Mead 2003). This selection is evident in elderly surviving Fore who had participated in cannibalistic feasts, whereas populations unaffected by kuru remained at the constant Hardy-Weinberg equilibrium (Mead 2003). Therefore, cannibalism can be detected through heterozygosity in the PRNP 129 prion protein. Though this theory of balancing selection is not the only explanation for kuru it is widely accepted among scholars.

A wider genetic study of PRNP 129 in global populations came to an interesting conclusion. These studies observed that the PRNP 129 balancing selection in the Fore is present in most populations, suggesting that selective pressures produced by the consumption of tissues infected with CJD were historically and geographically widespread (Mead 2003). For this to have happened on such a large scale multiple consumptions must have occurred. This evidence suggests repeated episodes of endocannibalistic prion disease outbreaks in ancient hominid populations (Mead 2003). The results of this study most clearly support the assertion that cannibalism, though not necessarily common or practiced by all groups, was nevertheless widespread tradition during the Palaeolithic.

Cannibalism in The Palaeolithic Archaeological Record

Instances of defleshing and probable cannibalism are evident from the Lower Palaeolithic. However, many still debate the reasons behind the development of these practices. For example, some point out that defleshing and other forms of hominid processing do not necessarily imply the occurrence of cannibalism (Pettit 2011). Though true, the same critics do not provide plausible alternative explanations. It is difficult to believe that our Lower Palaeolithic hunter-gatherer ancestors, to whom many scholars often attribute only the burgeoning of symbolic behavior, would consistently take the time to deflesh skin for no functional purpose. Though one cannot claim that human flesh was a consistent dietary staple of all of our Lower Palaeolithic ancestors, the existence of a form of nutritional cannibalism is not hard to suppose. This paper argues that, for some groups, symbolic meaning became attached to this nutritional cannibalism.

The Lower Palaeolithic, a term used to encompass the extensive period from 2.5 million years ago (mya) to circa 300,000 years ago (kya), is a time marked by great evolutionary change. Several cases of defleshing from this period have survived in the archaeological record. These range geographically from the *Homo heidelbergensis* remains from the site of Bodo in the Awash river valley in Ethiopia (600 kya) to the *Homo antecessor* remains at the site of Gran Dolina in Atapuerca, Spain.

Gran Dolina is a part of a complex of sites along the Sierra de Atapuerca mountain region of Spain. The site is a filled in cave containing eleven sedimentary levels (Fernandez- Jalvo *et. al*

1999). Level TD6, also called the Aurora Stratum, dates to 780 kya and contained faunal remains as well as the remains of at least 10 *Homo antecessor* individuals (Pettitt 2011). Marks of hominid processing are evident on both the cranial and post-cranial remains of many individuals, demonstrated by the appearance of cut-marks, percussion marks, peeling, and adhered flakes (Fernandez- Jalvo *et. al* 1999). The complete list of these modifications is lengthy and outside the realm of this paper, only a selected few will be referenced.

For instance, cut marks on the sides of the cranial vault correspond to the biggest muscle attachments, suggesting that tools were used to disarticulate these muscles from the skull (Fernandez- Jalvo *et. al* 1999). The occipital nuchal areas of many show adhered flaking, referring to bone flakes that adhere to the bone after a fracture, indicating percussion. Ribs demonstrate both scraping marks and peeling. Heavy hammering damage to femur ATD6-76 caused percussion markings and scars associated with the longitudinal breakage of the shaft, most likely inflicted in order to extract bone marrow (Fernandez- Jalvo *et. al* 1999).

These processing patterns and their strategic location on particular bones have major implications for the study of early cannibalism. The modifications obviously demonstrate that those processing the bones already had an intimate knowledge of the nutritional value of the hominin body. This is best indicated by the marks associated with disarticulating the muscles in the cranium, as well as the probable extraction of bone marrow from femur ATD6-76. Coincidentally, markings on the bones of less nutritiously significant body parts, such as the phalanges, are less homogenous and provide less evidence tool use.

Contextual evidence both supports claims of cannibalism at Gran Dolina and suggests that cannibalism was a tradition rather than a single stress-induced survival event. As previously stated, faunal remains were also present in the TD6 level, and represent a wide range of species. These faunal remains were mixed indiscriminately with hominin remains and bore the same patterns of stone tool processing (Diez *et. al* 1999). For example, some compare the long striations on the longitudinal axis of faunal bones as attempts to access bone marrow (Diez *et. al* 1999). After consumption, hominin and faunal bones were dumped together indicating no differentiation in treatment. Additionally, the location of processed individuals at different stratigraphic levels in the Aurora stratum indicates the repeated practice of cannibalism over time (Pettitt 2011).

The ecology of TD6 reinforces cannibalism as a customary practice over time rather than an isolated case of survival cannibalism. Sediment studies of pollen and animal remains suggest that conditions were stable and comfortable for our ancestors in Atapuerca throughout most of the time period (Rodriguez *et. al* 2011). The climate was relatively mild at occupation and the faunal taxa was varied and plentiful. Though seasonal and short term environmental changes are difficult to assess and could account for isolated instances of cannibalism, indications of the practice at different sedimental strata indicate the repetition of cannibalism over time. Therefore, survival cannibalism is an unconvincing explanation for processing at Grand Dolina. Instead, inhabitants may have adopted cannibalism as a source of seasonal source of fa as their prey thinned out in the winter. This hypothesis would coincide with the clear preference for fatty brain tissue and marrow. Though there is presently no evidence for ritual action, one can justifiably argue that cannibalism had become an established practice for some. Therefore, it is not unreasonable to posit that this tradition could become entrenched in the symbolic behavior of following populations.

The Middle and Upper Palaeolithic periods are characterized by increasingly complex mortuary practices and evident symbolic behavior at deposition and burial sites. According to the

archaeological record, hominin body processing continued sporadically throughout these periods. A few sites attributed to early *Homo sapiens* in Africa demonstrate clear evidence of processing, but lack much contextual and skeletal evidence due to fragmentation. The archaic *Homo Sapiens* Bodo cranium from the Middle Awash Valley of Ethiopia, dates from 500 kya to 200 kya and is the earliest of these examples (White 1986). A careful study of this partial cranium uncovered seventeen “cut mark areas” on the skull, which White (1986) argues were made with a small flake stone tool. The symmetry and consistency of cut marks on the frontal are most often cited as evidence of defleshing (White 1986). A crania grouping of two adult and one juvenile from the Bouri formation also in the Middle Awash, Ethiopia (150 kya) all demonstrate processing and exemplify debatable *Homo sapiens* cannibalism (Pettitt 2011). All fragments of the juvenile and one adult skull demonstrate particularly deep cut marks and scraping, most likely due to soft tissue removal. The lack of post-cranial remains in the context make definitive claims of cannibalism difficult. However if cannibalism did not occur at the site, then Bouri at least signifies defleshing as a symbolic or cultural process.

A later conglomeration of remains in the Main Cave at Klasies River Mouth, South Africa (100 kya) exhibit more contextual evidence for the consumption of humans. Processed and disarticulated human remains were found amidst similarly processed faunal bones scattered around the site (Pettitt 2011). The similar processing patterns and context more robustly suggest human consumption. The slightly wider (but still sparse) range of bones allows for a more comprehensive examination. In conclusion, evidence for early African *Homo sapiens* cannibalism is tenuous at best.

More tangible and conclusive evidence of cannibalism following the Lower Palaeolithic comes from various Neanderthal sites. Currently accepted chronology records Neanderthals as occupying Europe for the 100,000 year time span between 130 kya and 30 kya (Pettitt 2011). Within this period, Neanderthals developed a complex range of symbolic mortuary activity, one of which was customary cannibalism. The most infamous and conspicuous cases of Neanderthal cannibalism come from the sites of Moula Guercy Cave in France, and Krapina in Croatia, (Pettitt 2011). These sites demonstrate the transformation of cannibalism from a form of customary subsistence into a reflection of symbolic behavior.

The earliest, and most controversial, of these sites is that of Krapina, Croatia. Several issues arise in the study of Neanderthal remains at the site. First, the remains are highly fragmentary. Also, because many of these bones were uncovered and treated in the early twentieth century, the practices of excavation and conservation do not match the much higher standards of modern archaeology. Therefore, the remains found at Krapina were neither preserved nor reconstructed to today’s standards. For this reason, later studies of these remains have demonstrated that many supposed Neanderthal processing “cut marks” actually occurred much more recently due to taphonomic distortions. Nonetheless, it is still clear that the secondary Neanderthal processing occurred at Krapina and important insights can still be gleaned from a study of its remains.

Krapina, a rock shelter site dating to about 130 kya, contains the highly fragmented remains of about two dozen Neanderthals (Frayet *et al.* 2006). Various examples of human processing, especially cut marks, are evident on both cranial and postcranial bones recovered from Beds 3 and 4 (Pettitt 2011). Although a wide range of ages are represented most modifications appeared on juvenile bones. Research at the site yielded few reoccurring patterns. For example, cut marks often appeared on the mandibles of subjects. The cuts were close together and angled inwards, suggesting that the aim was to remove the tongue and/or muscle

tissue from that area (Frayet *et al.* 2006). A disputed interpretation of the osteological record proposes that the markings on the frontal bone of one cranium are consistent with scalping processes (Pettitt 2011). Common postcranial bones affected by modifications included clavicles, scapulae, and ribs. Less commonly modified bones included a humerus, ulna, femur, tibia, talus, and metacarpal.

The fragmentary state of the remains at Krapina has led to several different interpretations of the site's archaeological record. Some dismiss the idea of cannibalism entirely, arguing that bone modifications at Krapina simply reflect instances of ritual secondary processing (Pettitt 2011). I raise some objections to this argument. If this were indeed true, I would expect more established and consistent patterns of defleshing on this wide selection of bones. Nor is the argument for secondary processing substantiated by any additional archaeological data, most simply rely on ethnographic analogies. I also point to the custom of tongue removal at Krapina, a pattern given by some of these same critics to indicate cannibalism (Pettitt 2011). On the other hand, claims of both survival and nutritional cannibalism are unreliable. The selection of bones processed and patterns of processing do not suggest that the modifier's main intent was to remove the most nutritionally valuable parts. This is indicated by the lack of attempts at brain tissue and bone marrow removal. Therefore, I hesitantly propose that Krapina is an early example of ritual cannibalism.

Excavations at the site of Moula-Guercy Cave in Southeast France have uncovered a interesting array of Neanderthal and faunal assemblages which substantiate claims of Neanderthal cannibalism in Europe. Level XV of the site, believed to have been occupied by Mousterian tool making Neanderthals in the period between 120,000 and 100,000 years ago, has yielded the remains of several faunal and hominid remains (Defleur *et al.* 1999). Current studies estimate the presence of at least six individuals, all of which indicate hominin induced processing.

Processing patterns suggest defleshing and disarticulation followed by marrow extraction (Defleur *et al.* 1999). This butchery process is clearest in the refitting of adult femur CS-2. Cut marks on CS-2 demonstrate disarticulation and defleshing processes, whereas percussion pits, anvil striae, and internal conchoidal scars indicate hammering methods for marrow extraction (Defleur *et al.* 1999). Modification is also evident on the crania of two immature individuals, indicating the use of the same tool to remove the temporalis muscle from the skull (Defleur *et al.* 1999). Cut marks on the mandible recall those at Krapina and suggest tongue removal (Defleur *et al.* 1999).

The archaeological record at level XV exhibits clear evidence of cannibalistic practice by Neanderthals at Moula-Guercy. The bones modified display a preference for ingestion of nutritionally valuable tissues, such as the brain and marrow. Hands and feet, which are much less nutritionally valuable, display little trace of modification and in some cases remain intact (Defleur *et al.* 1999). This preference suggests that mere defleshing was not the purpose of modification. Also of significance is the relationship between Neanderthal and faunal remains, as both demonstrate similar butchery practices. For instance, cut marks on the mandible of a juvenile are in the same position and form of those on a red deer (Defleur *et al.* 1999). The indiscriminate mixing of animal and human bones further advance this interpretation.

The motivation behind cannibalism at Moula-Guercy is less evident. The repeated use of effective techniques suggest that cannibals at Moula-Guercy had acquired an established set of processing practices. For instance, all three distal clavicles found display cut marks on their lateral inferior surface congruent with the disarticulation of the shoulder (Defleur *et al.* 1999). I

propose that this indicates an understanding of the body and its processing that goes beyond isolated cases of survival cannibalism. Zooarchaeological and environmental data supports this hypothesis, as the inhabitants of level XV lived in a temperate, forested interglacial environment. The diverse range of fauna representing over 1500 remains from 23 different species, suggests that inhabitants had a varied diet and therefore probably did not turn to cannibalism purely as a short-term means of survival (Valensi 2012). Also, though some of the site has yet to be excavated, present archaeological data symbolic behavior related to cannibalism at Moula-Guercy (Defleur *et al.* 1999). Therefore the most reasonable explanation for cannibalism at Moula Guercy is that human flesh and fat was a common dietary source, either seasonal or year round, for the level XV Neanderthals.

The development of symbolic practice is characteristic of the Upper Palaeolithic, and is reflected in the increasingly diverse and complex mortuary traditions of the anatomically modern humans of the period. The body itself seems to have adopted symbolic meaning and significance, with a particular emphasis on fragmentation of the body (Pettitt 2011). This is clear in art of the Magdalenian, in which isolated body parts and bodies missing extremities are commonly depicted in art. A particular emphasis seems to have been placed on the head. For example, 58 out of 79 engravings of human heads at the French site of La Marche are missing bodies, while 14 out 51 depictions of bodies are missing heads (Pettitt 2011).

This emphasis on the body and its fragmentation is clearly reflected in coinciding mortuary traditions, as the percentage of modified remains in the archaeological record increases significantly. For instance, 40% of bones found in France during the Magdalenian indicate defleshing (Pettitt 2011). Again, the head is emphasized as most of these marks are found on the cranium (Pettitt 2011). Also, some groups began to differentiate processes of human defleshing from animal defleshing. Human defleshing became much more intense and careful, with the express intention of removing as much skin as possible (Pettitt 2011). Evidently, the body and the head attained a defined level of symbolic meaning during this period, both in mortuary and non-mortuary contexts. Therefore, it stands to reason that the defleshing, processing, and ingestion of the body must have also become embedded with symbolic meaning.

The site of Gough's Cave in England is a particularly intriguing and puzzling example of this phenomena. The site, re-dated recently to 14,700 years ago, contains a mix of human and non-human cranial and postcranial remains (Bello *et. al* 2011). However, modifications are restricted to limited areas of the cranial vault, mandible, and ribs (Pettitt 2011). Most interesting are the modifications on the crania, which recent interpretations argue coincide with the preparation of skull cups (Bello *et. al* 2011). Studies indicate that the individuals at Gough's Cave were processed for body tissue prior to the methodical shaping of their cranial vaults, providing an interesting combination of cultural behavior and cannibalistic practice.

The cranial sample from Gough's Cave is composed of 41 fragments, suggesting a minimum of five individuals at the site (Bello *et. al* 2011). The distribution of modifications demonstrates a high level of skilled processing, especially with regard to cut marks and percussion. The frequency of cut marks on the crania is extremely high, reaching an astounding 95.1% (Bello *et. al* 2011) The distribution of these marks indicate several processing procedures. The cut marks on the temporal, sphenoid, parietal, and zygomatic suggest a thorough removal of the major muscles from the skull. Various cut marks on the mandible, maxilla, zygomatic process, and temporal coincide with the removal of the tongue, lips, ears, and nose. Other cut marks suggest eye extraction and scalping. After these processes, the skull was very carefully shaped through percussion to remove the facial bones and cranial base without breaking the

cranial vault (Bello *et. al* 2011).

Though these markings in themselves would not necessarily suggest cannibalism, the context as a whole does. Unlike many other sites of its time, both animal and human remains were found discarded together and demonstrate similar processing (Bello *et. al* 2011). This is seen in the treatment of animal and human mandibles, as they are both severed from the head, carefully defleshed, and then broken open. These processes are in congruence with bone marrow extraction, therefore suggesting that the inhabitants of Gough's Cave were ingesting this edible tissue. Therefore, despite the intactness of the cranial vault, it is not improbable that the brain may have also been ingested after a skull was "cleaned" and prepared for skull-cap use with flint tools (Bello *et. al* 2011). Therefore, Gough's Cave is an example of cannibalism's association with symbolic behavior.

In conclusion, cannibalism in the archaeological record, though difficult to prove conclusively, is still observable. The clearest evidence of cannibalistic evidence of our hominin ancestors is demonstrated in the *Homo antecessor* bones from Gran Dolina 780 kya, and continues sporadically from that point into the Upper Palaeolithic. Furthermore, the role of cannibalism in our prehistory is evidenced by our own genetic code. This is clear in the form of balancing selection on PRNP129, which offers protection from diseases linked to brain consumption, such as kuru. Though not originally symbolic, it is probable that cannibalism took on a symbolic meaning in the Upper Palaeolithic as an emphasis on the body became a widespread practice.

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I magically captured this fleeting moment while waiting for a bus near Thiès, Senegal, after a trip to the desert. The three boys are driving their cart home through an abandoned field near the bus stop. This was a common sight I saw in more rural areas of Senegal: young children riding donkey/horse-drawn carts alone.

Samantha Bolan, Binghamton University



This was taken at the weekly Tuesday Market (Marché du Mardi) in Yoff, a small town in the city of Dakar, Senegal. Here, the woman, who I often frequented when buying fabric, is cutting my chosen fabric for me (after much bargaining of course).

Samantha Bolan, Binghamton University

A COMPARATIVE STUDY OF TYPE II AND III FC GAMMA
RECEPTOR IMMUNE GENES IN *HOMO SAPIENS*, *HOMO SAPIENS*
NEANDERTHALENSIS, AND THE DENISOVA THROUGH THE
UTILIZATION OF A BIOINFORMATICS APPROACH

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Abstract: Neanderthals and the Denisova were two sub-species of humans that existed in the Late Pleistocene over 30,000 years ago. They were contemporaneous with early modern humans, so a comparison of their genetic information can provide insight into the evolution of the immune system over time as well as ascertain evidence of what Neanderthal and Denisova immune systems were like. This paper focuses on type II and III gamma receptors, which are responsible for the respiratory burst mechanism and portions of phagocytosis, as well as integral to certain components of natural killer cells (Salmon and Pricop 2001, 741). Using the information provided through the UCSC genome browser from DNA extractions from Neanderthal and Denisova fossils, differences at single nucleotide polymorphism sites (SNPs) in the FCGR2A, FCGR2B, FCGR3A, and FCGR3B were ascertained (Kent et al. 2002, 996-1006). Evidence for damage at these sites is an indication for a possibly differing immune system possessed by Neanderthals and Denisova. It is concluded that the lack or deficiency of such important immune functions may have been detrimental to the survival of both populations.

Introduction

As late as thirty-five thousand years ago, modern humans were one of many species in the genus *Homo* that inhabited the earth (Bocquet-Appel and Demars 2000, 548). *Homo sapiens*, the only extant species in the genus *Homo*, is thought to have originated in Africa (Horai et al. 1995, 532) but there exists great archaeological evidence for a variety of species of humans, including *Homo sapiens neanderthalensis* or the Neanderthal. Neanderthals evolved in Europe in the mid-Quaternary period, they are distinctive for their morphological differences from modern humans including a projecting brow ridge and large nasal cavity; the prognathism along the midline of the skull is far different from the modern skeleton (Krovitz G.E 2003, 334-335). By the late Pleistocene, Neanderthals had spread through the majority of Europe and parts of West Asia, when they rather abruptly disappeared from the fossil record. There exists great controversy in the field of anthropology in regards to their fate. Until very recently, it was assumed that the Neanderthals had been eliminated by larger-brained *Homo sapiens* by competitive exclusion (Shea 2005, 143). However, new evidence shows that it is very possible that Neanderthals were not annihilated by modern humans, but rather partially assimilated through interbreeding between the two populations (Trinkhaus 2007, 7367).

A sister group of the Neanderthals existed concurrently with modern humans at around the same time period of 50,000 to 30,000 years ago (Reich et al. 2010, 1053). Known as the Denisova, they share common origins with the Neanderthals and were wide-spread in areas of

Asia (Reich et al. 2010, 1053). A team of anthropologists discovered them very recently in 2008, but the most significant aspect of this find were a tooth and a phalange containing mitochondrial DNA (Krause et al. 2010, 894-897). This finding allowed for the Denisova genome to be sequenced, making it available for comparison to modern humans.

Neanderthals are genetically similar enough to modern humans that they are considered to be a sub-species of *Homo*. Indeed, the genomes of humans and Neanderthals are so similar that some Neanderthal individuals may have been more closely related genetically to modern humans than other Neanderthals (Trinkhaus 2007, 7367). A similar comparison can be made of the Denisovan population, though it is not as closely related to modern humans (Krause et al. 2010, 894-897). In addition, both groups contributed new genetic information to the existing human population. Today, one to four percent of genomes are derived from Neanderthals outside of African populations and the Denisovans contributed four to six percent of genetic material of the modern day population in Melanesia, a region located in Oceania (Reich et al. 2010, 1053). Comparisons between Denisova, Neanderthal, and human DNA allow analysis into the evolution of the human genome and species.

As contemporaries of *Homo sapiens*, Neanderthals and Denisova would have encountered many of the same challenges, including the problem of disease. Two types of pathogens were known to have affected hunter gatherer groups such as Neanderthals, Denisova, and early humans: the heirloom and souvenir (Mascie-Taylor et al. 2004, 10). These early groups of *Homo* would likely have been affected by heirloom parasites such as lice, pinworms, and yaws (Mascie-Taylor et al. 2004, 10). In addition, souvenir diseases such as sleeping sickness, tetanus, trichomonosis, tuberculosis, and malaria would have plagued the populations (Mascie-Taylor et al. 2004, 10). Recent evidence shows that even diseases long thought to be byproducts of the agriculture revolution such as dysentery and salmonella were also present as early as the late Pleistocene (Cockburn 1971, 47-48). Pathogens are involved in a substantial part of human evolution as infections shape genetic variation at loci (Walsh et al. 2007, 92). This is due to natural selection; disease pressure would require selection for a developed immune system to ensure the greatest possibility of survival of an individual, in turn, yielding an increased rate of immune system development in an entire species (Walsh et al. 2007, 92). This principle would have yielded evolutionary changes in the immune system of early populations as to prevent the species from dying out.

The goal of the immune system is to defend the organism against pathogens with the ultimate goal of complete immunity (Unkeless 1989, 355). The focus of this paper will be on Fc gamma receptors, which are more methodologically tractable than concentrating on the entire immune system. These receptors are coded for by six genes, four of which will be covered: FCGR2A, FCGR2B, FCGR3A, and FCGR3B (Amos and Bryant 2011, 1587-1594). Fc gamma receptors are glycoproteins and members of the immunoglobulin superfamily that bind to IgC-containing immune complexes and regulate a variety of immune and inflammatory processes (Bruneis 2009, E641). The receptors serve as checkpoints to insure an orderly progression through the immune response by recognizing foreign antigens on the surface of the cell

(Nimmerjahn and Revetch 2006, 19). They also prevent self-destructive processes such as autoimmune disorders and early apoptosis of immune cells (Nimmerjahn and Revetch 2006, 21). The activation of the Fc gamma receptors triggers phagocytosis and release of inflammatory mediators (Nimmerjahn and Revetch 2006, 19). There are three types of receptors; type I includes high affinity receptors while types II and III are low affinity receptors (Nimmerjahn and Revetch 2006, 19). Fc gamma receptors are further divided into two classes: activating and inhibiting. Activating and inhibiting receptors are paired together to generate an immune response. FCGR2A, FCGR3A, and FCGR3B are all activating receptors while FCGR2B is the only inhibiting receptor of the FCGR locus (Nimmerjahn and Revetch 2006, 19).

Fc gamma receptors are found on effector cells of the immune system such as monocytes, macrophages, neutrophils and platelets (Nimmerjahn and Revetch 2006, 19). FCGR2A is unique to humans and it is associated with neutrophils while FCGR3A is expressed in macrophages and monocytes (Salmon and Pricop 2001, 741). Both help signal for a respiratory burst, a release of chemicals that can signal for phagocytosis or the propagation of inflammatory cytokines, proteases, and prostaglandins (Salmon and Pricop 2001, 741). FCGR3B is involved in the recruitment of sites of inflammation and is the most abundant neutrophil binding site. It delays neutrophil apoptosis and competes with IgC for bind sites to perpetuate inflammation (Salmon and Pricop 2001, 741). FCGR2B controls the amplitude of B cell activation in response to antigens and can yield apoptosis for these cells (Xiu et al. 2002, 4340).

The primary purpose of this research is to discover the variations between Neanderthal, Denisova, and modern human DNA to gain a more accurate portrayal of the evolution of the immune system. The secondary goal is to determine what the immune systems of Neanderthals and Denisova were like so that more of the biological characteristics of these extinct lineages can be inferred. Not much is known about the immune systems of ancient populations, so investigation into this important defense mechanism may offer more insight into what kind of immune system was required to defend against disease in the late Pleistocene as well as give a more accurate picture on how Neanderthals and Denisova disappeared. Alterations in Fc gamma receptor structure can provide a basis for the predisposition to a variety of diseases. A single amino acid substitution within the FCGR locus can alter a receptor's ability to bind to IgG which have been associated in the expression of autoimmune disorders. Through analysis, the genetic diseases and variations of these species can be ascertained.

Methods

FCGR2A, FCGR2B, FCGR3A, and FCGR3C were first analyzed using the University of California Santa-Cruz Genome Browser program (Kent et al. 2002, 996-1006). The full Denisova and Neanderthal genomes were compared against the Hg16 version of the human genome first, as this is the only version of the program that includes Denisova. The conservation settings were adjusted to include primate relatives including chimpanzees, gorillas, orangutans, rhesus monkeys, marmosets, tarsiers, mouse lemurs and bush babies. The purpose of this setting was to determine if any variations found between the Neanderthals, Denisova and modern

humans were ancestral, meaning they originated from primate relatives and differed from modern humans, or derived, meaning they were either anomalies of a particular species or associated specifically with the genus *Homo*. The genes were then individually analyzed solely at coding exons. Two variations in the genome or more were considered to be strong evidence for a variation, which was enhanced by the presence of a single nucleotide polymorphism present in the modern human population. When this was determined the “LiftOver” function of the genome browser was utilized. The “LiftOver” allows comparisons between the more recently updated Hg19 human genome and Neanderthals but excludes the Denisovan genome. This process is a check done to ensure the accuracy of the genomic variation. This does impede the quality of the Denisova results but other measures were taken to increase accuracy using the methods described above.

The variant information was then entered into the SIFT program which predicts whether an amino acid substitution will affect the protein function of a gene (Kumar et al. 2009, 1073-81). It is useful to determine if a variation within an amino acid codes for damaging missense or nonsense or is merely a synonymous substitution that does not change the structure of the amino acid. This information allowed for the determination of the affect an allele variation has on the gene. With these data, the basic genomic structure of the Neanderthal and Denisova FCGR locus was inferred and provided evidence to genetic diseases and deficiencies.

After variations had been discovered within the genome, the data was compared with the 1000 genomes populations (McVean et al. 2012, 56-65). The 1000 genomes project shows genetic variants that have frequencies of at least one percent in the populations studied. Population samples from Africa, Europe, East Asia, and America were utilized to find the alleles that vary among the population and the program gives genomic information at each SNP. Statistical information about variant frequency is also provided for each population by the program. The 1000 genome browser was used to compare the variation found in Neanderthal and Denisova populations with that of modern human populations from around the world. This will show which alleles, if any, are similar and where Neanderthal and Denisova genes may have integrated into the population or vice versa.

Results

The first step in this process was the genomic analysis of the Fc gamma receptors using the genome browser. In the FCGR2A gene, five thymine bases were found over the rs9427397 single nucleotide polymorphism (SNP) at chr1: 159742828. These changes were nonsynonymous, present in both the Neanderthal and Denisova, and were derived, meaning that they were different from the ape genome and closer to the human genome. Five guanine bases were also found over the rs9427398 SNP at chr1: 159742829 and possessed strong evidence for variation. This change was found in both Neanderthal and Denisova as well and passed the “LiftOver” test. It was also more similar to humans than apes. Two guanine bases were also found in succession on chr1:159747280 over the rs11810143 SNP that were nonsynonymous. They were only found in the Denisova genome, so it was not possible to do a “LiftOver” test as

this check can only be applied to Neanderthals as part of the limitations to the program. The change of guanine base pairs was a derived change. The complete results for “LiftOver” and allele changes can be found in table one.

Only four changes were found in the remaining three genes. In FCGR2B, on chr1:159907860 over the rs501758 SNP there was evidence for two adenine alleles in both the Neanderthal and Denisova genomes which was confirmed by LiftOver. This change was nonsynonymous and derived. In FCGR3A a variation consisting of three cytosine alleles and one thymine allele was found on chr1: 159784957 over the rs10127939 SNP. The cytosine alleles were found in both Neanderthal and Denisova and were present after LiftOver. The thymine base pair at the same site was found only in a Neanderthal individual. Another change in this gene was found at chr1:159784984 in the form of three adenine alleles. This was not a SNP site but was a variation that provided strong evidence for its validity. It was found only in Denisova so it could not pass the LiftOver test. The final variation was found in the FCGR3B gene at chr1:159862638. The SNP site was rs71632957 but was a synonymous change. This variation was discovered only in Neanderthal and passed the LiftOver test. The complete DNA mutations list and SIFT results are summarized in Table 2.

After the original work with the UCSC genome browser, an analysis was conducted using the SIFT nonsynonymous protein variants program to determine whether the change was tolerated or not tolerated. The vast majority of the changes found were coding for synonymous changes that did not make a difference to the gene structure, a type of change known as a silent mutation. However, a few interesting results were ascertained from the program. The change at chr1:15978497 proved to be missense as did the variation at chr1:159784984. This was found to be damaging to the gene. The greatest discovery, however, was the variation of chr1:159742829. This change was determined to be nonsense, the most destructive of DNA mutations. Obviously, this change was damaging to the structure of the gene as a whole.

The variants that caused damage to the genome were then compared to the 1000 genomes data to ascertain what populations of the world today possessed a similar genotype. Only the variations at chr1: 159784957 and chr1:159742829 could be considered as they are SNP sites that are found in humans as well as in Neanderthals and Denisova. The variation at chr1:159784984 is not a SNP site among human populations so it must be considered unique to both Neanderthals and Denisova. The cytosine allele on chr1:159742829 was present in only 3.6 percent overall of the one thousand individuals that contributed genetic data to the 1000 genomes project. However, it was found in six percent of European individuals, two percent in American individuals, zero percent of Asian individuals, and five percent of African individuals. The thymine phenotype is so rare in human populations that it was not compared to the normal alleles. The variation at chr1:159742829 was also compared against the 1000 genomes data. It was found that the guanine allele was present in 7.8 percent of the human population overall. It was found in fourteen percent of European individuals, nine percent of American individuals, zero percent in Asian individuals, and six percent in African individuals. The greatest similarity between Neanderthals and modern humans variation at the SNP sites occurred between

Neanderthals and Europeans which was expected as this population resided in much of Europe during the Pleistocene. The data collected from the 1000 genomes could not be applied to the Denisova populations as it only included broad specifications such as African, Asian, American and European whereas genetic similarities between Denisova and modern humans today can only be found in Melanesia which was not catalogued by the available software.

Discussion

The results of the study demonstrate that there may be a great deal of variance between human, Neanderthal and Denisova genomes. The nonsense coding found in FCGR2A suggests that that gene could perhaps be broken completely. This means that Neanderthals and Denisova might not possess this receptor in their immune system, a factor that could affect their ability to interact with the changing environment of the late Pleistocene. However, both the FCGR2B and FCGR3B were determined to be very similar to the human sequence. In combination, this evidence suggests that the Neanderthal and Denisova immune systems were different from what would be expected of modern humans and, by the same standards, may not have been as robust.

The missense codes in the form of the cytosine and thymine alleles found on chr1: 159784957 in FCGR3A were damaging as well. While the cytosine alleles were found in 3.4 percent of human populations overall, no individual had a complete CC genotype from both parents. They all had at least one normal adenine allele to complement the much rarer cytosine one suggesting that a full cytosine haplotype is not selected for among modern humans. However, 33.3 percent of the six Denisova DNA strands surveyed and one of two Neanderthal DNA strands had the cytosine allele. In the instance of the Neanderthal population, the other allele represented was thymine which also coded for missense. If the individuals represented in the UCSC data are representative of the entire Neanderthal and Denisova populations as a whole, there would be a much greater chance of offspring from these groups having a full CC genotype, which is clearly different for what is expected in the human populations.

The lone thymine allele of chr1: 159784957 also presented interesting results as it does not confirm to the known SNP information in humans or in primates. Upon further research, it was found that the thymine allele present would change the expected leucine amino acid to histidine. This amino acid difference has clinical implications in humans. In this rare scenario, it is presumed to be a dysfunction in the natural killer cells that reject infected cells and perform crucial functions in the immune system defense (DeVries 1996, 3022). As this unusual allele appeared in Neanderthals, it could imply that Neanderthals passed this allele into the human genome. In another scenario, this also could be an example of an allele that was common in Neanderthals before the onset of the vast majority of viruses and infectious bacteria that appeared in the Pleistocene. As time progressed, it may have been selected against by natural selection as it would have dramatically decreased the fitness of such individuals.

These findings are significant in terms of evolutionary trends. Neanderthal and Denisova became extinct in the late Pleistocene, from unknown, yet much speculated causes. One theory, known as the “out of Africa” hypothesis, is that Neanderthals in particular were overpowered

and driven to extinction by the much more technologically advanced archaic humans (Templeton 1997, 329). The other major theory is that Neanderthals and Denisova interbred with early humans, integrating parts of their genome into what would become the DNA sequences of modern humans today (Wolpoff et al. 2000, 329). However, the finding that Neanderthals potentially had malfunctioning or nonexistent FCGR2A and FCGR3A receptors in comparison to what is known to occur in modern humans today may suggest that their immune systems differed from modern humans and were perhaps insufficient to protect them against the rapidly expanding number of diseases. These genes in particular act in the propagation of neutrophils and the important “respiratory burst” and code for the phagocytosis of foreign bacteria. If broken, they may not have been able to perform needed tasks to repel foreign invaders. If the presence of a thymine allele on chr1: 159784957 was relatively common place, the effectiveness of natural killer cells would also have been severely diminished. With the vast variety of heirloom and souvenir diseases present during this time period, the inability to sufficiently protect themselves from disease is a potential hypothesis for the demise of Neanderthals and Denisova.

There are several caveats to point out. It is difficult to determine the exact positions of allele using the UCSC genome browser unless the findings include a SNP position. This might have proved problematic when attempting to insert the results into the SIFT program to determine whether the change was tolerated or damaging. However, the only case where this error might have occurred was in chr1:159784984. In addition, due to the difficulty of extracting DNA from bones that are tens of thousands of years old, the information provided by the genome browser is only somewhat accurate. While this problem cannot be resolved completely, it can be somewhat alleviated by taking careful measures which were utilized in this project. By only counting variations that are in the middle, not the ends, of chromosomal strands accuracy can be protected. In addition, multiple alleles found in conjunction with each other help to support evidence of an actual variations, not just mistakes in the DNA extraction. In addition, the “LiftOver”, while not providing confirmation for the Denisova genome, helps to confirm the Neanderthal results that were determined from later extractions. This can provide further evidence that the variation of alleles can be accounted for in multiple tests by researchers. Finally, it is difficult to completely conclude what genotypes were common in both Neanderthal and Denisova due to the very small number of individuals that have been sequenced. It is very difficult to extract genetic data from fossilized bones over thirty thousand years old and as such, much of the fossil record available today cannot be sequenced. Only by the discovery of additional Neanderthal and Denisova fossils will a more accurate depiction of their genome be created.

There are several areas of research that could be undertaken to further validate the results of this paper. For one, the effects of the Fc gamma receptors are not well studied as a whole; they are mostly just discussed in cases of specific diseases, not in how they affect the whole system. Since the Neanderthal and Denisova genes may potentially be broken or otherwise negatively affected, more clinical research would have to be done to ascertain the extent of which the

immune system is affected by variance in this area. Also, improvement needs to be made to the system of finding DNA from ancient populations for the results to be fully accurate. This could be done by discovering more grave sites that include Neanderthal and Denisova bones that have the potential for ancient DNA to be extracted. The conditions for both the fossilizing of bones and the preservation of the viable DNA are rarely found in nature, so it would likely take many years before this issue could be fully resolved. Improvements in PCR techniques for ancient DNA could also contribute to solving the issue of fully verifying the results. Finally, more research has to be undertaken regarding the immune system of ancient populations as a whole. The type I Fc gamma receptors could be analyzed for allele for a complete picture of this family of genes in Neanderthal and Denisova. There are one hundred sixty-eight genes in the immune system in total all of which need to be checked for variations in order to make a complete interpretation for how well ancient populations could respond to disease (Amos and Bryant 2010, 1587-1594).

Conclusion

The primary goal of this research was to determine the variations between Neanderthal and Denisova DNA and modern humans so that insights into the evolution of the immune system could be obtained. The secondary goal was to determine the biological characteristics of the immune systems of Neanderthals and Denisova. It was discovered that Neanderthals and Denisova differed from modern humans in both the FCGR2A and FCGR3A genes. If genetic variation in the three populations produces the same effects, both Neanderthals and Denisova would be affected negatively by the nonsense mutation in chr1: 159742829 and the missense mutations in chr1: 159784957 and chr1:159784984. Such “mutations” as they are referred to now may have not been so damaging in the late Pleistocene until it became necessary to defend the body against the numerous bacterial and viral diseases that were evolving in that time period. If modern humans were genetically better adapted to fighting off these infections, the fitness of the modern human population would have been higher and better adapted to deal with the growing threat. The alleles that contributed to a weaker or different immune system would have been selected against, diminishing the instances of the variant alleles. Depending on how sudden the onset of disease was, many of the Neanderthals and Denisova may have died out. The surviving Neanderthals and Denisova could have been partially assimilated into the modern human population, thus contributing the portions of their genome that are seen in human populations of today, converging from sub-species to the one human population that exists on earth today, *Homo sapiens*.

Tables

Table 1. A catalogue of chromosomal sites where genetic variants were found. It lists the chromosome number, SNP position and amount of variance at Neanderthal and Denisova sites that differed from the current human genome. It also details the results of the LiftOver check for accuracy.

Chromosome Position	Gene	Allele Variance	LiftOver	Single Nucleotide Polymorphism
chr1:159742828	FCGR2A	Six T alleles over SNP	Present	rs9427397 Nonsynonymous
chr1:159742829	FCGR2A	Six G alleles over SNP	Present	rs9427398 Nonsynonymous
chr1:159747273	FCGR2A	2 G over SNP	Not Present	rs11810143 Nonsynonymous
chr1:1159907860	FCGR2B	Two A alleles over SNP	Present	rs501758 Nonsynonymous
chr1:159784957	FCGR3A	Three C alleles over SNP	Present	rs10127939 Nonsynonymous
chr1:159784984	FCGR3A	Three A alleles	Not Present	N/A
chr1:159862638	FCGR3B	G allele over SNP	Present	rs71632957 Synonymous

Table 2. Classifies the SIFT information found in genetic variants of Neanderthal and Denisova and shows whether they were derived or ancestral. Nonsense and missense mutations noted in the body of the paper are shown while further variants discovered that coded for synonymous changes are listed.

Chromosome Position	Gene	Species	Derived or Ancestral	Mutations in DNA	SIFT Results Effect on Gene
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chr1:159742 828	FCGR2A	Neanderthal and Denisova	Derived	Nonsense	N/A
chr1:159742 829	FCGR2A	Neanderthal and Denisova	Derived	Missense	Tolerated
chr1:159747 273	FCGR2A	Denisova	Derived	Silent	Tolerated
chr1:159907 860	FCGR2B	Neanderthal and Denisova	Derived	Silent	Tolerated
chr1: 159784957	FCGR3A	Neanderthal and Denisova	Derived	Missense	Damaging
chr1:159784 984	FCGR3A	Denisova	Derived	Missense	Damaging
chr1:159862 638	FCGR3B	Neanderthal	Derived	Silent	Tolerated

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WHAT CAME BEFORE KNITTING: THE ORIGINS AND DEVELOPMENT OF NALBINDING

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Abstract: This paper looks at the origins of nalbinding, an ancient technique for making nonwoven fabric. As little remains in the archeological record, traditional research methods are of limited value for understanding nalbinding. Thus this paper utilizes both the available literature and experimental archaeology to gain a deeper understanding. By actually learning nalbinding, I placed myself in a position to better evaluate different claims about the possible origins of this method of textile production.

Life without textiles is unimaginable today. It is with textiles that we cover our bodies, not only as protection from the elements but because our society demands it. Our clothing shields us from both nature and society, while proclaiming who we are. The question of the development of textiles is thus a question of the development of the basics of human society, but it has received less attention from archeologists because textiles are so rarely preserved. One early textile technique all but forgotten today is nalbinding². Nalbinding³ is a Scandinavian compound word: *nål* means needle and binding means stitching (Schmitt 2006, 2). It has been used around the world from ancient time to today to make a range of smaller shaped objects such as socks, and may be one of the earliest textile arts (Marian 2008, 330). Outside of Scandinavia this technique was replaced by the related practice of knitting after knitting was invented in the Middle Ages (Wild 1988, 50-51). The historically important technique of nalbinding has received limited attention by textile historians who focus on better-known techniques such as weaving.⁴ The development and history of nalbinding are important for understanding how humans responded to their environment. This project investigated when and how nalbinding might have developed through researching its history and through experimentation.

The technique of making non-woven fabric now commonly called nalbinding has been defined and classified in different ways. The simplest definition of nalbinding--the use of a needle and a short length of yarn which is pulled through each stitch to create a fabric of interlocking loops--is the one used in this paper (Schmitt 2006, 2). This definition, while simple, distinguishes nalbinding from similar techniques because knitting, crochet, and braiding use long lengths of yarn and more equipment than just a needle (and knotted netting is formed out of knots rather than loops) (Marian 2008). To fully understand even this simple definition, especially in a historical context, we must agree on an understanding of what counts as yarn. Today yarn is commonly made from wool, cotton and acrylic. In the past, however, anything fibrous that could be spun was spun. For example, the collection of Norwegian Folk Museum houses a collection of nalbinding items of which the yarn consists solely or in part, of: wool both coarse and fine, dog hair, cow's tail hair, horse's tail hair, and pig bristle (Hald 1980, 306). From the plant world, bast fibers such as nettle, hops, and flax were also used to make yarn (Hald 1980, 125/130). Yarn is any fibrous material that has been drawn out and twisted into an

² Also called: Knotless netting, needlebinding, looped needle netting, one needle knitting, needle lace, Coptic knitting, needle-looped netting,

³ Also written *nålbinding*, *naalbinding*, *nalebinding*, *naalebinding*,

⁴ For example, the first chapter of Barber's survey of prehistoric textiles starts by carefully differentiates woven textiles from basketry but does not mention techniques other than weaving (Barber 1991)

unbroken thread which can then be twisted together to create a stronger plied yarn. The only definition for the needle used in nalbinding is that it has a wide enough hole so the yarn can be threaded, though nalbinding needles often have a fairly blunt point. The needle can be round or flat, have the eye at one end or more in the middle, and be made of wood, bone, horn, metal or today even plastic. From these simple basics grows the varied and complex technology of nalbinding.

Two different varieties, usually called simple and complex, fall within the basic definition of nalbinding. Some people have argued that simple nalbinding is a totally different technique. In the simple form of nalbinding, the loops are not tensioned on the thumb as in complex nalbinding. Also, the loops only interlock with the loops below them, not with the loops next to them as most complex nalbinding stitches do. The simple stitches do not fit into

Hald's system of classification of nalbinding and she considers them to be more closely related to sewing than nalbinding (Hald 1980, 283). Nordland on the other hand does count them as nalbinding and gives them places in his classification system even though they do not fit perfectly (Nordland 1961). Most people who practice nalbinding today consider the simple stitches to be nalbinding. The common simple stitches; buttonhole, Coptic/tarim/mesh, loop and twist, hourglass and Danish, are known throughout the world, but their history has been neglected. With the exception of the study of Coptic socks, the bulk of the scant attention given to nalbinding has been given to understanding and classifying complex nalbinding

It is difficult to classify complex nalbinding stitches because there are three separate places where complexity can be added. Stitches vary in how they join to the row below them, how many previous loops they interlock with, and the direction of the needle and thread in the interlocking. Both Hald and Nordland tried and failed to create a system of classification that has a unique notation for each stitch and can be understood and used by nalbinders (Schmitt 2006, 11). Hansen provides a more workable system of notation, which is complicated to learn (since it is based on looking at nalbinding not doing it)⁵ but gives enough information to allow a new stitch to be learned just from the stitch classification (Schmitt 2006, 11). Hansen's notation is the one most often used by current practitioners (Schmitt 2006). The main way nalbinders today identify stitches is by naming the stitch after the site where the historical piece using the stitch was found, but since multiple pieces from multiple sites use the same stitch, the stitches can have many names (Tonteri). Hansen's classification system provides the necessary language to identify and discuss different nalbinding stitches, which allows more interesting questions to be asked, such as the comparison of nalbinding over time and space.

Examples of nalbinding have been found on every inhabited continent, with dates ranging from ancient to modern and uses as varied as its distribution. The technique is best suited for smaller objects which can be made in the round and which need to be hard-wearing and warm. The earliest complete piece done in nalbinding known from Europe is a mitten found in the Ålse Mose bog in Southern Sweden, which has been dated to the 4th or 5th centuries A.D. (Finch 1991, 21). The oldest known fragment of nalbinding comes from a Stone Age village in Denmark and has been dated to 4200 B.C. (Finch 1991, 16). In Scandinavia, nalbinding was traditionally used not only for shaped garments but also for the construction of milk strainers (Nordland 1961). The oldest known complete pieces of nalbinding, dating to around 1000 B.C., are a pair of hats found with one of the famous Tarim mummies from Western China (Graves 2008, 1). One of the Tarim hats used the same stitch best known from the large group of surviving socks made by

⁵ Hasen's notation works by recording whether the active yarn goes over or under the old yarn using a slash to mark where the active yarn turns

nalbinding in Coptic Egypt (Graves 2008, 1). In Persia nalbinding continued to be used in recent centuries to craft the upper part of a traditional type of peasant shoe called a givéh (Hald 1980, 310). In the Americas and Oceania nalbinding was used primarily for soft carrying bags but also sometimes for clothing and nets (Davidson 1935, 119). Simple nalbinding techniques are found throughout the world. Complex nalbinding is also widely distributed; examples are known from Europe, Egypt, Iran, Peru, and New Guinea (Hald 1980, 310). Today nalbinding is most associated with the Scandinavian countries where its greater warmth caused it to remain a craft tradition long after knitting became dominant elsewhere (Graves 2008, 1).

This project focuses not on the geography of nalbinding but on a hands-on investigation of how it might have developed. The initial step in understanding the origins of nalbinding was to learn a variety of different stitches. In the course of the project, Coptic stitch (Figure 1), buttonhole stitch (figure 2), Danish stitch (Figure 3), York stitch (Figure 4), U/OO, Oslo stitch (Figures 5 & 6), Mammen stitch (Figure 7), Brodén stitch (Figure 8), Långaryd stitch, and Båsta stitch were learned. Coptic stitch and buttonhole stitch are both simple nalbinding stitches while Danish stitch is a borderline stitch since it can be tensioned on the thumb but is easier if it is not. The last six stitches on the list above (figure 9) represent one way of increasing complexity in nalbinding. They all have the same connection to the row below with each stitch going through one loop from the row below, and the same directionality of the needle through the work; the only difference is in the number of interlock loops from zero to five. York stitch shows the other two types of complexity since it has the same number of interlocking loops as Oslo stitch but it goes through two of the loops of the row below and has a different directionality of the needle. Trying all of these different stitches shows how easily new stitches can be developed. Once one or two stitches have been learned and the different ways of adding complexity are clear, experimentation comes naturally.

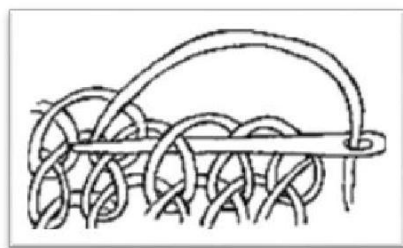


Figure 1: Coptic Stitch⁶

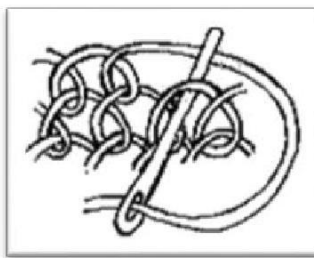


Figure 2: Buttonhole stitch⁷

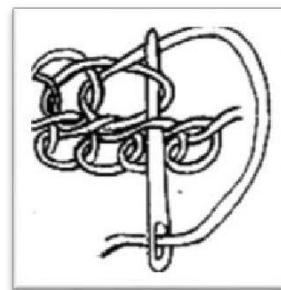


Figure 3: Danish Stitch⁸



Figure 4: York Stitch⁹

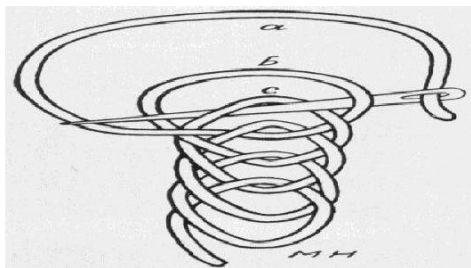


Figure 5: Oslo Stitch¹⁰

⁶ Karen Sullivan, "Alixs Nalbinding Page," <http://www.geocities.com/alixtiberga/index.html> (accessed 12/112012).

⁷ Sullivan.

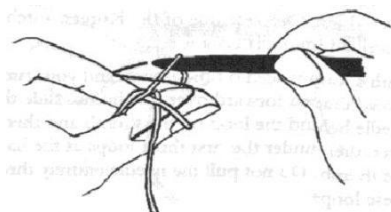


Figure 6: Oslo Stitch¹¹

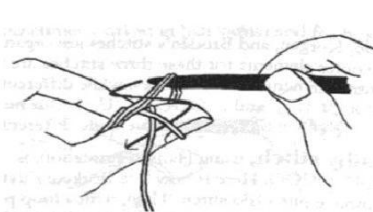


Figure 7: Mammen Stitch¹²

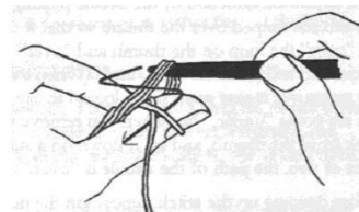


Figure 8: Brodén Stitch¹³



Figure 9: U/OO, Oslo, Mammen, Brodén, Långaryd, and Båsta stitch

The numerous ways nalbinding projects can be started show its varied nature. Nalbinding is most often worked in a cylinder. It is started by making a row of the desired length and then joining the line of stitches into a circle by having the next stitch go through the first stitch of the row below. This method can be used to make a mitten, sock, hat or bag by starting at the open end. Nalbinding can also be started in the round by using a type of slip knot called a Josephine Knot (Figure 10) which can be used for starting hats at the top. It can also be started in an oval shaped spiral (Figure 11) by working in the bottom loop of the last stitch. This approach can be used for starting bags, socks, mittens, etc from the closed end. The final and least common method of working nalbinding is flat. This is because nalbinding is not an efficient method of making a flat piece of fabric and many stitches have different fronts and backs so working flat creates patterns from turning the work. This spirit of experimentation, seen in the varied ways to start nalbinding and the large number of stitches, allows a huge number of possibilities to be made by nalbinding.

⁹ "Neulakinnas Nalbinding" <https://sites.google.com/site/neulakinnas/home> (accessed 12/11/2012).

¹⁰ Hald, 290.

¹¹ Schmitt, 13.

¹² Schmitt, 13.

¹³ Schmitt, 14.



Figure 10: Round Start (Coptic Stitch)



Figure 11: Spiral Start (Brodén stitch)

The biggest disadvantage to nalbinding is that it uses short lengths of yarn, with about 5 feet being as much as is manageable, so the ends must be joined frequently. The method of joining yarn most commonly used today for nalbinding is the felt join (Figure 12). The felt join is done by fraying the two ends of the yarn, wetting the ends, placing them overlapped in your hand and then rubbing your two hands together until the yarn joins. This join is strong but only works on yarns that can felt such as wool and alpaca. Another method of joining is the braided join (Figure 13) which works by untwisting the ply of the end of the yarn attached to the work for several inches then braiding it with one end of the new length of yarn. Another join used today is the Russian join (Figure 14) which works by looping the two ends and then feeding them back through the yarn above the loop. While these two joins work on all types of yarn, they do not work well for nalbinding because they are time consuming to do and they create thick areas at the join which bunch and resist being pulled through the stitch. The most obvious join, though not commonly used, is to knot the two ends together (Figure 15). Using a knot, while fast, has the same problem; it creates a lump which is hard to pull through the stitch, especially as the stitches get more complex. The final join tried in this project was the simplest: just starting with the new length of yarn without attaching it to the old (Figure 16). This is effective though the ends then have to be woven into the work. It is probably the oldest technique since it is the way new wrapping material is added in coil baskets (Jolie 2006, 20/22). Though joining yarn so frequently grates on people used to techniques such as knitting that can use long lengths of yarn, joins which can be done with some speed exists. The short lengths of yarn are not the disadvantage they are sometimes portrayed to be, since with experience and without the expectation of few joins they do not greatly slow down the process of creation.



Figure 12: Felted Join



Figure 13: Braided Join



Figure 14: Russian Join



Figure 15: Knot Join



Figure 16: Overlap Join

Hands-on experience with the simple nalbinding stitches (in particular buttonhole stitch) suggests a possible relationship between coil basketry and nalbinding. Coil baskets are made by winding a thinner and more flexible material around a thicker material and anchoring the rows by going into the row before every x number of wraps (Jolie 2006, 20/22). This is similar to the way that simple nalbinding stitches go through the row below (consider Figures 2 & 18). Today, a famous example of coil baskets is the Sweet Grass Baskets of the American Southeast in which bundles of sweet grass are wrapped with strips of palm frond. Since many baskets take the shape of inverted hats, the question arose of whether a coil basket could be made solely of yarn. The first attempt (Figure 17) done with two strands of yarn the same size failed because the rows were so thin that it became unclear which was the row below. The next attempt (Figure 18) done with a very loosely spun, thick two ply yarn in the middle and the same thinner yarn as the previous attempt for coiling worked very well but was a very slow process. While nalbinding is also slow compared to knitting, it is a faster process than coil basketry to get a similar result. Experimentation suggests coil baskets might have been an inspiration for the development of nalbinding.



Figure 17: Failed Yarn Coil Basket



Figure 18: Yarn Coil Basket

To begin answering the question of how and when nalbinding might have been invented, the starting place is the materials needed for its development. The predominant use for nalbinding is clothing, though it can be used for other purposes. Thus, the origins of nalbinding are unlikely to precede the advent of clothing, for which a date of between 170,000 and 83,000 years ago for *Homo sapiens* has been proposed based on the genetic split between head and clothing lice (Toups et al. 2011, 29). Since eyed needles were invented no later than 40,000 BCE (the earliest known example from the archaeological record) (Toups et al. 2011, 29), the tool requirement for nalbinding were met very early in humanity's development. The other material requirement for nalbinding is yarn. Leaving aside the question of spinning for the moment, it was possible to collect fibers for yarn from many wild sources including plants and furry animals even before domestication of the sources that are used today (Barber 1991). The techniques for producing yarn are identical to that of making cordage, which was used very early for baskets, ropes, and nets. A twisted piece of fiber can be called cordage or yarn depending on how it is used, since both are often made out of plant bast fibers and can be made by the same methods of spinning. Thus while the earliest fragments of nalbinding are not very old, the tools and material used for it are extremely ancient, making a very early origin date possible for nalbinding.

Some scholars have argued that nalbinding must have originated before continuous spinning because it uses short lengths of yarn but the argument is not convincing. Yarn can either be spun in limited lengths using only the body or, later, continuously with the aid of a spindle (Backer 1972, 51). Hald, Nordland, Burnham, and Finch have all suggested that nalbinding must date to a period before continuous spinning was known since it uses short lengths of yarn (Nordland 1961; Burnham 1972; Finch 1991). Burnham puts it best, arguing that "a technique using short lengths of fibre is not entirely logical as an early development if it involved cutting up spun yarn" thus it makes sense if it developed when only short lengths were available (Burnham 1972, 121). However, looking at the socks made by nalbinding in Egypt during the Coptic period (well after nalbinding was developed), one finds many examples using 3 or 4 ply yarn, which would be nearly impossible to make in short lengths by spinning on the thigh (Burnham 1972, 122). This evidence from a period where continuous spinning with the aid of spindle was well developed shows that long lengths of yarn were cut into manageable lengths for nalbinding.

Another explanation is possible for why a technique using short lengths of yarn developed at an early date. If we take into consideration the other techniques that were probably

in use when nalbinding developed, a pattern emerges. Early techniques such as baskets and sewing use short lengths of material (Jolie 2006, 20/22). At the time nalbinding was likely developed, most techniques for working with fiber used short lengths of materials, though a few using long lengths such as sprang may have been known (Soffer et al. 2000, 513). Thus, it would have been easier and more natural to develop a technique using shorter lengths even if continuous spinning was known. If the argument of the development of nalbinding predating the ability to spin continuous lengths of yarn is true, then nalbinding is a very early textile technique since the origin of continuously spun textiles keeps getting pushed back (Soffer et al. 2000). Even if the argument cannot be proven, the short lengths of yarn do suggest an early development date.

From this project the different possible impacts of nalbinding became clear. The most obvious, given that the bulk of nalbound objects were used as clothing, is the ability to live in colder climates. While nalbinding is not the only technique for making garments for cold climates, it is still very well suited for the purpose. This is because with complex nalbinding, warm thick garments such as socks, hats and mittens can be made in one piece in the needed shape. Thus, no material is wasted as would be if cutting said garments out of a flat piece of hide or woven cloth. Since all evidence points to the development of textile production and likely nalbinding before the domestication of the plants and animals most commonly used for fiber (Soffer et al. 2000), it probably encouraged their domestication. While fibers could be gathered from wild plants and animals, domestication would have provided early people with a large reliable and better quality source for fiber (Barber 1991, 12/20-23).

While the exact origin of nalbinding will probably never be known, by understanding what might have driven its development we can better understand how humans have adapted to their environment. Whether nalbinding was developed only once very early on or separately in different places and times across the globe, humans used their creativity to meet the challenges presented by their environment. The organic nature of textiles means that most are lost to the ravages of time but we can use the lucky examples to survive from the distant past, uses in the more recent past, and experimental archaeology, to learn much more than we currently know.. Nalbinding, with its universal distribution and wide variety of uses, offers insight into how humans have thrived.

Appendix: One Possible Way Nalbinding Developed

As humans pushed north into and throughout Europe, they encountered new climates and animals (Hoffecker 2004). The colder climate required more elaborate protection in the form of warmer clothing (Hoffecker 2004). It is easy to imagine an early person suffering from freezing ears, grabbing a basket and putting it on their head for warmth. Since baskets are most often made of plant material it would not have been extremely warm (Barber 1991, 20-21). The next day the person might have tried sewing a hat out of hide to warm his ears but again without insulation it would have offered limited warmth. If the person was clever they might have realized that the fur of the woolly mammoth or other such furry creature must be what kept them warm. Thus she might take some of the fur from a dead woolly mammoth and tried stuffing it in either the basket or hide cap. This must have been warmer and this stage could have lasted a while. But somebody must have realized that there must be a more efficient way to use the fur. Assuming they were already making cordage for different purpose(s), a bright fellow might try spinning the fur the same way as cordage and try making a basket out of it to put on his head. This would have been a warm hat which more efficiently used the fur. Making a basket this

way, however, is time consuming (Mauer, unpublished data) and so people likely experimented to find a more time effective way of making such a hat, perhaps turning to sewing stitches for inspiration leading to Coptic or buttonhole stitch. Either before or after the development of nalbinding they must have realized that yarn had other uses both for different types of clothing and bags, strainers, nets, etc.

This explanation, while it has no actual archaeological backing (since much of the early evidence for textiles suggests the use of plant fiber) (Finch 1991, 16), is an important exercise. Too often the creativity of ancient people is doubted; just because little has survived from the paleolithic does not mean that they did not make a wide variety of useful items. Some people would also argue that this explanation is especially fanciful as Finch assumes that the earliest fragment known of nalbinding was most likely a bag, because the fiber is of vegetable origin (Finch 1991, 16). This assumption makes some sense since textiles made from plant fibers are less warm than those made from animal fibers (Barber 1991), but the lack of early examples of textiles made from animal fibers does not prove they were not used. A justification for the hypothesis above is that the need for warm clothing is a good motivation to experiment and develop new technology. If the earliest uses of nalbinding were non-clothing items such as bags and nets made of plant fiber, what would have been the driving force behind the experimentation? Both of these needs could be met by what were most likely the preexisting technologies of sewing, basketry, and cordage. While hypothetical speculations such as this one can never be proven, the exercise is a useful one since it can help guide further research.

Especially for understanding the distant past, experimental archaeology is key. The old archaeology joke says if you do not know what an object was used for it must be a ritual object. This joke contains too much truth, but experimental archaeology provides a way to avoid it.

Through actually making and using objects like stone tools, archaeologists learn not only about how the tool was made but gain a much deeper understanding of how they can and cannot be used. It seemed impossible to use a knapped flint tool to cut through the inch thick hide of an elephant until it was proved possible through experimental archaeology (Schnick et al. 1993). It is only through actually trying the many possibilities that the impossible and the plausible can be determined. In doing so, new avenues of understanding and research are discovered.

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A busy square in Jerusalem, Israel – protest sign asking for social equality

Galit Govezensky, Bar Ilan University



Orthodox Jew in Tsfat, Israel

Galit Govezensky, Bar Ilan University

**“ENGLISH IS MY LANGUAGE”: THE IMPORTANCE OF INCORPORATING
THE STUDY OF LINGUISTIC IDENTITY IN FIELD RESEARCH**

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Abstract: This article discusses the importance of studying linguistic identity and expression when conducting ethnographic fieldwork and the unexpected challenges and rewards of doing independent field work as an undergraduate student. These arguments and observations are based on my month long field work experience on the archipelago of San Andrés, Colombia during the summer of 2012. The members of the oldest community on these islands, the Raizal, are historically speakers of an English based Creole. However, in recent years an influx of Spanish-speaking “continentals” from the Colombian mainland have raised concerns about Raizal language and culture.

Introduction

“¿P á ?”

I looked up. The question had come from the airport taxi driver who had been glancing my way for the past hour and a half. He had asked me if I needed a ride when I had first arrived on the island. Then I had said no, but my ride was now an hour and a half late and I was beginning to panic. I realized I was staring at him. I knew what he said; I had studied Spanish for six years by that point, and had intermediate knowledge of the language but learning a foreign language in class is one thing. Having to speak it in the real world is a different story, and I could not think of what to say.

“Do you speak English?” I asked. I was a little disappointed with myself for chickening out of using Spanish, but it had been a long day.

“Of course”, he replied, “English is my language. Why are you crying?” My mood did almost a full one-eighty. Not only could he speak English, but he had just called English *his* language! This was fascinating to me; it was what I was here in San Andrés to study.

San Andrés is part of an archipelago that consists of three major islands: San Andrés, Providencia, and Santa Catalina (Parsons 1964). The islands’ oldest inhabitants refer to themselves as the Raizal, or roots in Spanish. They have been here since the 1600’s when their ancestors were brought from West Africa to the islands by English speaking Puritan colonists to work as slaves on their farms. The Puritans were soon forced off the islands by the Spanish, but the Raizal remained. Over the next two hundred years the islands were disputed, conquered, and forgotten by almost all the major imperial powers, until they were finally annexed by Colombia in 1831. Over the centuries, the Raizal had developed their own culture and creole language, but ever since the Free Port Decree in 1953, continental Colombians (or “continentals” as the Raizal call them) have been migrating to San Andrés in flocks and Spanish has indisputably become the language of education and business (Ross 2007, 3-36). According to my informants, including a couple school principals, all the schools teach in Spanish. Even two of the three bilingual schools are only bilingual in the sense that they teach English classes from a young age. All of the other core classes are taught in Spanish.

The Creole that the Raizal speak is primarily English, but there is heavy West African, and some Spanish influence in it (Wilson and Buettner-Janusch 1961, 940-954). Yet this man, the first person I talked to on the island, tells me his language is *English*. Does that mean that he considers San Andean Creole to be English, or that he personally speaks Standard English

fluently? Even if the latter is true, why would he be inclined to call it *his* language? Standard English is the language spoken least often in day to day life on San Andrés. I was re-energized; this trip was not a mistake. There were real and intricate situations playing out here. All it took was the taxi driver at the airport to remind me of that.

I told the taxi driver about how I was a student here, to do research on the linguistic and cultural identity of the islanders. When I had visited the islands in March 2012 as part of a service learning course through my university, I had met a lovely woman named Patricia Bowie who had agreed to let me stay with her when I returned to the islands that summer. In my mind, Patricia was going to be my key informant. She was perfect for the job because not only did she live in Loma-Barrack, one of the two Raizal neighborhoods left on the island, but she also seemed to be related to half the islanders, including the governor. Through our email correspondence, I had told Patricia when my flight would arrive and she had agreed to pick me up at the airport, but I was starting to think she may have forgotten.

"I don't know Patricia," he said, "but I do know some Bowies who live in Barrack. Let's go see if we can find your Bowie, okay?" He took my suitcases and headed towards his car. I wiped my eyes, took a deep breath, and took my first steps out of the airport, and into the daunting yet thrilling world of ethnography.

Research Methods and Clarifications

The main goal of my research was to study contemporary Raizal ideologies, policies and practices through their linguistic expression. Since the 1950s, the Raizal community has not only had to adjust to sharing their island with the continentals, but also with a growing tourism industry from which they feel largely excluded (Ross 2007, 3-36). Environmental changes have made it impossible for the Raizal to continue harvesting fruits such as coconuts and oranges, which had been one of the islanders' chief sources of income for over a century (Parsons 1964). I planned to examine how these factors affected the Raizal as a community, what about their identity had been relatively untouched by the changes happening around them, and what aspects of traditional Raizal identity seemed to be waning or already lost.

Because the focus of my research was on the views of the Raizal community itself, I concentrated on conducting interviews and participant observation in the Raizal communities. Out of my forty-seven interviews, forty-two were conducted with members of the Raizal community, four with members of the continental community, and one with a married couple, one of whom was Raizal, the other continental. I also attended church services, parades, community meetings and any other event I could. Because my goal was to understand the Raizal community as a whole, I attempted to document the perspectives of individuals representing a wide range of experiences. Thus, I interviewed people of many occupations: teachers, lawyers, the unemployed, retired personnel, government officials, preachers, school principals, students, psychologists and special needs workers; women and men; the old and the young; the rich and the poor; etc. Though my data may be limited in quantity, as one month in the field is rarely enough time to conduct a completely comprehensive investigation, I believe it is of good enough quality, breadth, and depth to begin to answer my initial research questions about language and culture change among the Raizal.

During my research, I spent three weeks on San Andrés and one week on the islands of Providencia and Santa Catalina. Santa Catalina is connected to Providencia via a walking bridge, and it is so small that you can walk its entire circumference in only a couple of hours. I conducted one interview on the island of Santa Catalina itself, spending a day there with a

synchronized swimming instructor and her students. The people of Santa Catalina work in Providencia and the two islands are in constant communication. Thus for the purposes of this paper, it is not necessary to touch on any minute distinctions there may be between people of the two islands. If I refer to Providencia, I am referring to both the islands of Providencia and of Santa Catalina.

Between Providencia and San Andrés, however, there are important distinctions. Geographically, the islands are much farther apart. Demographically, the Raizal are now a minority to the continental majority on San Andrés while they remain the healthy majority in Providencia (Ross 2007, 3-36). While the Raizal on both islands consider themselves to be of the same cultural heritage, my research has shown that both groups acknowledge the people of Providencia as being more faithful to the traditional ways of their people. The owner of a *posada nativa* (native house) in Providencia, Phillip Archibald, well summarized the feelings the Raizal of Providencia have towards the situation on their neighboring island. "San Andrés is a mirror for us," Archibald told me. "We always can look on this mirror and see we don't want that."

Thus in some ways the Raizal of Providencia do differ from those of San Andrés. Therefore, when necessary to distinguish between the views and practices of the islands, I will provide analysis of both situations. When talking about themes that apply to the residents of all three islands, however, I will refer to the entire archipelago as San Andrés; if no distinction is made it is safe to assume to concept applies to the entire Raizal community.

The Bowies

Patricia had not forgotten about me. There was a big storm on the island right before I arrived and Patricia had been struggling to find a ride down to the airport. I was waiting in the taxi as the driver asked directions from an elderly woman in a pretty yellow house when Patricia came barreling over the hill in a big red pick-up truck. Even though I was sitting in the car, Patricia picked me out and yelled for the driver of the pick-up truck to stop.

"Hello, Diane!" she called waving at me with a big smile on her face. Patricia thanked the driver of the pick-up, who nodded his head and drove off down the hill. She gave me a hug and apologized for being so late. I apologized for being impatient. I knew that time worked a bit differently here. Meeting times were more of a suggestion and showing up half an hour or later to an event was not only acceptable but expected. It was something I was going to need to get used to.

Under Patricia's guidance, the cab driver brought us back to her house. It was just as I remembered it. On the right of the property stood the main house, well-kept with a fresh coat of lavender paint, and lime green trim and a wonderful wrap around porch that covered the front half of the building. The house had been built by Patricia's father and, like all traditional houses; it was made of imported Colombian wood. Patricia's sister Petty, Petty's son, their niece's son Jayden, and Patricia and Petty's mother lived in that main house along with a boarder from Bogota who was on the island to take diving classes. Behind it to the left was a white *casita* (little house) that had its own little porch and chair in front of it. This was to be where I would live during my time in San Andrés. Behind the *casita* was a large, concrete house where Patricia lived with her sister, Carrie, Carrie's two teenage sons, and Fernanda, the sisters' cousin from Providencia.

Though her entire family was kind and welcoming towards me, I noticed some intriguing differences between how the different family members communicated with me. Patricia, who had worked for the regional *gobernación*, or government, for several years before her cousin

became governor, spoke almost perfect Standard English. She would spend hours with me out on the porch talking about San Andrés, why she loved it, how it had changed, and what she hoped for its future. Only when Maria, the boarder from Bogota, was home would Patricia try to encourage me to speak in Spanish. She would have me speak to Maria in Spanish and Maria to speak to me in English so we both could practice our non-native languages. When we would attempt these little bilingual conversations, Patricia would switch between the two languages, speaking to me mostly in English and Maria mostly in Spanish trying to help us clarify what the other one was saying.

Petty's English was not quite as seamless as Patricia's. She mixed her verb tenses a little more (i.e. "we *was* going" instead of "we *w* ") and would have to grasp for the right word now and then, but I never had a problem understanding her. Petty and I were always the first to rise and she would cook me breakfast every morning, letting me ask her questions about whatever was on my mind. Carrie worked outside the home, and unfortunately I did not get to spend as much time with her as I did with her sisters, but now and then she would join Patricia and me on the porch while waiting for a ride or after returning from church, and she too had no problem addressing me in Standard English.

Patricia's mother, or Grandma as I called her, seemed to include more San Andean Creole in her speech, even though she knew I could not speak Creole. She seemed to distinguish less between the two forms of English than her children had. Sometimes she would speak to me entirely in Creole and I would have to ask her to repeat herself. She would think for a second and then reword what she had said. This time her speech would be closer to Standard English but would still include some code-switching or non-standard grammar. She never spoke to me in Spanish, and rarely did I hear her speak Spanish to others in the home. Instead, she spoke to them in Creole. The only time I heard her speak Spanish was when the family had visitors who could only speak that language.

The kids and young adults preferred to speak in either the native Creole or Spanish. Carrie's two boys would not even respond verbally to me when I tried to talk to them in English. Their friends laughed at them for this. One night I was sitting on the porch with one of my friends, Geordanny, I had met during my first trip to the island. I asked him why the boys would not talk to me. He laughed.

"They are embarrassed," he said. "You speak much better English than they do." "But you aren't embarrassed to talk to me," I replied. "You speak great English, why would your English be better than theirs?" Geordanny thought for a moment.

"I don't really know. I was always good at English. I live with my grandmother, and she always spoke to me in English. Try talking to the boys in Spanish. They'll be more comfortable with that."

He was right. The boys were still a little shy, but if I greeted them in Spanish, they would at least respond, which I considered a win after two weeks of the silent treatment.

The youngest boy, Jayden, was the exact opposite of his teenage cousins. Jayden was shy for about one full day. After that, he had no problem chatting with me and showing me his favorite TV shows and games on Facebook. Even so, sometimes he would not understand me when I talked to him in English, and he would tell me to say things in Spanish instead. Jayden preferred to try to talk to me in Spanish first and only switch to English if necessary.

Fernanda had grown up in Providencia and had only moved to San Andrés recently to look for a job. Fernanda loved to tell me stories about Providencia. She talked about how it was more traditional than San Andrés, and how beautiful it was. She would always speak to me in

English as well, and for the most part I could understand her fine. Like Petty, Fernanda would have to reach for words sometimes and would mix verb tenses, but she was very fluent and I could easily understand her.

Analysis

I found it incredible that there could be such a wide variety of language fluency and preference within one household. As I interviewed more and more individuals I found that the overall trend was very consistent with what I observed in the Bowie household. The older generation preferred to speak in Creole to each other, though they were more than happy to speak Standard English with me and felt fairly confident with their skills in Standard English. They would speak in Spanish only when talking to a *continental*, a person who had, or whose family had immigrated to the island from mainland Colombia and did not speak English. The youth would also speak in Creole amongst themselves and with their parents, but they were far more reluctant to speak to me in Standard English. Even Jayden and Fernanda, who were not shy and did not mind attempting to talk in English, had stronger Spanish skills and would sometimes unconsciously revert to Spanish when trying to communicate a complex idea.

Paying attention to these language cues can tell us a lot, not only about the linguistic ideologies of the Raizal people, but also their changing cultural identity. In San Andrés, the languages people choose to speak say a lot about where they see themselves in Colombian society. The oldest generation, who can still remember life before the Free Port decree was the most likely to speak in Creole and the least likely to differentiate between Creole and Standard English. This is because before Free Port, there was never a need for them to. At times, Spanish was taught in the schools or required for governmental positions, but all the people who lived on the islands were Raizal, so everyone understood the local creole in day –to-day life (Ross 2007, 3-36).

Once Free Port was enacted in the 1950s and the Spanish speaking continentals began to immigrate to San Andrés, the situation changed. The creole language of the Raizal had no economic, political, or cultural value to these newcomers. Spanish quickly became the language of commerce and government on the island (Ross 2007, 3-36). In order to maintain their cultural identity, the Raizal realized that they would have to offer something that had value to both themselves and the continentals. Thus they adopted Standard English as *their* language. The Raizal justified this by sharing the story of Phillip Beekman, the American who had officially freed them from slavery in the 1830s. Beekman built the first church on the island, a Baptist one, and taught the Raizal to read and write in Standard English so that they could worship properly in the church (Parsons 1964). While it is unclear how much Standard English was actually used in the church prior to the 1950s, the Raizal saw this as validation that they do indeed know Standard English and have a history of using it on the islands. Today, only Standard English is used in the original Baptist church, and while some of the other Baptist churches give bilingual services in both Spanish and English, Creole is not officially used. This is meant to accentuate the point that Standard English has a valid place in Raizal history, giving a kind of ownership of the English language to the Raizal within Colombian society.

While the Raizal youth acknowledge that they belong to the islander community, they have grown up with the children of continental immigrants who have never known life outside of San Andrés. They went to school together, played sports together, marched in several annual parades celebrating San Andean and Colombian history and culture, and went to many of the same parties and clubs. At home the youth generally see and interact with other youth in their

own community, but this generation feels a much closer connection to their Colombian peers and makes less of a distinction between the two groups. While they will speak in Creole to their parents at home, the children and adolescents are much more likely to speak in Spanish at school and in town. They do not feel the same need to learn Standard English because they hold more of a mixed Colombian-Raizal identity, and thus do not see the same problem with speaking in Spanish. The youth I talked to who did say they wanted to become more fluent in English cited economic, not cultural reasons. They explained to me that English was the language of international business. Those who wanted to have a career in the United States or elsewhere would have to learn to read, write, and fluently speak Standard English. Yet most students realized that these were no more than pipe dreams. Most of their families struggled to send their children to the mainland for higher education; sending them to another country would be downright impossible. Most students who did value Standard English planned on working on cruise ships where a basic knowledge of the language was required.

Conclusion

I returned from San Andrés in late August. At first I felt an overwhelming sense of accomplishment; in fact I was proud of myself. I had not given up when I realized I was shoeless in the Rochester airport, I went out of my comfort zone, I talked to strangers, I felt like a real professional. Then I sat down on my bedroom floor and laid out all of my data: interviews, notes, household surveys, and pictures. I realized the work had just begun. I knew in my head what I had seen, what I had learned, but how was I supposed to convey that to an educated audience? After all, I had only been on the islands for a month, which compared to most fieldwork is a very brief period of time. What could I talk about with certainty? What could my research contribute to the larger picture?

After seven months of transcribing, coding, re-reading, and analyzing, I can honestly say that I am definitely not an expert on the Raizal. I cannot pretend after one month of fieldwork to have the ability to speak for them, but I do understand the immense amount of knowledge and insight I gained from paying attention to their language. So often we as ethnographers focus only on *what* people say and do, and not enough on *how* they say or do it. By focusing on *how* the Raizal expressed themselves, how they used and interchanged their languages, how they blurred the lines between Standard English and San Andean Creole, I learned more in one month on the island than years of purely observational and empirical work could ever teach me.

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This photo was taken at an end-of-the-school year celebration in Accra, Ghana. The two boys in the green shirts with red flowers are the sons of my former professor. The other two are their friends (also brothers). For the last day of school, all the children come in their finest and newest clothes and eat, drink, dance, sing, and play games to celebrate the completion of another successful year.

Samantha Bolan, Binghamton University



This was taken at the University of Ghana-Legon in Accra, Ghana. Here, the National Dance Ensemble is welcoming guests to a conference with dancing, drumming, and singing.

Samantha Bolan, Binghamton University