

Overview

Medicine – Teratology - Mythology – History – Ethics

Prepared Minds – Past and Future COM 2007 W. Wertelecki, M.D.

Introduction.

“Arts and Sciences” is often a euphemism because rarely are these domains well integrated by academic programs. Medicine in particular requires a good grasp of both. Furthermore, the realization that Ethics is an integral part of Medicine is also vital.

These Comments and Notes are integrated with images and short statements that concern Medical Genetics and Teratology and with an emphasis on ancient observations and recent scientific discoveries and how these were conveyed by the outstanding “prepared minds” that became pioneers.

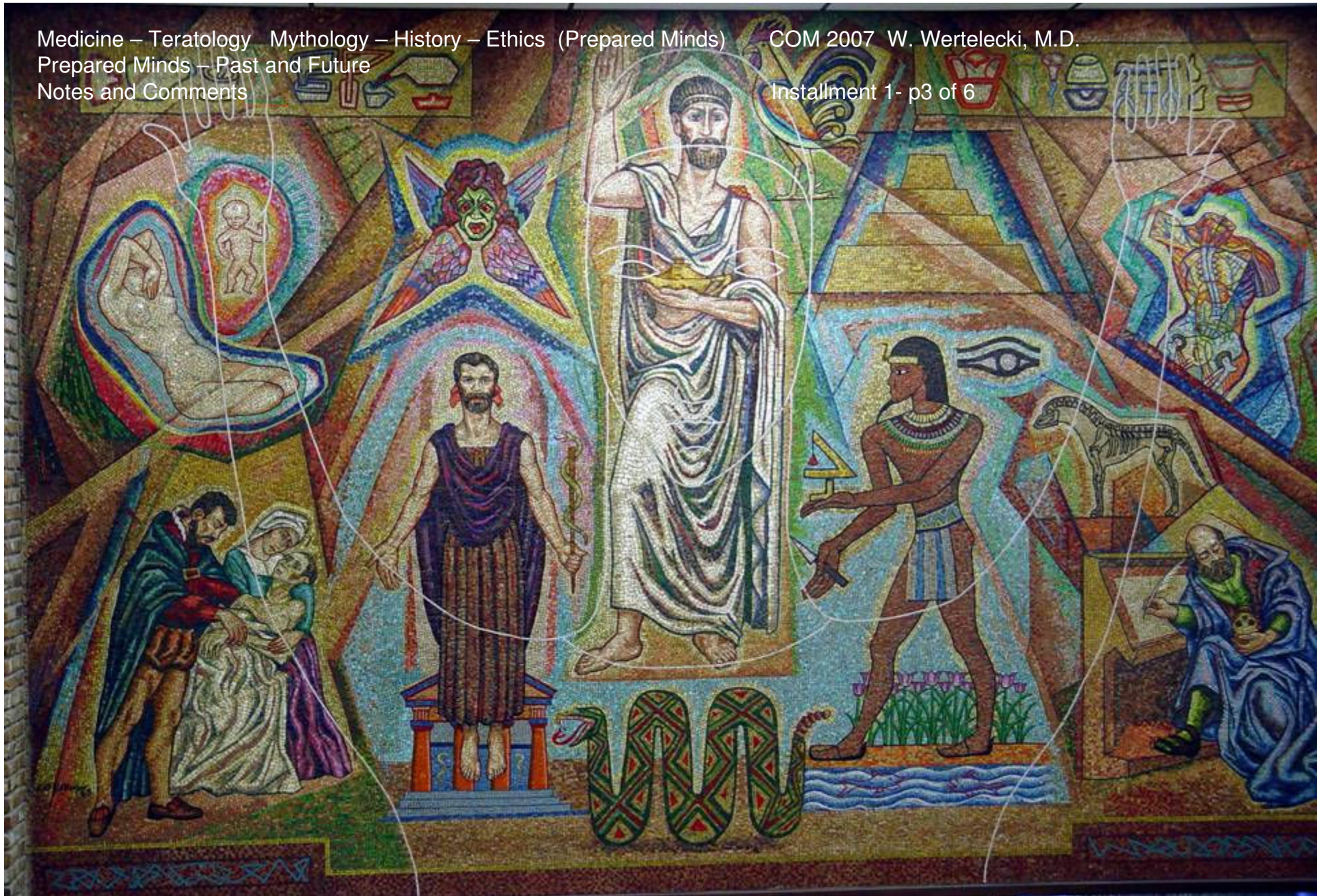
The goal is to show that having a “prepared mind” can advance the understanding of human life and health. Each “physician” has the duty to “cure” but also has the duty to contribute to the advancement of medical sciences as a tribute to those who preceded us. Physicians who value clinical observations and have a “prepared mind” will discover an inexhaustible fountain of new knowledge.

Apollo – Harmony – Humanism - Hippocrates – Professional Ethics

The following figure, a magnificent mosaic by Conrad Albrizio, located in the lobby of the University of South Alabama University Hospital, depicts a synthesis of the History of Medicine. The mosaic shows that Medicine is anchored in myths as well as sciences and ethics. Medicine is a “scientific and moral discipline” (licensed by society), which is central to mankind (humans are the sole animals who seek “healing” from divinities and from healing priests, some of whom became “medicos” or physicians). The central figure is Hippocrates, the personification of Medicine and the oath outlining the duties of physicians. To the right stands Aesculapius (son of Apollo, the deity of “harmony” - the essence of “health”) and above floats an oracle (voice of gods) or in medical parlance, prognosis (at best, a statement of probability). In Medical Genetics-Teratology, prognostic pronouncements most often focus on developmental and reproductive “fitness”. This complex process to inform patients and their relatives of the medical and reproductive implications of “genetic-teratologic” condition has become known as “genetic counseling”, a term that arguably is ambiguous (genetic counselors often are not physicians and can not assume the responsibility for the accuracy of the diagnosis triggering the process). In any case, genetic counseling is of vital importance for those receiving care for conditions of genetic-teratology etiology. (more: http://www.ibis-birthdefects.org/start/g_fraser.htm) (continued)

Hippocrates - Imhopt - Aesculapius – Chiron - Chiropractic - Surgery
Darwin - Galton - Biometrics - Morphometry - Dysmorphology

To the right of Hippocrates stands Imhopt (Egyptian equivalent of Aesculapius) and nearby are shown measuring tools (a reminder that “scientific medicine” greatly relies on “biometrics”, a discipline pioneered by F. Galton, a cousin of C. Darwin - from “biometrics” emerged bio-statistics, population genetics, epidemiology and specialized methods to assess probabilities and risks). Imhopt also holds a scalpel, an emblem of surgery (implying dexterity or a “handy-craft”) which Aesculapius learned from the centaur Chiron along with other “manual crafts” or chiro-practices (to this day, manual labor is a demeaning term linked to ideas of “mindless” labor). Aesculapius personifies both the artisanship of surgery and the art of medicine. However, until the recent era, European surgeons were excluded from medical fraternities (note that some colleges persist using “Physicians and Surgeons” rather than “College of Medicine”). Further to the right, Galen is shown examining a skull (morphometry) and to the left, Vesalius, a pioneer among other early morphologists (anatomist is a morphologist who relies on “ana-lysis” of structures by di-sections - “ana” denoting “separate” or “away from”). Clinical geneticists rely on “dys-morphology” (dis-ease, dis also denoting “separate” or “away from”) denoting “ab-normal” or away from the “norm” proportions or forms (note that “ab” as in abduct also implies away from the “middle” and that those with a large abdomen may be abducting or putting away excessive amounts of food). (more in: <http://www.consultsos.com/pandora/in290304.htm>)



Note: eye=vigilance; snake=renewal (shedding of skin); gravity, gravidity; lamp, enlighten ...

Warkany – Teratology – Teratogen – Birth Defects – Eugenics – Euthanasia

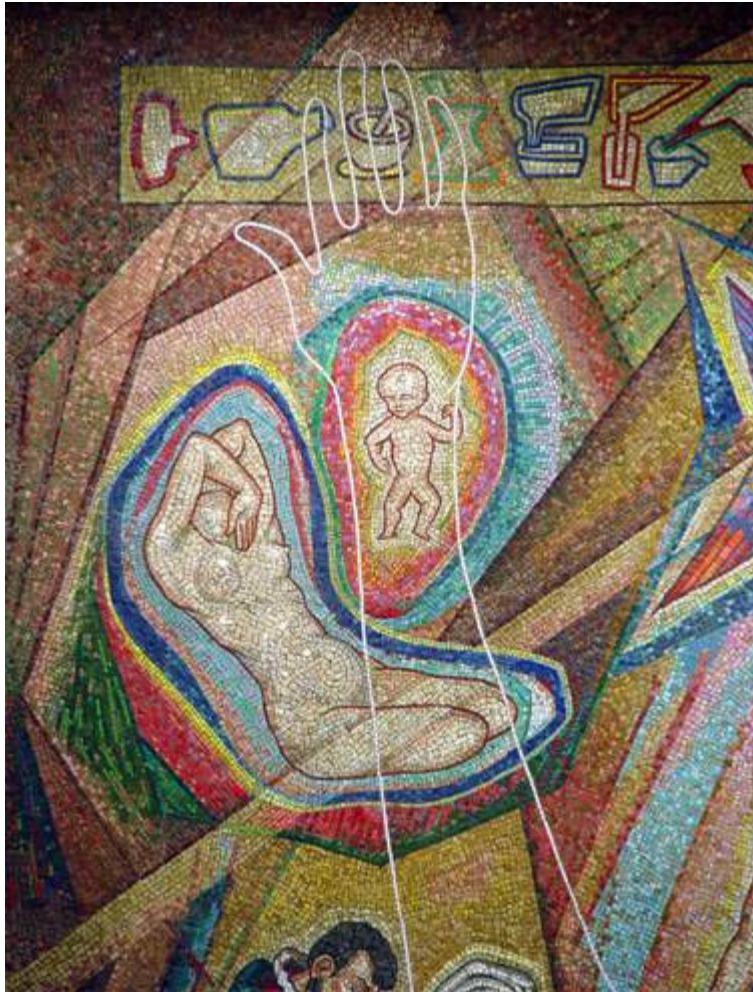
Fertility, birth and normal child development remain a central concern of the human family. Until the pioneering studies of Josef Warkany, the unborn was considered to be “safe” from environmental assaults. By implication, “birth defects”, particularly “idiocy” were due to “parental flaws”, a view reinforced by the familial clusters of such events. With the emergence of “genetics”, some enthusiasts became expansive and advocated policies of social “eugenics” which degenerated into political programs culminating in “euthanasia” (more about current legal euthanasia of malformed infants is given later).

Warkany sustained that regardless of “clever accountants” and “cost-benefit” calculators, it is the price of a civilized society to care for the mentally “deficient”. Nonetheless, Warkany pointed out that society benefits more from studies of the “abnormal” than it spends on their care (most human genes were mapped following clinical observations). Warkany was among the pioneers who prevailed on the US government to establish University Affiliated Centers (UAC) for the study of Developmental Disabilities – an early UAC was established in Cincinnati where “gene therapies” emerged for disorders that formerly were lethal. The marketing of these “cures” proved to be “curative” and quite profitable for corporations who market them (Genzyme, etc.). (continued)

Warkany - Birth Defects – Teratogens – Micronutrients (vitamins, iodine) - Alcohol

Josef Warkany had a “prepared” mind (more later). When Hitler came to power in 1933, Warkany left Vienna for Cincinnati (three years later, Germany invaded Austria). During the war, Warkany discovered that micro-nutrients (vitamins) can cause malformations as does maternal iodine deficiency (goiter). Following the Thalidomide disaster in Europe (a teratogenic sedative that damaged thousands of infants who were born with serious malformations), the FDA required that new drugs be proven safe for the unborn. Concurrently, Warkany prompted the formation of the American Teratology Society and became its first President. Warkany also persuaded the March of Dimes to shift from the “Polio – March of Dimes” to become the “Birth Defects - March of Dimes” (poliomyelitis was being vanquished by Salk and Sabin vaccines (more in Am. J. Med. Gen. 33:522-536, 1989 or <http://ibis-birthdefects.org/start/dream1.htm>))

“Birth Defect” is a term invented by lawyers of the March of Dimes to embrace all abnormalities due to causes present at birth that result in altered function or structure, manifested at any age, are sporadic or familial in nature and due to genetic or environmental factors. (Under this broad definition, “birth defects” include prematurity, errors of function, metabolism and structure – mental retardation, PKU, Cystic Fibrosis, congenital rubella, neonatal HIV, alcohol spectrum disorders, malformations, Marfan s., Neurofibromatosis, etc.). (more in: <http://www.ibis-birthdefects.org/start/birthd.htm>) .



Teratogen is any agent that can destroy an embryo or disrupt its development (in that sense, note that human development is incomplete at birth and continues until adulthood). For example, alcohol is a major teratogen that can, among other effects, disrupt brain development, both before and after birth.

There are several Teratogen Information Systems (TIS) who belong to an organization (TERIS).

more in

<http://www.ibis-birthdefects.org/start/terat.htm>