

Euclid's makes it both more interesting and more memorable to the student.

NOTES

- ¹ Quotations here and elsewhere are taken from R. Catesby Taliaferro's translation, published in Vol. 11 of the *Great Books of the Western World* (Chicago, 1952).
- ² I call this theorem analogous rather than the same because its statement requires principles not necessary for the enunciation of the original theorem. If the circle were essentially a conic section, it would possess the property as a limiting case of the ellipse's property. Since the circle is prior to the conic sections, the reasons why the Pythagorean Theorem holds for it are other than the reasons why it holds for the conics.
- ³ In the case of the hyperbola, the figure on the radius EA is equal to the difference between the areas on the ordinate and on the line between the center and the ordinate. As is always the case, addition and subtraction are interchanged when one moves from the ellipse to the hyperbola. I shall say no more about the hyperbola. An analogous property also belongs to the parabola (see Prop. 42).
- ⁴ Let $A = sq$ on the radius, $B =$ the other square, $C =$ rect on the ordinate $= (u/t)A$, and let $e/f =$ any ratio. We have proven that $A - B = C$. Thus, $(e/f)A - (e/f)B = (e/f)C = (u/t)(e/f)A$. The first two terms represent similar figures, either rectangular or parallelogrammic. The third will be an equiangular parallelogram obtained by compounding the first with the ratio u/t .

THE PHYSICIAN: A NORMATIVE ARTIST
A Brief Analysis

Herbert Ratner, M.D.

NOT all M.D.s are physicians. Some leave the field of medicine entirely. Others remain in medicine in diverse capacities, some proximate, some remote to the work of the physician: medical historians and philosophers, teachers, administrators, researchers and so on. Whereas the above named possessors of M.D. degrees do not need a license to carry on their work, the physician does.

A confusion arises when medicine is defined as both a science and an art for it implies that the physician functions simultaneously as scientist and artist. This is dangerous. It may confuse a patient with a guinea pig. A common belief is that art substitutes for scientific knowledge presently lacking—that the greater the scientific knowledge, the less relevant the art; that ultimately art will not be needed when scientific knowledge is complete. Meanwhile, art is equated with bedside manner, caring, compassion and guesswork which physicians of previous generations were thought to employ as a substitute for knowledge that awaited a later age.¹ But no one who knows anything about the history of medicine should be so arrogant as to believe that present scientific knowledge is free of error and myth. Witness the frequent withdrawal of highly-touted drugs, such as thalidomide and Mer-29, and multiple outbreaks of iatrogenic disease.

Dr. Ratner, a philosopher of medicine, is Visiting Professor of Community and Preventive Medicine, New York Medical College, and editor of Child and Family. This article was originally published in Listening: Journal of Religion and Culture, 18:181-184, 1983.

Seventeenth-century William Harvey, the father of modern physiology, sharply states the distinction between scientist and artist; "...nam ut ars circa facienda, ita scientia circa cognoscenda, est habitus... /...for as art is a habit whose object is something to be made, so science is a habit whose object is something to be known..."² This distinction between a theoretic science which distinguishes between the true and false as it seeks a universal, and a productive art which distinguishes between the good and the bad as it decides on an action is a timeless distinction that extends back at least to Aristotle.³ It delineates two tendencies of the human mind: to wonder and to create. The former leads to the knower or scientist; the latter to the maker or artist.

The *knower's thought process* is along the line of a demonstrative syllogism. It starts with principles (many from inductions and experiments) which lead to a conclusion that terminates within the knower, e.g., that blood circulates. Exemplary is Harvey's logical demonstration of the circulation of the blood.⁴ The *maker's thought process* is of the nature of a practical syllogism. It starts with an end to be achieved and directs what is to be done by resembling knowledge so as to arrive at an individual action that terminates outside oneself, e.g., a prescription. In contrast to science, to quote Hippocrates, "the Art descends straight down from a consideration of the common characteristics of a flux to a particular case."⁵

Whereas the goal of the physiologist is to establish causal knowledge of the workings of the body that produce health, the goal of the physician is to restore health when it is absent, and, when it is present, to perfect health and prevent disease. The physician uses his knowledge of physiology (and other medical sciences) to accomplish this. Though the terms *physiology* and *physician* both stem from *phusis*, nature, this does not make the physician a physiologist, nor the physiologist a physician. As Aristotle observed:

Indeed we may say of most physical inquiries [physiological], and of those physicians who study

their art philosophically, that while the former complete their works with a disquisition on medicine, the latter usually base their medical theories on principles derived from Physics [nature]. (436^a 20-436^b1, Oxford Translation)

In distinguishing *artist* from *scientist*, it should be seen that there is a radical difference between a veterinarian treating a dog in a clinic, and a research worker studying a dog in a laboratory. In the former, the dog's health is paramount; in the latter, it is irrelevant. The former is for the sake of the dog; the latter for the sake of science. Parallel is the difference between a physician struggling to keep a premature baby alive and a laboratory worker doing a terminal experiment on an aborted, but live, premature baby. The physician who does not see the difference, who permits his scientific interest to override the patient's interest, is a physician in name only, and dangerously confused.

The difference, however, is real. The researcher, a *knower*, is analogous to the astronomer; whereas, the physician, a *maker*, is analogous to the navigator who uses astronomy to make his port. A similar contrast is seen with the physicist and the engineer. The former is a knower or *scientist*, the latter, a maker or *artist*. The term, *artist*, of course, is frequently misleading in that it is identified with the fine arts to the exclusion of the servile arts.

Of particular interest is the maker or artist who deals with living things. When a carpenter leaves his work, nothing further happens to his product. When he returns, he starts from where he left off. He is an artist who operates on passive materials. This contrasts sharply to the artist whose work is with the living. When a physician leaves his patient, much can happen: the patient may take a turn for the better or for the worse. This is because the physician is an artist who *co-operates* with the dynamic homeostatic forces of nature whose goal, health, is the same as that of the physician. Some other cooperative artists and their opposite scientists are the farmer and the botanist, the eugenicist

and the geneticist, the teacher and the grammarian, the preacher and the theologian.

The Aristotelian-Scholastic tradition is rich in texts elaborating on the concept of cooperative art, e.g.:

It must, however, be observed, in accordance with Aristotle's teaching in 7 *Metaphysics*, that there are some arts in which the matter is not an active principle productive of the art's effect; such is the art of building, since in timber and stone there is not an active force tending to the production of a house, but merely a passive aptitude. On the other hand there is an art the matter of which is an active principle tending to produce the effect of the art; such is the medical art, since in the sick body there is an active principle conducive to health. Consequently the effect of an art of the first kind is never produced by nature but is always the result of the art. But the effect of the art of the second kind is the result both of art, and of nature without art; for many are healed by the action of nature without the art of medicine. In those things that can be done both by art and by nature, art imitates nature; (2) for if a person is taken ill through a cold cause nature can cure him by heating. Now the art of teaching is like this art... C.G.2:75

The text of Aristotle referred to by Aquinas (2) is from *Physics* 2:8 199^a9-19 and has as its key sentence "generally art partly completes what nature cannot bring to a finish, and partly imitates her..."

Accordingly, the art of medicine consists of doing for nature what nature would like to do for herself if she could. The physician ministers to nature and is nature's assistant. In the case of childbirth, the physician is primarily a midwife not unlike the

Socratic midwife. Because nature is the prime physician, quackery thrives. In truth, we are all quacks in the sense that we frequently handicap nature in the cure, yet get the credit for a cure which doubly belongs to nature. We suffer from activism.⁶ The hardest thing to do in medicine, and this is partly the public's fault, is to do nothing, which is, in many instances, the quickest way of bringing about a cure. A fringe benefit is that it avoids iatrogenic disease.

Medicine, then, is a cooperative art ministerial to nature, and the better we comprehend nature, her goals, her workings, her norms, the better we know when and how to intervene and when not to intervene. Underlying this view of nature as a paradigm (and more than this, as a major guide to life in general) is the acceptance of nature as a storehouse of perennial wisdom that transcends the passing beliefs and myths of practicing physicians brainwashed by the propaganda of drug companies, voluntary and governmental health agencies, and media-induced hypochondriasis. The most wholesome aspect of the consumer revolt is its return to nature: natural foods, natural delivery, natural infant feeding and natural sex.

Other factors related to understanding the physician as a normative artist which have not been discussed are the role of experience, of prudence and of medical ethics. The latter should conform to the ends of medicine. Nor has the importance of this concept for medical education been discussed.⁷

Notes

- ¹ Pickering, Sir George. *Therapeutics: Art or Science J. Amer. Med. Assoc.* 242:649-653, 1979.
- ² *The Works of William Harvey, M.D.* (London: Printed for the Sydenham Society, 1847). Translated from the Latin by Robert Willis, M.D. *Anatomical Exercises on the Generation of Animals* (1651): Introduction, pp. 156-7.
- ³ *Ethics* 6:4.

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- ⁴ Ratner, H. William Harvey, M.D. Modern or Ancient Scientist? *The Thomist*, Vol. xxiv No. 2, 1961.
- ⁵ Quoted by Celsus, De Med. Pro 74 Loeb Classics.
- ⁶ Ratner, H. The Donald McDonald Interview on Medicine. The American Character Series of the Center for the Study of Democratic Institutions, Robert Maynard Hutchins, President, 1962. Reprinted in *Child and Family* 11:4-14; 100-110; 276-286; 363-375, 1972.
- ⁷ Ratner, H. Deficiencies in Present-Day Medical Education. From a National Family Health Conference Conducted by the American Academy of General Practice Foundation, *GP* 332: 185-192.

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