

# LAMBDA ALPHA



# JOURNAL

Volume 24  
1993

## INFORMATION FOR CONTRIBUTORS

The Lambda Alpha Journal is published annually by the Lambda Alpha National Anthropology Honors Society and is intended as a forum for the publication of article manuscripts, reviews and essays by students, faculty, other professional and avocational anthropologists in any of the subdisciplines of the field. The Journal encourages responses to published papers, both in the Journal and **elsewhere**.

The opinions expressed are those of the authors and not necessarily those of the Lambda Alpha Editorial Staff. The Lambda Alpha Journal is partially funded by the Wichita State University Student Government Association.

### STUDENT EDITOR

Antonio T. Freeman  
Richard H. Plouch

### PRODUCTION EDITOR

Donna Martinson

### EDITOR

Peer H. Moore-Jansen, Ph.D

### A word about manuscripts and call for papers

Manuscripts are now being accepted for the Lambda Alpha Journal, Volume 25. All submitted articles must be in WordPerfect or ASCII-Text format on 3 1/2 or 5 1/4 inch floppy diskette and should be accompanied by two original printed copies **complete** with any plates, tables, or figures. Manuscripts should generally not exceed 25 to 30 pages in length. All references to literature must be correctly documented with the Author's name, date of publication, and the page number, e.g. (Smith 1969:340). References cited should follow the format established in American Anthropologist.

Manuscripts should be sent to:

The Editor  
Lambda Alpha Journal  
Department of Anthropology  
Campus Box 52  
The Wichita State University  
Wichita, KS 67260-0052  
8itnet: MOOREJA@TWSUVM

## CONTENTS

Editors Notes	i
National Executive Council	v
The Creative Mind at the Mercy of Society Christine Morvillo	"
A Look at the Educational System in The People's Republic of China and the Impact of Changing Governmental Ideology Donna Martinson	'7
A Summary of the Skeletal Biology of South America Anne H. Ross	.47
Lambda Alpha Scholarship Application	65
Lambda Alpha Scholarship Award Recipients	67
LambdaAlpha List of Chapters	69

LAMBDA ALPHA  
NATIONAL EXECUTIVE COUNCIL  
(1993)

B.K. Swartz, Jr., Ph.D., National Executive Secretary, BALL STATE UNIVERSITY, Muncie Indiana	47306-1099
Alana Cordy-Collins, Ph.D., Council Member for the Pacific Southwest UNIVERSITY OF SAN DIEGO, San Diego, CA	92110-2492
Greysolynne J. Hyman, Ph.D., Council Member for the Southeast 40029 Bamburgh Lane, Apex, NC	277502
M. Jude Kirkpatrick, Ph.D., Council Member for the Northeast GANNON UNIVERSITY, Erie, PA	16501
Elwyn C. Lapoint, Ph.D., Council Member for the Far West EASTERN WASHINGTON UNIVERSITY, Cheney, WA	99004
Peer H. Moore-Jansen, Ph.D., Editor, Lambda Alpha Journal THE WICHITA STATE UNIVERSITY, Wichita, Kansas	67260-0052
Marie Elaine Danforth, Council Member for the South University of Southern Mississippi, Hattiesburg, MS	39406-5074
Lillian Pollock, National President, THE WICHITA STATE UNIVERSITY, Wichita, Kansas	67260-0052
Kim Kies, National Vice President, THE WICHITA STATE UNIVERSITY, Wichita, Kansas	67260-0052
Erin Kenny, National Secretary-Treasurer, THE WICHITA STATE UNIVERSITY, Wichita, Kansas	67260-0052

Christine Morvillo  
Department of Anthropology  
University of San Diego

## The Creative Mind at the Mercy of Society

With the evolution of human beings came a complex brain system that has allowed us to develop beyond all other animals. The human brain's capacity to reason has allowed us to manipulate our environment. This manipulation has given rise to societal developments not experienced by any other creature. At the root of this human intellect is the ability to create. Through imagination and creativity humankind has cured diseases, flown to the moon, and built weapons of mass destruction. The wonder that is the human brain has not been fully explained and its capabilities are far from understood.

A major aspect of humankind's unique ability to create is the drive to produce artistic works. The human species is unique in its capability and desire to create 'art'. We know that art dates back to the beginnings of humanity: a small statue found **in Lower** Austria dated approximately 30,000 B.C. (Le. 'Venus of Willendorf') is a valid example (Hartt 1989:34). While each human has the capacity to make art, few seem to have the special gift for creating truly outstanding works. The Van Goghs, Mozarts, Plaths, Hemingways, O'Neills, Pollocks, and many more stand apart in a world of visions and thoughts not experienced by the average person. It is tragic to learn that for many of these great artists their world of unique vision causes much torment and pain. The unique processes of the artistic mind, not fully understood by science, place them apart from society in private tortuous worlds that may end in disaster, even death.

Kay Redfield Jamison commented that "All you have to do is go down a list of poets, writers, and other artists" and you will find a history of institutionalization and suicides" (Raymond 1989:A6). At a quick glance one would conclude that uniquely creative persons are driven by some sort of psychosis. But this is certainly not the case when observing artists in traditional societies. Likewise, many modern creative and established artists do not suffer from psychological problems. While the lifestyles of many artists are peculiar, it can not be said that their 'craziness' is synonymous with creative genius. It can then be asked, why are many creative geniuses of our Western culture hobbled with a mental inability to cope with their lives. The answer to this question is to be found in the human society. The social surroundings of creative persons play a role in determining how they will be able to cope with their mental gift. By examining the society of a traditional artist as compared to that of a Western artist, it will become apparent that both societies impact the mental health of the individuals who are especially creative or unique.

Art as expressed in traditional societies can be categorized as 'functional'. The art found in association with traditional cultures originally served a domestic and/or **ritual** purpose. While songs, drawings, pottery, sculptures, metallurgy, and weapons were creative expressions that served a significant function for the community, there is a dominant religious component. An example of this would be the Tiwi culture that has existed in Northern Australia for thousands of years. Senior Tiwi men spend their time manufacturing ceremonial spears, graveposts, and composing songs and dances (Hart 1988:51). These pieces of art are then used in annual ceremonies. Creativity is employed to honor the spirit world and is a task reserved for senior males who have earned the leisure time to invest in this important endeavor.

Another example of a culture that integrated religion with art is the ancient Moche of the last centuries B.C. on the north coast of Peru. Christopher Donnan suggests that the many scenes represented in Moche art represent the spiritual aspects of the culture. Elaborately dressed figures and anthropomorphic figures indicate that the scenes in which they are depicted are spiritual in nature. Likewise, many other art pieces that seem to represent daily activities, prove ultimately to have religious meaning. Donnan, in Moche Art of Peru, writes:

...certain depictions, which appear to illustrate secular or daily occurrences, may in fact be pieces of a symbolic system which expresses only the supernatural and ceremonial aspects of this ancient culture. [1978: 174]

The artists who produced these works were craftsmen whose job it was to make pottery and textiles used in the society. As in today's society the level of artistic talent differed from artist to artist. In the same volume, Donnan explains:

...Our ability to recognize the work of certain artists suggest that the Moche people also were able to identify the work of specific individuals. Perhaps there were certain artists whose work was highly revered, and who had considerable influence over their contemporaries, as well as the artists of subsequent generations. [1978: 50]

Donnan further notes that although they worked "within the standard canons of Moche art, [the artists] enjoyed some idiosyncratic variation" (1978:174).

All the artists of Moche society had a special talent in the creation of art and served a function within the community. What they produced focused on the religious aspect of their lives, something that was so integrated it would have been difficult for the Moche people to draw a line between secular and non-secular (Donnan 1978:50). These remarkable artists were supported in their endeavors by

the structure of their society. The continuation of all art was promoted and regarded as distinguished.

In both the Tiwi and Moche cultures, art served an important function in the daily lives of the community. Life's activities would have been seriously compromised if no one had manufactured pottery, textiles, or ceremonial tools. For this reason artists had a significant place within society, as well as a focus for their own existence. This focus was the creation of domestic/religious artifacts. In modern society this is no longer the focus of an artist's self-expression.

In traditional society there is another strong figure whose creativity and mental gifts play a special role within the community. This person would be the shaman, or traditional healer. These individuals are 'chosen' by the gods to work as religious mediators, keepers of ritual, healers, and protectors of the group. Mircea Eliade, in Shamanism, explains the role of the shaman:

...it is the shamans who, by their trances, cure them [tribal members], accompany their dead to the "Realm of Shades," and serve as mediators between them and their gods, celestial or infernal, greater or lesser. This small mystical elite not only directs the community's religious life but, as it were, guards its "soul." The shaman is the great specialist in the human soul; he alone "sees" it, for he knows its "form and its destiny. [1964:8]

These religious mediators are strikingly unique within their community. Their behavior and mental frame of mind is unlike that of other members of their community. They see things others do not, they hear things that others do not, and they think things others do not. Their mental state may be comparable to the mental states of exceptionally creative persons in the modern world.

Shamans are usually people who are 'different' or seemingly 'chosen'. This could include persons with epilepsy or other similar afflictions. Others may feel

themselves chosen by what they see in a dream or during illness. Social conditioning tells these individuals that if they experience unique visions and thoughts it is the gods who are speaking to or through them. In response they become shamans and fulfill their calling. And finally, they can be chosen through lineage. Mircea Eliade , in Shamanism, explains:

...While still a child, the future shaman,...proves to be sickly, withdrawn, contemplative. But his father gives him a lengthy preparation, teaching him the tribe's song and traditions. When a young man in a family is subject to epileptic attacks, the Altaians are convinced that one of his ancestors was a shaman. [1964:20]

Society supports and conditions these individuals unique mental experiences. The society offers explanations for the experiences as well as a purpose for the Shaman's creative energies. In this way mental stability is maintained whereas in the modern world such behavior would be deemed evidence of mental instability.

As society develops and 'advances', such creative and mentally unique individuals begin to lose their elevated social roles. Sociologists have noted that as society-moves from traditional to modern, life becomes increasingly secular. During the eighteenth century philosophers of the Enlightenment began to develop a rift between the traditional and the modern approaches to religion. Bernard J. Cooke writes, "A basic split between traditional and modern approaches to religion became evident and increased until well into the twentieth century" (1990:217). This was a time of revolution and change, when people abolished the aristocracies and the rule of the Church, and sought the freedoms of the republics ruled by democracy.

In art this period is called Neoclassicism. Artists began to move away from the heavily religious themes expressed throughout the Gothic and Renaissance periods in Europe, and Neoclassicism focused on revolutions, war heros, and the

republic. Although this period of transition was not completely without some religious influence, as some painters honored their subjects with religious overtones, secularism had been put into motion. The freedoms of democracy and the break from the dominance of religion spurred artists to explore other realms of expression.

American art never saw a clear religious period, because American settlers were rebelling from aristocracy and the Church, and the country sought a secular democratic state. The work of colonial American artists was functional. Much like that of the traditional artist, their art was often decorative in nature. During the colonial years of America a portrait was not an aesthetic piece, but rather a record of an individual and his or her belongings. Furniture and domestic wares were also carefully decorated. This pragmatism put forth the question of an objects purpose. Art at this point still had a distinct purpose within the community, and the artist still had a purpose and place within society.

As modernization and industrialization moved forward, artists began an exploration of themselves and the world around them. Art no longer needed a purpose, artists were free to simply explore and recreate what they saw and felt. Matthew-Baigell points out that "[Robert Henri) became convinced at that time that art should remain a matter of personal exploration rather than of formal manipulation" (1984:196). The nineteenth century became filled with paintings unlike anything ever created before. The scope of techniques and genres exploded during this period. Imagists, luminists, impressionists, and realists brought the world a completely new visual experience.

With such diversity and lack of function, art came to be carefully and sometimes painfully scrutinized. Artists were even ostracized and shut out of art academies because of their work. Independent exhibits became the outlet for artists who were forced to "bypass the academies, which were no longer willing or able to

adjust to the new forces in the art world" (Baigell 1984:193). The life of an artist and his work had left the realm of religion just as society had. Art was no longer revered as sacred, it no longer served a distinct function or a purpose. Art had become purely aesthetic, to be judged subjectively, and the artist became the victim of those subjective values. The artist began to sit outside of society and wait to be let in, rather than holding a productive and respected place within the community. And as this artist sat outside and waited, he became susceptible to the complexities of his creative, gifted mind.

It is assumed that exceptionally creative people have brain activity somewhat different from the average person. This different brain activity allows for a different mode of thought and vision; it is what allowed Mozart to write symphonies in one draft and what allowed Einstein to develop the theory of relativity. Albert Rothenberg identifies two thought processes involved in creativity: the janusian process and homospatial process (1990).

During the janusian process the individual conceives "multiple opposites or antitheses [simultaneously], either as existing side by side or as equally operative, valid, on:ue" (Rothenberg 1990:15). The individual perceives opposites as logically coexisting simultaneously. Rothenberg explains that this process allows the individual to leap past the bounds of logic and is "at the heart of the most striking creative breakthroughs" (1990:15).

Rothenberg offers some examples of the creative outcome of the janusian process. Novelist Robert Penn Warren described to Rothenberg that while exercising, he thought of a series of poetic lines. The last word of each line became the first word of the next line, "... a juxtaposition that sets one word to opposite functions, both ending and beginning a poetic thought" (Rothenberg 1990:17). Rothenberg also notes the janusian process in Pablo Picasso's mural Guernica: "The completed

mural, portrays human carnage both inside a room and outside at the same time..." {1990:9}, with the source of light being both the sun and a light bulb at once. An example of this process in science is indicated by Einstein's ability to perceive that as a person falls that person has no gravitational field, so in theory that person is "both in motion and at rest at the same time" {Rothenberg 1990:15}.

. The second type of thought process identified with creativity is the homospatial process. "The homospatial process consists of conceiving two or more discrete entities occupying the same space, a conception leading to the articulation of new identities" (Rothenberg 1990:25). The process can be stimulated by "Rhythmic connections, verbal overtones and associations, emotional relationships, aesthetic feeling, and conceptual formulations" (Rothenberg 1990:27), and is an extension of the thoughts derived from the janusian process. The artist will visualize separate entities superimposed on one another, and this vision gives rise to the creative structure of ideas, poetry, paintings, stories, etc.

Examples of the outcome of this process can be metaphors used in poetry. Rothenberg cites the metaphor "tarantula rays of the lamp spread across the conference room" (1990:26). Rothenberg writes, "He actively superimposed images of the spider and a light source together, along with images of the letters in the words because he wanted to create a metaphor of both together" (1990:26). A second example is seen in Marc Chagall's painting Le Saint Voiturier. In this painting "... two distinct bodies are perfectly integrated into a single form that appears to be both falling and at rest" (Rothenberg 1990:29). Like the janusian process the homospatial process brings together ideas that, without this process, would seem disassociated. The janusian and homospatial processes allow the mind to transcend boundaries of common thought and bring seemingly unrelated things together to create new artistic thoughts and visions.

Rothenberg's findings surrounding the janusian and homospatial processes evolved from over 2,000 hours of interviewing prize winning artists and scientists, exploring the creative processes of their work in progress at the time of the research. In addition to the intensive interviews Rothenberg carried out controlled psychological experiments consisting "... of special tasks designated to identify characteristic thinking processes" (1990:10).

Through Rothenberg's research, he has concluded that the conceptual processes used in creation are not related to pathological motivations (1990:12). These processes can only be accessed by a healthy mind. If a person were suffering from a psychological disorder he would only be able to engage in these mental processes if he stepped out of his psychosis:

..., although creative people may be psychotic at various periods of their lives,...,they cannot be psychotic at the time they are engaged in a creative process, or it will not be successful. Homospatial and janusian processes are healthy ones. [Rothenberg 1990:36]

But even though these processes are healthy they causes mental strain and are difficult to utilize. This strain is limited, occurring only during creative activities and not during uncreative activities (Rothenberg 1990:36). Unfortunately, emotional strain from these processes is not always confined to the creative activities and may ....spill over into other activities and interpersonal relationships, and the tension associated with creative thinking may directly and indirectly affect them" (Rothenberg 1990:36). For this reason creative people may appear eccentric and bizarre in their behaviors.

The strains incurred by the use of the janusian and homospatial processes, as part of the creative process, create a risk for some artists. The level of strain can transcend into mental illness. But which artists are most likely to cross over

the boundary and why? The answer may not be found within the chemical makeup of the brain, but outside in the social environment of the artist. It is possible that the artist's environment will play a decisive role in his ability to control his emotional state and prevent or instigate the onset of mental illness.

The social environment of the traditional artist was religiously based with strong community support for the artist's endeavors. Traditional art pieces had purpose since they were needed in the intertwined domestic and religious life of the society. Craftsmen and shamans occupied a functional place within their society and their work carried deep meaning. The secularism that has occurred as society has modernized turned traditional artistic endeavors into 'art', and the artist lost his functional place within society.

In Western classrooms children are scolded for drawing (doodling), daydreaming,--in other words--creating. In Western homes parents push their children towards business degrees rather than the pursuit of art. Western society tends to stereotype artists as 'oddballs' and 'hippies' because they are non-conformists. Our society is structured around a delicate balance of 'normal' conduct, and artistic individuals often question these norms as they exercise their creativity; their individualistic creative ideas are threatening to the conservative, conformist nature of society. Beyond the mental strain that these artists undergo through the creative process, they also face society's judgmental attitudes concerning what is art, and are often pushed outside society to be left alone with their thoughts and visions.

A sad example of this is William Kurelek. Kurelek was a Canadian landscape artist of the 1960's who grew up in Sonewall, Manitoba on his father's dairy farm. Kurelek's imaginative and creative nature was not appreciated by his strict father. Joan Murray **writes** that Kurelek's father thought that his son was weak, "'not like

the other kids.' 'Wake up and be a boy', Kurelek recalled his father saying one night as he went to sleep. 'Don't be a girl.'" (1983:10). While he feared his father, he also admired the man's ability to tell stories and hoped to one day be a master story teller like his father, but in high school he realized "that no **one** wanted to hear what he had to say" (Murray 1983:10). The pain and disappointment of his young life was translated into his artwork which vividly and gruesomely communicated the pain in his heart and mind. Critics referred to his work as "'somber', 'menacing', 'grotesque', and 'macabre'" (Murray 1983:9).

Kurelek's social environment created a nervous, shy, hesitant, yet honest individual who sought approval in a world where he was a misfit (Murray 1983:6). Searching endlessly in an attempt to fill his void he found himself in England during the mid-1950s. It was there that he had a breakdown that placed him in a mental institution. .During this period he still painted and even titled one work Help Me Please Help Me Please Help Me-Please Help. It was while he was in the English mental institution that Kurelek received shock therapy which led him toward a "redeeming and transforming conversion to Roman Catholicism" (Murray 1983:9).

**Kurelek** described this transformation during an interview that appeared in the film The Maze. He describes the shock therapy as "Fourteen treatments in all ... like being executed fourteen times over" (Murray 1983:9), and as he gazed around the room during his 'executions' he saw other patients waiting their turn . He noticed that they all had their hands clasped as if they were praying, and Kurelek, who was never very religious, began to pray. It was at this moment that he 'knew' that God had allowed his mental anguish so that he, Kurelek, would be better able to represent the pain that Christ experienced during the crucifixion.

From that point on Kurelek became a very devout Catholic and "believed that his ability to make art was literally a gift from God, and must be used in God's

services" (Murray 1983:9). His creative gifts had been given meaning and focus and he used religion to fill his void and ease his pain. Kurelek was able to stabilize his life, was married, had a family, continued painting the Canadian landscape and began writing children's stories. Religion became a temporary source of this stability, but ultimately he was unable to control his mental world and successfully committed suicide in 1977.

Peter I. Berger writes about anomy and nomos and religions role in those two states. Nomos is "a meaningful order [that] is imposed upon the direct experiences and meaning of individuals" (Berger 1967:19). The opposite of nomos is anomy, a "radical separation from the social world" and constitutes a threat to the individual living in this state" (Berger, 1967:21). Berger writes, "To be separated **from** society exposes the individual **to a** multiplicity of dangers with which he is unable to cope by himself, in the extreme case to the danger of imminent extinction" (1967:22). For Berger, religion provides a sanctuary from anomy and helps to hold individuals in nomos. like many artists Kurelek was separated from society due to his creative mental 'gifts'. Driven to self destruction, he found a temporary shield from anomy in the Catholic Religion.

Another artist who was able to secure his social environment and control the destructive strain of creative thought was Andy Warhol. Warhol had a nervous condition as a child and his mother kept him busy with sketching. He studied art in college and became a commercial artist in New York after graduation. Warhol was an intense observer of people and the life outside himself. In his art he recreated objects that were familiar. The Coke bottle, soup can, ketchup bottle, cereal box, Marilyn Monroe and Elvis Presley were all common images of the commercial world of the 1960's.

Warhol, like Kurelek, was shy, simple, honest, and oriented towards approval. Both also evidenced a violent orientation in their art. Warhol expressed this in his 'death and disaster' series of paintings and later in his films. But, unlike Kurelek, Warhol never was pushed to the brink of destruction by his creative mind. He was able to escape what Kurelek was only able to delay. The explanation for this may have much to do with Warhol's environment.

As a child, Warhol's creativity was supported and encouraged as therapy for his nervous condition. As an adult Warhol submerged himself within a group of people that supported his work and his ideas. They lived and worked together, all creating and supporting the ideas that were being born in his studio 'The Factory'. While Warhol's creativity could have driven him outside of society's nomos, he manufactured a nurturing society around his nomos, and never experienced exposure to long periods of anomy.

Rather than using religion, Warhol was able to shield himself from 'madness' by creating a sub-culture within society, one where his thoughts and visions had support, focus, and meaning. However, Warhol was not the first artist to submerge himself. In this manner, to create support in a world that was unable to give it. At the end of the 19th century Robert Henri's 'The Eight', a group of painters, bonded together against society at large which was very critical of their work. The realism of 'The Eight' was an expression of the life that they saw around them. Trash cans, smoke stacks, and poverty were the subjects of their work, in fact, they were nicknamed the 'Ash-can School'.

The mental torment and final destruction of such artists as William Kurelek, Silvia Plath, Ernest Hemingway, Eugene O'Neill, Jackson Pollock, and many others, is a tragic loss for our society. While it is easy to point to the brain and say they were simply mentally unstable people and their demise was an inevitable meltdown,

or ordained by God, we may be ignoring the role society plays in their painful lives. Artistic creativity is one of the most remarkable of human activities, but our society, instead of allowing it to invoke passion, suppresses it. It is possible that the values of our society may have caused more destruction of human creativity -- even genius -- than it has generated.

### References Cited

- Baigell, Matthew  
1984 A Concise History of American Painting and Sculpture.  
San Francisco, CA:Harper & Row Publishers.
- Berger, Peter I.  
1967 The Sacred Canopy. New York, NY: Anchor Press, Doubleday.
- Cooke, Bernard J.  
1990 The Distancing of God. Minneapolis, MN: Fortress Press.
- Donnan, Christopher B.  
1978 Moche Art of Peru. Los Angeles, CA: Museum  
of Cultural History.
- Eliade, Mircea  
1964 Shamanism. Princeton, NJ: Princeton University Press.
- Evans, Kim  
1987 Portrait of an Artist: Andy Warhol. Reiner Moritz Associates.
- Extension Media Center Berkeley  
1971 The Maze. Berkeley, CA: Extension Media Center.
- Hart, C.W.M., Pilling, Arnold R. and Goodale, Jane C.  
1988 The Tiwi of North Australia. San Francisco, CA: Holt, Rinehart and  
Winston, Inc.
- Hartt, Frederick  
1989a Art: A history of painting, sculpture, architecture; Volume I.  
New York, NY: Harry N. Abrams, Inc.  
1989b Art: A history of painting, sculpture, architecture; Volume II.  
New York, NY: Harry N. Abrams, Inc.

McLanathan, Richard

1988 Art in America: A brief history. San Diego, CA:  
Harcourt Brace Jovanovich, Publishers.

Murray, Joan, and Kurelek, William

1983 Kurelek's Vision of Canada. Edmonton, Canada: Hurtig Publishers.

Raymond, Chris

1989 Researchers link Manic-Depressive Illness and Artistic Creativity.  
The Chronicle of Higher Education 35(41):A4-A6.

Rothenberg, Albert

1990 Creativity and Madness. Baltimore, MD: Johns Hopkins  
University Press.

1979 The Emerging Goddess. Chicago, IL: University of Chicago Press.

Donna J. Martinson  
Intensive English Language Center  
The Wichita State University

## A Look at the Educational System in The People's Republic of China and the Impact of Changing Governmental Ideology

### Introduction

The Webster's Dictionary definition of educate includes: 1a) to provide school for; 1b) to train by formal instruction and supervised practice, especially in a skill, trade, or profession; 2) to develop mentally, morally, or aesthetically, especially by instruction; and 3) to persuade or condition as desirable. The educational system in the United States concerns mainly those activities included in definitions 1a and 1b, and the mental instruction portion of definition 2. However, the educational system in China today more fully emphasizes aspects in all three of the definitions. Schooling and training by formal instruction and supervision are provided through both the regular educational system and the comprehensive system of adult education. In addition, "mental, moral, and aesthetic development" and "persuading or conditioning as desirable" all have a legitimate place within both the regular educational system and the adult educational system. The first portion of this paper will take a look at the history of education in China and how it has changed in form, scope, and emphasis since the time of Confucius. Consideration will then be given to the current educational system, examining the various levels and types of education and some of the issues involved. Finally, the issues **and** challenges facing the Chinese educational system in general as it moves into the future will be explored.

## History

"...education was used as a tool for the ruling class to stay in power rather than to serve society" (She 1989:36). This statement describes the purpose of education throughout much of the dynastic period of China's history. Education at that time required the rote learning of such things as poetry, philosophy, and literary commentaries, with little or no attention paid to scientific, technical, or practical knowledge. The Chinese system of scholar-officials came to be based on a series of highly competitive examinations designed to test men in the aforementioned 'classics' -- and being a scholar-official was the most desirable career to which a young man might aspire. However, while education was highly valued as a means to attain power, prestige, and respect, it was not easy to attain, even if one were highly motivated. Public schools did not exist, and while there were private academies, the cost was prohibitive for most people. Independent of the cost, women could neither attend academies nor become civil servants, the general consensus of the times being seen in the proverb "A woman with education causes trouble" (Clayre 1985:96).

Increasing contact with the West caused China to realize the need to be able to compete on a technological level with the rest of the world; something the civil service system did not provide for. Consequently, the civil service system was disbanded and the Ministry of Education came into being in 1905. Through the Ministry of Education, the government maintained centralized control of the emerging modern system of education and attempted to provide uniform instruction throughout the country.

The thrust of the new educational system was modernization, and toward that goal the most important task of the educational system below the university level was "to inculcate...patriotism, loyalty to the government, respect for authority,

diligence, thrift, etc." (Reed 1988:5). While colleges and universities were established which specialized in a variety of areas (particularly science and technology), there were few programs at the master's level or beyond, which created the necessity for those desirous of such degrees to go abroad.

The Chinese actively sought outside ideas and strategies for developing their new system as early as 1895, first turning to the Japanese and later to the Americans (Broaded 1989:98). In 1931, the Nationalist government invited a group of European scholars sponsored by the League of Nations Institute of Intellectual Cooperation to review their system and make suggestions for reform (Hayhoe, 1987:255). However, in spite of all the good intentions at educational reform, civil war and foreign invasion hampered progress.

When the communists came to power in 1949, education was seen as a critical element in the transformation of the country, and in 1952 they patterned their new system after the Russian model. As in the previous period, a centralized system of control was set up. Appointments were political in nature, which later led to the 'red' vs. 'expert' debate. One of the problems with this system was that it alienated education from the educational needs of society. Graduates found themselves unable to use their knowledge on the job, and in some cases even had difficulty finding jobs (Li 1988:26).

During the Cultural Revolution, 'education' came under strong suspicion; the knowledge and training of the educated were seen as having strong pernicious Western influence. Teachers were often publicly humiliated, sent to remote regions to work the land, tortured, or even killed. Schools were closed for long periods of time, ranging from months at the primary and secondary levels to years for colleges and universities. When schools were in session, the quality of education received was low because former teachers had been sent away or were retained but denied

permission to teach, which meant that those teaching classes were often unqualified or underqualified. Also, the withdrawal of textbooks created a serious problem.

The Ministry of Education was dismantled in 1969, and decentralization of education took place. Revolutionary committees controlled by workers and peasants ran the universities (Kwong 1987), and studies in "Mao Zedong Thought" replaced science and technology in importance. During this time many universities became overstaffed as teachers who were "politically incapacitated" were retained and new teachers were hired to fulfill their duties. In addition to the "iron rice bowl" concept which kept teachers on the payroll, the "big rice pot" concept meant that the collective or state would look after everyone and the schools weren't required to concern themselves with things like performance or budgets...and they didn't. In extreme cases, student-teacher ratios were as low as 1:1 (Kwong 1987). This situation led to low morale and wasted resources. Antipathy ran rampant as faculty were afraid to make waves, carry on research which might show Western influence, or voice opinions, lest they be attacked in the next round of scourges. Buck passing or "kicking the ball" was a prevalent way to keep from having responsibility pinned on oneself in the future if things went badly.

Huang Wei cites Soong Ching Ling (widow of Sun Yat-Sen and famous children's educator) as saying "For children, ideological education is more important than material conditions" (Huang 1990:23). Ideological education stressed love of the motherland, loving people, loving labor, loving science, and loving state property. Although such teaching is still considered important, one of the major shifts in education since 1976 has been from an ideological to a technological emphasis. Deng Xiaoping's 1978 speech on the Four Modernizations emphasizes that education is the cornerstone of modernization.

Some of the specific changes which have occurred in the post-Mao period include: 1) nine-year compulsory education; 2) enhanced vocational education programs at the secondary level; 3) the re-implementation of a system of "key" schools; 4) the reintroduction of a national university entrance exam; and 5) the adoption of scientific management and the responsibility system in higher education.

The structure of the educational system in present day China is similar to that found in the U.S., as can be seen in Appendix 1 (Reed 1988:61). It must be remembered that China is a huge country with a widely dispersed rural population, and the educational structure has changed dramatically since 1949. With so many people and so many changes within such a short time span, inconsistencies exist, and this chart must be taken as a general guideline. Appendix 2 (Paver 1990), shows some of the challenges that exist in equating diplomas or degrees received in China at different times and in different places.

#### Types/levels of education

Keeping in mind that there are variations in the system, a discussion of the various types/levels of education in China and the challenges faced by each will follow. The types include: primary schools; secondary schools (both academic and vocational); colleges and universities; and adult education, which is not a part of the academic stream presented in Appendix 1. Schools in China are the responsibility of the State Education Commission (SEDC), but direct supervision may be done by provincial or municipal bureaus of education, local municipalities or counties, industrial ministries, and in some cases people in an area can finance, organize, and run their own schools. All of this depends in part on the level of education under discussion: the higher the level of education, the higher the level of bureaucratic supervision.

Primary education has been compulsory in China (through grade 9) since the mid-1980's, but compliance varies greatly between rural and urban areas. There is an adage "9-6-3" which means for every 9 students who enter primary school, 6 complete it and only 3 go on to secondary school (and the first 3 years of secondary school are part of the 9 years of 'compulsory' education). Particularly with the advent of the responsibility system, rural families have found it economically advantageous to keep their children out of school

The literature reports inadequate facilities, e.g. classes that are held outdoors with umbrellas for roofs in the event of rain; school buildings with only one restroom for 2,000 students and teachers; teachers who use their laps for desks; and classrooms and halls that are dilapidated...some of which have even collapsed, killing or injuring students and teachers (State Statistical Bureau 1988:32). Wu Fushing, (Department of Education, Science, Culture, and Public Health) agrees that too little has been spent on construction of primary and secondary educational facilities (Beijing Review 1987:8). The problem of poor facilities is coupled with a low quality of teaching at the primary level, particularly in rural areas. Teachers rank third from the bottom among employees in state-run units, which provides little incentive to enter the profession (State Statistical Bureau 1989:27).

The goals of primary education include: 1) instilling the ideological goals of loving the motherland, loving people, loving labor, loving science, and loving state property; 2) developing comprehension, expressivity, and calculating ability, grasping rudimentary knowledge about nature and human society, and acquiring the ability to observe, think, and study independently; 3) enabling students to develop a healthy body, good social habits, familiarity with manual labor, and the ability to take care of themselves; and 4) cultivating a love for beauty and the beginning of aesthetic judgment.

Those students who go on to secondary school attend 3 years of junior middle school (which completes the compulsory 9-years of education), and 3 years of senior middle school. The curriculum at both levels is similar. With the exception of political and ideological education (taken all 6 years) and physiology and hygiene, the curriculum resembles that in American schools. Upon completion of the first 3 years, those students who continue their secondary education are divided into two streams: Regular Senior Middle School; or Specialized, Technical, Vocational, or Agricultural Senior Middle School (Appendix 1). The government has been pushing for increased vocational/technical education, and according to Reed (1988: 11), they hoped to have equal numbers in the two categories by 1990.

Ranson (1988:751) sees the Chinese system as unnecessarily meritocratic, and feels this starts at the earliest levels. Students are sorted out based on how they excel in one area of the secondary educational system: the ability to calculate or manipulate symbols. Those who are identified as good in this area are encouraged **in** their studies, while those who don't are shunted into vocational streams. Those students who do extremely well are sent to "key" schools, a system that exists through the university level. Under this system, selected schools (usually in urban areas) receive the best teachers, priority in allocation of funds, better equipment and resources, and the 'best' students. "Key" schools are regarded as vital to the campaign of modernization and educational reform (Holcomb 1989:5). Ranson feels that one indicator (i.e. the ability to calculate) in no way adequately reflects a child's ability to go on and make significant contributions to science and technology. He feels the nation needs to raise the level of technological mastery of the masses; as opposed to a few elite. This meritocratic system may, in part, be responsible for the high primary school dropout rates, as students who do not excel

in this one specific area withdraw when they realize there is no future for them on the educational ladder to success.

The National Entrance Exam, given once yearly throughout China, determines who will be admitted to colleges and universities and which schools they will attend. Students are allowed to list preferences of schools they wish to attend, but final selection is made by the universities based on their national examinations scores. Those with the highest scores end up in the "key" schools, and only about 25% of those taking the national entrance exam are selected to go on to higher education. For those **who** complete their undergraduate degree and want to earn a master's degree, there is again an entrance exam, and in addition to the test scores, students are evaluated with respect to politics and physical health. Interestingly, a graduate student must be under 35, which means that many who missed schooling during the Cultural Revolution cannot pick it up at a later date; one of the reasons many Chinese students attempt to study abroad. Similar age requirements exist at the undergraduate level.

Chinese universities generally specialize in a specific area, e.g. engineering, natural science, etc. Unlike the liberal arts system of the United States, in which only about 25-30% of the courses are in the student's major subject, Chinese students have 70-80% of their courses in their major subject, with the remaining 20-30% divided between political courses and general courses.

One of the major recent changes at the university level is the introduction of the responsibility system and scientific management. Since the Decision of Educational Reform in 1985, universities have seen a dramatic rise in decision making power. They benefit from surpluses, and have to be responsible for losses, just as the rural farmers do under **the** responsibility system. This has forced universities to take a close look at how they can increase their resources, and best

use the resources they have. Scientific management was considered a means to this end. Some of the changes that have occurred are: a streamlining of human resources through creative methods of inducing retirement; circulating lists of excess staff and encouraging local enterprises to hire them; periodic reviews of staff, which can lead to rewards, promotions, censure, or dismissal; hiring based on qualifications; augmentation of income through contract research, joint ventures with industries, and teaching classes in the local communities; running factories and farms; and renting of assets (e.g. guestrooms, cars, swimming pools, laboratories, computers, etc.). Schools who tried these scientific management principles have been so successful that the government has urged other schools to emulate them. Eventually such changes were mandated (Kwong 1987). Some of the ramifications of the responsibility system on Chinese education will be discussed in the final section on issues and -challenges.

The last major type of education found in China is adult education, which provides education at many levels: primary, secondary, tertiary, job training, and farmer education. Schools may be run by the State, factories, businesses or trade unions,- work units, social organizations, or individuals. Subjects taught include almost everything one might encounter within the regular academic and vocational educational stream plus such things as cadre education. Within this vast system there are more than 1.5 million adults who receive education and training every year (Yang 1990:35).

One of the first major tasks tackled by adult education was literacy. In 1949, 80% of the people in China were illiterate. Today, the illiteracy rate is around 25%. When adult education first started in China, much of the coursework was at the primary level. Progress has been made, and today a larger percentage of the

instruction is needed, and provided, at the secondary and higher specialized educational levels.

The methods of instruction also take a variety of forms, such as direct instruction from classroom teachers, small group study, radio and television broadcasts, correspondence, on-the-job training, and self-study. Degrees and certificates earned from such instruction are recognized in different ways. Those who earn degrees or certificates in job training and farmer education do so mainly to continue in the same line of work, but often with a promotion. Some job training certificates allow workers to work independently rather than under supervision. While secondary and tertiary adult education are considered separate from the regular educational stream and do not serve as a vehicle to get back into the formalized educational track, the State recognizes the diplomas, and promotions and job transfers result from them. Although the literature does not specifically address the issue of recognition of self-study, it mentions that degrees and certificates are awarded. Reed's educational chart seems to imply that self-study is separate from the main track, yet allows students to take the university entrance exam (as long as they **mēet** the other requirements). Self-study is very economical for the State, in that it only spends 100 yuan (US\$21) on a self-teaching adult student, while they spend 6400 yuan (US\$1,350) on a student in the college of arts and 7300 yuan (US\$1,570) on a student in the college of engineering (Yang 1990:35).

### Issues and Challenges

Consideration will now be given to the challenges that face the educational system in general, and possible courses of action for the future. The issues fall into four categories: 1) providing equality in education; 2) improving the status of teachers; 3) reaping the benefits of the responsibility system without losing track

of the overall goal of education; and 4) the need for development of an educational infrastructure.

There are a number of areas where inequality exists within the Chinese educational system. Specifically discussed will be minority, gender, and geographic based inequality. Many minorities live in the interior regions, and economic policy has most recently been aimed at development of the coastal areas. The need to develop a system to accommodate the new 9-year compulsory educational plan has put a serious drain on the limited funds that are allocated to interior regions. Illiteracy is much higher among minorities than it is for the majority population, and the level of schooling attained is significantly lower, although the absolute levels vary considerably depending on the minority group under discussion. Postiglione (1992) sees part of the overall minority educational problem as a result of underutilization of existing facilities by minorities. Some possible explanations for this situation include: poor facilities, untrained teachers, irrelevant curriculum, low family socioeconomic background, cultural tradition, religious beliefs, and/or a resistance to being assimilated into the mainstream Han culture. However, in spite of generally lower levels of educational attainment, minority enrollment at all levels has shown rapid improvement in recent years (Postiglione 1992; Beijing Review 1988:40).

Gender inequality in education is quite prevalent in China, particularly at the lower levels of the system. The responsibility system has had an impact on female education in rural areas, since extra hands mean extra profits. Girls end up taking care of younger siblings and doing household chores to free their mothers to work in the fields. Bauer, et.al. (1992) points out that having a brother reduces the probability that a female will be enrolled in school. If a brother and sister *both* attend school, the **family** often supports the son more, through the assignment of fewer chores or provision of more private tutoring, both of which can influence

future educational opportunities. This could be recognition by the parents of potential return on investment, as boys are likely to make more money in the work force and are the ones who will look after their parents when they grow old (Bauer 1992). Gender inequality in educational opportunities decreases at higher levels of education, which Lavelly (1990:89) feels is logical as higher education takes place more often in urban areas where adherence to governmental policy is more likely to occur. Bauer also found that having an educated father increases the likelihood that a 15-18 year old daughter will be enrolled. Improvement in the educational level of women (who are responsible for early education of the next generation) can only have a positive effect on the educational level of the entire nation.

The last area of inequality is based on the rural-urban distinction, and inequality in this area is related to minority and gender inequality. It is more difficult to bring education to a dispersed rural area than it is to an urban area. Facilities are often poor, and teachers who are assigned there often have poorer qualifications, which makes the quality of education in rural areas low. According to a 1% sample done in 1987, illiteracy for rural people 12 and older was 29.34% compared to 15.79% for urban dwellers (State Statistical Bureau 1989). One possible method of dealing with this issue might be to expand the radio/television educational programming for rural areas. Typically this type of education has dealt more with higher education, and is largely confined to urban areas (McCormick 1986:72).

The next major area of concern that needs to be addressed is improvement of the situation of teachers. The government recognizes that this is a problem, as seen in Premier Li Peng's 1990 address at a working conference of the State Education Commission in which he urged society and governments to support the development of education by improving the living conditions for teachers (Beijing

Review 1990:5). The teaching profession lacks appeal among the youth of today, and not surprisingly, with its low pay, low status, often poor working conditions, and meager benefits. But these are not the only concerns of prospective educators. There is a great deal of cautiousness and distrust that exists in light of the way teachers have been viewed and treated in the past 40 years; although Broaded (1989:100) feels that many aspects of the intellectual's position improved after the 1978 redefinition of teachers as part of the working class, and relaxation of restrictions on academic and artistic expression. There are signs, however, that the pendulum may be swinging the other direction with respect to academic expression since the 1989 incident at Tiananmen Square. An example is the requirement that university students, faculty, and administrators study Deng Xiaopeng's speeches in order to "unify their thinking" about the "counter-revolutionary rebellion" at Tiananmen Square. Many students, including those interested in teaching, fear that the job assignment process will be used to banish them to remote rural areas. It will be interesting to see in the next few years whether the government actually follows through on its concerns for the plight of teachers, or whether they are only giving lip service to the problem.

The next major issue for discussion is the responsibility system and whether China can reap its benefits without compromising the higher educational system. The various forms the responsibility system has taken within education were seen in the previous discussion of higher education, and its impact on education will now be considered. Economically speaking, the changes have been positive, both for professors and universities and colleges. Teaching off-campus is lucrative for professors, who receive direct compensation for their services. Joint ventures, contract research, farm and industry management, and rental of assets are profitable for the universities, and schools are allowed to keep all surpluses they generate.

About 60% of the surpluses stay at the university level and the rest are retained by the level that provided the services, with a small portion going to staff benefits like health resources, cultural events, training opportunities, or bonuses. Surpluses may be used for supplies for teaching and research, or for capital expenditures for machinery or buildings for the university-run factories and farms (Kwong 1987).

The responsibility system as applied to the educational system, however, has created problems. Professors spend less time on campus since off-campus teaching is so profitable, which means the quality of teaching on campus is negatively affected as students have less contact with their professors. To combat this, the State has restricted the amount of money that can be earned from outside sources. It has also become more lucrative (and prestigious) to do contract research, and while this has improved the availability and quality of equipment and facilities, it has had some detrimental effects: 1) teachers spend less time on teaching and more time on research, which means classes are taught by younger faculty and lecturers; and 2) it has caused a shift away from basic research, and while industry and agriculture have benefited as universities become more responsive to their needs, the long-term needs of the country may be adversely affected as basic research is de-emphasized.

The responsibility system has also had an effect on the faculty make-up in the universities. Performance criteria have been established, and bonuses, promotions, and even dismissals are now based on individual performance. The number of excess staff members has been reduced through the method previously discussed. Retirement of older administrators has been encouraged through the establishment of honorary positions and through allowing retirees to keep their housing and other fringe benefits. This **reduced** the age of top administrators by 10 years between 1979 and 1982, and although this did little to reduce cost, it has

created a less conservative atmosphere and given younger faculty increased opportunities.

The last major concern is the development of an educational infrastructure. Often a university is isolated from disciplines which it does not teach, from other universities, and from the rest of the world. Chinese universities generally specialize in one academic area instead of having a variety of disciplines at the same institution. This lack of interaction among students and teachers from various disciplines can lead to a very narrow focus.

Lack of communication between colleges, universities, and research units also creates problems: research may be duplicated; expensive equipment that might be shared may be duplicated; and there is not enough sharing of information that could be synergistic in nature. All of this leads to the wasting of already scarce resources. With **respect** to communication at the international level, while participation in international conferences is very beneficial for researchers, and has been encouraged in recent years, the events at Tiananmen Square may change that.

Another means of participation at the international level is through students studying abroad, and it is the government's hope that such study will provide Chinese students with a better understanding of China's conditions and challenges. However, there has been much concern over the issue of students who extend their stay abroad instead of returning immediately to China to resume their place in society. This will continue to be a problem until the issues of intellectual freedom, low pay, poor benefits, and low prestige are addressed. The government recognizes the problems that exist in this area, as evident in the following comments by He Dongchang, Vice Minister of the State Education Commission, "We'll try to understand them. While preparing good conditions for them in the country, we'll persuade them and inflame their patriotic enthusiasm. They'll become an important

---

force to serve China's modernization drive sooner or later, at home or in foreign countries." (Wang 1989:36)

What are the prospects for the future of education in China? Recent statistics {State -Statistical Bureau 1989:25} show that: in proportion to GNP, China's educational expenses rank 100th in the world; the entrance rate of Chinese students into secondary school ranks 80th out of 139 countries and regions of the world; the entrance rate and number of college students per 100,000 people is 110th out of 139 countries and regions; and China's per capita educational expenses come to only 25% of that of the developing countries.

While increased educational spending might improve the situation, the World Bank suggested in 1986 that efficient use of available resources, rather than absolute funding, might be the key problem (Delfs 1988:32). Statistics show that the average student-teacher ratio in China is perhaps the lowest in the world at 3.7:1. (The average student-teacher ratio in the U.S. is 15:1.) Allocation of classroom and laboratory space per student was also found to be extremely high.

While the emphasis has varied since 1949, there is no doubt that great strides have been made in Chinese education, but there is still much to be done. China faces the challenge of providing education to the masses (25% of whom are illiterate) and still being able to provide education appropriate to produce the professionals needed to carry through with its modernization. China must also find ways to provide more educational opportunities and yet maintain the quality of the programs already offered. While some approaches such as the responsibility system and scientific management have been successful in providing short-term benefits, care needs to be exercised to make sure that long-term goals are being met. If long-term modernization goals are not met, a violent backlash may occur and progress in education may move backward as reorganization occurs once again.

Care needs to be taken in evaluating and/or equating degrees received in China. For example, "B" represents a university diploma received in the mid-1970's based on 3 years of university work and 10 years of primary and secondary education. "B," which also represents a university diploma, is one received after 12 years of primary and secondary education, and may have been received after 2 or 3 years of university education. "C" represents a "bachelor's degree earned after completion of 12 years of primary and secondary education plus 4 years of university work (similar to C<sub>3</sub>, which represents roughly the same amount of education before the cultural revolution).

### References Cited

- Bauer, John; Wang Feng; Riley, Nancy E.; and Xiaohua, Zhao  
1992 Gender Inequality in Urban China: Education and employment.  
Modern China. 18 (July 1992):333-70.
- Beijing Review  
1985 Adapting China's Higher Education. from Shijie Jingji  
Daobao. 28 (November 4, 1985):28.
- 1987 Compulsory Education Stressed. 30 (May 25, 1987):8-9.
- 1990 Gearing Education to Nation's Needs. 33 (January 29, 1990):5.
- 1988 Higher Education in Minority Area. 31 (November 14, 1992):39-40.
- Broaded, C. Montgomery  
1989 Education and Cultural Transfer in China. Problems of Communism 38  
September/October):96-102.
- Clayre, Alasdair  
1985 The Heart of the Dragon. Boston, MA: Houghton Mifflin Company.
- Delfs, Robert  
1988 Leap Forward Resumed. Far Eastern Economic Review 140  
(June 16, 1988):31-2

- Hayhoe, Ruth  
1987 Shanghai as a Mediator of the Educational Open Door. Pacific Affairs. 61 (Summer 1988):253-84.
- Holcomb, Michael  
1989 Profile of the Educational System of the People's Republic of China. World Education Series Special Report:5-8.
- Huang Wei  
1990 Cultivating a New Generation for the Future. Beijing Review 33 (June 11, 1990):23-5.
- Kwong, Julia  
1987 In Pursuit of Efficiency: Scientific management in Chinese higher education. Modern China. 13(April 1987):226-56.
- Lavelly, William; Zhenyu, Xiao; Bohua, Li; and Freedman, Ronald  
1990 The Rise in Female Education in China: National and regional Patterns. The China Quarterly. 121(March 1990):61-93.
- LiLi  
1988 Reforming and Restructuring the System. Beijing Review 31 (June 13, 1988):25-30.
- McCormick, Robert  
1986 The Radio and Television Universities and the Development of Higher Education in China. The China Quarterly. 105 (March 1986):72-94.
- Paver, William J.  
1990 Handbook on the Placement of Foreign Graduate Students. Washington, D.C.: National Association for Foreign Student Affairs.
- Postiglione, Gerard A.  
1992 China's National Minorities and Educational Change. Journal of Contemporary Asia. 22 (1992):1 :20-44.
- Ranson, Baldwin  
1988 Education For Modernization: Meritocratic myths in China, Mexico, the United States, and Japan. Journal of Economic Issues 22 (September 1988):747-62.
- Reed, Linda A.  
1988 Education in the People's Republic of China and U.S. - China Educational Exchanges. Washington, D.C.: National Association for Foreign Student Affairs.
- She Siyong  
1989 Education and Social Values. Beijing Review. 32 (July 3, 1989):36-7.
- State **Statistical Bureau**  
1989 Education in Present Day China. Facts and Figures, Beijing Review 32 (July 17, 1989):25-7.

State Statistical Bureau

1988 Education and Reform. Facts and Figures, Beijing Review 32  
(November 7, 1988):31-2.

Wang Zhigan and Yang Minhui

1989 Education: Opening and improvement. Beijing Review 32  
(Sept 25, 1989):35-6.

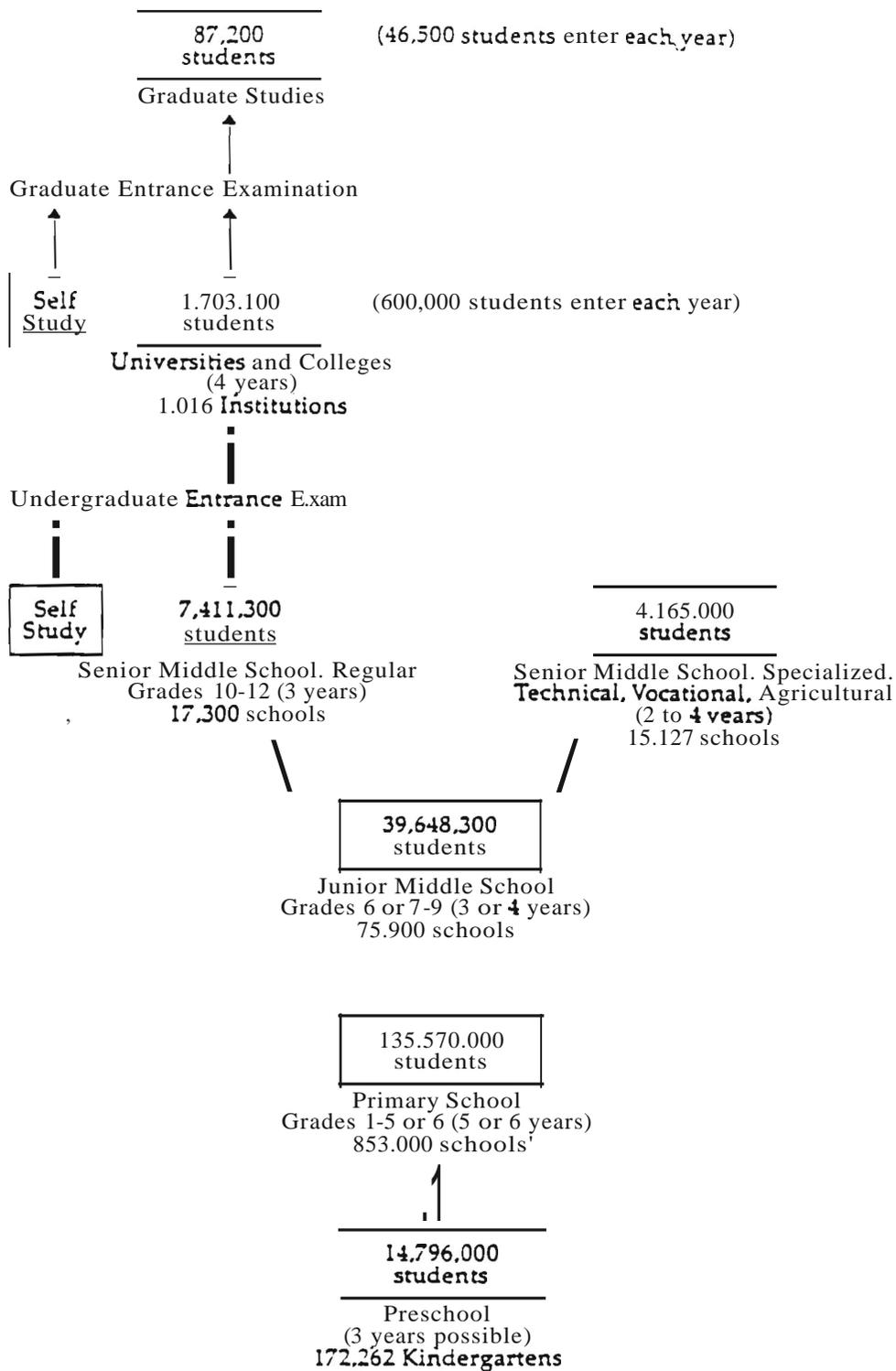
Yang YuH

1990 Adult Education in Full Swing. Beijing Review 33  
(Nov 26, 1990):34-7.

## **APPENDIX 1.**

**Pre** Educational Track (Dickey 1985).

**PRE EDUCATIONAL TRACK (1985)\***



\* This chart is based upon one compiled in 1980 by Karlene N. Dickey (Stanford University) that has been updated with 1985 SEDC statistics.

## APPENDIX 2.

Educational System of the Peoples Republic of China (Paver 1990).

Educational System

Primary			Secondary					Tertiary												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
										A <sub>4</sub>	A	B	B <sub>1</sub>	B <sub>1</sub>	B <sub>J</sub>	C <sub>1</sub>	D	D	E	
										A <sub>5</sub>	A <sub>1</sub>		B <sub>2</sub>		B <sub>6</sub>	C <sub>2</sub>	D <sub>1</sub>			
										A <sub>2</sub>			B <sub>4</sub>		B <sub>7</sub>	C <sub>J</sub>	D <sub>2</sub>			
										A <sub>J</sub>			B <sub>8</sub>		C	C <sub>4</sub>				
										A <sub>4</sub>			B <sub>6</sub>		C <sub>J</sub>					
										As			B <sub>7</sub>		C <sub>4</sub>					
															C <sub>8</sub>					

- A Certificate of Graduation from a senior middle school-awarded for completion of three years of education following six years of primary school and three years of junior middle school. Admission is based on regional entrance examinations.
- AI Certificate of Graduation from a normal school-awarded for completion of three years of teacher training for kindergarten and primary school teachers following junior middle school. Admission is based on entrance exams which are comparable to senior middle school entrance exams. (See NOTES.)
- A<sub>2</sub> Certificate of Graduation from a nursing school-awarded for completion of three years of nursing education following junior middle school. Admission is based on entrance exams which are comparable to senior middle school entrance exams. (See NOTES.)
- A<sub>J</sub> Certificate of Graduation from a vocational senior secondary school-awarded for completion of three years of technical education following junior middle school. Admission is based on entrance exams which are comparable to senior middle school entrance exams.
- A<sub>4</sub> Certificate of Graduation from a vocational senior secondary school-awarded for completion of two to three years of vocational education following junior middle school or agricultural junior middle school. Entrance exams are less demanding than senior middle school entrance exams.
- As Certificate of Graduation from an agricultural senior secondary school-awarded for completion of two to three years of agricultural education following junior middle school. Entrance exams are less demanding than senior middle school entrance exams.
- B Diploma of Graduation from a university/college awarded in mid-1970s-during the Cultural Revolution, admission to colleges and universities followed 10 years of primary and secondary education (sometimes less) and was based on political recommendations rather than on academic entrance exams. Programs required three years of study, political lectures, and practical work.

- B: Diploma of Graduation from a university/college—awarded for completion of two to three years of higher education following senior middle school or its equivalent. Admission is based on the National College Entrance Examination (NCEE).
- B<sub>2</sub> Diploma of Graduation from a military academy—awarded for completion of two years of study at military academies following senior middle school. Admission is based on the NCEE and political recommendations.
- B<sub>3</sub> Advanced Diploma of Graduation from a military academy—awarded for completion of four years of military education following senior middle school education or its *equivalent*. Admission is based on the NCEE and political recommendations. Some technology-oriented military academies award bachelor's degrees.
- B<sub>4</sub> Diploma of Graduation from an evening university—awarded for completion of the equivalent of two years of higher education on a full-time basis following senior middle school education or its equivalent. Usually programs require three to four years of study on a part-time basis. Evening universities are run by formal institutions of higher education, but the standards of the entrance examinations prepared by each institution are not as high as the NCEE and the curriculum is less demanding.
- B<sub>5</sub> Diploma of Graduation from a vocational college—awarded for completion of two years of vocational training following senior middle school education or its equivalent. Institutions that award this type of diploma are also called "institutions of adult higher education." *Admission* is based on regional entrance examinations *which* are less demanding than the NCEE.
- B<sub>6</sub> Diploma of Graduation from an administrative college—awarded for completion of two or four years of study following senior middle school or its equivalent. *Admission* is based on political recommendations, work experience, and entrance exams that are less demanding than the NCEE. Curriculum emphasizes Marxist theory.
- B<sub>7</sub> College diploma for self-education/study—awarded for successful completion of examinations on the curriculum for two or four years of university studies. Students who are self-taught sit for examinations prepared by university professors selected by provincial education commissions. Many students with two- or three-year college graduate diplomas pursue *this* kind of study to upgrade their education. Some provinces also award a bachelor's degree along with a graduate diploma for completion of examinations on a four-year curriculum.
- C Bachelor's degree—awarded for completion of four years of university study. Admission is based on the NCEE. Bachelor's degrees were first awarded in 1982.
- C<sub>1</sub> Bachelor's degree—awarded for *completion* of five years of university studies in medicine and in engineering at some universities.
- C<sub>2</sub> Double bachelor's degrees—awarded for completion of five years of university studies in two majors. Students who pursue two majors must meet certain academic requirements and obtain special permission from the administration of the institution.
- C<sub>3</sub> Diploma of Graduation from a university/college awarded before 1970—awarded for completion of a pre-Cultural Revolution university program of four to five years following twelve years of primary and secondary education. Admission was based on entrance exams. Students who discontinued regular studies in 1966 when universities closed were said to *have* graduated when they completed the curriculum through independent study.
- C<sub>4</sub> Diploma of Graduation from a university/college awarded in 1980 and 1981—awarded after the Cultural Revolution but before degrees were introduced in 1982 for completion of four- or five-year university programs to students admitted through entrance examinations first offered in 1977.
- C<sub>5</sub> Diploma of Graduation from a university/college awarded since 1982—awarded for completion of four years of university study by institutions of

higher education that have been newly founded or upgraded from two- or three-year institutions. They are fully recognized but may not grant bachelor's degrees to their graduates for a specified number of years. Admission is based on the NeEE. Diplomas are also awarded by universities along with degree certificates. A student may receive a diploma that verifies completion of all **program** requirements and eligibility to graduate in addition to a diploma that verifies conferral of the degree.

- O Graduate Study Diploma-awarded for completion of two to three years of study following the bachelor's degree or its equivalent. Admission is based on **entrance** examinations and recommendations. This credential was awarded before 1966 and between 1978 and 1981, prior to introduction of master's degrees. Since 1982, this diploma is still awarded to students who have completed *all* degree requirements except the thesis or to nondegree graduate students.
- O<sub>1</sub> Master's degree-awarded for completion of two to three years of graduate study, research, and a thesis. Admission is based on entrance examinations and recommendations. Master's degrees were first awarded in 1982.
- O<sub>2</sub> College teacher training certificate-awarded for completion of two years of graduate study to holders of bachelor's degrees or the equivalent who have been employed as full-time teaching assistants or assistant instructors. Only institutions that have graduate programs may award this credential and all courses **must** be offered by the graduate faculty. Admission is based on entrance examinations, recommendations, and work experience.
- E Doctoral degree-awarded for completion of a minimum of three years of advanced study, research, and a dissertation following the master's degree or its equivalent. Admission is based on entrance examinations, recommendations, research experience, and **interview**. Doctoral degrees were **first** awarded in 1984.

Ann Ross  
Department of Anthropology  
Florida Atlantic University

## A Summary of the Skeletal Biology of South America

### Introduction

The purpose of this paper is to summarize the studies carried out in the field of physical anthropology in South America. The primary aspects of the study of physical anthropology are to establish, from a morphological point of view, the similarities and/or differences between populations of a particular geographic region (Munizaga 1980:124). The principle method of accomplishment is based on the comparative study of skeletal size and shape; in South America the most important analysis is that of the skull (Munizaga 1980:124).

Research of skeletal material has been focused around studies of the skull (Stewart and Newman 1963:19). Much of the skeletal biology realized is of archaeological material. The studies carried out center around archaeological finds such as mummies and Pre-Columbian individuals. Much work needs to be done on modern populations. The research studies of skeletal material are few and are centered around specific regions, many geographical regions have not been accounted for.

### Craniometric Variation

Much work has been done in the area of craniometric variations in prehistoric Andean populations. Such studies have been found to facilitate the reconstruction of the biological human history of the area (Rothhammer et al. 1981:276). The analysis by Rothhammer et al. (1982) revealed that in general "males are more

similar to females in their own group than to females in other groups", differences in shape being more valuable than those of size.

An abundance of studies in skeletal biology express the desire for knowledge concentrated around finding out migration routes via craniometric differentiation, genetic variability between populations (Rothhammer 1989:403) and morphological distances in pre-hispanic populations (Oricot 1976). In another study by Rothhammer et al. (1981) between the populations of El Laicho and Alto Ramirez, no difference was found between populations. The similarities are more pronounced amongst the women (Tables 1a and 1b). In the study carried out by Cocilovo et al. (1982) on the microevolution of the Andean area, they took into consideration both deformed and normal skulls. They concluded that the principle factor of variation between populations was sexual dimorphism.

Table 1a. Percentages separated by sex of craniometric measurements in five prehistoric populations of Africa - Males.

Group	Measurement (*)								
	1	2	3	4	5	6	7	8	9
Camarones 14	9.62	13.18	9.38	6.90	4.98	3.95	3.40	5.19	3.19
Morro de Arica	9.60	13.46	9.78	7.05	5.07	3.90	3.52	4.41	3.40
El Laicho	9.09	13.68	10.32	6.85	4.90	3.64	3.44	5.27	3.64
Alto Ramirez	8.62	13.30	10.17	6.97	4.75	3.59	3.52	4.94	3.87
Playa Miller 4	8.86	13.56	10.01	6.66	4.73	3.49	3.40	4.94	3.83

- 1. Minimum frontal breadth
- 2. Bizygomatic breadth
- 3. Alveolo-basilar diameter
- 4. Nasio-alveolar height
- 5. Altura de la nariz
- 6. Nose breadth
- 7. Orbital height
- 8. Pal length
- 9. Pal breadth

(compiled from Rothhammer et al. 1981).

T.O. Stewart (1943a) claimed that low-headedness found amongst western North American population groups and in northern geographical areas of South America delineated a continuous late migration route. These low-heads represent a late migration from Asia. This distribution of low-headedness as well as the

absence of low-headedness amongst the more ancient populations appears to support his theory.

Table 1b. Percentages separated by sex of craniometric measurements in five prehistoric populations of Africa - Females.

Group	Measurement (*)								
	1	2	3	4	5	6	7	8	9
Camarones 14	8.76	12.19	8.76	6.40	4.46	3.70	3.40	4.36	3.40
Morro de Arica	9.18	12.57	9.25	6.58	4.79	3.84	3.49	4.26	3.27
El Iaucho	8.65	12.78	9.71	6.51	4.70	3.66	3.47	4.75	3.52
Alto Ramirez	8.33	12.30	9.39	6.33	4.60	3.50	3.33	4.80	3.53
Playa Miller 4	8.55	12.69	9.78	6.51	4.46	3.36	3.29	4.72	3.67

- 1. Minimal frontal breadth
- 2. Bizygomatic breadth
- 3. Alveolo-basilar diameter
- 4. Nasio-alveolar height
- 5. Altura de la nariz
- 6. Nose breadth
- 7. Orbitel height
- 8. Palatar length
- 9. Palatar breadth

(compiled from Rothhammer et al. 19811).

### Nonmetric Traits - bone

There has been quite a debate among physical anthropologists over the validity of using nonmetric traits. In their (1984) study Rothhammer et al., found that nonmetric and metric factors appeared to be comparable and quite constant with regard to change in time. Much more work needs to be realized in this area in order to determine whether nonmetrical traits can be used instead of craniometry (Rothhammer et al. 1984:159).

It is professed that discrete traits such as the mylohyoid bridge "are genetic in nature, vary in frequency between closely related population groups, do not vary with age, show no sex difference, and are easily defined" (Sawyer et al.1978:9). Ossenberg (1974) proclaimed that there are two types of mylohyoid bridges. The most common one "extends from a few millimeters anteroinferior to the mandibular foramen to the anterior margin of the roughened region for the insertion of the medial pterygoid muscle with the canal" (Sawyer et al. 1978:9). The less common

type of mylohyoid bridge starts higher up and is commonly discontinuous (Sawyer et al. 1978:9). The mylohyoid and foramen bridging could prove to be an effective means of distinctly identifying population groups, if used in conjunction with other similar types of discrete traits (Sawyer et al. 1990:179). In this study of Pre-Columbian Chileans, females were found to have a higher rate of jugular foramen at a rate of 18.2%, males at a rate of 10.91% whereas the overall occurrence was 14.94% (Sawyer et al. 1990:179) (Table 2).

Table 2. Sex and size differences in the incidence of jugular foramen bridging in a population of Pre-Columbian Chileans.

Sex <sup>1</sup>	(n)	Present	Absent
Male	110	12	10.91
Female	131	24	18.32
Total	241	36	14.94
Side <sup>2</sup>			
Right	241	25	10.37
left	241	16	6.64

<sup>1</sup>X<sup>2</sup> = 2.686, df = 1, P = 0.1078 (N.S.).  
<sup>2</sup>X<sup>2</sup> = 2.169, df = 1, P = 0.1417 (N.S.).

(Compiled from Sawyer et al. 1990).

The jugular foramen showed differences between the sexes and sides; the left side being more prominent (Sawyer et al. 1990:180) (Table 3). The mylohyoid groove bridging showed a frequency rate of 4.09% and no difference was found between the sexes (Sawyer et al. 1990:180).

The torus palatinus and torus mandibulares are other discrete traits that can aid in the identifying of population groups. Both are believed to be hereditary in nature or to have certain hereditary proclivities. Because of their high frequency variation, these traits along with the before mentioned can help identify different population groups (Sawyer et al. 1979:525).

Table 3. Matrix of association between sides in the occurrence of jugular foramen bridging.

LEFT:	RIGHT:		
	Present	Absent	Total
Present	5	11	16
Absent	20	205	225
Total	25	216	241

---

$\chi^2 = 8.034, df = 1, P = 0.0048.$

Compiled from Sawyer et al. 1990).

### Nonmetric Traits - Dentition

The **talon** cusp or t-shaped incisor is an uncommon anomaly which appears in the primary and permanent dentition. This anomaly is reported to have appeared in individuals with a cleft lip and/or cleft palate. The talon cusp poses problems of dental caries control, occlusal accommodation, and in terms of esthetics (Sawyer et al. 1976a:65).

The shovel-shaped incisor is a morphological variation used in the assessment of population proclivities and "as an aid in tracing population migrations" (Sawyer et al. 1976b:54). The frequency of the shovel-shaped incisor is greater among the maxillary incisor than with mandibular incisors (Sawyer et al. 1976b:54). The frequency of this anomaly varies tremendously from one population to another (Table 5). "In modern man, marked shovelling usually suggests Mongoloid affinities" (Sawyer et al. 1976b:55). Also, the degree of shovelling is much greater amid Mongoloid groups than with Caucasoid races. Hanihara (1963) has indicated that the proportion of shovelling is more often in permanent dentition than in the deciduous dentition. Shovelling has shown a certain degree of sex differentiation, the highest occurrence being among females (Hrdlicka 1920). Table 4 displays the frequency of shovelling for numerous populations.

Table 4. Percentage Frequency of Shovel-Shaped Incisors in selected populations - permanent teeth/pooled sexes

<u>Population</u>	<u>n</u>	<u>Frequency</u>
Aleut (11)	75	100.0
Aleut (12)	70	100.0
Polynesian	96	76.0
Mapuche Indian (11)	376	56.9
Mapuche Indian (12)	376	93.6
Chileans	689	45.7
Pewenche Indians	73	95.3
Early Am. Indian	17	63.0
Mongolian	24	100.0
Eskimo	40	100.0
American White (a)	2000	68.5
American White (b)	642	55.0
Pima Indian	226	100.0
Diguitas Indian	60	80.3

(Compiled from Sawyer et al. 1976).

The Carabelli's cusp is a genetically determined anomaly also used in racial classifications. It is most common among Caucasoids. Another inherited anomaly is the protostylid. Protostylid is most common among mongoloid races. If one or more of these anomalies are paired they may prove to be a useful means of determining racial groups (Sawyer et al. 1976b:55).

There have not been many studies on tooth size on South American Indians. One such study by Harris and Nweeia (1980) suggests that there is little sexual dimorphism in tooth size "and that this probably results from a diminution in mean male crown diameters rather than an increase in female tooth size" (Harris and Nweeia 1980:81). Studies have shown that tooth size is less useful for purposes of detecting morphological differences between population groups than say tooth shape (Harris and Nweeia 1980:81).

## Anthropometry

The amount of data available for living South American Indians is considerably small. Marcellino et al. (1978) compared six tribes using the Mahalanobis'

Table 5. Percentage Distribution and Frequency of Protostylid in deciduous (d) and permanent (p) molar teeth of selected populations.

Population	Incidence(%)			
	Dm2	Pm1	Pm2	Pm3
American White(a)	15.0**	6.0**	25.5**	0.0**
Pima Indian	60.0**	31.5**	20.0**	20.0**
Cont. Peruvian Indian	44.5	68.2	44.8	16.7
Pre-Columbian Peruvian	69.2***	66.5***	51.7***	23.7***
American White (b)	13.0			
Japanese	44.7			
Negro	17.0			

---

\*\* Percentage for m8Je Population only.  
\*\*\* Baed on the number of molar. aVilil.ble for Itudy.

(Compiled from Sawyer et al. 19761.

morphological distances. In the results, "males and females from the same village are essentially similar in shape, the main difference in this component occurring between villages (and tribes)" (Marcellino et al. 1978:72). Johnston et al. (1971), carried out a study of the Cashinahua Indians of Peru. They took measurements of skinfolds, endosteal and periosteal breadths of the second metacarpals and various other anthropometric measurements. The analysis of these Indians demonstrated that they are short and heavy and are morphologically similar to other populations (Johnston et al. 1971:409). Not much work has been done to analyze modern populations, which is a primary weakness in this area.

## Paleopathology - Cranial Deformation

The cultural trait of intentional cranial deformation was very prominent among South American Pre-Columbian peoples. There are several forms of cranial deformations,

among them tabular erecta, tabular obliqua, annular I, and cuneiform (Munizaga 1976:687). Munizaga (1974) carried out a study where 54 skulls showed intentional skull deformation of a circular variety. These were formed by using very thin threads and wrapping it around the skull to form a type of turban (Munizaga 1974:330). "The cuneiform is marked by flattening of the entire occiput (not just the upper, membraneous-derived bone) without evidence of counter pressure in front" (Munizaga 1976:687). The intensity of the deformation varies in severity, from slight to very distinct (Munizaga 1974:330). This form of cranial deformation was present on the northern coast of Chile as early as 3400 B.P.; whereas the tabular erecta variety was found about the same time on the coast of Ecuador and on the northern and central coasts of Peru (Munizaga 1974:333). In order to distinguish the tabular erecta from the tabular obliqua there are a number of criteria to be followed (Dembo and Imbelloni N.D.). Such criteria include the nature of the occipital bone, its curvature, angle, and the severity of the pressure (Dembo and Imbelloni N.D.). Ecuador has sustained some of the earliest instances of cranial deformation. Ecuador seems to be a core geographical area for the diffusion of this cultural trait (Munizaga 1976:690). Because cranial deformations are cultural traits they have chronologie as well as geographical disseminations (Stewart 1963:45). These deformations were usually inflicted on young infants while their skulls were still soft. Each variety of deformation has its own specific type of apparatus (Dembo and Imbelloni N.D.). Countless instruments were used to mold the heads of the young. Most techniques applied the use of boards and tablets. The use of bands, was also common practice such as in the cuneiform type; although some techniques did involve the use of both boards and bands (Munizaga 1976:690). The Quebrada de Humahuaca used an arrangement of free boards applied to the forehead and the occiput (Imbelloni 1963:54). "This consisted of two boards, ...the smaller was

placed on the forehead, the larger on the occiput, ...the two boards were then drawn toward each other by tightening the slender strands of wool which passed around them" (Imbelloni 1963:54). The annular type of deformation was realized by winding belts and bandages around the head in the form of a coif.

#### Paleopathology - Trephination

Trephining is a surgical operation on the skull practiced by Pre-Columbian populations, and which was conducted on living people. This form of surgical procedure is most commonly found in Bolivia and Peru, although in some instances it has been seen in parts of Argentina and Northern Chile (Stewart 1963a:45). There are three techniques known to this form of surgical procedure, cutting or sawing, scraping, and drilling (Stewart 1963a:45). "Cutting was done in both straight and curved lines. Straight-line cutting, perhaps better designated sawing, produced angular openings, usually square or rectangular, with the cuts extending into the bone beyond the opening" (Stewart 1963a:46). Curved cuts left a tidier rounded opening. The process by the curved method is thought to have been **slow**. Scraping was also a slow procedure, that left a damaged area larger than the final aperture (Stewart 1963a:46). lastly, drilling seems to have been rarely used and then only for small openings (Stewart 1963a:46). These procedures were performed using quartz and obsidian tools. The survival rate for these operations is quite good, found to be approximately 60% (Stewart 1963a:46). The motive for trephining is considered to be therapeutic in nature, suchlike the relief of headaches caused by concussions (Stewart 1963a:46). "The defect in the skull is said to have been covered in some instances by a disk of shell, metal or other material. These disks, if recovered in situ, rarely have been described" (Stewart

1963a:46). One such example is of a Paracas individual with the trephined opening covered by an irregular sheet of gold (Stewart 1943b:53).

#### Paleopathology - Dental Mutilations

Chipping of the teeth was not practiced until historic times, being introduced by the negro slaves. Mutilation by filing and inlay was practiced in Ecuador, Bolivia, Peru, and Chile. Inlay and filing was indigenous to South America. The material for inlay work was gold, usually in circular form (Stewart 1963a:47). It is unknown how the inlay work was performed, but Dembo and Imbelloni (N.D.) believe it was by way of a stone drill, rotated over sand. Tooth extraction was also a common practice among certain tribes of South America. Extraction is achieved by means of hitting a slab of wood placed on the tooth to be removed with a stone (Dembo and-Imbelloni N.D.). Another customary practice is that of fracturing the tooth with a hammer, the head of which was made from various materials (Dembo and Imbelloni N.D.).

Dental mutilation was practiced for several reasons. One such popular reason is for mere beautification and/or ornamentation. Some tribes used dental mutilation as a form of initiation rite, such as coming of age. Another purpose may be to express rank, to display one's status of nobility (Dembo and Imbelloni N.D.).

#### Pathology-Infectious disease

The presence of chronic infectious diseases in the new world appears to be an uncommon occurrence. The most common and easiest of these to identify was tuberculosis (Stewart 1963b:50). "The identification of tuberculosis is somewhat more definite than syphilis because of the tendency of the former to

localize in the spinal column and produce kyphosis, the condition known as hunchback" (Stewart 1963b:50).

Arthritis was found to be a common pathological condition among the ancient Peruvians. There are various forms of arthritis, some of the forms encountered are lipping, arthritis deformans or hyperthropic arthritis (Stewart 1963b:50). Dental disease is thought to be a contributing factor to arthritis (Stewart 1963b:51). The condition termed lipping, is marked by growth of bone along the edge of a joint (Stewart 1963b:50). Arthritis deformans or hyperthropic arthritis is an ailment characterized by "erosions of the joint surface together with polishing or eburnation" (Stewart 1963b:50). In the collection examined by Hrdlicka (1914) arthritis was confined to the joints. The incidence of arthritis of the hip joint was quite high. In these cases the head of the femur was deformed into a shape termed 'mushroom head', or 'capis penis' (Stewart 1963b:51).

In a more recent study by El Najjar (1979), although these conditions were rare, his findings show that treponematosi and tuberculosis were endemic to the New World. Some syphilitic bones have come from the skeletal remains-of Paracas; remains show some of the characteristic lesions associated with syphilis (Stewart 1943a:55).

The child's skeleton retrieved from the Alto Salaverry site, is the first example of "a pitting of the orbital roof associated with anemia" (Trinkaus 1977:25). The orbital roof discloses the condition known as cribra orbitalia, it is most prominent in the left orbit (Trinkaus 1977:25). "This condition had been recognized...as a manifestation of general osteoporosis of the cranium known as porotic hyperostosis" (Trinkaus 1977:25). It believed that the conditions of cribra orbitalia and porotic hyperostosis in Pre-Columbian individuals is the direct result of iron deficiency anemia (Trinkaus 1977:27). The evidence of hookworm infestation

could also be the cause of such ailments, since the loss of blood caused by this parasite can lead to severe anemia (Trinkaus 1977:27).

In Ubelaker (1979) "analysis of the Aylan burials revealed unusual alterations on many of the metatarsals and phalanges...metatarsals display facets and/or small bony extensions on the superior surface of the distal end" (Ubelaker 1979:679). These alterations occur with the same frequency on both the left and right feet (Ubelaker 1979:679). Ubelaker (1979) concluded that these alterations were the cause of stress brought about by constant kneeling.

Exostosis and bone tumors can occur in any part of the skeleton and their cause is not known (Stewart 1963b:51). The most common area to be affected is the auditory meatus, termed ear exostosis (Stewart 1963b:51). The frequency of occurrence is much higher in males than in females (Stewart 1963b:51). Another type of exostosis with a functional use is the "third trochanter" of the femur (Stewart 1963b:51). This condition is most common in females. A less frequently occurring hyperostosis develops "on the inner side of the lower jaw in the region of the premolars and molars" (Stewart 1963b:51).

A contributing factor to the cause of arthritis is believed to be dental disease. The correlation of these conditions have not yet been well established nor documented in South America (Stewart 1963b:51). The majority of the studies carried out on the teeth have been on dental caries, the chief cause of antemortem tooth loss (Stewart 1963b:51). "Cavities first appeared in the developmental pits and fissures on the crowns of the molars and then on the approximo-cervical surfaces of all teeth" (Stewart 1963b:51).

## **Discussion -**

Much work has been done with regards to archeological material. It is evident that the importance of such finds lies tracing the microevolutionary processes of prehistoric populations. Such studies can aid in detecting the morphology and population variances among the living South American populate.

More work needs to be done not only in the area of anthropometry of South American Indians, but also in dentition, paleopathology, and pathology. "In view of the widely differing environments in South America and the different diets of the native peoples that this entails, a broad study of the dental conditions here in prehistoric times would contribute to the knowledge of their etiology" (Stewart 1963b:51).

Craniometric measurements have been the primary way of assessing skeletal material in South America. The evaluation of non-cranial skeletal material has been for the most part completely ignored (Stewart and Newman 1963:19). The reasons for this prejudice is unknown. Other means of skeletal assessment need to be looked into. Another area of heated debate is in the validity of using discrete traits. More research needs to be carried out in order to establish the validity of using nonmetric traits. In the future we might find that craniometric and discrete traits can be paired to be used simultaneously. The use of both craniometric and nonmetric traits may prove to be a more accurate means for determining morphological variations of different populations.

### References Cited

- Cocilovo, A.; Rothhammer, F.; Quevedo, S.; and Llop, E.  
1982 Microevolucion En Poblaciones Prehistoricas del Area Andina.  
.. III.. La poblacion del Morro de Arica. Craneometria. Rev.  
UNRC 2(2):91-111.

- Dembo, A.; and Imbelloni, J.  
N.D. Deformaciones Intensionales del Cuerpo Humano de Caracter Etnico.  
Buenos Aires, Argentina: Jose Anesi.
- Dricot, A.; J.M.  
1976 Calculo de Distancias en Poblaciones Prehispanas del Peru.  
Antropologia Fisica. 1:1-16.
- El Najjar, M.  
1979 Human Trepanematosi and Tuberculosis: Evidence from the New  
World. American Journal of Physical Anthropology. 51:599- 618.
- Hanihara, K.  
1963 Crown Characters of the deciduous dentition of the  
Japanese-American Hybrids. *in* Dental Anthropology.  
DR Brothwell, ed., Pp. 105-124. Oxford, Great Britain:  
Pergamon Press.
- Harris, E.; and Nweeia, M.  
1980 Tooth Size of Ticuna Indians, Colombia, with Phenetic Comparisons  
to other Amerindians. American Journal of Physical Anthropology. 53:81-91.
- Hrdlicka, A.  
1920 Shovel-Shaped Teeth. American Journal of Physical Anthropology.  
3:429-465.
- Imbelloni, J.  
1963 Cephalic Deformations of the Indians in Argentina. *In* Handbook of  
South American Indians. Julian H. Steward, ed. Pp. 53-55. New York, NY:  
Cooper Square Publishers Inc.
- Johnston, F.E.; Gindhart, P.; Richard, I.J.; Kensinger, K.; and Walker, Geoffrey F.  
1971 The Anthropometric Determination of Body Composition among the  
Peruvian Cashinahua. American Journal of Physical Anthropology. 34:409-  
416.
- Marcellino, A.J.; Da Rocha, F.J.; and Salzano, F.M.  
1978 Size and Shape Differences among Six South American Indian Tribes.  
Annals of Human Biology. 5:69-74.
- Munizaga, J.R.  
1965 Appendix 2: Skeletal Remains from Sites of Valdivia and Machalilla  
Phases. *In* Smithsonian Contributions to Anthropology. Betty J. Meggers,  
Clifford Evans, and Emilio Estrada, eds.  
Pp. 219-233. Washington, DC: Smithsonian Institution.
- 1974 Deformacion Craneal y Momificacion en Chile. Annales Antropologia.  
11-329-336.
- 1976 Intentional Cranial Deformation in the Pre-Colombian Populations of  
Ecuador. American Journal of Physical Anthropology. 45:687-694.

- 1980 Antropologia Fisica. Chungara. 6:134.
- Ossenberg, N.S.  
 1974 The Mylohyoid Bridge: an anomalous derivative of Meckel's cartilage. Journal of Dental Research. 53:77-82.
- Rothhammer, F.; Cocilovo, J.A.; Quevedo, S.; and Llop, E.  
 1982 Microevolution in Prehistoric Andean Populations: I. Chronologie Craniometric Variation. American Journal of Physical Anthropology. 58:391-396.
- Rothhammer, F.; Quevedo, S.; Cocilovo, A.; Focacci, G.; and Llop, E.  
 1981 Microevolucion en Poblaciones Prehistoricas del Area Andina. 2. Variacion Craneometrica Cronologia en los Valles de Arica. Chungara. 8:275-289.
- Rothhammer, F.; Quevedo, S.; Cocilovo, J.A.; and Llop, E.  
 1984 Microevolution in Prehistoric Andean Populations: Chronologie non-metrical variation in Northern Chile. American Journal of Physical Anthropology. 65:157-162.
- Rothhammer F., Silva C.  
 1989 Peopling of Andean South America. American Journal of Physical Anthropology. 78:403-410.
- Sawyer, D.; Allison, M.J.; and Pezzia, Alejandro  
 1976a Talon Cusp: A clinically significant anomaly in a primary incisor from Pre-Colombian America. MCV Quarterly. 12:64-66.
- Sawyer, D.; Allison, M.J.; Elzay, R.P.; and Pezzia, Alejandro  
 1976 Morphological Characteristics of the Pre-Colombian Dentition: I. Shovel-Shaped Incisors, Carabelli's Cusp, and Protostylid. MCV Quarterly. 12:54-63.
- 1978 The Mylohyoid Bridge of Pre-Colombian Peruvians. American Journal of Physical Anthropology. 48:9-16.
- 1979 A Study of Torus Palatinus and Torus Mandibularis in Pre-Colombian Peruvians. American Journal of Physical Anthropology. 50:525-526.
- Sawyer, D.; Gianfortune, V.; Kiely, M.I.; and Allison, Marvin J.  
 1990 Mylohyoid and Jugular Foramen Bridging in Pre-Colombian Chileans. American Journal of Physical Anthropology. 82:177-181.
- Stewart, T.D.  
 1943a Distribution of Cranial Height in South America. American Journal of Physical Anthropology. 1:143-155.

1943b Skeletal Remains from Paracas, Peru. *American Journal of Physical Anthropology*. 1:47-62.

1963a Deformity, Trephining, and Mutilation in South American Indian Skeletal Remains. *In Handbook of South American Indians*. Julian H. Steward, ed. Pp. 43-48. New York, NY: Cooper Square Publishers Inc.

1963b Pathological Changes in South American Indian Skeletal Remains. *In Handbook of South American Indians*. Julian H. Steward, ed. Pp. 49-52. New York, NY: Cooper Square Publishers Inc.

1969 The Effects of Pathology on Skeletal Populations. *American Journal of Physical Anthropology*. 30:443-450.

Stewart, T.D. and Newman, M.T.

1963 Anthropometry of South American Indian Skeletal Remains. *In Handbook of South American Indians*. Julian H. Steward, ed. Pp. 19-42. New York, NY: Cooper Square Publishers Inc.

Trinkaus, E.

1977 The Alto Salaverry Child: A case of anemia from the Peruvian Preceramic. *American Journal of Physical Anthropology*. 46:25-28.

Ubelaker, D.H.

1979 Skeletal Evidence for Kneeling in Prehistoric Ecuador. *American Journal of Physical Anthropology*. 51 :679-686.

## LAMBDA ALPHA NATIONAL SCHOLARSHIP AWARD APPLICATION

The Lambda Alpha National Anthropology Honors Society offers two scholarship awards: (1) the National Scholarship, and (2) the National Dean's List Scholarship.

The National Executive Office will offer a \$4,000.00 annual base award for the National Lambda Alpha Scholarship. The National Dean's List scholarship will offer a \$1,000.00 award.

The National Lambda Alpha Scholarship is awarded to a graduating senior majoring in Anthropology. The Lambda Alpha National Dean's List Scholarship is awarded to an Anthropology major with junior standing during the 1994-95 academic year.

These are limited and closed competitions. A well qualified candidate has a reasonable chance to win. In order to insure a quality set of candidates, potential applicants will be allowed to join the honorary but must be accepted by their chapter and paid up before the application deadline of March 1, 1994.

The chapter of the scholarship candidate for either award must **forward** the following materials to the National Executive Secretary by the March 1st deadline:

1. Letter of nomination from the department or appropriate academic unit (this letter must specify to which scholarship the candidate is applying).
2. Curriculum vitae
3. Transcripts of all undergraduate grades
4. A statement, signed by applicant, giving permission to the National Executive Council to view submitted manuscripts
5. Two supporting letters of recommendation (one must be from a professional Anthropologist)

In addition candidates for the National Lambda Alpha Scholarship award must also submit a statement by the applicant of future professional plans and an example of the candidate's professional writing (e.g. a publication or course paper). Paper submissions will be published in the Lambda Alpha Journal.

If notice of receipt of submitted materials is desired please send them by certified mail or enclose with them a stamped or postal paid self-addressed card. There is often a delay in submission of transcripts sent directly from the university. Candidates are advised to confirm their processing. The winner of the National Lambda Alpha Scholarship will be announced before May 15th, 1994 the winner of the Lambda Alpha National Dean's List Award will be announced sometime in October, 1994.



**LAMBDA ALPHA  
SCHOLARSHIP AWARD RECIPIENTS**

1975	Frances A. Francis National Scholarship Award Southern Illinois University- Edwardsville
1976	Sharon D. Sublett National Scholarship Award Easter Washington State College
1977	Pamela J. Dorn National Scholarship Award Georgia State University
1978	linda R. Carnes National Scholarship Award Southern Illinois University - Edwardsville
1979	Eileen A. Van Schaik National Scholarship Award Southern Illinois University - Edwardsville
1980	Kathleen Kinkle National Scholarship Award Ball State University
1981	Sharon Dettmer National Scholarship Award Ball State University
1982	Pat A. Bartils National Scholarship Award Georgia State University
1983	Katherine E. Arnold National Scholarship Award Florida Atlantic University
1984	lisa Cottrell National Scholarship Award Georgia State University
1985	Susan R. Loth National Scholarship Award Florida Atlantic University
1986	No Award Given

**LAMBDA ALPHA  
NATIONAL SCHOLARSHIP AWARD RECIPIENTS**

1987	Katherine L. Ferraro National Scholarship Award East Carolina University
1988	Evan Peacock National Scholarship Award Mississippi State University
1989	Beverly E. Saltzman National Scholarship Award Emory University
1990	Nancy M. LeFevre National Scholarship Award California State University
1991	Danyelle K. Means National Scholarship Award University of South Dakota
1992	
1993	Natasha SchOll National Scholarship Award University of California - Berkeley
1993	Alice Oleson National Dean's List Award University of Iowa

## LAMBDA ALPHA CHAPTERS 1993

### Alabama

Mark A. Moberg Ph.D., Faculty Sponsor  
Alpha of Alabama  
Department of Sociology and Anthropology  
University of South Alabama  
Mobile, AL 36688

### California

Frank E. Bayham Ph.D., Faculty Sponsor  
Alpha of California  
Department of Anthropology  
California State University - Chico  
Chico, CA 95929

Lorraine Heidecker Ph.D., Faculty Sponsor  
Beta of California  
Department of Anthropology  
California **State** University - Sacramento  
Sacramento, CA 95819-2694

Alana Cordy-Collins Ph.D., Faculty Sponsor  
Gamma of California  
Department of Anthropology and Sociology  
University of San Diego  
San Diego, CA 92110-2492

Kofi Akwabi-Ameyaw Ph.D., Faculty Sponsor  
Epsilon of California  
Department of Anthropology and Geography  
California State College - Stanislaus  
Turlock, CA 95380-3953

Mary Weismantel Ph.D., Faculty Sponsor  
Zeta of California  
Department of Sociology and Anthropology  
Occidental College  
Los Angeles, CA 90041-3392

Susan Parman Ph.D., Faculty Sponsor  
Eta of California  
Department of Anthropology  
California State University - Fullerton  
Fullerton, CA 92634-4080

LAMBDA ALPHA CHAPTERS  
1993

California (Continued)

Brent Berlin Ph.D., Faculty Sponsor  
Theta of California  
Department of Anthropology  
University of California - Berkeley  
Berkeley, CA 94720

Colorado

Robert J. Theodoratus Ph.D., Faculty Sponsor  
Alpha of Colorado  
Department of Anthropology  
Colorado State University  
Fort Collins, CO 80523

Florida

William J. Kennedy Ph.D., Faculty Sponsor  
Beta of Florida  
Department of Anthropology  
Florida Atlantic University  
Boca Raton, FL 33431-0991

Diane Z. Chase, Ph.D., Lambda Alpha Faculty Sponsor  
Gamma of Florida  
Department of Anthropology and Sociology  
University of Central Florida  
Orlando, FL 32816-0990

Georgia

Robert L. Blakely Ph.D., Faculty Sponsor  
Alpha of Georgia  
Department of Anthropology  
Georgia State University  
Atlanta, GA 30303

Charles W. Nuckolls Ph.D., Faculty Sponsor  
Beta of Georgia  
Department of anthropology  
Emory University  
Atlanta, GA 30322

LAMBDA ALPHA CHAPTERS  
1993

Illinois

Charlotte J. Frisbie Ph.D., Faculty Sponsor  
Alpha of Illinois  
Department of Anthropology  
Southern Illinois University - Edwardsville  
Edwardsville, IL 62026-1451

Dean E. Arnold Ph.D., Faculty Sponsor  
Beta of Illinois  
Department of Sociology and Anthropology  
Wheaton College  
Wheaton, IL 60187-5593

Indiana

B. K. Swartz, Jr. Ph.D., Faculty Sponsor  
Alpha of Indiana  
Department of Anthropology  
Ball State University  
Muncie, IN 47306-0435

(Patrick D Gaffney Ph.D.) James O. Bellis Ph.D., Faculty Sponsor  
Beta of Indiana  
Department of Anthropology  
University of Notre Dame  
Notre D\_ame, IN 46556

Scott F. Clark Ph.D., Faculty Sponsor  
Delta of Indiana  
Department of Anthropology  
Indiana State University  
Terre Haute, IN 47809

Mac Marshall, Ph.D., Faculty Sponsor  
Beta of Iowa  
Department of Anthropology  
University of Iowa  
Iowa City, IA 52242

LAMBDA ALPHA CHAPTERS  
1993

Kansas

Peer Moore-Jansen Ph.D., Faculty Sponsor  
Alpha of Kansas  
Department of Anthropology  
Wichita State University  
Wichita, KS 67260-0052

Kentucky

Jack M. Schock Ph.D., Faculty Sponsor  
Alpha of Kentucky  
Department of Sociology, Anthropology  
and Social Work  
Western Kentucky University  
Bowling Green, KY 42101

Louisiana

Paul Farnsworth, Ph.D, Faculty Sponsor  
Alpha of Louisiana  
Department of Geography and Anthropology  
Louisiana State University  
Baton Rouge, LA 70803-4105

Maryland

Douglas-S. Snyder Ph.D., Faculty Sponsor (acting)  
Alpha of Maryland  
Department of Behavioral Sciences  
and Human Services  
Bowie State University  
Bowie, MD 20715-9465

Mississippi

Janet E. Rafferty Ph.D., Faculty Sponsor  
Alpha of Mississippi  
Department of Sociology and Anthropology  
Mississippi State University  
Mississippi State, MS 39762

Marie Elaine Danforth Ph.D., Faculty Sponsor  
Beta of Mississippi  
Department of Sociology and Anthropology  
University of Southern Mississippi  
Hattiesburg, MS 39406-5074

## LAMBDA ALPHA CHAPTERS 1993

### Missouri

Joseph I. Harl, Ph.D., Faculty Sponsor  
Alpha of Missouri  
Department of Anthropology  
University of Missouri - St. Louis  
St. Louis, MO 63121

Fiona Marshall Ph.D., Faculty Sponsor  
Beta of Missouri  
Department of Anthropology  
Washington University  
St. Louis, MO 63130

### Nevada

Martha C. Knack, Ph.D., Faculty Sponsor  
Alpha of Nevada  
Department of Anthropology and Ethnic Studies  
University of Nevada - Las Vegas  
Las Vegas, NV 89154-5012

### New Jersey

William P. Mitchell Ph.D., Faculty Sponsor  
Alpha of New Jersey  
Department of Sociology and Anthropology  
Monmouth College  
West Long Branch, NJ 07764

Maurie Sacks Ph.D., Faculty Sponsor  
Beta of New Jersey  
Department of Anthropology  
Montclair State College  
Upper Montclair, NJ 07043

### New York

John Omohundro Ph.D., Faculty Sponsor  
Alpha of New York  
Department of Anthropology  
State University of New York College  
Potsdam, NY 13676-2294

LAMBDA ALPHA CHAPTERS  
1993

New York (Continued)

Michael G. Peletz Ph.D., Faculty Sponsor  
Beta of New York  
Department of Sociology and Anthropology  
Colgate University  
Hamilton, NY 13346-1398

Douglas V. Armstrong Ph.D., Faculty Sponsor  
Delta of New York  
Department of Anthropology  
Syracuse University  
Syracuse, NY 13244-1200

Ellen R. Kintz Ph.D., Faculty Sponsor  
Epsilon of New York  
Department of Anthropology  
State University of New York College  
Geneseo, NY - 14454-1401

Sharon Gmelch Ph.D., Faculty Sponsor  
Zeta of New York  
Department of Sociology and Anthropology  
Union College  
Schenectady, NY 12308-2365

Edward Albert, Ph.D., Faculty Sponsor  
Eta of New York  
Department of Sociology and Anthropology  
Hofstra University  
Hempstead, NY 11550-1090

Connie M. Anderson, Ph.D., Faculty Sponsor  
Theta of New York  
Department of Anthropology  
Hartwick College  
Oneonta, NY 13820

North Carolina

Robert L. Bunker, Jr. Ph.D., Faculty Sponsor  
Beta of North Carolina  
Department of Sociology, Anthropology,  
- - and Economics  
East Carolina University  
Greenville, NC 27834-4353

## LAMBDA ALPHA CHAPTERS 1993

### North Carolina (Continued)

Robert E. Daniels Ph.D., Faculty Sponsor  
Gamma of North Carolina  
Department of Anthropology  
University of North Carolina - Chapel Hill  
Chapel Hill, NC 27414

### Ohio

Robert V. Riordan Ph.D., Faculty Sponsor  
Alpha of Ohio  
Department of Sociology and Anthropology  
Wright State University  
Dayton, OH 45431

David M. Stothers Ph.D., Faculty Sponsor  
Beta of Ohio  
Department of Sociology and Anthropology  
and Social Work  
University of Toledo  
Toledo, OH 43606-3390

### Oregon

Kenneth Beals Ph.D., Faculty Sponsor  
Alpha of Oregon  
Department of Anthropology  
Oregon State University  
Corvallis, OR 97331-6403

### Pennsylvania

M. Jude Kirkpatrick Ph.D., Faculty Sponsor  
Beta of Pennsylvania  
Department of Sociology and Anthropology  
Gannon University  
Erie, PA 16501

John P. Nass, Jr. Ph.D., Faculty Sponsor  
Gamma of Pennsylvania  
Department of Social Science, Anthropology  
Section  
California University of Pennsylvania  
California, PA 15419

LAMBDA ALPHA CHAPTERS  
1993

Pennsylvania (Continued)

William J. Smole, Ph.D., Faculty Sponsor  
Delta of Pennsylvania  
Department of Anthropology  
University of Pittsburg  
Pittsburg, PA 15260

South Dakota

Dona Davis Ph.D., Faculty Sponsor  
Alpha of South Dakota  
Department of Anthropology  
University of South Dakota  
Vermillion, SD 57069

Texas

Jeffrey R. Hanson Ph.D., Faculty Sponsor  
Alpha of Texas  
Department of Sociology, Anthropology,  
and Social Work  
University of Texas - Arlington  
Arlington, TX 76019

Sheila Pozorski, Ph.D., Faculty Sponsor  
Beta of T-exas  
Department of Psychology and Anthropology  
University of Texas - Pan American  
Edinburg, TX 78539-2999

Utah

David F. Laney, Ph.D., Faculty Sponsor  
Alpha of Utah  
Department of Social Work, Sociology & Anthropology  
Utah State University  
Logan, UT 84322-0730

Vermont

Carroll McC. Lewin Ph.D., Faculty Sponsor  
Alpha of Vermont  
Department of Anthropology  
University of Vermont  
Burlington, VT 05405

LAMBDA ALPHA CHAPTERS  
1993

Virginia

Donna C. Boyd Ph.D., Faculty Sponsor  
Alpha of Virginia  
Department of Sociology and Anthropology  
Radford University  
Radford, VA 24142

Kevin Avruch Ph.D., Faculty Sponsor  
Beta of Virginia  
Department of Sociology and Anthropology  
George **Mason** University  
Fairfax, VA 22030-4444

Barbara, J. King, Ph.D., Faculty Sponsor  
Gamma of Virginia  
Department of Anthropology  
College of William and Mary  
Williamsburg, VA 23187-8795

Washington

Elwyn C. Lapoint Ph.D., Faculty Sponsor  
Alpha of Washington  
Department of Geography and Anthropology  
Eastern Washington University  
**Cheney**, WA 99004

West Virginia

Kenyon Stebbins Ph.D., Faculty Sponsor  
Alpha of West Virginia  
Department of Sociology and Anthropology  
West Virginia University  
Morgantown, WV 26506