

Nothing New Under the Sun:

A Modern Synthesis of Historical Mental Health Treatments

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### **Abstract**

People with “mental illness” have been treated in vastly diverse ways throughout history and from culture to culture. Differing philosophies and spiritual beliefs, which shaped a culture’s view of the mentally ill, defined the manner of treatment down through the ages. The author investigated some of the historical philosophies and religious beliefs of Western culture to determine how those evolving beliefs influenced treatment strategies, while also comparing the philosophies of other contemporary historic cultures and their often-contrasting understanding of mental illness and treatment. This paper attempts to demonstrate how the best and most compassionate aspects of historical mental health treatments have begun to converge in modern times in order to treat the whole person: body, mind, and spirit. The author considers the philosophical changes that spurred the movement toward a respectful, holistic treatment of the entire person and what that will mean for the future of mental health in American society.

## Introduction

Over the entire history of humankind and in many different cultures, there is evidence of “mental illness” or “madness.” However, all cultures did not define mental illness in the same way, or attribute erratic behavior to the same causes. To complicate matters further, different cultures had different ideas of what constituted mental illness at different times in their history. There is also the problem of labels changing over time for similar ailments within a single culture. This paper examines the literature concerning historical treatments from ancient times to present day with an eye toward the cultural philosophies that instigated them, compares and contrasts causes and treatments in non-Western historical cultures, and finally demonstrates how the best and most compassionate aspects of historical mental health treatments have begun to converge in modern times in order to treat the whole person: body, mind, and spirit.

## Ancient Civilizations and Mental Illness

### Egypt

The Greeks claimed to have borrowed from Egyptian medicine and were impressed by the health of the Egyptian people. Papyri survive that give us a very good overview of the ancient Egyptian medical knowledge, including the nature of mental illness. The ancient Egyptian philosophy of life and death “centered upon the idea that these were part of a continuous cycle” (Okasha, 2000, p.413-415)

The individual was believed to be composed of 3 parts: the body, or *Khat*, the soul of the individual’s double that protected the body, or *Ka*, and the *Ba*, which is the soul, represented by a flying bird carrying the key to the afterlife, and which resided in the body at night to rest so it

could go about its business during the day. “It was thought that diseases were either due to evil spirits or to the wrath of the gods, but organic causes were also described” (Okasha, 2000). Of course, “diseases” included mental illness as well. “The heart was believed to be the center of the physical and emotional life, of the will and of the intellect,” according to Okasha, and “wear and tear on the heart brought about senility” (Okasha, 2000). Therefore, all feelings were attributed to the heart. However, the Smith papyrus (c. 1600 BC), may be the first reference to the brain used anywhere, and it showed that the Ancient Egyptians quite understood the brain’s role as a center of nervous control. “The surgeon noticed that injuries to the skull and brain disturbed the normal control of various parts of the body as far away as the feet” (Okasha, 2000). The same source also refers to “convulsions of the brain... the connection of the brain with the nervous system...and tetanus after brain injury,” among other things (Okasha, 2000, pp. 416 – 418).

Obviously, the ancient Egyptians had a working understanding of human physiology; however, it was their complex spiritual system that informed their choices regarding mental health practices. A temple complex near modern Saqqara is thought to be the first known mental hospital, where methods used to attempt to cure the mentally ill included using opium to induce visions, performing rituals or delivering prayers to specific gods, and "sleep therapy" (the interpretation of dreams by temple priests). Magico-religious elements combined with herbs were used to treat hysteria. Okasha (2000) describes that “an ibis of wax was placed on charcoal” as part of this healing. The ibis is a symbol of the god Thoth, who was considered physician to the gods. It is obvious that Egyptians treated mental illness with both physical and spiritual methods.

Depression and suicide are also present in the Egyptian literature, however, suicide did not seem to be an issue in ancient Egypt, for it didn't matter how one died, only that the body was preserved for the *Ba*. There is an entire system of causes for mental disorders in the Ebers papyrus, and both the physical and mental factors were considered, along with the spiritual idea of demonic possession, or possession by ghosts. Also important was "reconciling the patient with the transcendental world" (Okasha, 2000, pp.420-422). It is easy to see that ancient Egyptian society, with its orientation toward the health of the soul, is probably the first major example of a society with mental health as a priority.

### **China**

While modern Chinese mental health is based on the Western model, there are ancient accounts in Chinese medical literature concerning the treatment of mental disorders according to traditional Chinese medicine, which is based on hot and cold, and the traditional elements of air, earth, fire, metal, and wood. It is also organ-oriented, where "each visceral organ takes charge of a specific function and various kinds of emotion were raised through the visceral organs" (Beng-Yeong Ng, 1999); for instance, the heart is thought to house the mind.

"In traditional Chinese medicine, the notion of a moral harmony or rhythm between physiology and society is central," Beng-Yeong Ng relates. Illness is considered a disturbance in the relationship between a person and his surroundings, primarily because a person loses his "quietness," seen as fundamental to a harmonious life. Healing, then, becomes a matter of restoring a person's internal peace, which was done with herbs, acupuncture, and "emotional therapy," very much in the same way traditional Chinese medicine is practiced today.

### **Greece and Rome**

It is from the Greek that we get the root of the word “psychology,” for “psyche” means “soul.” Indeed, much of the Greek writings of the time seemed concerned with the care and nature of the soul, a practice known also as the discipline of philosophy.

Ntafoulis asserts that the “mythological Greek healer Melampous was a prophet and a psychiatrist before psychiatry” (Ntafoulis, et al, 2008). He is thought to have been a real person, born around 1400 BC. He had great powers and healing gifts, and several ancient writers claim he went to Egypt to learn more about healing and medicine. He is said to have used psychological means to cure several people, along with pharmaceutical treatment (herbal support). In all accounts, he is recognized as a “doctor of the soul (psyche) who used the art of the seer to discover the causes of illness and the medicines that would cure them” (Ntafoulis, et al, 2008). He represents the achievements of the ancient Greeks concerning the psychological in particular.

Hippocrates (460-377 BC), who is referred to as the father of Western medicine, proposed a triad of mental disorders termed melancholia, mania, and delirium. (Adamis, et al, 2007). Hippocrates is credited with being the first physician to reject supernatural or divine explanations for illness. Instead, he recommended “a tranquil lifestyle, sobriety, abstinence from all excesses, vegetable diets, strenuous exercise (but not to the point of fatigue), and blood-letting” (Gerig, 2007, p.22). The Hippocratic School of Medicine established medicine as a profession distinct from theory and philosophy.

Plato (428-348 BC), a classical Greek philosopher, believed that madness was a “societal issue that required a community response” (Gerig, 2007, p. 22). Also, Galen (130 – 200 AD) was a prominent Roman of Greek ethnicity. He was a physician, surgeon and philosopher whose

recommendations for peace of mind included “massage and drinking chilled wines while reclining in a warm bath” (Gerig, 2007, p. 22). In fact, both the Greeks and Romans seemed to promote happiness and wellness -- not surprising, as the Romans admired the Greeks and emulated them in many ways, especially following Roman conquest of Greece.

### **The Ancient Celts**

Very little is disclosed in most treatises concerning mental health in regard to the ancient Celts of either the European continent or the British Isles, probably because the Celts didn't really write anything down much before the Roman conquest of Gaul in AD 50. However, we can glean some understanding from the later insular literature and the observations of Greek and Roman contemporaries. In Ireland and Wales, much was preserved and recorded that can serve to help us understand the ancient Celtic mindset, which was somewhat different from the dominant Roman culture of the time. Druids were the intelligentsia of the culture, presiding over law, history, social mores, and spiritual matters.

From the examination of Middle Irish and Welsh texts, it seems that the ancient Celts considered that insanity was something that could come to a person through battle or a wound. It could also come about through ecstatic experiences like initiations or *imbas* (roughly, “divine inspiration”). Finally, ordeals could bring on madness akin to the symptoms of modern post-traumatic stress disorder. The Irish king, Suibhne (Sweeney), who went mad in a battle “after hearing the cries of the warriors” and spent years in the trees like a wild animal, created sacred poetry and studied the ways of nature. He was partly cured by “milk,” which was probably a botanical in cow's milk, but it could also be inferred that he was shown kindness and responded well to it.

The Celts were no strangers to erratic behaviors that are currently considered mental illness, but one must allow that the ancient Celts themselves may not have considered these behaviors erratic from within their culture, especially when they are described in the tales as behaviors attributed to heroes (Smeenk, 1999, pp. 17-28). Seeing spirits, fairies, and ghosts, along with an awareness of the Otherworld, was not considered mental illness among Celts. In fact, those who had the “second sight” were considered gifted and favored by the gods, and were often chosen to train in *Draiocht*, or the Druid Arts.

## **Medieval Madness**

### **Christian Europe**

The Middle Ages was a dark time for those with mental disorders, especially in Christian Europe. Interestingly enough, it was in this time and place that trepanning was used to “let evil spirits out,” which (contrary to popular opinion) was not necessarily the reason for the practice in ancient times. Gerig states that “humans were thought to be the site where the ultimate battle between ‘good’ and ‘evil’ took place” (Gerig, 2007). Therefore, the mentally ill were considered possessed by demons. The “trial by ordeal” was devised in the Middle Ages; it was believed that God would save the righteous. The ordeal of hot water required the accused to dip his hand in a kettle of boiling water and retrieve a stone. The ordeal of cold water required that a man accused of sorcery be submerged in a stream and acquitted if he survived, or submerged in a barrel three times and considered guilty if he sank to the bottom. In the 6<sup>th</sup> century it was commonly expected that if a person was thrown into a river with a millstone around his neck, the “guilty” would sink.

“Insane individuals were classified into two distinct categories: harmless and raving” (Shoham-Steiner, 2006). The harmless were considered “beings of lesser mind” and left to wander the streets, collecting what charity they could. The raving were subject to segregation, imprisonment, and even grave mistreatment. Some medieval “cures” for possession by evil spirits were purges, bloodletting, and whipping. The mentally ill were often placed in “fools’ cages” in miserable conditions, or sometimes put in lock-ups inside the city gates. Others were put on trial, tortured, and found guilty as witches. Suffice to say that humanity seems to have taken a backward turn during the Middle Ages, and those with mental disorders suffered greatly.

However, there were also some great strides forward at this time in history. The colony of Gheel in Belgium “became a center of care for the mentally ill that was characterized by love and kindness” (Gerig, 2007, p. 23). Legend has it that an Irish woman, now called Saint Dymphna, was beheaded in Gheel, and her spirit produced miracles there. These miraculous powers attracted the “insane,” who came in search of healing and stayed to form a colony there in the 13<sup>th</sup> century that exists to this day.

### **The Muslim Empire**

At the same time that Medieval Europe was whipping, purging, boiling, and drowning the mentally ill, “centers for the humane treatment of the mentally disturbed rose up in Bagdad and Damascus in the ninth and tenth centuries” (Gerig, 2007). Indeed, the first institutions recognizable as insane asylums were built in the medieval Islamic world in the 8<sup>th</sup> century: in Bagdad in 705, Cairo in 800, and Damascus and Aleppo in 1270. Ofek asserts that from the 8<sup>th</sup> to 12<sup>th</sup> centuries, “Arabic thinkers made original contributions...in such fields as philosophy, astronomy, medicine, chemistry, geography, physics, optics, and mathematics” (Ofek, 2011).

Medieval Muslim physicians also developed practices to treat patients suffering from a variety of "diseases of the mind."

Ahmed ibn Sahl al-Balkhi (850–934), was a Persian Muslim, a physician and philosopher, who reasoned that if the psyche became ill, the whole person got sick. He wrote that imbalance of the soul can result in anger, anxiety, and sadness. In the Persian asylums and elsewhere in the Arab world, patients were treated using baths, drugs, music and activities to help restore balance to body and soul.

## **Indigenous Americans**

### **South America**

The Incas were the ruling tribe in Peru at the time of the Spanish conquest. The culture was very advanced, but, like the Celts, they left no written accounts, so we are reliant upon the Spanish for information concerning their treatment of mental illness.

For the Incas, “a disease was the result of a disturbed relationship with supernatural forces” (Elferink, 1999). Treatment of disease was a mixture of religion, magic, and botanicals, as the ancient Peruvians were well aware of the healing power of plants, and it seems the most important task of the physician was herbal knowledge and application. Spiritually, the Incas, like the Aztecs, didn’t have a sharp distinction between good and evil spirits (or gods and demons). All supernatural forces were ambivalent.

Like the Egyptians, the Incas considered the heart the seat of the emotions as well as the spirit. There are some reports of hysteria, but not as many as the contemporary Aztec chroniclers reported. More often there were depressive disorders among the Incas, especially melancholy, and about fifteen plants are mentioned as treatments for depression. There was also a common

“dancing disease” reported, where those afflicted would dance, tremble, and fall to the ground. It was cured by specialists with magic and sorcery, and was never considered a form of insanity. One wonders if it might have been a form of epilepsy. There are no real indications that “mental disorders were more associated with supernatural forces than other diseases,” and, since the descendents of the Incas are still living in Peru, we may make some inferences. For instance, Elferink considers that “from Peruvian folk medicine we know that psychotherapy plays an important role in the contemporaneous treatment of mental diseases by indigenous *curanderos* or shamans” (Elferink, 1999). The treatment of mental illness, then, for the Incas, was a mixture of magico-religious acts combined with the administration of medicinal plants (Elferink, 1999, p. 316).

A word must be said here concerning the Incas and Aztecs, along with other ancient cultures around the world, having performed trepanning, or the cutting of holes in the skull, as evidenced by archaeological findings. Some people have postulated that it was used to release evil spirits from the body; however, other sources refute that particular hypothesis. In fact, Wadley, et al, states that “the reasons for trephination of the skull remain speculative, but the vast majority were probably for therapeutic reasons such as for trauma, headaches, epilepsy, insanity or paralysis”. Relieving brain pressure from swelling was deemed especially useful when a warrior had a blow to the head from battle. Considering that a similar practice is still in use today in ICUs to assist in cases of severe brain injury or trauma, those ancient cultures that practiced trepanning could be considered ahead of their time.

### **North America**

North American native healing techniques were often considered inferior by Westerners, in spite of the fact that “many western colonists benefitted from and survived diseases through the

use of Native American treatments” (Mancini, 2004, as quoted in Portman and Garrett 2006, p. 454). Wars between the States and European countries disrupted the supply of medicines from Europe and created a change in attitude toward Native American healing practices. Indigenous North American Indian healing practices have been transmitted orally for centuries, and oral traditions are very slow to introduce new concepts. Portman and Garrett assert that a study of “three Native American communities revealed traditional Native American healing practices with the same plants and herbs prevailed over time (Mancini, 2004), leaving a healing thread across two centuries.” Native American healing traditions can’t be taken out of the context of relationship to all the other beings on the planet, the Native culture, and the indigenous spirituality; in fact, traditional Indian medicine “performed without the spiritual relationships might prove ineffective for treatment” (Portman and Garrett, 2006, pp. 454-455).

Native Americans believe that good medicine is “walking in harmony and balance” with the earth and “all our relations,” which are all the beings on the earth with us. Maintaining that balance was (and is) accomplished through ritual and ceremony, the interpretation of dreams, and sometimes the seeking of visions.

Illustrative of some Native American beliefs, the Iroquois people at the time of Jesuit contact believed in the ability of the person’s mind to make them sick. “The Iroquois theory of dreams was basically psychoanalytic” (Wallace, 1972). Dreams were considered messages concerning the desires of the soul, and if the soul’s desires were not satisfied in some way, the person would get sick. Diseases or bodily infirmity could arise from 3 sources: from natural injury, from witchcraft projected onto the person, or from “the mind of the patient himself, which desires something, and will vex the body of a sick man until it possesses the thing required. For they think that there are in every man certain inborn desires, often unknown to themselves, upon

which the happiness of an individual depends” (Father Ragueneau, Jesuit priest, 1649, as quoted by Wallace, 1972, p. 61). The Iroquois recognized conscious and unconscious parts of the mind and the “great force of unconscious desires, were aware that the frustration of these desires could cause mental and physical (psychosomatic) illness. They understand that these desires were expressed in symbolic form, by dreams...” (Wallace, 1972, p. 63). The cure was for the community to act out the person’s dream, thereby giving the person’s psyche what it desired in a harmless way while maintaining balance and harmony among the people.

## **The Modern Era**

### **16<sup>th</sup> – 18<sup>th</sup> Centuries**

By the 16<sup>th</sup> century, “a system of hospitals, know as asylums, developed in Europe to provide shelter for persons unable to care for themselves” (Gerig, 2007). These new private “madhouses” served to get the insane out of sight (and out of mind) of the larger society. Those incarcerated in these places lived in deplorable conditions, often chained to the wall and left in their own excrement, oftentimes left without clothing as well. Severe somatic treatments were used, similar to those in medieval times. One notable exception was the facility at Lübeck, which was built in 1602 in response to the new Poor Laws, as well as reformers’ complaints about keeping the insane like caged animals. Compared to other hospitals of its type, the poor insane were treated rather well, with a new “Christian charity,” but often humane treatment was subject to the economics of the time. And like Bethlam (where the modern term “bedlam” derives) in England, where people could pay money to observe the insane as entertainment, the “population of the city [of Lübeck] came to see and heckle the sick people kept behind bars” (Dilling, et al, 2010).

The late 18<sup>th</sup> century saw the rise of a moral treatment movement in parts of Europe, with “advocates such as Phillipe Pinel, William Tuke, and Benjamin Rush” (Gerig, 2007, p.23). Madhouses began to transform from being basically prisons for the insane to more hospital-like institutions with medically-guided care. However, “depending on the prevailing Zeitgeist, epochs of discrimination and separation alternated with those of Christian and humanitarian involvement” (Dilling, et al., 2010, p.384). By the end of the 18<sup>th</sup> century, mental illness was increasingly seen as having medical cause, and the “recovery of King George III as an example of success of the moral treatment...generated extraordinary interest in the medical community, which had held in some disrepute those who treated madness” (Rovang, 2006, p. 41).

### **19<sup>th</sup> Century**

The 19<sup>th</sup> century was an era of exponential growth, both in number and size, for asylums in every Western country. A significant occurrence in 1844 was the formation of the Association of Medical Superintendents of American Institutions for the Insane (AMSAII), which consisted of 13 asylum supervisors. “It became the first organized medical specialty society in America” (Gerig, 2007), and predated the American Medical Association by 2 years. The organization advocated moral treatment. Dorothea Dix (1802 –1887), a nurse and an advocate for the poor with mental disorders, was also influential in creating the first generation of American mental asylums. However, abuses in asylums were still the rule rather than the exception.

The Age of Reason had promoted science and discouraged superstition, and it wasn’t long before a new generation of Enlightenment scientists applied their craft to mental illness. It became known that mental illness could sometimes have physiological cause, which opened up a new array of treatments, including medication and surgery. The term “psychiatry” was coined.

## **20th Century**

Sigmund Freud began treating neuroses (nervous conditions) with hypnosis and his famous talk therapy, and his theories about the way the psyche worked fascinated other young scientists. Psychoanalysis was born, which examined dreams for subconscious meaning and utilized word association, transference and countertransference to delve deeply into the subconscious. Freud established the Institute for Psychoanalysis in Vienna. Freud's theories are still the basis for many schools of thought regarding mental health today. Another young scientist named Carl Jung developed the concepts of the dream archetype and the collective unconscious, essentially re-introducing the soul or psyche, once so important to the ancients, back into mental health treatment theory. Emil Kraepelin devised the first classification system for all mental illnesses, the precursor to the DSM-IV-TR. Many and varied scientifically-based theories of mental health and behavior were put forth in the 20<sup>th</sup> century, each having both merits and weaknesses as the healing of the psyche moved toward integration of art and science.

The 1963 Mental Health Act deinstitutionalized mental health in America. While mental hospitals (run by the states) remain for acute care, the advent of antipsychotic drugs and a desire for community-based mental health practices allowed a majority of people with mental disorders to be released into society and utilize outpatient services.

A dark side remains regarding mental health facilities and treatments. For instance, electroconvulsive therapy (shock treatments, which Freud rejected) and lobotomy seem too close to the bizarre and inhumane treatments of the European Middle Ages for comfort. While lobotomy is rarely practiced today, there has been a resurgence of electroconvulsive therapy advocates in recent years (Gilman, 2008).

## Conclusion

In the 21<sup>st</sup> century, we are poised on the brink of what could prove to be an exciting synthesis of treatments with roots in the ancient past. There is a growing trend in mental health counseling to practice integrated therapy and develop a deeper awareness of a multicultural approach to healing. People are returning to natural cures and herbal medicine; indeed, treatments from Chinese to Native North and South American traditions have become popular again. The ancient, indigenous concept of healing through dream interpretation is once again considered a valid modality, thanks in large part to Freud and Jung. Considerations of a spiritual nature have returned to mental health treatment after the Age of Reason relegated them to superstition for so long (an understandable reaction to the regrettable religious zeal of the Middle Ages), and the shaman is once again an important mental health practitioner in many cultures, with growing popularity even among Westerners. Like the Persians in the 8<sup>th</sup> century, therapists are once again using soothing treatments, like music and dance, and other activities, like painting, hiking, or animal-assisted therapy, in order to help restore balance to body and soul. Acupuncture, meditation, and massage therapy are also enjoying a new popularity as healing modalities. Existentialist and other talk therapies consider the meaning of life in a way that is nurturing to the spirit, and even nutritional imbalances are being re-examined as possible causes of erratic behavior. The Roman idea of relaxation is being recommended today as stress therapy, and kindness still goes a long way toward healing the wounded warrior.

In fact, the increase in respect for other cultures and their spiritual practices, both ancient and modern, has opened up a plethora of healing modalities from which the modern therapist may choose. Treatments can be customized to both the client's and the therapist's preferences and personalities. Mental health practitioners are slowly beginning to awaken to an

understanding that psychoses are often the product of cultural mores, and that a person considered mentally ill in one culture might be revered as a shaman in another. Modern treatments cover the physical, mental, and spiritual influences on disorders, supported quite often by sound scientific evidence. With that in mind, a life of internal balance and harmony with the environment can become the goal of therapy once again, making deep psychological healing seem quite attainable.

**References**

Adamis, D., Adrian Treloar, Finbarr C. Martin, and Alastair J. D. MacDonald (2007). A brief review of the history of delirium as a mental disorder. *History of Psychiatry*, 18(4): 459-469.

DOI: 10.1177/0957154X07076467

Beng-Yeong Ng (1999). Hysteria: a cross-cultural comparison of its origins and history. *History of Psychiatry*, x(1999), 287-301.

Elferink, Jan. G. R., (1999). Mental disorder among the Incas in ancient Peru. *History of Psychiatry*, x (1999), 303-318.

Dilling, Horst, Hans Peter Thomsen, and Fritz Hohagen, 2010. Care of the insane in Lübeck during the 17<sup>th</sup> and 18<sup>th</sup> centuries. *History of Psychiatry*, 21(4), 371-386.

Gerig, M.S. (2007). *Foundations for mental health and community counseling*.

Upper Saddle River, NJ: Pearson.

Gilman, S. L., (2008). Electrotherapy and mental illness: then and now. *History of Psychiatry*, 19(3); 339-357.

Karlsen, Carol F., (1998). *The devil in the shape of a woman: Witchcraft in colonial new england*. W.W. Norton & Company: New York, NY.

Kovang, D., (2006). Where reason reigns: madness, passion, and sovereignty in late 18<sup>th</sup>-cnetury England. *History of Psychiatry*, 17(1), 23-44.

*Maclean's*, (2008). The Inca dynasty: Head-splitting surgery. Vol. 121 Issue 20/21, p45-45, 1/9p

Ntafoulis, Paulos, Philippos Gourzis, and Constantinos Trompoukis (2008). Historical note: Melampous: a psychiatrist before psychiatry. *History of Psychiatry*, 2008 19:242-246. DOI: 10.1177/0957154X07078704

Ofek, Hillel, (2011). Why the arabic world turned away from science. *The New Atlantis: a Journal of Technology and Society*, Winter: 3-23.

Okasha, Ahmed and Tarek Okasha (2000). Notes on mental disorders in pharaonic Egypt. *History of Psychiatry*, xi(2000), 413 -434.

Portman, Tarrell A.A. and Michael T. Garrett, (2006). Native american healing traditions. *International Journal of Disability, Development and Education*, Vol. 53, No. 4, December 2006, pp. 453–469. DOI: 10.1080/10349120601008647

Shoham-Steiner, E. (2006). The humble sage and the wandering madman; Madness and madmen in an exemplum from *Sefer Hasidim*. *The Jewish Quarterly Review*, Vol 96, no 1, winter, 38-49.

Smeenck, Renske, 2007. *Potions in medieval Irish literature*. (Masters Thesis.) University of Utrecht.

Wadley, J. P., G. T. Smith & C. Shieff, (1997). Self-trephination of the skull with an electric power drill. *British Journal of Neurosurgery*; 11(2):156 -158.

Wallace, Anthony F. C., (1972). *The death and rebirth of the seneca*. Vintage Books: New York, NY.