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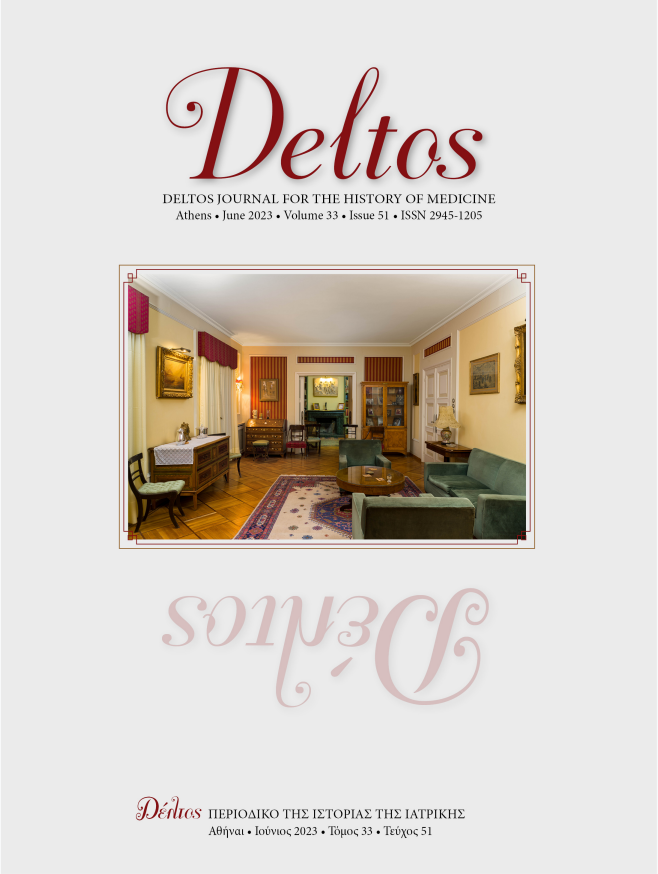

Bioethics - Origins and Birth. Inaugural Lecture

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Bioethics - Origins and Birth*
Inaugural Lecture

Stefanos J. Geroulanos[1]

Figure. 1 The Rector of the Ioannina University Trtiantafyllos Albanis (L) awarding Professor Stefanos Geroulanos (R) his Honorary Doctorate Diploma for the History of Medicine, The Aula, 21 March 2019.

Abstract

Bioethics is the study of ethical issues emerging from advances in Biology, Medicine and our environment. The oldest sub-discipline of Bioethics is Medical Ethics. This can be traced back to the earliest writings in Egypt and Mesopotamia, in the 3rd millennium BCE. The "Hippocratic Oath" was the most important milestone dominating ethical rules for 2,500 years. With the advent of Christianity, these early ethical rules were expanded and accepted throughout the Western World. However, the term Medical Ethics itself was only coined in 1803 by Thomas Percival, outlining the obligations and conduct expected of healthcare practitioners and institutions. Regrettably, subsequent codes of ethics did not provide for any legal repercussions. As a result, during the Nuremberg Trial for Nazi physicians, only patient deaths were punishable, while all other heinous acts could not be punished. Remarkably, no country worldwide had legislation to prosecute

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physicians who had violated their oath. The Nuremberg Code and the Geneva Declaration, which followed offered again merely guidelines for physicians. With the rate of medical knowledge doubling at an accelerated pace from every 50 years in the 1950s to every 2 months today, new ethical dilemmas have emerged that cannot be resolved by the current recommendations. The discovery of genes, cloning, genetic manipulation, selection criteria for chronic haemodialysis and transplantation, contraceptives for birth control, abortion, brain death, vegetative state, the right to die and euthanasia, along with extracorporeal fertilisation, surrogate motherhood, sexual relations and numerous other ethical issues, have become significant concerns that will need to be reconsidered in the future. What is deemed acceptable in one country may still be prohibited in another. Legal regulations are often implemented years after the ethical problems have arisen, and many physicians have found themselves caught in the middle and incarcerated. With the advent of the Industrial Revolution, the atomic bomb, gene discovery, and manipulation, and many other developments, the Earth has entered a new geological epoch, known as the "Anthropocene". As we are unable to foresee what lies ahead, it is imperative that we pass down to our students and future generations the timeless ethical principles that we have inherited from our forebears and adapted to our era. These values encompass the safety of patients, respect for their autonomy, avoidance of harm and promotion of well-being, detailed information and informed consent, respect of confidentiality, impartiality towards all patients irrespective of gender, race, religion or beliefs, treatment, pain relief, fairness, and concurrently, respect for the rights of all humans, animals, and nature. It is imperative that these values are always kept at the forefront of our minds. These will enable our students, successors, nursing staff, theologians, lawyers, sociologists, psychologists, administrative personnel, and ethical committees to find common ground and prevent conflicts with patients, their families, or society. The cultivation of self-control, constructive criticism of our decisions, and quality control shall remain our duty forever.

Key words: *Bioethics, Hippocratic Oath, Ten Commandments, Nuremberg Trial*

Introduction

Bioethics is the study of ethical issues emerging from advances in Biology, Medicine and our environment. However, Bioethics is concerned with ethical issues that arise not only in Biology and Medicine, but also in the relationship among other sciences like Biotechnology, Biochemistry, Biophysics, Veterinary Medicine, environmental Politics, Morality, Law and Philosophy (Jonsen, 2000).

The oldest sub-discipline of Bioethics is Medical Ethics, which can be traced back to Antiquity and even earlier. These are based on the rules of the very early General Ethics.

Ethics in the Western World are fundamentally based on Christian Rules, as found in the Old and New Testament, and the Ancient Greek Testimony, esp. the Pre-Socratic, Socratic/Plato's and Aristotle's Ethics. The introduction of the "Hippocratic Oath" (circa 411 BCE) established a solid basis for Medical Ethics, providing sufficient solutions to most ethical problems in Medicine for almost 2,500 years.

Contemporary Bioethics is based on these solid fundamentals of Medical and General Ethics.

Origins of Ethics

The first written ethical codes date back to the origins of human writing, prompting inquiry into whether ethics predated written language. Evidence from existing tribal codices strongly suggests the existence of earlier, unwritten codes. The emergence of simple ethical rules likely occurred among early Homo sapiens at the time of formation of the first families and alliances with neighbours, and the founding of small settlements.

The first written evidence of ethical rules goes back to Egypt and Mesopotamia. By the end of the 4th Millennium BCE, the two great river civilizations, Mesopotamia and Egypt, had been established and were using writing.

Ethics in Ancient Egypt

At the heart of Egyptian ethics was ***ma'at;*** a word/god that signified justice, balance, norm, order, truth, what is correct and right action, all of which were established by the gods and were then guaranteed by the Pharaoh, the King of Egypt. From the fifth Dynasty (c.2450-2300 BCE) onward, public officials were appointed by the King in order to deal with legal matters (Morenz, 1973, pp. 12ff). They were called ***"priests of ma'at"***. However, no legal codes defining *ma'at* have been recovered. It appears that some sort of ethics existed already and priests functioned as moral judges, providing basic values for moral behaviour. It seems that there must have been commonly accepted regulations based on *ma'at*, which could be enhanced from time to time by nowadays lost pharaonic edicts.

However, Justice and Truth were not vague concepts; they were to be spoken and lived. In courts of

law, judges were to manifest ***ma'at*** in what they said and in how they ruled on cases (Morenz, 1973, p. 125).

Ethical norms that sustained *ma'at* were even taught in scribal schools by wise men. Schoolboy-copies of the aphorisms, maxims and advice, some from around 2000 BCE, have been found. "*Ethical norms were essentially practical: to ignore them was to court failure, to violate them was to invite punishment and social disaster*" (Larue, 1988, p. 70-3)!

Egyptian ethics are definitively related to the Egyptians' belief in afterlife. No other nation of the ancient world made so determined an effort to vanquish death and win eternal life (Lichtheim, 1975, I. p. 119). According to the Ancient Egyptian tradition, after you die you must be able to stand before Osiris, the God of the Dead, and the rest of the Pantheon and state the "negative Confessions" while your heart, the seat of your consciousness, was weighted on a scale against the feather of *ma'at* or truth, a truly Cosmic Order.

A precursor of the Book of the Dead is already inscribed in a Pyramid Text on the tomb of Teti, 2333 BCE

The ***Book of the Dead*****,** used at least from 1550 BCE onwards, contains a negative confession in which the deceased recited a list of 42 sins not committed before a panel of 42 divine judges (Table 1). The crimes included mistreatment of persons and animals, blasphemy, theft, maligning a servant to his master, causing pain or tears or suffering, killing someone, illicit sex or masturbation, cheating in business, discussing secrets, and many other. It appears that Moses was inspired for his Ten Commandments by this text. The deceased even claimed to have given bread to the hungry, water to the thirsty, clothing to the naked and river transportation to the man without a boat (Budge, 1913, p. 587). These were ethical issues that were repeated later by Jesus Christ. If the deceased could truthfully make all of these negative confessions, their heart would be found to weight less than the feather placed on the other side of the scale and their spirit would be accepted into the afterlife. If they failed, their spirit would have been destroyed and they would have been condemned to death.

Ethics in Mesopotamia

Mesopotamia had several very early codices with exact laws, regulating not only crimes but also behaviour. The earliest known, now housed in the Archaeological Museum of Istanbul (no 3191), is the *Codex of Ur-Nammu*, dating back to 2100 - 2050 BCE. Most

Table 1. Book of the Dead

I have not:
Committed sins against men
Opposed my family
Opposed kinsfolk
Wrought evil
Vilified slave to his master
Inflicted pain
Caused anyone to go hungry or thirsty
Committed murder or given order to commit murder
Been loud
Slain sacred cattle
Caused calamities
Plundered the offerings
Filched land from my neighbour
Added to the weights of the scales
Caught fish with the hair made of the bodies of the same kind of fish
Stopped water when it should flow
Made a cutting in a canal
Extinguished a fire when it should burn
Confounded truth
Been inpatient or done wrong
Robbed
Stolen
Slain people
Destroyed food offering
Reduced measures
Told lies
Caused to weep
Dissembled
Done evil
Transgressed
Done grain-profiteering
Robbed a parcel of land
Discussed secrets
Brought lawsuits
Disputed about property
Had intercourse with married woman
Masturbated
Struck terror
Been hot tempered
Been violent

of its decrees relate to "equity in the land". However, murder, robbery, adultery and rape were capital offenses and offenders were executed.

The laws of *Eshnunna*, written approximately in 1930 BCE, some decades before the country was conquered by King Hammurabi (1810-c.1750 BCE) are similar, as are those of the *Codex of Lipit-Ishtar of Isin*, dating back to circa 1870 BCE. They both constitute the earliest known collection of legal rules not only in Akkadian but of the Western Civilisation.

However, the most famous of all legal rules is the *Codex of Hammurabi*, King of Babylon (1810-c.1750 BCE). The codex, now housed in the Louvre Museum, once stood at the Centre of Babylon, for all be able to see. The top of the engraved stele features King Hammurabi standing, receiving the code from Shamash, the Babylonian God of Justice. In contrast to the earlier Sumerian codices, which focused on the compensation of the victim of a crime, the law of Hammurabi was one of the first to place greater emphasis on the physical punishment of the perpetrator. It prescribes specific penalties for each crime and is among the first codices to establish the presumption of innocence.

The codex describes 282 laws and the corresponding punishments. Some of the major subjects are stealing, agriculture regulations, damage of foreign property, marriage and rights in marriage, the rights of women, children and slaves, death, injuries & murder. Punishment and prices vary according to the cast of the person.

Concerning Medicine, the codex forbids the use of bronze needles for cataract operations and dictates the cost of the operation, which was different for free men and slaves. If a surgeon used a bronze needle, his hand should be amputated. Bronze rusts and the little *shavings* could cause an eye infection leading to loss of the eye.

The codex finishes with a blessing for those who follow the laws and a curse for those who do not care or violate them. It reminds us of the last article of the «Hippocrtic Oath», which states: *"but if I transgress it and forswear myself, may the opposite be my fate*" ("Hippocrtic Oath", Art. 9b).

Ethics in Israel

With the Exodus of the Jews from Egypt, probably at the time of the eruption of the Santorini volcano with its catastrophic tsunami in 1613 BCE, Moses with his followers reached the peninsula of Sinai. There, Moses received from the hand of God the Ten Commandments, a concentrated and precise religious/legal/moral rule that has marked Western Ethics for 3.5 millenniums (Fig. 2).

The last six Commandments will remain forever as the unshakable fundamentals of ethics. However, there is no doubt today that these Ten Commandments have their roots in Egyptian, Mesopotamian, Hittite ethics or even the earlier ethics of prehistoric humans.

But the Jews formulated more than the Ten Commandments. In the Old Testament, which according to recent research was written between the 7th and 5th centuries BCE, we can also find ethical issues that were thought to have been formulated by Jesus. In the Leviticus (17,19) of the Torah we read: *"Thou shall love thy neighbour as thyself"*; In *Job* (31,32): *"But no stranger*

Figure 2. Moses on Sinai Mountain receiving the Ten Commandments from the hand of the Lord. 13th c. Icon, St. Catherine's Monastery at Sinai, Egypt.

Table 2. The Ten Commandments.

I am the Lord, thy God.
Thou shall have no strange gods before me.
Thou shall not take the name of the Lord in vain.
Remember the Sabbath day, to keep it holy.
Honour thy father and thy mother.
Thou shall not kill.
Thou shall not commit adultery.
Thou shall not steal.
Thou shall not bear false witness against thy neighbour.
Though shall not covet.

had to lodge on the street, for my door has been open to the traveller"; In *Isaiah* (58,7): *"Is it not to share your bread with the hungry, to bring the poor and homeless into your home, to clothe the naked when you see him and not turn away from your own flesh and blood?"*. These ethical maxims have been incorporated in most major religions!

Ethics in Ancient Greece

The Pre-Socratic Philosophers

There is no doubt that ethical standards and rules of moral behaviour existed very early on, as we can find examples in Ancient Greek Mythology and the Homeric epic poems (ca 8th century BCE), with the Gods and the Erinyes (the furies) being the major punishers of crime and misbehaviour. Pythagoras and other pre-Socratic philosophers put major ethical maxims in words, although these never attained the theological/legal status of the Book of the Dead, the Ten Commandments, or the Mesopotamian legal rules. But sentences like the famous Golden Rule: *"Avoid doing what you would blame others for doing"* was at least formulated around the same time as the Torah, by the Greek pre-Socratic philosopher Thales of Miletus (ca 624-546 BCE). In its prohibitive form it was a common principle in Ancient Greek Philosophy, repeated at least by Isocrates (436-338 BCE): *"treat people the same way you want to be treated"*; or Sextus the Pythagorean: *"what you do not want to happen to you, do not do it yourself either"* or *"such as you wish your neighbour to be to you, such also be you to your neighbour"*.

With the appearance of Socrates, Plato and especially Aristotle, ethics were discussed openly, written down and preserved for the future. These ethical issues led to today's fundamentals of Western Ethics.

Birth of Medical Ethics

Hippocrates

A major landmark in the history of Medical Ethics is the "Oath of the Hippocratic Collection", widely known as the "Hippocratic Oath". This established a solid basis for medical ethics, used to solve most ethical problems in Medicine, Pharmacology and Physicians' conduct for almost 2,500 years.

The Oath addresses the proper conduct of physicians and their relation to patients (Table 3). The most significant commitments and qualities distinguishing a noble profession have been postulated in just a half-page text: *Piety, gratitude towards the teacher, disinterested-ness for himself, service to the sufferer, purity, respect for the human person, unwavering care for the fellow-human irrespective of gender, social, financial or slavery status, reliability in the fulfilment of duty, a deep sense of responsibility, professional secrecy and so on*. The Universality of the Oath's rules and its profound

Table 3. The "Oath of the Hippocratic Collection".

I swear by Apollo Physician, by Asclepios, by Hygeia and Panacea and by all other gods and goddesses, making them my witnesses that I will carry out, according to my ability and judgment, this oath and this indenture.
To hold my teacher in this art equal to my own parents; to make him partner in my livelihood; when he is in need of money to share mine with him; to consider his family as my own brothers, and to teach them this art, if they want to learn it, without fee or indenture.
To impart instruction written, oral and practical, to my own sons, the sons of my teacher, and to indentured pupils who have taken the physician's oath, but to nobody else.
I will use treatment to help the sick according to my ability and judgment, but never with a view to injury and wrongdoing.
Neither will I administer a poison to anybody when asked to do so, nor will I suggest such a course.
Similarly, I will not give to a woman a pessary (vaginal suppository) to cause abortion.
But I will keep pure and holy both my life and my art.
I will not use the knife, not even, verily, on sufferers from stone, but I will give place to such as are craftsmen therein.
Into whatsoever house I enter, I will enter to help the sick, and I will abstain from all intentional wrongdoing and harm, especially from abusing the bodies of man or woman, bond or free.
And whatsoever I shall see or hear in the course of my profession, as well as outside my profession in my intercourse with men, if it be what should not be published abroad, I will never divulge, holding such things to be holy secrets.
Now, if I carry out this oath, and break it not, may I gain forever reputation among all men for my life and for my art; but if I transgress it and forswear myself, may the opposite befall me.

Kiapokas E.,1999

humanism render it a declaration with eternal value and unequalled authority.

The "Hippocratic Oath" remains the cornerstone of medical ethics and etiquette, revered as a paramount document in the history of civilization. Its influence transformed medicine from a profession to a calling, imbuing our profession with a divine aspect.

The Oath's endurance for over 2,400 years and its impact on the ethical codes of numerous nations and international organisations underscore its profound importance. Its 3rd article*: "I will use treatment to help the sick according to my ability and judgment, but never with a view to injury and wrong-doing",* reflects the passage of Epidemics A, 6: *"Ωφελέειν ή μη βλάπτειν"* (to help or at least not harm), later, in the 17th century, was shortened as: *"Primum non nocere"* (first, do no harm). This was practically enough to solve most ethical problems arising in Medicine.

Christianity

With the advent of Christianity and its establishment in the Western World with the Edict of Milan (313 AD), the Old Testament, the Ten Commandments, and the New Testament dominated Christian Ethics. The "Hippocratic Oath" was also incorporated, shaping Medical Ethics. However, it is interesting to note that most of these ethical maxims go back to earlier ethical rules (Table 4).

New elements concern the "equality between slave or free man, between man and woman" (Hippocrates Oath, Art. 7, 411 BCE) and "between different nationalities or races" (Paulus, epist. Galatae 3, 28, 1st c. ACE).

The most important ethical maxim for the Medical Profession was Jesus's words*: "Love your neighbour as thyself"*. These five words completely transformed the relation between physician and patient. The Ancient Medical Centres, the Asclepieia, became Hospices and Hospitals with a strong theological and humanistic aspect.

Recent Centuries

For over two millennia, ethical dilemmas in medicine were addressed through the "Hippocratic Oath" and Christian maxims. However, the term '*Medical Ethics*' was not coined until 1803, when the English author and physician Thomas Percival published a book outlining the requirements and expectations of medical professionals within medical facilities. Its chapters were written according to the Oath's articles. Percival's book deeply influenced the Anglo-Saxon World. This Code of Ethics was later adapted in 1847, 1903 & 1912 relying heavily on Percival's words.

In 1891, the Prussian minister of the interior issued a directive to all prisons that prohibited the use of tuberculin for the treatment of tuberculosis without the patient's consent. It was the first directive on informed consent!

At the turn of the century, the Minister for Religious, Educational, and Medical Affairs in Germany commissioned a detailed report from the Scientific Medical Office of Health, which included leading German physicians such as Rudolf Virchow. The commission directed its attention to beneficence and autonomy. However, these codes were merely recommendations and did not have the force of law to punish physicians who failed to comply with them.

Thus, in 1947, at the Nuremberg Medical Trial for Nazi doctors after World War II, the judges faced a lack of laws that would allow them to hold physicians and their administrative superiors or collaborators accountable for the atrocities committed in their human experimentation. The judges were only able to condemn physicians for murder if the human subject had died, leaving no legal recourse for other atrocities. To address this issue, the court sought assistance from the American Medical Association (AMA). The AMA appointed Professor Andrew C. Ivy, the President of the American Society of Physiology, to the Nuremberg Tribunal. Ivy then formulated the famous Nuremberg Code (Table 5), which provided a foundation upon which the judges could base their judgment.

In September 1948, the World Medical Association formulated the Declaration of Geneva, a set of ethical principles intended to guide physicians in their treatment of human subjects. The declaration was subsequently revised in Helsinki in 1964 and, most recently, in South Africa in 2006.

Birth of Bioethics

These highly standardised Medical Ethic Codes allowed people to be guaranteed quality and principled care, regardless of race, gender or religion. However, in the years that followed the Nuremberg Code and the Declaration of Geneva and especially "*between 1945 and 1965, antibiotic, antipsychotic, antihypertensive, and cancer drugs came into common practice. Surgery entered the heart and the brain; organ transplantation was initiated; and dialysis machines, pacemakers, ventilators and life sustaining mechanical devices came into medical use*" (Jonsen, 2000). New guidelines were necessary. Old and new values were formulated. This led to the emergence of the new discipline of ***Bioethics***.

Table 4. Cross references in Palaeo-ethics

Though shall not murder.	***Honour thy father and thy mother***
Code of Ur-Nammu, 2100 BCE	Codex of Hammurabi, 1750 BCE
Codex of Hammurabi, 1750 BCE	Egypt, Book of Dead, 1550 BCE
Egypt, Book of Dead, 1550 BCE	Moses, 10 Commandments, 1500 BCE
Moses, 10 Commandments, 1500 BCE	"Hippocratic Oath", Article 2a, 5th c. BCE
"Hippocratic Oath", Article 2a, 5th c. BCE	Jesus, Mathew, 19:16-19, 1st c. ACE
Jesus, Mathew, 19:16-19, 1st c. ACE	Common Christian, Hebrew & Moslem Ethics
Common Christian, Hebrew & Moslem Ethics	
Declaration of Geneva, 1947 ACE	***Professional secrecy.***
	Codex of Hammurabi 1750 BCE
Thou shall not commit adultery.	Egypt, Book of Dead, 1550 BCE
Code of Ur-Nammu, 2100 BCE	Old Testament, Leviticus, 1500 BCE
Codex of Hammurabi, 1750 BCE	"Hippocratic Oath", Article 8, 411 BCE
Egypt, Book of Dead, 1550 BCE	Jesus, Paulus, 1st c. ACE
Moses, 10 Commandments 1500 BCE	Declaration of Geneva, 1947
"Hippocratic Oath", Article 7a, 5th c. BCE	
Jesus, Mathew 19:16-19, 1st c. ACE	***For I was hungry and you gave me something to eat***
Common Christian, Hebrew & Moslem Ethics	***I was thirsty and you gave me something to drink***
	I was a stranger and you invited me
Thou shall not steal.	***I was naked and ye clothed me***
Code of Ur-Nammu, 2100 BCE	Codex of Hammurabi, 1750 BCE
Codex of Hammurabi, 1750 BCE	Egypt, Book of Dead, 1550 BCE
Egypt, Book of Dead, 1550 BCE	Old Testament, Leviticus, 1500 BCE
Moses, 10 Commandments, 1500 BCE	Homer, Odyssey, 750 BCE
"Hippocratic Oath", Article 5, 5th c. BCE	Jesus, Mathew, 19:16-19, 1st c. ACE
Jesus, Mathew, 19:16-19, 1st c. ACE	Common Christian, Hebrew, & Moslem? Ethics
Common Christian, Hebrew & Moslem Ethics	
	I was sick and in prison, and ye visited me
Thou shall not bear false witness.	Egypt, Book of Dead, 1550 BCE
Codex of Hammurabi, 1750 BCE	Old Testament, Leviticus, 1500 BCE
Egypt, Book of Dead, 1550 BCE	Jesus, Mathew, 19:16-19, 1st c. ACE
Moses, 10 Commandments, 1500 BCE	Common Christian, Hebrew, & Moslem? Ethics
"Hippocratic Oath", Article 5, 5th c. BCE	
Jesus, Mathew, 19:16-19, 1st c. ACE	***Thou shall love thy neighbour as thyself***
Common Christian, Hebrew & Moslem Ethics	Egypt, Book of Dead, 1550 BCE
	Old Testament, Leviticus 19.17, 1500 BCE
	Thales of Miletos, (ca 624-546 BCE)
	Jesus, Mathew, 19:16-19, 1st c. ACE
	Common Christian, Hebrew & Moslem Ethics

Table 5. Nuremberg Code

Voluntary human consent is essential
Experimental results should result in good for society
Anticipated results should justify the experiment
Avoid all unnecessary physical and mental suffering
No experiment if there is a chance of death/disability
Minimize risk of subjects
Proper preparations and facilities to protect subjects
Experiments conducted only by qualified persons
Subjects can withdraw at anytime
Terminate experiment if results are known or with best judgement

Initially, most of its ethical values were borrowed from Medical Ethics but it soon extended to Biology, Sociology, Biotechnology, Biochemistry, Biophysics, human & animal Medicine, environmental Politics, Morality, Law and Philosophy. These values encompassed respect for autonomy, non-maleficence, beneficence, justice (not law) and human, animal & nature's rights. With the help of these values, physicians, health care providers, and families can create treatment plans and work towards the same common goal without "any" conflict. The challenge was to keep the focus on fair, balanced, and moral thinking.

Despite these generally accepted ethical values, the rapid medical, biological and technological advances often outpace the law. Regulatory laws are often delayed by 10-20 years, forcing decisions to be made against existing laws and resulting in physicians being taken to court. Renowned Professors of Medicine have been deposed from their positions or even imprisoned for actions made legal a decade later. Additionally, major issues such as Euthanasia, Abortion, and Gene manipulation continue to divide countries, with different laws and rules in place. Finding a balance is challenging, and predicting future developments is even more difficult. To address these challenges, Ethical Committees have been established to guide decision-makers.

Let us examine some major milestones in the evolution of bioethics to assist future decision-makers in understanding how past issues were addressed or left unregulated. Although we cannot anticipate the future, presenting past problem-solving methods may aid those who will make future decisions.

Gene Discovery

In 1869, *The New York Times* reported that a hereditary chemical was isolated. Professor Stern from Brooklyn had put his Genoprotein theory before a Cytology Group in Stockholm. Yet 78 years had to pass before *The New York Times* mentioned it again. In an article published on 15 July 1947 one reads: *"The isolation from the nuclei of living cells of a chemical believed to be the substance transmitting heredity was reported today."* The article went on to describe two different forms of the chemical, which was called "ribo-nucleic acid" and "desoxyribo-nucleic acid". By 16 August 1951, the abbreviations "DNA" & RNA were in common use and by 24 April 1953 the Secret of Life had been decoded by Watson & Crick and published in the *"Science"* Journal (Jonsen, 2000).

Albeit the risks of gene manipulation were immediately apparent, despite the wounds of the Nazi eugenic programs remaining unhealed, proposed regulations were not accepted. The cloning of Dolly on 10 March 1997 opened the door to human cloning. However, despite this 150 to 50-year-old problem, and after months of ongoing discussions, the UN General Assembly in November 2004 failed to reach a conclusive convention against human cloning. In 2018, the first genetically manipulated twins were born in China.

The Earth has definitively entered a new Geological Era, the ***"Anthropocene".*** What Aldous Huxley had predicted for 2,500 AD has happened in less than a century!

Renal Transplantation

On 23 December 1954, the first renal transplantation was performed in Boston. The kidney of a 24-year-old man was successfully transplanted into his identical twin brother, who survived for another 8 years. This procedure challenged the Hippocratic maxim of "do no harm", as the donor suffered harm without benefiting from the transplant. However, the advent of immunological drugs in 1962 allowed for cadaver kidney transplantation, shifting focus to selection criteria. The question of who should receive the kidney emerged as a major issue, and unfortunately persists in all solid organ transplantations.

Chronic Haemodialysis

The issue of selection criteria arose with the opening of the first Artificial Kidney Centre in Seattle on 9 March 1960. Despite a capacity of only nine beds, there were approximately 20,000 patients who needed treatment. The Seattle Dialysis Selection Committee was called to address this unsolvable problem of medical discrimination. As Jonsen (2000) pointed out, *"the idea of turning over this responsibility to a lay committee was*

shocking". Non-physicians were tasked with choosing which patients would receive life-saving treatment. Social considerations, such as prioritising a mother of two over a childless, younger woman, were used. This posed a challenge to the constitutions of many democratic nations, as it undermined the fundamental principle of human equality. A minority of individuals were deemed "more equal" than others. Fortunately, the issue was resolved through the production of haemodialysis machines by the medical industry. These machines are now widely available for the treatment of chronic renal insufficiency, rendering discriminatory selection unnecessary.

Birth Control

In May 1960, the introduction of oral contraceptives in the United States sparked religious opposition, as many viewed it as contrary to God's or nature's will. Despite public debate and even the Catholic Church's prohibition, over 2 million American women had adopted the pill within three years (Jonsen, 2000), indicating that practical considerations superseded moral objections.

Brain Death

The first heart transplant took place in Cape Town, South Africa on 3 December 1967. The donor was declared dead due to irreversibly fatal brain damage, a condition that was not yet included in the legal definition of death in any country. At that time, most countries defined death as the cessation of cardiac and respiratory function, making the removal of a beating heart tantamount to murder under existing laws. In response to this dilemma, Harvard published a definition of "*Irreversible Coma*" in the *New England Journal of Medicine* on 5 August 1968, coining the term "brain death".

Despite that, Ake Senning in Zurich, who had performed the first two heart transplantations in Switzerland, was accused by the family of one of the donors of killing their son. The Supreme Court of Switzerland acquitted Senning of the charges only 17 years later, meaning that the heart transplantation program could only restart in 1985.

In hindsight, the question of responsibility arises for approximately 300 patients who did not benefit from a heart transplant and subsequently passed away. Should accountability lie with the donor›s family, their lawyers, the judiciary, the Ministry of Justice, or Parliament? These entities were perceived as myopic and sluggish in their responses.

Autonomy

On 22January 1973, the U.S. Supreme Court ruled in favour of Roe v. Wade's lawsuit against Dallas County's restrictive abortion law, which prohibited women from obtaining abortions according to their wishes. The Court's verdict established that state laws could not limit a woman's right to obtain an abortion during the first trimester of pregnancy.

To comply with the U.S. Supreme Court's ruling, states amended their restrictive abortion laws, leading to a significant political debate on abortion. The 1992 Casey case of Planned Parenthood added to this controversy by affirming a woman's right to abortion until foetal viability. Foetal viability, which can occur as early as 23-24 weeks due to medical advancements, marks the point at which the foetus is recognised as a person under the U.S. Constitution, as only then can it survive independently outside his mother's womb.

The Dobbs case, decided on 24 June 2022, overturned the constitutional right to an abortion, thereby allowing the government to regulate and restrict access depending on the stage of pregnancy. As a result, abortion rights are now defined on a state-by-state basis, returning to an unprecedently confusing situation and leaving numerous practical questions unanswered. The European Union strongly criticised the decision.

Vegetative State

On 14 April 1975, 21-year-old Karen Ann Quinlan attempted suicide by ingesting a mixture of barbiturates, Valium, and alcohol. She was admitted to the emergency department and was put on mechanical ventilation. Following several months in a *persistent vegetative state*, her parents requested that she be taken off the respirator, but the hospital lawyers and doctors refused. The case went to court, and a decision was made to discontinue the use of the respirator. However, Karen was gradually weaned from the machine and ultimately breathed unassisted for the remainder of her life. Although she never regained consciousness, she survived for ten years in a nursing home. Such cases, which can persist for up to thirty years, are well-documented and have been subject to legal proceedings in various countries. Despite this, no country has yet enacted legislation that addresses the decision-making responsibilities of physicians in these cases. Consequently, this issue remains an ongoing concern.

Right to Die

On 25 February 1990, at age 26, Terry Schiavo suf-

fered a cardiac arrest at her home in St. Petersburg, Florida. She was successfully resuscitated but sustained severe brain damage from oxygen deprivation and was left comatose. Eight years later, her husband petitioned the Florida Court to remove her feeding tube. The court ruled that Schiavo would not have wanted life-prolonging measures, and her feeding tube was initially removed on 24 April 2001, only to be reinserted several days later. Schiavo's parents disputed her husband's assertions and challenged Schiavo's medical diagnosis, advocating for continuing artificial nutrition and hydration. The widely publicised and protracted series of legal challenges led by her parents, which ultimately involved state and federal politicians up to the level of President George W. Bush, caused a seven-year delay before the feeding tube was ultimately removed. Schiavo died a few days later.

Life versus Dignified Death

On 5 October 1992, after a heavy car accident, an 18-year-old pregnant woman was admitted to the emergency department at Erlangen (D) after a serious car accident, requiring intubation. Half of her face and brain were completely destroyed and, three days later, she was diagnosed with brain death. Her unborn baby was 12 weeks old and still alive, with the father unknown. Her parents opted to remove their daughter from the respirator, but the hospital disagreed and proceeded with intensive treatment. Subsequently, Julius Hackethal filed a lawsuit against the hospital physicians. Immediately, on 16 October 1992, the court in Hersbruck decided that the right of the baby to live is stronger than the mother's right for a dignified death. The mother's body served as an incubator for the infant, which was ultimately delivered stillborn three months later.

In this case, the hospitalisation costs (approximately 200,000 euros) heavily influenced the grandparents' decision, as they were unable to afford the treatment for their deceased daughter. It was evident that no insurance policy would cover the expenses for treating a deceased individual, and a foetus was not insured. Consequently, the grandparents were responsible for covering the costs themselves. Ultimately, when the state agreed to cover the expenses, the grandparents acquiesced.

Euthanasia

In December 1974, Professor Urs Haemmerli, Director of a major Internal Medicine Department in Zurich (CH), was removed from his position for substituting water for liquid food in patients with complete senile dementia. The Haemmerli case followed the 1973 Postma case in the Netherlands, where a physician was convicted for facilitating the death of her mother following repeated and explicit requests for euthanasia. The intense discussions in the Canton of Zurich resulted in a referendum on 25 September 1977, which decided, with 203.000 pro votes against 145.000, that: *"Euthanasia by request of terminally ill patients should be allowed"*. It was the first law in Europe to legalise active euthanasia. Switzerland has allowed assisted suicide since 1942, while the Netherlands passed the Termination of Life on Request and Assisted Suicide Act in April 2001.

Extracorporeal Fertilisation

The first successful in vitro fertilisation (IVF) birth took place on 25 July 1978. The baby's mother had previously experienced ectopic pregnancies, which caused damage to both of her fallopian tubes and prevented natural conception (Jonsen, 2000). While this breakthrough was initially viewed as miraculous, bioethical concerns arose as the procedure's indications were expanded. The Catholic Church eventually prohibited IVF, but its benefits for infertile couples drove market demand. To address emerging issues, parliaments worldwide passed precise regulations. However, laws can only resolve existing problems.

Surrogate Motherhood

Despite Greece's detailed legal regulations on extracorporeal fertilisation, a specific case was not covered. In August 2018, a court in Athens granted permission to a 31-year-old Polish woman residing in Greece to carry the in vitro fertilised egg of a British couple living in the UK. This transborder regulation made possible what would have been impossible in the UK. This raises questions about the child's nationality, whether the parents need to adopt the child in their country, and the possibility of such a procedure after Brexit.

Other Problems

Numerous ethical challenges, including the development of artificial hearts, treatment of infectious diseases such as HIV and Ebola, expensive cancer drugs, limited medication availability, reproductive medicine, end-of-life care, sexual relations, healthcare quality and efficiency, access to care and waiting lists, privacy concerns, conflicts of interest, longer lifespans, medical errors, and medical research, require ongoing attention from ethical committees. Furthermore,

as new technologies and online business practices emerge, medical ethics in the digital age must also be considered. These challenges are not limited to the past, and it is expected that the list of unresolved issues will continue to grow.

Epilogue

The internet's capacity to share an unlimited amount of data globally has been compared to the transformative impact of writing and Gutenberg's printing press. It took four millennia for the invention of writing to lead to Gutenberg's press, and another 500 years for electronic access to knowledge to emerge. The rate of medical knowledge doubling has accelerated from every 50 years in the 1950s to every 2 months today and is projected to double monthly by 2030. The exponential speed of future technological advancements will likely exacerbate ethical challenges.

Every day, major hospitals face ethical problems that require solutions from physicians themselves, their department's ethical committee, or their hospital. However, these decisions are often difficult and can be conflicting. Evidence-based protocols do not always provide the answer as ethical problems arise frequently, and exceptions that create new ethical problems are not included in these protocols. In situations where no similar cases exist to refer to, physicians must devise individual solutions, and it is impossible to predict what ethical problem may arise the following day. Consequently, one is often alone in addressing these issues, and future generations cannot rely on our experiences to provide them with guidance. While we can document solutions to similar situations, it remains uncertain whether they will be useful in solving future ethical dilemmas.

The sole contribution we can impart is a selection of the timeless ethical values bequeathed to us by our forebears, which we have adapted to our age. Amongst these values are the patient's safety, respect for their autonomy, avoidance of harm and promotion of well-being, thorough disclosure of information and informed consent, confidentiality, impartiality towards all patients regardless of gender, race, religion or beliefs, humane treatment, pain relief, fairness, and concurrently, respect for the rights of all humans, animals, and nature. It is imperative that these values are always kept at the forefront of our minds. These will enable our students, successors, nursing staff, theologians, lawyers, sociologists, psychologists, administrative personnel, and ethical committees to find common ground and prevent conflicts with patients, their families, or society. The cultivation of self-control, constructive criticism of our decisions, and quality control shall remain our duty forever.

Nonetheless, the paramount matter that shall consistently feature on the agenda is speaking truthfully with patients and their families. It is not always necessary to divulge the brutal reality, but veracity must be always upheld. Even more crucial is our adept communication with our patients and their families. We ought to steer them towards a sound decision whilst respecting their choice. This is the sole way to avoid major conflicts.

ΠΕΡΙΛΗΨΗ

Βιοηθική - Καταβολές και Γέννηση* - Πανηγυρική Ομιλία

Στέφανος Γερουλάνος

Βιοηθική είναι η μελέτη των ηθικών ζητημάτων που προκύπτουν από τις εξελίξεις στη Βιολογία, την Ιατρική και το περιβάλλον μας. Ο παλαιότερος υποκλάδος της Βιοηθικής είναι η Ιατρική Ηθική, καθώς οι πρωιμότερες αναφορές στο θέμα υπάρχουν στα πρώτα γραπτά από την Αίγυπτο και τη Μεσοποταμία, κατά την 3η χιλιετία π.Χ. Επί 2.500 έτη, ο «Ιπποκρατικός Όρκος» αποτελούσε τον ακρογωνιαίο λίθο των κανόνων ηθικής. Με την έλευση του Χριστιανισμού, αυτοί οι πρώιμοι ηθικοί κανόνες επεκτάθηκαν και έγιναν αποδεκτοί σε όλο τον Δυτικό Κόσμο. Ωστόσο, ο ίδιος ο όρος Ιατρική Ηθική επινοήθηκε μόλις το 1803 από τον Thomas Percival, για να περιγράψει τις υποχρεώσεις και τη αναμενόμενη συμπεριφορά των επαγγελματιών και των ιδρυμάτων του τομέα της υγείας. Δυστυχώς, οι μεταγενέστεροι κώδικες ηθικής δεν προέβλεπαν νομικές επιπτώσεις. Ως εκ τούτου, κατά τη δίκη της Νυρεμβέργης στους ναζιστές ιατρούς επεβλήθησαν ποινές μόνο για θανάτους ασθενών, ενώ όλες οι άλλες αποτρόπαιες πράξεις τους παρέμειναν ατιμώρητες. Είναι αξιοσημείωτο ότι καμία χώρα παγκοσμίως δεν είχε νομοθεσία για τη δίωξη των ιατρών που είχαν παραβιάσει τον όρκο τους. Μετέπειτα, ο Κώδικας της Νυρεμβέργης και η Διακήρυξη της Γενεύης προσέφεραν απλώς κατευθυντήριες γραμμές για τους ιατρούς. Καθώς ο ρυθμός διπλασιασμού των

ιατρικών γνώσεων επιταχύνεται, από κάθε 50 έτη στη δεκαετία του 1950 σε κάθε 2 μήνες σήμερα, έχουν προκύψει νέα ηθικά διλήμματα που δεν μπορούν να επιλυθούν με βάση τις τρέχουσες συστάσεις. Η ανακάλυψη γονιδίων, η κλωνοποίηση, η γενετική χειραγώγηση, τα κριτήρια επιλογής για χρόνια αιμοκάθαρση και μεταμόσχευση, τα αντισυλληπτικά για τον έλεγχο των γεννήσεων, η άμβλωση, ο εγκεφαλικός θάνατος, η φυτική κατάσταση, το δικαίωμα στο θάνατο και η ευθανασία, μαζί με την εξωσωματική γονιμοποίηση, την παρένθετη μητρότητα, τις σεξουαλικές σχέσεις και πολλά άλλα ηθικά ζητήματα, έχουν καταστεί σημαντικές πηγές ανησυχίας που θα πρέπει να επανεξεταστούν στο μέλλον. Αυτό που θεωρείται αποδεκτό σε μια χώρα, μπορεί να εξακολουθεί να απαγορεύεται σε μια άλλη. Οι νομικοί κανονισμοί εφαρμόζονται συχνά χρόνια μετά την εμφάνιση των ηθικών προβλημάτων, ενώ στο μεσοδιάστημα πολλοί ιατροί έχουν βρεθεί φυλακισμένοι λόγω αυτής της χρονικής απόκλισης. Με την έλευση της Βιομηχανικής Επανάστασης, την ατομική βόμβα, την ανακάλυψη γονιδίων, τη γενετική χειραγώγηση και πολλές ακόμα εξελίξεις, η Γη έχει εισέλθει σε μια νέα γεωλογική εποχή, γνωστή ως «Ανθρωπόκαινος». Καθώς δεν μπορούμε να προβλέψουμε τι θα ακολουθήσει, είναι επιτακτική ανάγκη να μεταλαμπαδεύσουμε στους φοιτητές μας και στις μελλοντικές γενιές, τις διαχρονικές ηθικές αρχές που έχουμε κληρονομήσει από τους προγόνους μας, προσαρμοσμένες στην εποχή μας. Οι αξίες αυτές περιλαμβάνουν την ασφάλεια των ασθενών, τον σεβασμό της αυτονομίας τους, την αποφυγή βλάβης και την προώθηση της ευημερίας, τη λεπτομερή ενημέρωση και τη συναίνεση κατόπιν ενημέρωσης, τον σεβασμό της εμπιστευτικότητας, την αμεροληψία προς όλους τους ασθενείς ανεξάρτητα από το φύλο, τη φυλή, τη θρησκεία ή τις πεποιθήσεις τους, τη θεραπεία, την ανακούφιση από τον πόνο, τη δικαιοσύνη και ταυτόχρονα τον σεβασμό των δικαιωμάτων όλων των ανθρώπων, των ζώων και της φύσης. Αυτές οι αξίες πρέπει να αποτελούν πάντα προτεραιότητα, καθώς είναι αυτές που θα επιτρέψουν στους μαθητές και τους διαδόχους μας, στο νοσηλευτικό προσωπικό, τους θεολόγους, τους δικηγόρους, τους κοινωνιολόγους, τους ψυχολόγους, το διοικητικό προσωπικό και τις επιτροπές δεοντολογίας να βρουν κοινό έδαφος και να αποτρέψουν τις συγκρούσεις τους με ασθενείς, τις οικογένειές τους ή την κοινωνία. Η άσκηση αυτοελέγχου, η εποικοδομητική κριτική των αποφάσεών μας και ο ποιοτικός έλεγχός τους θα παραμείνουν καθήκον μας για πάντα.

Λέξεις Κλειδιά: *Βιοηθική, Όρκος του Ιπποκράτη, Δέκα Εντολές, Δίκη της Νυρεμβέργης*

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