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Medicine and Technology at the Crossroads

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In his book *Philosophy at the Crossroads*, Professor Edward G. Ballard defines philosophy in the following fashion:

Philosophy as the interpretation of archaic experience, then, is the art which seeks, in the light of a principle, to disengage the intelligible aspects of the compulsion which has precipitated the moral radical transitions in the human experience.¹

Philosophy is concerned, I take it, with the unveiling and the critical examination of radical experiences (archaic) which usher in a new epoch. Philosophy is concerned with crossroads. Also philosophy is concerned with the world that is passing away, and the new world that is coming to birth. To say this is to echo Heidegger: "Being is worldmaking." Therefore, philosophy seeks to dialogue with Being about the world that is *both* coming to unconcealment, as well as the world that is concealed. The unfolding of Being as the power of world-making takes place in historical epochs. History — time and philosophy — and language are ever in search of Being and its ways.

By world or epoch I mean a given way of understanding, valuing and experiencing Being. There are at the crossroads of each epoch, crisis events or moments, for example, the passage of the individual from adolescence to adulthood, or the transition in language usage from mythical and poetic to *logos* or rational expression in the time of Plato. Also, the shift in cosmologies from the Ptolemaic to the Newtonian to the views of Einstein brought a new way of understanding man and his place in the cosmos. Each of these crises or archaic experiences were times of judgment and testing. It is a time of danger because the old gods are dying and the new have not yet appeared. Until they do appear, chaos and confusion threaten to overwhelm.

With this in mind, I shall attempt to examine a highly structured aspect of human behavior — medicine. It will be the thesis of this essay that in the 19th century a new epoch in medicine came into being. Through the introduction of specific technology, most especially the stethoscope by Rene Laennec, a crossroad was reached and *crossed*. A new epoch was born, and with it, a new world of knowledge, values

and social relationships. There was no going back. In 1816 a new way of being-in-the-world was coming to light. Today, we are the children raised in that epoch. We are the anonymous ones who have resulted from the marriage of medicine and technology. But I am getting ahead of my story, for such anonymity was not always the case.

I shall present a brief historical overview of medical practice from the 17th century up to our own day. Special emphasis will be placed on issues of medical epistemology, that is, what comes to be accepted as relevant data for medical diagnosis. Also the shifting of focus as to *how* the data is gathered. In addition, of great concern is the change in *sources* of information. We will witness a shift from the verbal story *by* the patient to the physician describing *to* the patient his condition. There is a movement from the patient's presentation and interpretation (mythic) of his illness, to a more rational and quantifiable (*logos*) collection of data. The result is a profound restricting of the identities of patient *and* physician. I will end this essay, ever so gently, by advancing some suggestions for a more healing medical crossroad.

Historical Overview

From the beginning of the 17th and through the 18th centuries, the physician relied on three techniques to determine the nature of illness: the patient's physical appearance and behavior, the rarely used manual examination of the patient's body, and the patient's statement in words which describe his symptoms. The greatest of these is the last one — the patient's subjective narrative of the symptoms, course of the illness, and above all, the *personal meaning* of his illness.² The physician recognized that illness evokes introspection and speculation as to its genesis and likely outcome. Illness can yield a deeply personal statement about the patient as a unique self. The physician, through Socratic dialogue, was able to gain valuable insight into the patient, and the physician's own self as well.³

A typical example of such narrative or dialogue was recorded by Dr. John Symcotts, an English physician, on July 1663. His private casebook can be taken as typical of medical practice in the 17th century. Dr. Symcotts records the following:

Mistress Christian Tenum of Cambridge, fifty years of age, would sleep so little that for fifteen years she had scarcely two and rarely three hours sleep each night. For twenty years she had a pulsing of the arteries and when she first lay down to rest many images of things passed before her eyes. Ringing in the ears. She felt as if a heavy burden or weight was continually pushing down upon the top of her head. She had a feeling of intense heat at the back of the head. She was usually delirious once a day. Pain in the left abdomen. In colic a concentration of wind. Weakness of the back. During her menses (which had stopped five years earlier) her face swollen, and it was followed by several stools. Three years ago she was stricken with paralysis and from this she still has a numbness of the head. A continuous cough.⁴

The significance of the above citation is that Mistress Tenum is the chief witness to and interpreter of the events of her illness. She is in control of the memories which she manipulates as she sees fit. Mistress Tenum is not an objective reporter, but a living witness to her own illness and its meaning. Dr. Symcotts is drawn or lured into the human drama of her illness. Above all, Dr. Symcotts accepts at face value her interpretation, and never becomes the detached observer. There is no evidence that Dr. Symcotts tried to physically examine Mistress Tenum.

As I mentioned at the beginning of this section, the physician would focus on facial expressions, posture, tongue, skin color, and manner of breathing. He also examined the appearance of the blood, urine, and stools. The least employed method was the physical examination of the body. Such physical examination was limited to his sense of touch. He would feel the pulse for its quality, but not rate. Touch was used to estimate temperature. And on rare occasions, the physician would use touch to detect tenderness of abnormal masses. This touching was done quickly and only to tissues beneath the skin. It must be emphasized that the physician attached far less weight to the evidence obtained by his sense of touch than to the patient's narrative and his own visual observations. Professor Stanley Joel Reiser of Harvard writes, "The maintenance of human dignity and physical privacy placed limits on human interaction through touch, and in the seventeenth century this principle was adhered to in the relation of a physician to his patient. Only in relatively modern times have patients and physicians learned to accept physical intrusion upon the body as necessary to the diagnostic process."⁵

The locus of medical practice in the 17th and 18th centuries was the home — either the patient's or the physician's. The hospital was reserved only for those without economic means or family support. The hospital was the last resort, not the first. When the physician came to visit, often at great risk and inconvenience because of poor roads and robbers, this was the great *social* event of the year. The physician dined with the patient, and if necessary, stayed for several days. The consulting room of the physician was often in his home. The patient could room and board with the physician for weeks at a time. In many instances, the physician would prescribe through the mail. This is a great testimony to the doctor's general confidence in the ability of the patient to provide a valuable presentation of his illness.

The winds of change ushering in a new epoch were beginning to blow in the 18th century. Of crucial importance were the following two changes: physicians began to overcome the taboo about touching the body, and consequently began to perform autopsies with great seriousness. And secondly, in the performance of the autopsy, the physician found pathological lesions left by the disease which could be

correlated with the symptoms the patient had described. The physician came to accept manipulation of the body, not only after death, but also during sickness. This is not to say that all physicians stopped listening to the patient. In fact, the physician continued to rely on the patient's subjective narrative or story. But the seeds had been sown. In the words of Professor Reiser, "The practice of dissecting bodies to find physical evidence of disease began to transform some eighteenth-century physicians from word-oriented, theory-bound scholastics to touch-oriented, observation-bound scientists."⁶

With the dying and rising of epochs, there seems to be a significant book that is central to the transition, for example, *On the Revolution of the Heavenly Orbs* by Nicolaus Copernicus which was significant in ending one epoch and giving birth to another. In philosophy, Rene Descartes' *On Method* opened a new world of understanding and valuing. So it is in the field of medical history, for in 1819, a young French physician, Rene-Theophile-Hyacinth Laennec, published his *On Mediate Auscultation*. This volume contained the most numerous and detailed accounts yet written of pathological lesions found in the chest at autopsy. The archaic or transitional experience was a new technique — mediate auscultation — which allowed the physician to detect chest disease in living patients by studying the character of the sounds produced by the damaged tissue.

Hippocrates was the first to develop the technique of auscultation. In his *De Morbis*, Hippocrates writes: "You shall know by this that the chest contains water and not pus, if in applying the ear during a certain time on the side, you perceive a noise like that of boiling vinegar."⁷ But physicians after Hippocrates largely ignored the ideas suggested in this passage. Even Laennec, early in his training, dismissed Hippocrates' ideas as erroneous. It was only later he was to see the wisdom of the father physician.

It was in 1816 at the Necker Hospital in Paris that Laennec, 35, made the fateful rediscovery. He was asked to examine a young female patient with a puzzling heart disorder. Her story and other signs of illness were inconclusive in the formation of a diagnosis. A colleague of Laennec, Gaspard Boyle, was in the habit of placing his ear on the patient's chest. This was not widely accepted because of the close physical contact; in addition, this patient was a female and a very young one at that. The insight came to Laennec, and with it the dawn of a new epoch in medicine, of applying physics to medicine.

Laennec reasoned that sound traveling through solid bodies becomes increased. He took a sheet of paper rolled into a cylinder, and placed his ear at one end and the patient's chest at the other. The sounds of the heart were clearly transmitted to him. Laennec went on to write concerning this event, "From this moment, I imagined that the circumstances might furnish means for enabling us to ascertain the character, not only of the action of the heart, but of every species of

sound produced by the motion of all the thoracic viscera."⁸ Laennec experimented with different materials; he finally settled on the instrument to be used in this new technique. The instrument was constructed from a rounded piece of wood, one foot in length and one and one-half inches in diameter, longitudinally perforated down the center to enhance its sound-carrying properties, and separable into two parts for convenient carrying. Laennec called this instrument the "stethoscope" from the Greek words for "chest" and "I view." For the next three years Laennec used his invention to examine the sounds of healthy and diseased patients. Upon death of the patient, an autopsy was performed to correlate the sound and the physical lesions. In 1819 Laennec published his three years of work and research in two volumes called, *On Mediate Auscultation*. In this work the other methods were criticized and shown to be ineffectual. The patient's story was irrelevant and unnecessary for a proper, precise diagnosis.

We are now at a new epoch. The stethoscope has helped create the objective physician — the physician who is no longer in need of the story the patient needs to tell. Diagnosis is now precise, objectifiable, and neat. In the words of Professor Reiser: "The physical characteristics of the illness and the changes they denote in tissues within the body dominate the narrative (now the physician's, not the patient's). We know little about the patient's sensations or thoughts. We know him as a physical being."⁹ The stethoscope became joined in the latter half of the 19th century with a matrix of other instruments: the ophthalmoscope (1850), laryngoscope (1855), x-ray (1895) and the electrocardiograph (1901), all of which replaced the physician's own sensory data, as well as eroding the need for dialogue with the patient. It was also during this time that the microscope revealed a cellular universe in which the microorganic causes of many diseases could be located. The introduction of chemical theory into the act of diagnosis revealed the chemical world inside the cell, the result being that health and disease were labeled more and more in terms of chemical status. What was the result of such technologies and theories? In the words of Sandra Harding, assistant professor of philosophy at the University of Delaware, "... the vast increase in knowledge of the human body made possible through these diagnostic technologies resulted in medical specialization and the accompanying centralization of medical diagnosis and therapy in hospitals."¹⁰

We have now arrived at our own time. Such closeness often renders vision and insight difficult. I shall make but two observations: one is ironic, the other dangerous.

1. It is ironic that at the same time medicine was closing its ranks behind technology, a counter-valuing movement of some note was taking shape: psychoanalysis under the direction of Sigmund Freud. Psychoanalysis emphasized the importance of the patient's ideas, feelings and experiences. The patient was encouraged to "tell his story." The importance of the

patient's history and lifesetting was essential for recovery and growth. A true diagnosis was only possible if one had insight into the patient as a person with a past, and a story to tell. It is this subjective testimony which has become completely hidden or structured in an epoch which subjects the patient to endless technological evaluations. Only then does the physician speak to the patient about his life story. Such personal testimony is disvalued and "too often the history of the patient is relegated to a relatively untrained person when it would be safer to turn over any other part of the examination."¹¹

2. If we have arrived at an epoch which has silenced the patient, such an epoch is no less unkind to the physician. The latter part of this century is fraught with danger for the man in the white coat. Technology in its most radical and threatening form — the computer — has raised anxieties for the physician. The computer is an all too familiar blessing and curse. It has the ability to store, classify, and integrate data. On the other hand, many physicians envision a scenario in which "doctors would be rendered obsolete," replaced by a "medic-computer symbiosis." In the twenty-first century computers will make most diagnostic and therapeutic decisions "while *medics*, a hitherto unknown type of health care professional," would provide "the supportive and some of the technical tasks" now carried out by doctors.¹²

We have journeyed a long way through time as we came to a cross-road and took the next step. We have passed from direct communication with dialogue and storytelling to a silent epoch in which patient *and* physician now huddle together in anxiety. We have hitched our wagon to the star of technology, and now we're not sure where we are going; if we are directing the movement or being seduced along. Finally, we are not sure we could tame the process even if we had the will and wisdom. Perhaps there is a fate that awaits all Prometheans. It is not wings consumed by fire for us, but the haunting hum of the machine that witnesses our tragic end.

Epistemological Issues

As we have seen, there are various ways for the physician to gather and interpret data in making a diagnosis. We have passed from the subjective narrative of the patient, to the quiet objective facts of technological procedures. It cannot be mentioned enough that the technique one employs not only reveals certain data, but also conceals other aspects from view. The physician becomes involved in an either/or situation. Either he listens to the patient as a person, or employs the modern technological structure for data. But does this *have* to be the case? Is the physician fated to fragmentation and incompleteness? Before attempting to develop such questions, two epistemological concerns need to be discussed. The use of fact-gathering techniques, subjective as well as objective, often leads to what A. N. Whitehead called "misplaced concreteness," that is, the tendency to focus attention on one or a limited aspect of an entity and predicate of the whole. Such a fallacy obscures or conceals other relevant aspects of the entity that would prove beneficial in making a

judgment: in our case, a diagnosis. This (neglected) Whiteheadian insight leads to violence, especially in the use of modern technology. Professor E. G. Ballard addresses just this point in his book, *Man and Technology*. "What is violence? In its general sense, I define it as treating a whole as if this whole were identical with one or some of its parts. In particular, violence offered to a person consists in behaving toward the person or self as if he were identical with some role or some special aspect of the self which is found to be interesting or which can be used."¹³ In the use of modern medical techniques such violence is all too common. That alone which interests the physician or researcher is the data that can be abstracted from the patient. The data is objective, precise, and quantifiable in mathematical symbols. The art of healing in many ways is accomplished at the juice of violence. Too often the cure *is* worse than the disease.

Modern man likes to think that science and technology have freed him from myths and superstition. It is part of the modern "enlightenment" to equate myth with primitive explanations of reality. But in a world "come of age" we have no need for myth. Yet, myth can also mean a system of belief and values which gives direction and meaning to an individual or society. Myth is the collection of stories that deals with the significant existential questions: identity, morals, cosmology, death, and after-life. Science is also a system of myths. That is, science is an explanation of the how and why of reality. This "how and why" is by no means complete or closed. In fact, it is one of the glories of the scientific method that remains ever open to new experiences and the creative intellect.

In the field of medicine which walks a tightrope between art and science, there is belief (myth) that the collection of data by the use of modern technology is the *only* acceptable method of diagnosis. The diagnostic data extracted by the machine provides what alone is necessary and valuable: data that is objective, precise, quantifiable, and yields to mathematical expression. The result of such a belief leads to what Professor Ian R. McWhinney, chairman of the department of family medicine, University of Western Ontario, London, Canada, calls "unnecessary precision," "spurious objectivity," "redundant investigation," "selective inattention," and "inappropriate standardization."¹⁴

The basic reason we have sided with the machine in obtaining data is our belief that the machine alone yields objective and therefore error-free information. It is only by the elimination of the subjective components in medical practice that a reliable diagnosis can be made. In effect, the removal of the human is the ultimate goal. Leaving aside the question as to whether such a goal is desirable, we need to ask if such a goal is attainable. Can the subjective human self be eliminated from the diagnostic process?

It would seem the answer is NO. I say this for several reasons. American philosopher C. I. Lewis (*Mind and the World Order*) reminds us

that reality does not come with nametags. It is the human being interacting with raw experience that structures and orders the world. Man names, orders, interprets, and judges what is. Nowhere is this more evident than in the area of medical practice. The investigator needs to make human judgments about the data yielded from the machine. Instruments do not speak. Data varies from machine to machine due to construction. There is a great deal of variation because of the physiological peculiarities of the patient and the partiality and dexterity of the operation. Also of great importance is the physician's intelligence and education.

If there is one place that stands as the symbol of this objective drive it is the laboratory. Yet physicians realize that data from the lab is extremely unreliable. Such unreliability results from the changing constitution of the patient in the areas of digestion, emotion, work, and weather. The lab is often the locus of damage to specimens, variation in the substances used to perform the tests, dirty equipment, and wrongly labeled specimens, all of which leads to variation in laboratory results.

Error and variation also result from cultural factors which influence interpretation. Insights provided by the sociology of knowledge (Karl Mannheim) are extremely helpful. Culture is a crucial factor in shaping clinical reality; that is, expectations, behaviors, communication patterns, and the goals of medicine are constructed by social expectations. Above all, sickness is a social construction, and needs social recognition for the role of "sick person" to be legitimately claimed. Sickness in non-Western countries, for example, may relate a certain disease with a social problem in the community. Once the social problem is solved, that disease is defined as cured, *irrespective of the individual patient*. In our own culture the bias is in favor of the "scientific expert." With such a cultural bias we often conceal other views of clinical reality. Professors Arthur Kleinman and Everett Mendelsohn offer a valuable observation: ". . . culture exerts its major impact on the clinical process through the categories and value orientations of patients and practitioners, which determine what is taken to be clinically 'real' and most significant. This should be the point of origin of studies in clinical epistemology."¹⁵

Prognosis

To play the role of prophet is always dangerous. The fate that awaits those who see too far or too deeply is often rejection, and ultimately death. The present writer is too young to have the vision required for such confrontations. I can only offer a vision seen through a "glass only darkly." Behind the few modest proposals I wish to advance lie the insights of two great men — one a philosopher, Martin Heidegger, and the other a scientist, Jacob Bronowski.

Heidegger in his essay on "The Question Concerning Technology" offers the valuable insight that we must face the dangers resulting from technology. We cannot actualize a romantic return to the so-called "good ole days." It is *in* the danger that the source of hope and salvation are found as well. It is in facing the dangers of technology that authentic existence and freedom can be fetched or saved. Heidegger writes:

... it is necessary, as a last step upon our way, to look with yet clearer eyes into the danger. Accordingly, we must once more question concerning technology. For we hope that in technology's essence roots and thrives the saving power.

Man's vocation is to question, and search, and be the "shepherd of Being", not only the Being that is manifest or brought to unconcealment in a given epoch, but most especially, man must keep watch over the aspect of Being that is concealed or handed over to mystery. The danger is that the mystery of concealing aspects of Being will be forgotten. The "shepherd of Being" must always question, and question some more. Questioning is the saving power into the mystery of Being. "For questioning is the piety of thought."¹⁷

Heidegger's words are of great importance in our epoch of medical technology. Too often we have uncritically — without questioning — accepted the gifts of technology without asking the cost for human Being. We have been all too willing to worship at the altar of progress, without paying sufficient attention to the effects on self-knowledge and human living. We have been blinded by the spectacular achievements of medical technology, and in the process have forgotten about other significant areas of human concern. The testimony of the machine and the analysis of the laboratory have raised their "voices," and silenced the patient. But machines do not question, do not know the sacred moments of piety that questioning evokes, and the machine is not the authentic guardian or shepherd of Being. This alone is the vocation of man.

There is the need in modern medicine, so under the reign of technology, to reassert the centrality of the patient as a valuable, subjective self. The patient is one who has a history and archaic experiences which can help the physician in his art of healing. The patient must tell his story and the physician must listen to it if health — wholeness — is to be realized. Illness is more than figures on a chart or a printed computer read-out. Illness is personal, subjective, and filled with meaning for the patient. In other words, the illness is part of the self, and if the physician is after healing, he must care about the person who happens to be ill.

Jacob Bronowski is a true Renaissance Man. He has worked to bridge the so-called "two cultures" of C. P. Snow. Bronowski was a true human being at home in the world of science as well as art.

Bronowski was a first-rate philosopher of science who professed two great commandments: science must touch people, and science is a product of the creative intellect and imagination of man.¹⁸ Death came unexpectedly for Bronowski in 1974, and the world lost a true symbol of human potential and hope.

In recounting the history of the technological intrusion into the area of medical practice, we saw that the objective data of the machine became more valued than the subjective narrative of the patient. There was a clear value judgment in favor of the machine or new technique as objective and therefore better. The subjective story of the patient was inaccurate, biased, emotional, and highly unreliable. The physician was forced to take sides. The machine won, but man and medicine may have lost in the end. The "objective myth" itself, as presented earlier, is an illusion. The subjective cannot be eliminated. What is needed is balance.

Professor Bronowski, writing in his book, *Science and Human Values*, reminds us that art and science are related in the art of creation. Each work of art and each discovery in science is a tribute to the creative, imaginative working of the mind in the quest for truth. In other words, there is an indispensable need for a creative synthesis between the objective and subjective poles of human understanding. In the words of Professor Bronowski:

The discoveries of science, the works of art are explorations — more, are explosions, of a hidden likeness. The discoverer or the artist presents in them two aspects of nature and fuses them into one. This is the art of creation, in which an original thought is born, and it is the same art in original science and original art.¹⁹

This is the explosion and fusion needed in present medical practice. There needs to be such a fusion and creative use of the subjective narrative or story of the patient with the data supplied by medical technology. Medical practice must be rescued or saved from the "either/or" situation of the present.

It seems to me that such creative possibilities must begin with the educational institutions which train physicians. Medical schools need to rediscover, and take seriously, the purpose and ideals of the classical Greek educational structure. A very profitable account of such educational ideals and *proxis* is provided by Professor E. G. Ballard in a recent article entitled "The Idea of Being: A Platonic Speculation."²⁰ Among Professor Ballard's insights, the more relevant ones for our discussion would be the following:

It is in the educational institutions that the Greeks placed the responsibility for developing the art of human-being. Education, itself an art and discipline, is charged with the task of training people for the examined life. The primary concern of education is the art of living life in an authentically human way. To be human is to be

schooled in the moral virtues of temperance, courage and wisdom. Such schooling serves to enrich the specific arts. For example, the physician must not only be proficient in the art of healing; he is expected to be, above all, a human being of character who practices the medical art.

The fundamental issue which concerned Greek education was the self. What kind of self have I brought to my fellows in the *polis* was always the issue. When one ventured to the Oracle of Delphi in search of wisdom, the expression "know thyself" said it all. Self-knowledge is the height of human wisdom. Such wisdom only comes to those who gain insight through discipline and struggle. The art of human living and self-knowledge is a life-long process that constantly demands self-examination. True self-knowledge demands the price of constant questioning, especially of the self.

What method leads one to such self-knowledge? An analogy from physical discipline offers an insight. Such discipline forms the body in a graceful way. One needs to know one's body so as not to exceed the limits and incur sickness or death. The discipline and training needed to mature the self, Socrates called the dialectic. This method of self-discovery is based on the soul in conversation with itself and others. The dialectic is the radical questioning of the beliefs, values and knowledge to which the self lays claim. These are often taken for granted and must be re-examined, and at times even discarded. Such refutation makes it possible for insight into the permanent and necessary aspect of human-being. The insight gained becomes a guide for maturity. The result is that we become "the philosopher-kings of ourselves." Not only do we possess the power to rule, but of greater significance, we are now in possession of the wisdom to rule.

From the above, we can say that the physician must not only be an expert in the specific medical art, but must also develop the moral art of being human. The physician is a human being who happens to be a physician, not a physician who happens to be a human being. The physician as human being must know his limits and those of his art. He must be concerned about character formation, the development of moral sensitivity, and the ability to dialogue with others in self-discovery. Also, the curriculum that structures the training of our physicians needs to be the subject of constant and critical evaluation from voices inside and outside the profession. The moral and specific arts must be developed in such a way as to complement one another. There are encouraging signs within the profession in recent years. The number of seminars and courses dealing with ethical and moral issues is important. But such concerns must be part of the everyday life of the physician and physician-to-be.

We have come a long way in our inquiry, yet honesty demands that we admit we have scarcely broken the skin. As we approach the close of this essay, a few concluding remarks are in order. Medicine and the

physician have long been honored in our society. But such honor is beginning to erode. The nobility that surrounded so many in the long white coats has begun to yellow with age. This is symptomatic of so many of our traditional values and social roles. The physician is beginning to experience what many have before him — an identity crisis and subsequent loss of nerve. The vision of greater technological intervention freeing the physician for more interpersonal contact with the patient is an illusion. The greater the presence of technology, the less personal and human medicine seems to be. The physician and patient must *both* work together to recover their humanity. The physician as healer and the patient as person share a common anxiety — alienation. Both will become strangers to each other and the self.

This essay will come to an end on a defiant, if not hopeful note. The words are those of Doctor Reiser of Harvard:

... today's physician must rebel. He can use his strongest weapon — a refusal to accept bondage to any one technique, no matter how useful it may be in a particular instance. He must regard them all with detachment, as mere tools, to be chosen as necessary for a particular task. He must accept the patient as a human being, and regain and reassert his faith in his own medical judgment. 21

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