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BETWEEN LIFE AND DEATH: ETHICAL AND MORAL ISSUES INVOLVED IN RECENT MEDICAL ADVANCES

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I. Introduction

PHILOSOPHERS HAVE ALWAYS been vitally interested in discussions on death and many of them have consumed most of their speculative attention and concern with death and its implications. Socrates and Karl Jaspers (2300 years after him) have maintained that the whole essence and function of philosophy is to prepare a man for death. Others have attempted to apply either magic or mysticism to considerations of death. Epicurus observed: "When I am, death is not. When death is, I am not. Therefore we can never have anything to do with death." Pascal mentions this same paradox of trying to put death out of one's thinking and the constant preoccupation that death plays in one's ordinary routine: "Since men have not succeeded in eliminating death, they have decided not to think of it." In this Symposium we shall be thinking of the phenomenon of death as it concerns the medical, legal, philosophical, and theological professions. Medically, death may be constantly receding and dreams of indefinite life spans may be experienced more and more, but the inevitability of death sometime, somewhere, occupies the attention of every man. Much of the fear and mystery of death may have been dispelled and Christianity may look upon the conquest of death as its great enterprise: "O death, where is thy sting? O grave, where is thy victory?" But death still remains and lawyers, philosophers, and theologians look to the medical profession for a reconsideration of the medical definition of death in the light of recent procedures in heart transplantation. ¹

It has been pointed out by one of the participants to this Symposium that at a meeting of The American College of Cardiology in San Francisco on February 28, 1968, the members found themselves unable to align traditional ethics of medical practice with the new technology of human transplantation. Dr. William Likoff, the president of The American College of Cardiology, pointed out that such questions are no longer the private concern of the individual doctor

alone. Ruth K. Franklin in an editorial in *The New Republic* welcomes the encounter between law and medicine and indicates its urgency:

[B]y being forced to grapple with the nature of death and the nature of consent and related ethical problems, law and medicine, long at odds, may lay the groundwork for a concerted attack on the foreseeable challenges of technology that are less pressing but equally basic: problems of human experimentation, genetics and eugenics, in sum, the humane use of human beings.

The conflicts between medicine and law may seem to imply that there are conflicts that are inevitable between medicine and ethics. It seems that this is the concern of the moral philosopher in this Symposium. What can he possibly contribute to this discussion on death?

II. THE QUALITY OF LIFE

Some ethicians are not unwilling to discern some relationship between good medicine and good ethics and good morality. The terms might be considered at the outset to be loaded ones and it will be the role of the ethicist to make clear his meaning. As a beginning we might say that good medicine regards the patient always as a person and not as a mere object of experimentation. It respects the person's attitudes toward life and death; it is interested in the quality of life and not only in absolutizing mere vegetative survival. It considers the patient as a person whose life has philosophical and theological implications that cannot be ignored by the medical profession. The interpersonal dynamic that takes place in the relationship between doctor and patient is a constant concern of the responsible medical practitioner. This responsible attitude of the profession is such an evident fact that the proposition has become almost convertible that good medicine is good morality. Just recently the criteria were spelled out by the Board of Medicine of the National Academy of Sciences that the judgment of the Board should be followed in cardiac transplantation cases. To read these criteria is to find the possible objections of the ethicist disappear more and more. Good medicine spells out what the ethicist would in all probability say in other words. It might be well to read the criteria that were laid down by the National Academy of Sciences in order to see in the concrete what its Board of Medicine considered to be good medicine:

1) The surgical team should have had extensive laboratory experience in cardiac transplantation, and should have demonstrated not only technical competence but a thorough understand-
ing of the biological processes that threaten functional survival of the transplant, i.e., rejection and its control. Investigators skilled in immunology, including tissue typing and the management of immuno-suppressive procedures, should be readily available as collaborators in the transplantation effort.

2) As in any other scientific investigation, the overall plan of study should be carefully recorded in advance and arrangements made to continue the systematic observations throughout the whole lifetime of the recipient. The conduct of such studies should be within an organized framework of information exchange and analysis. This would permit prompt access by other investigators to the full positive and negative results. Thus the continued care of each recipient would be assured the continuing benefit of the most up-to-date information. Such an organized communication network would also permit the findings to be integrated with the work of others and assist in the planning of further investigative efforts. In this way, it would be possible to ensure that progress will be deliberate, and that the experience from each individual case will make its full contribution to the planning of the next.

3) As the procedure is a scientific investigation and not as yet an accepted form of therapy, the primary justification for this activity in respect to both the donor and recipient is that from the study will come new knowledge of benefit to others in our society. The ethical issues involved in the selection of donor and recipient are a part of the whole complex question of the ethics of human experimentation. This extremely sensitive and complicated subject is now under intensive study by a number of well-qualified groups in this country and abroad. Pending the further development of ethical guidelines, it behooves each institution in which a cardiac transplantation is to be conducted to assure itself that it has protected the interests of all parties involved to the fullest possible extent.

Rigid safeguards should be developed with respect to the selection of prospective donors and the selection of prospective recipients. An independent group of expert mature physicians — none of whom is directly engaged in the transplantation effort — should examine the prospective donor. They should agree and record their unanimous judgment as to the donor’s acceptability on the basis of crucial and irreversible bodily damage and imminent death. Similarly the prospective recipient should be examined by an independent group of competent physicians and clinical scientists including a cardiologist and an expert in immunology. In this instance the consulting group should also record their opinion as to the acceptability of the recipient for transplantation on the basis of all the evidence including the presence of far-advanced irreversible cardiac damage and the likelihood of benefit from the procedure.
Enumeration of the above criteria is based on the conviction that in order to obtain the scientific information necessary for the next phase in this form of organ transplantation, only a relatively small number of careful investigations involving cardiac transplantation need be done at this time. Therefore, the Board strongly urges that institutions, even though well equipped from the standpoint of surgical expertise and facilities but without specific capabilities to conduct the whole range of scientific observations involved in the total study, resist the temptation to approve the performance of the surgical procedure until there has been an opportunity for the total situation to be clarified by intensive and closely integrated study.  

To show the plausibility of the proposition that good medicine is good morality we can approach the ethics of heart transplantation from the point of view of the ethician and discover how the analysis leads almost to the statement of the same criteria. In *America* John J. Lynch raises the two questions about heart transplantation operations: Is there any objection to the heart transplantation operation? If not, are there any limitations on attempting the operation? The ethical criteria that Lynch lays down are the following: (1) The heart transplantation is a necessary measure of last resort; (2) There is reasonable hope of substantial benefit to the recipient; (3) There is medical and surgical competence on the part of the operating team. His conclusion is that "it does not seem likely that any serious moral objection will be lodged against the procedure so long as the above cautions are observed." Do not both the ethicist and the responsible doctor find themselves in agreement especially if their presuppositions include a recognition of the sacred inviolability of human life? When there is so much agreement on the criteria of good medicine and the criteria of good morality, clarification might be made of more profound questions that are raised by Lynch: "Is human life especially sacred not merely because of the essential dignity of a human 'personality,' but because human life is itself removed from man's dominion and reserved to God's own providence? If so, to what extent is control of human life exclusively of divine right?" In other words is it to be admitted that man's right to his own life is not commensurate with a right of ownership but is identified with a right of legitimate use, legitimate stewardship? Is it possible to demonstrate that man does not own his life in the strict sense of proprietary dominion over his life?

5. *Id.*
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This brings us to the heart of many of the ethical and moral issues involved in problems of human experimentation, problems of genetic engineering, problems which tax the limitations of legitimate use of one's body and closely approach the area of manifest ownership. Let us develop these considerations gradually.

It seems to this moral philosopher that the problems of determining death are intertwined with the problems of determining life and that this is even more patent for anyone who considers that death is a process and that life is a process also. The latter point brings into focus discussions on abortion and the possibility of getting down to the nitty-gritty in ethical choices in a pluralistic society where opinions on ethics and morality are so diverse. Our attention is focused not on the beginnings of life but on the process of death, and we are inquiring of the medical profession as to the criteria that should be recognized now in light of the most recent transplantation procedures. Whatever contribution the philosopher-ethicist might make to this discussion with members of the medical and legal professions might proceed in this fashion. Each one of us in regard to one another has a juridical right to life permitting us to terminate the life of another only when necessary in the event of an unjustified attack upon our lives. The criterion is always the employment of commensurate force in order to tranquilize the assailant and not necessarily to pulverize him. This right that everyone has to his own life with respect to another is not commensurate with a right of ownership over our lives. It is here where the embarrassing question of Albert Camus is submitted to anyone who considers that the evidence is demonstrable and probative for denying man's ownership over his life. In The Myth of Sisyphus Camus asserts that the one problem in philosophy is the problem of suicide, the problem of showing with a minimum of presuppositions that man does not own his life and that life has a value that must always be recognized. Camus saw the difficulty of demonstrating that life has a value in a society that has cheapened it so much through war and increasing depersonalization. Without the admission of a number of presuppositions, one of which would be the radical contingency of man's nature in relation to an Absolute, there seems to be no apodictic, probative, demonstrable evidence against suicide. If the arguments against suicide are not compelling unless the discussant admits the presuppositions that go along with the evidence, neither is the implicit proposition compelling that man has no right of ownership over his life. Nevertheless, the right each man has over his life is one of stewardship and this
right is enormously wide. It can certainly include situations in which it might be said that man has the right to die.

What does this mean? It means that a man ought to keep his life going by using those means which in the judgment of the medical profession are ordinary means. While the term ordinary is a relative, situational term, historically conditioned, some formulation may be offered as to its general outlines. Ordinary means, it seems, would include those medicines, operations, and treatments which not only can be lawfully obtained and applied without excessive cost, pain, or inconvenience but which also offer appreciable benefit to the patient insofar as they promote the interests of his life (temporal and spiritual) in the discharge of acts that are human acts and not only the acts of a vegetable or an animal. The judgment of what in the concrete case constitutes ordinary means is not a mathematical one but the judgment of reasonable, responsible medical men. An illustration might help:

In a case of extensive paralysis of the respiratory muscles, due to poliomyelitis, it is possible to keep the patient alive for months by performing a tracheotomy and applying artificial respiration through a tracheotomy tube. There is no possibility of recovery, or even, owing to irreparable damage to the brain, of a return to conscious life, and incessant attention will be required to keep the patient breathing. Is it allowable to omit or discontinue this artificial respiration and allow the person to die by natural asphyxiation?

In the case proposed, the method used to keep the patient breathing seems to be clearly extraordinary. If, therefore, the doctor knows that patient had no desire to be kept alive artificially, once all hope of real recovery and even of conscious life has ceased, or if he can reasonably presume that this was his state of mind and will at the moment of losing consciousness for the last time, he would certainly seem to be at liberty to refrain from the tracheotomy or to discontinue the artificial respiration. In doing so, he is not killing by direct and positive act, but merely acknowledging defeat. When Arthur Hugh Clough wrote, in his ironical version of the modern man's decalogue:

"Thou shalt not kill; but need'st not strive
  Officiously to keep alive."

he was unintentionally but accurately stating a principle which has a correct moral and ethical application. No man may lawfully hasten his own death or another's death by direct means, but he is not bound
to resist the natural approach of death as though it were the supreme evil, and if, when ordinary means of resistance have failed, he chooses to yield, it appears unwarrantably officious on the part of the doctor to prolong the struggle, especially a futile struggle, by extraordinary means. It is therefore a question of determining the will of the patient and the chances of success. If the patient has indicated that he wants to cling to life as long as possible, however painfully or precariously, the doctor must normally struggle to the end with all the means at his disposal. Many doctors, especially those who have a conscientious respect for the moral law and the Hippocratic oath, tend to assume that this is always their duty, except when they are instructed otherwise. It is, in general, a tendency to be encouraged, not only as a counterbalance to the tendency of other doctors to accelerate death by positive euthanasian methods, but also as a powerful contributory factor in the progress of therapy and surgery. Nevertheless, it seems that the patient's expressed or presumed desire to cling to life can, as a rule, be reasonably interpreted to mean human life, not just any kind of vegetative or animal existence. When, therefore, as in the case proposed, there is no further possibility of a return to conscious life, we consider that the doctor can conscientiously and even laudably abandon the struggle. Doctors are always expected to keep up the struggle against disease itself, but not to the extent of treating their patients as objects upon whom to experiment. One moralist, in the course of his investigation into this problem, was informed by clergy in charge of a hospital for incurable cancer patients that they never used artificial life-sustainers; they merely did their best to alleviate the pain and to prepare the sufferer for a happy death. He remarked that it was a respectable attitude towards death by those who were convinced that life had a theological dimension that had to be honestly faced.

The ethicist therefore would admit that a person has the right to die if he has the right on occasion to refuse the use of extraordinary means to promote his life. Such means might be the case of a person who was told that he is to continue in an iron lung for the rest of his life. The omission of the extraordinary means which might under the circumstances bring on eventual death is not morally the same as positing an act affirmative in nature which is productive of death per se. Admittedly it is here where most examination must be done, because it can plausibly be asked just where the difference lies in accelerating the dying process by acts of commission as well as by acts of omission. Father Charles Curran is one moralist who has raised this question in a dialogue with Dr. Robert White, a neurosurgeon who directs the Brain Research Laboratories at Cleveland Metropolitan
General Hospital. In elaborating on the concept of death as a process, Father Curran pointed out the hang-up that we run into concerning euthanasia: "If death is a process rather than an instantaneous event, then we can ask: What about the morality of hastening the dying process by acts of commission as well as by acts of omission? What, ultimately, is the difference between the two from an ethical standpoint?" Let us look to his additional remarks:

Many times, acts of omission can be more reprehensible than acts of commission. On the other hand, if we eliminate the traditional distinction that Catholic moral theologians have always upheld, where will this lead us? All of a sudden, you see the myriad possibilities to which this could rise. In one sense, the theologian is always involved in drawing lines, and there are inevitably certain inconsistencies in where the lines are drawn. But if we erase the lines altogether, if we give the state or anyone else unlimited control over human life, this could have terrible consequences. We've seen enough of this in recent history to cringe instinctively at the thought of surrendering such power to the private judgment of individuals.

The ethical problem of the difference between the commission of certain acts and the omission of extraordinary means to keep the patient alive becomes very acute when consideration is given to certain painkilling drugs which have the concomitant effect of accelerating death. Traditionally the employment of such drugs is justified on the principle of the double effect which permits actions that inevitably have two effects, one evil and the other good. The principle of double effect requires that the act producing such effects be either morally good or indifferent and that the evil effect is not the means used to directly cause the good effect. It is hard to see at times how the effect of death is not involved in the very intentionality of the administrator. It seems somewhat unreasonable to assert that a patient who is given such drugs in order to eliminate pain, although the process of death is going to be accelerated, is always unaware of this combined intentionality in the minds of his physician and family. In fact, it could be conceived that the patient — before he ever went into the final stages of his terminal illness — might advise both physician and relatives that he would prefer to have these painkilling drugs administered to him despite their concomitant effect of accelerating his death. Many would look upon such intentionality with regard to death not as an object of indirect intention but as one of direct intentionality. The traditional justification for these drugs


10. Id.
according to the principle of double effect seems to be strained here and to invite an explanation that might be defensible in theory but does not confront the realistic picture of a patient directly intending his death in this context. Moralists will have to face this problem more and more despite the fact that embarrassments follow in its wake.

III. Determination of Death

We have been using the concept of death as if there were complete agreement on its meaning. This Symposium gives evidence of the difficulties confronting the medical profession in offering a definition of death to the legal profession. If the legal profession waits upon the medical profession for such a definition, as Mr. Berman stated it does,11 so does the philosopher-ethician. For that reason, the philosopher-ethician must consider the general and specific meanings that have been given to death.

Death is essentially defined as the cessation of the integrated life functions.12 These vital functions include respiration, heart beat, and cerebral activity. When these are operating normally, the human organism is physiologically integrated and psychologically functional. The phenomena of dying can be considered a process which occurs gradually and which involves two main phases:13 clinical death and biological death.14 Clinical or medical death is taken to mean the diagnosis of death made on the basis of the following physical phenomena: “the ending of all vital functions”15 and “[t]he apparent extinction of life, as manifested by absence of heart beat and respiration.”16 Clinical death is a deduction from perceptible signs. Biological death is “the cessation of vital activities in cells and the loss of capacity to return to a functional state.”17 A notable differential exists between cells of the body with respect to the time of death. This is evidenced in the fact that thymic and lymphatic tissue begin to age, regress, and die during the first months of life whereas after clinical death has occurred, the hair and nails continue to grow for several days. Since today the characteristics of death, such as absence of pulse and lack of respiration,
are produced and reversed by physicians, Dr. Vincent J. Collins recommends that clinical death "should be considered as 'the cessation of sustained and spontaneous vital functions.'\(^{18}\)

In the United Nations Vital Statistics, death is defined as the permanent disappearance of every sign of life. Dr. Jorgen Voigt of Copenhagen points out how according to this definition it cannot be accepted that an individual has died when the function of the brain only has ceased.\(^{19}\) He is critical of this definition as not being sufficiently comprehensive and offers this one as his own: "Death has occurred when every spontaneous vital function has ceased permanently. . . .\(^{20}\) He gives as his reason for this revised definition the fact that in "the definitions of death and life respectively, more subtle biological expressions of life such as residual muscular contractility, cellular motility, etc., are ignored. It is physiological life and not vegetative life which is of significance."\(^{21}\) Professor Dalgaard in Denmark recently distinguished three forms of death as (1) reversible asphyxia, (2) irreversible death, and (3) suspended death, \(i.e.,\) a condition in which the brain is irreversibly dead but where the circulation and respiration are maintained by artificial means.\(^{22}\) Professor Voigt takes exception to the last meaning of death:

\[\text{[F]or formal reasons, I hesitate to recognize the last expression because in the expression "suspended death" there remains a suggestion that death has not yet occurred and this implies, for instance, that one would hesitate to remove organs in this phase. For the sake of clarity, the expressions of life and death should be retained as the only alternative and the rare states of asphyxia regarded as a form of life.}\(^{23}\)

Dr. Voigt refers to the clear statement made by Pope Pius XII in 1957 and how it applies to cases of cardiac transplantation:

These deliberations bring us to the question of when measures such as mechanical artificial respiration and external cardiac massage can and may cease. This question was discussed by Pope Pius XII among others. As early as 1957, he issued a very clear statement which is included in the CIBA symposium. The Pope states that respirators and other mechanical aids are extraordinary systems for prolongation of life and that the physician is only under an obligation to institute ordinary and not extraordinary measures.

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18. Id.
20. Id.
22. Id.
23. Id.
If the physician is convinced that there is no hope of reviving a patient who is virtually dead, then he is under no obligation to continue with these measures.\textsuperscript{24}

He continues by saying how he himself would apply these norms:

I believe that it is of primary importance not to get unawares into a situation in which it may be necessary to make a decision regarding the continuance of respirator treatment. Before institution of such treatment, as with every form of therapy, a decision must be taken as to whether it is indicated. If not, it should be refrained from just as the surgeon does not find indications for operation in hopeless (inoperable) cases of cancer. According to most recent opinions, even the indications for so-called palliative interventions in inoperable cancer patients are doubtful. . . .

Technical progress has offered and will continue to offer the medical profession unsuspected possibilities. The question of extent of therapy must be seen in relation to other patients' medical and nursing requirements. Even if there may soon be no limits to the technical possibilities, it is our duty to ensure that development does not run amok and cause damage. Nowhere do human and economic resources suffice to do everything in every case. We must attempt primarily to know the indications for certain treatments and then invariably adhere to them.\textsuperscript{25}

Recent advances and extensive use of transplantation techniques have brought with them a specific detailed elaboration of the phenomena of death. It may be true that men in unrelated (nonmedical) positions may wish to develop the definition of death, but it must be understood that the diagnosis of death must be the task of the doctor and that no legal rules can be drawn up for it.\textsuperscript{26} Dr. Voigt considers that in a particular case, if brain damage has caused brain function to cease and if spontaneous circulation and respiration have ceased as well, then in his judgment the patient is dead according to the definition we cited above.

If the question then arises of his being a donor in a transplantation procedure, it may be justified to continue or institute cardiac massage and artificial ventilation to maintain the circulation of the organ to be transplanted in the brief interval until it is removed. There will inevitably come a time, sooner or later, when it is in the interests both of the patient and his relatives to stop unrewarding treatment. No one can be interested in being doomed to a

\textsuperscript{24} Id. at 144-45.
\textsuperscript{25} Id. at 145.
\textsuperscript{26} Id. at 146.
'technical life' which is not a life at all but a soulless vegetative dependence upon one or more machines.

Medical progress is accompanied by new ethical problems. Sometimes these problems must be solved radically and rationally so that they do not persist as barriers. I consider that in the long run the public will come to accept the above-mentioned points of view, although establishing the criteria of death is scarcely a problem suitable for public vote.27

Because of the dynamic state of research and the discovery and quantity of data flowing in from all fields of natural science, there has not been any universal, accepted, official, delineated criteria upon which to base a valid definition of death. But there is to date a comprehensive outline which very likely will serve as the foundation upon which will be organized a detailed set of norms which would act as the standard to be followed by all physicians in all countries. In the CIBA symposium certain criteria were offered to determine when the vital functions have ceased definitely. Greater experience is necessary in order to act with complete certainty but these five criteria were proposed by Alexandre of Brussels:

(1) complete bilateral mydriasis; (2) complete absence of reflexes, both natural and in response to profound pain; (3) complete absence of spontaneous respiration, five minutes after mechanical respiration has stopped; (4) falling blood pressure, necessitating increasing amounts of vasopressive drugs . . .; (5) a flat EEG.28

Alexandre requires all five of these criteria to be fulfilled prior to removal of a kidney. In commenting on these criteria Dr. Voigt says: 

"A flat EEG for five minutes is not adequate proof that brain function is definitely abolished. In the CIBA symposium, it is mentioned that the EEG should be followed up 4 hours before there can be any certainty that no restoration will occur."29 J. P. Revillard, during the CIBA symposium, added two additional criteria: "(1) interruption of blood flow in the brain as judged by angiography, which we assume is a better sign of death than a flat EEG, and (2) — of less value — the absence of reaction to atropine."30 Dr. Voigt considers that these seven criteria introduce nothing new and that the most important criterion is actually the classical observation that death has occurred when spontaneous circulation and spontaneous respiration have ceased.31 Fur-

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27. Id. at 145.
28. CIBA Foundation Symposium, reported in Ethics in Medical Progress 69 (M. O'Conner & G. Wolstenholme eds. 1966).
29. Voigt, supra note 19, at 145.
30. Ethics in Medical Progress, supra note 28, at 71.
31. Voigt, supra note 19, at 145.
ther, he thinks that "the question of 'cerebral death' is of significance in determining whether there are indications for continued artificial maintenance of respiration and circulation, but is not in itself a criterion of death." 32 If only one of the vital functions continues spontaneously, Dr. Voigt maintains that the indications are present for maintaining the others artificially to the greatest possible extent. Under such circumstances "the patient remains inaccessible to the transplantation surgeons." 33 How long "the action of the heart and the activity of the brain should be followed electrocardiographically and electroencephalographically in order to be certain that spontaneous functions have ceased" 34 — this is left to the clinical staff. On the basis of present experience Dr. Voigt does not consider that this question can be answered with complete certainty. 35 The determination as to when death has occurred should be left to the medical team in charge of the donor patient and not to the surgical team. 36 In this way it will not cause undue anxiety among patients and their relatives and possible suspicion that the diagnosis of death has not been established on completely objective grounds. 37

With almost all of these precautions taken, and with these criteria for death, almost all ethicists would agree. In this regard on the matter of life and death Dr. C. Frederick Kittle, Professor of Surgery and head of the section of thoracic and cardiovascular surgery at the University of Chicago, made a statement with which most moralists would be in agreement:

[T]here are many forms of death; there is no need to reiterate these. But I think one has to differentiate between life and death in the pure biological sense such as is used, say, for describing a live bacteria or a live lower animal and the life of a human being. After all, life to a human means that not only is he breathing; that his heart is beating, but that he also has a worthwhile and an appropriate relationship to his environment. 38

We referred before to the electroencephalograph (EEG) and to its use in ascertaining the amount of brain damage. This is one of the more recent techniques developed for extended diagnosis of patients. It is an electronic instrument which measures and records the bioelectrical impulses of brain tissue and enables the examiner to comparatively

32. Id.
33. Id.
34. Id.
35. Id.
36. Id.
37. Id.
38. Dr. Kittle made this statement on a radio panel discussion, Man and His World, WBAI, New York City, April 21, 1968.
evaluate the condition of health or disease in the brain. With this instrument at his disposal and with the recognition of the brain being the center of intellectual and emotional — therefore of human — life activity, this vital organ has been recognized as of equal importance in determining the phenomenon of death just as previously the heart and breathing apparatus were. EEG response is one of the chief criteria in determining when a human organism has died. We saw this in the criteria set up by Alexandre, Revillard, and Voigt. Because of the importance of this criterion in determining human death, it might be helpful to elaborate on this aspect of death and the attitude of the ethician toward the use of this criterion. In a recent edition of the Journal of the American Medical Association, Dr. H. Hamlin stated the function of the EEG:

The bioelectric activity of the living brain is silenced by anoxia which soon produces cerebral death (Anoxia is the condition wherein due to the lack of oxygen — usually caused by insufficient blood supply — cellular metabolism is disrupted and becomes irreversibly damaged). Respirators and heart stimulators can maintain the look of life on the face of death while agonizing and expensive prolongation of false hope continues for all concerned.  

Dr. Hamlin says that "[w]hen the brain is so compromised, the EEG can signal the point of no return, although the cardiovascular system continues to respond to supportive therapy that produces a respectable ECG [electrocardiogram]." Furthermore he says that: "[S]upportive efforts should be continued only so long as the brain shares physiological response together with heart and lungs. Adequate experience has been analyzed to show that competent application and interpretation of the EEG should gain medical approval for legal pronounce-ment of human death." The French Academy of Medicine has defined death on the basis of brain function: "If the brain is damaged beyond repair, as demonstrated by certain medical tests, even if the other organs of the body are healthy and functioning, the patient may be declared dead by a special committee for such a purpose."

The crux of the matter is therefore to frame a definition of irreversible cessation of central nervous activity. In Sweden a team of medical experts have differentiated three stages in loss of brain functions:

(1) sopor, with reflex functions maintained; these are the cases where maintenance of medical care can lead to recovery even after months;

40. Id.
41. Id.
42. Letter from J.A. Fabro, M.D., to Editor, 88 COMMONWEAL 118 (1968).
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(2) coma, with loss of muscle tonus, poor brain reflexes and poor function of respiratory, vasomotor and temperature-regulating centres; here recovery is again possible;

(3) abolished brain function.

The working group would base a definition of death on two findings — a knowledge of the irreversible nature of the brain injury, and the presence of stage 3 unconsciousness for say up to one hour.\textsuperscript{43}

In an editorial in The World Medical Journal, the writer offers these sobering words:

However, proof of abolition of all brain activity depends on the presence of experts and equipment. Many deaths will still be certified in traditional manner. We may therefore see “two moments of death” recorded, that of brain death and that of circulatory arrest. Whether a change in the law in this sense could be made is something which the working group wisely refuses to pronounce upon at this stage. It will need a lot of education of the public to introduce a change so radical and so likely to arouse misgivings in older citizens, unjustly suspicious of collaboration between certifiers of death and their surgical colleagues, whose needs will become even more urgent when heart transplantation becomes a practical procedure.\textsuperscript{44}

That these concerns raised in the editorial are constantly experienced by others is evident from an announcement made on May 9, 1968 by The American Heart Association. It stated that an investigation will begin into the scientific, legal, and ethical problems arising from heart transplantation. Dr. Lewis E. January, chairman of the association’s committee for medical and community programs, said the study would seek to develop detailed guidelines for heart transplantations that could be used by the medical profession and the public. The areas to be investigated by committees of the association are the establishment of criteria for death and the rights of the heart donor; the setting of criteria for the selection of a heart recipient; the identification of potential donors; the setting up of organ registries; and establishment of legal safeguards for donor, recipient, and physician.\textsuperscript{45}

Irreversible brain damage or irreversible loss of brain function has been proposed as a substantial norm of human death by Dr. Roy Cohn of Stanford University.

\textsuperscript{44} Id. at 134.
\textsuperscript{45} Id. at 135.
in the electroencephalogram, rather than cessation of the heart beat. It is possible for the heart to go on beating for days after the brain has passed beyond possible recovery.46

The philosopher-ethician would not oppose this definition of human death if it were the consensus of responsible, prudent, and conscientious doctors. From the above it does seem evident that "brain damage" is the proper criterion to be used in assessing the death condition in human beings. Whereas before the electrical nature of that, perhaps, most vital organ — the brain — was recognized, the heart, thought to be the center of integrating activity in the human structure, was regarded as the principal organ upon which to evaluate the life or death of an individual, now science recognizes the brain as man's central physiological and psychological integrating faculty and so properly uses this information to assess the condition of his existence. Dr. Gunnar Börck of Sweden, Professor of Medicine at the Karolinska Institute, head of the department of medicine at the Serafimer Hospital in Stockholm, and scientific counsellor to the Royal Board of Medicine, points out how, before the development of modern techniques of resuscitation and intensive care, things were reasonably simple:

The mutual interdependence of brain activity, heart and circulation and respiration invariably resulted in death if and when one of these was critically severed. Inasmuch as consciousness disappears within 10 seconds of the cessation of circulation, and complete and permanent loss of brain function occurs within 15 minutes thereof, the disappearance of heart action or of the pulse or the last gasping breath shortly thereafter, becomes a simple and mostly reliable sign of death in the sense of complete breakdown of all the vital functions. If one tries to analyze the ultimate determinant of the death concept, this seems to belong to the sphere of consciousness. Thus, it was natural for a long time also in our culture to believe that the heart was the seat of the soul. Later discoveries of the function of the brain have not changed our procedure in stating death, because up to very recently no other possibilities were available. As a consequence, to most people also the concept of death is by tradition linked to the heart rather than to the brain. There can, however, be little doubt that the thing that we are aiming at, when we attempt to resuscitate patients or keep them on life-supporting treatment, is not mainly to keep the heart going but to achieve immediately or sometimes in the future, however distant, some degree of at least partial consciousness in the patient, enabling recognition of persons nearby and mutual emotional contact. This is the reason for which in every country

unconscious patients are treated for months and years with available techniques, and in a fraction of these cases the care is ultimately rewarded.47

Therefore, because of this interdependence of all man’s “parts and organs” and their proper coordination to maintain a healthy organization, the role of man’s heart cannot be overlooked: “[I]f the heart stops beating according to the Swedish working team brain function stops almost immediately. The cerebral cortical cells are most sensitive to arrest of circulation, beginning to die within 5 minutes. The whole brain may be considered dead within 15 minutes.”48 Neurologists today state that under proper hospital conditions “brain death” can be diagnosed with at least the same degree of reliability as “heart death.” Dr. Börck admits that it is not easy to say whether the concept of “brain death” is in its essence different from the concept of “heart death” otherwise than with regard to procedure. He cites two apparent features that might signify a real difference to the patient’s relatives: brain death in a patient on life-supporting techniques may precede heart death — whereas in most cases of “spontaneous death” the reverse is true; and such a patient may be kept warm and rosy until circulation, despite intensive care measures, ultimately breaks down, and the patient arrives at the stage of “heart death.”49 Dr. Börck knows that the introduction of alternative concepts and procedures in the definition of death will give rise to considerable complications with regard to the civil law.50 This became evident very early in the Symposium in the exchange between Dr. William H. Likoff and the attorney, Emile Zola Berman, when questions were raised whether the medical profession should come up with a clear and distinct definition of death. The ethician has the same set of difficulties as the civil attorney if the medical profession finds problems in offering to them the results of his own research into the concept and procedure that will structure a definition of death in the light of contemporary scientific knowledge. Even with the indications of “heart death” that are employed at present there are difficulties with the available methods of resuscitation and intensive care. The physician frequently has to decide whether to use or refrain from using the facilities at hand and this decision must be made in a matter of seconds. However, if pacemakers and pulmonary respirators are used upon the pronouncement of “brain death,” it is possible for the patient to live for another day or two until finally the heart fails

48. Id.
49. Id. at 139.
50. Id. at 138-39.
and "heart death" is stated. Dr. Biörck distinguishes the two cases of certifying clinical and medical death by "heart death" and "brain death" in this way:

This means that the time of death, which formerly depended mainly on factors *within* the patient may now depend increasingly on factors *outside* the patient: the availability of facilities, the decision to resuscitate, the choice of alternative death concepts and the decision to discontinue treatment.\(^51\)

He admits that it is hard to tell whether any new legislation will be attempted in Sweden relating to the definition of death. What he says about his own country can be applied equally to the United States: "[I]t is unlikely that the medical profession will avail itself of new concepts and new procedures, unless public opinion has cleared its mind and some kind of agreement has been reached concerning what is ethically and legally acceptable."\(^62\)

Dr. Frank J. Ayd, cites the case of a team of surgeons headed by Professor Clarence Crafoord of Karolinska Institute in Stockholm who removed, with her husband's consent, a kidney from a dying woman with irreparable brain damage and transplanted it in a patient with kidney disease. When objections were raised against what had been done, Professor Crafoord defended the operation. He said:

Don't keep already dead people alive. . . . A surgeon must feel that it is not his duty to give help to a person whose brain does not function. . . . *What I want is a modern moral, ethical, religious, medical, and legal definition of the death concept.* The basis for such a definition must be: you are dead when your brain doesn't function any more — not when your heart has stopped beating. When the electrical activity of one's brain stops — which can be measured — life is gone and what's left is only a surviving organism which can be used to save the lives of other people.\(^53\)

**IV. THE PHYSICIAN'S EVALUATION**

More and more physicians are becoming concerned with this question — when is a person dead? Not every physician will be as determined and fixed in his attitude as Dr. Crafoord. As Dr. Ayd points out, the question of guidelines that are morally and legally acceptable should be the concern of everyone — philosophers, theologians, moralists, lawmakers, and judges.\(^64\) There is no legal definition of death

\(^51\) *Id.* at 139.

\(^52\) *Id.*.


\(^54\) *Id.* at 18.
based on 20th century facts. In some way the moral and ethical consensus of society must become known before any law is framed which is intended to reflect that consensus. In the view of many doctors, once the human brain has undergone irreversible damage, thereby producing a flat EEG reading over a certain period of time, even if the patient's other vital organs are alive and functioning (possibly by artificial means), the human being is dead because self-consciousness, emotion, and understanding are to all reasonable empirical investigation terminated. Where there is extensive brain damage, we know that the dying nervous system disintegrates by steps and the person dies in stages.\textsuperscript{55} Dr. Ayd describes the process:

First there occurs "clinical or medical death" at which moment spontaneous respiration and circulation cease. "Biological death" or permanent extinction of life quickly follows unless reanimation procedures are started. If this is done, the brain may be stimulated to function for a time. Nevertheless, at this stage, the patient is immobile withatomic muscles. There are no reflexes. There is no reaction to pain. All vegetative regulations, such as body temperature, cease. Only the heart continues to function. An electroencephalogram (EEG) tracing is totally flat and this many physicians believe justifies the conclusion that the central nervous system is dead.\textsuperscript{56}

It is the period of time over which a flat or negative reading is made that is the crucial point of controversy. No definite time has as yet been established and agreed upon by all. Dr. Hannibal Hamlin of the Harvard Medical School at the 1964 annual meeting of the American Medical Association encouraged physicians to use the EEG to establish when the brain has died and declared that this was the means of determining death. Then he recommended that, even though artificially sustained cardiopulmonary function goes on, the pacemaker and the respirator ought to be turned off.\textsuperscript{57} A flat EEG is indicative of the cessation of brain activity, but the length of time ranges from 1 minute of EEG silence, 3 to 5 minutes, etc., to 48 hours set by the French Academy of Medicine in 1966. At the CIBA Foundation symposium in 1966 Professor Jean Hamburger of Paris attempted to show how

\textsuperscript{55} Once the brain has been irreversibly damaged, even if the heart and respiration continue of their own accord for a time, they eventually will cease functioning in a short period in view of the fact that the integrating mechanism (nervous system) of the body has been destroyed. If the brain is not irreversibly damaged, but only the heart or some other vital organ, then medical means can be taken to rectify the disturbance in functioning, \textit{i.e.}, a respirator, heart massage procedure, transplant, etc., can be employed. The case of artificially sustaining the vital organs when the brain is irreversibly beyond repair is an example of extraordinary means to promote the life of the patient.

\textsuperscript{56} Ayd, supra note 53, at 19.

\textsuperscript{57} Hamlin, supra note 55.
unreliable these intervals were and how these difficulties are present if brain damage is considered the sole criterion of death by citing two patients who recovered from barbiturate coma after a "flat EEG for several hours." Despite this problem of time the French Academy has ruled that a person be declared legally dead when his brain has ceased to function, even though other organs may be kept alive by artificial means. It is precisely here where many physicians would be opposed to the hardening into law of a definition of death that would spell out the exact period of time in which the person is ruled to be dead. This judgment many physicians would prefer to be reserved to them and they would object vigorously to the intrusion of law which would take out of their hands lives that could possibly be restored. While appreciating the reluctance that the physicians have toward a legal definition of death that would hold them responsible before civil law for terminating life even by the omission of extraordinary means, we might begin to raise certain questions concerning the attitude of the unwilling doctors. Dedicated to a scrupulous consideration of the value of life and convinced at times that even the distinction between ordinary and extraordinary means by an ethician is an unfortunate one in application for doctors, the physicians themselves might reasonably begin to raise questions about some of the implicit presuppositions in their unwillingness to agree to any definition of legal death. Before going into the deeper issue that it seems to us underlies the dissatisfaction physicians have with establishing a suitable length of time for a silent or negative EEG, let us examine how some doctors are equally unwilling to accept at all times the distinction that the ethician makes between ordinary and extraordinary means to promote life.

A vigorous defense of what he called "aggressive or extraordinary means of treatment" to prolong life has come from Dr. David A. Karnofsky, of Sloan-Kettering Institute for Cancer Research. As the patient continues in a seemingly inexorable decline, said Dr. Karnofsky, "the state of dying may be protracted by expensive and desperate supportive measures, and the patient is rescued from one life-threatening situation only to face another. Many objective observers, in contemplating this dismal scene, plead with the doctor to let the patient go quickly, with dignity and without pain." He is critical of the deliberate omission of extraordinary means when he says:

[W]ithholding of aggressive or extraordinary treatment can be urged and supported by state planners, efficiency experts, social

58. See Ayd, supra note 53, at 19.
59. Letter from J.A. Fabro, M.D., to Editor, supra note 42.
workers, philosophers, theologians, economists and humanitarians. For here is one means of ensuring an efficient, productive, orderly and pain-free society, by sweeping out each day the inevitable debris of life.\textsuperscript{62}

Roundly rejecting any such advice, Dr. Karnofsky said that life must be prolonged on the ground, among others, that there is always the hope during a temporary reprieve that science will find a more effective and longer lasting treatment.\textsuperscript{63} Temporary relief can be stretched a long way. Dr. Karnofsky cited the case of a patient with cancer of the large bowel. A colostomy relieved an intestinal obstruction. A recurrence of cancer nearby was relieved by X-ray treatment. When the abdominal cavity began to fill with fluid, radioactive phosphorus checked the process. Bronchopneumonia was cured by an antibiotic. Cancer spread to the liver, and again X-rays were used. As liver function progressively declined, many medical measures supported the patient. If some of these treatments had been withheld, according to Dr. Karnofsky, the patient would have died within weeks or days. Successively, they kept him alive for 10 months. Dr. Karnofsky puts the question this way: "When should the physician stop treating the patient?" — his answer is direct: "I think that he must carry on until the issue is taken out of his hands."\textsuperscript{64}

It is obvious that not everyone ethically responsible will answer the question in exactly the same way as Dr. Karnofsky and it is here in the diverse answers to the question that we discover diverse attitudes on the quality of life. Life is not something merely quantitative and mathematically measurable. Even the case cited by the doctor above brought 10 months more of existence to the patient. What was the quality of that existence during the 10 months? Here is the crucial question which is fundamental and which operates as a dynamic in the thinking of different physicians. The doctor who finds himself unable to admit to a definition of death established by irreversible brain damage measured by a certain period of time of a silent or negative EEG, however long and protracted that period might be, even the 48 hours of silence of the French Academy of Medicine,\textsuperscript{65} certainly displays a great respect for life, whatever the quality of life might be during the use of all means, ordinary and extraordinary. This attitude should be respected because it gives the widest berth to euthanasia; it completely avoids anything like defeatism; it is surely easiest on the conscience of the physician. There are disadvantages to such an attitude and they

\textsuperscript{62} Id.
\textsuperscript{63} Id.
\textsuperscript{64} Id.
\textsuperscript{65} Letter from J.A. Fabro, M.D., 6 Editor, supra note 42.
should be honestly confronted. The principal one is that it creates the impression that physical existence of whatever quality, even a prolonged vegetative life with no reasonable promise of a return to rational consciousness, is valued by everyone in exactly the same way. Death is looked upon as the greatest evil — a strange attitude to be adopted by patients who are convinced of an afterlife.

The moderate position on professional standards strikes the ethician as the more reasonable one. By the moderate position we understand the acceptance by the person as obligated to use all ordinary medical procedures within his means to prolong his life but not necessarily extraordinary methods. What are the advantages or reasons for this moderate position on what ethical and moral claims may be placed upon the physician in his relation to the patient? In the first place, the moderate position is more in accord with the traditional policy of ethicists in interpreting duty and obligation according to a reasonable limit. Secondly, it seems to be in accord with a good religious attitude accepted by those patients who believe in an afterlife. Thirdly, it appears that it is less likely to impose excessive burdens on the family and the relatives of the patient. The disadvantages of this position are the advantages of the more rigorous attitude towards professional standards. The admission of defeat may be made before it should be made and it might create difficulties in the minds and consciences of the attending physicians. Nevertheless, to this ethicist the moderate position with its admitted presupposition and its admitted disadvantages is to be preferred to the attitude that would prolong life at all times regardless of the quality of existence. During the Villanova Symposium, discussion did not develop for too long a period on the quality of life, and it was precisely here where the participants were divided. To absolutize physical vegetative existence where there is little likelihood of a possible restoration of rational consciousness displays an attitude toward life and its meaning that invites discussion and reasonable dissent. But here this ethicist must be most honest. To appeal to the value of the quality of life and not only to the mathematical quantity of life as an important factor in the decision to withhold the use of extraordinary means in the case of irreversible brain damage is not the only situation where the quality of life ought to be considered. On the subject of abortions and the beginnings of existence, Roman Catholics might well listen to the appeal made by others who raise the point about the quality of life, the quality of life of the embryo, and the quality of life of the fetus compared with the mother. It is somewhat inconsistent to advance the importance of the quality of life in cases where life is denied to the quality of life by others as life
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is beginning to develop and evolve. There is much truth in the observation that "Roman Catholics have a remarkable theology of death but a horrible theology of birth."

V. Conclusion

It appears true that it is always in presuppositions that people divide and on the application of these presuppositions that they come to diverse conclusions. In the CIBA symposium in the exchange between two doctors this became so very clear. Dr. Cortesini developed the attitude of Pius XII on the question of transplantation and reanimation. After he explained the position of the Pope there was an interesting conversation between Dr. Starzl and Dr. Schreiner. Let us first listen to Dr. Cortesini:

[The Pope] was asked in 1957 when a doctor should stop artificial respiration to a patient who is virtually dead and is being assisted by a respirator. The Pope replied that the respirator and other systems for aiding circulation were extraordinary systems of prolonging life, not ordinary systems. The physician can give ordinary treatment but is not obliged to give extraordinary treatment. If the family tells the physician to stop the respirator, and if the physician thinks that there is no hope of life being prolonged, he can stop the respirator with a clear conscience. The principle here is that of the double effect. Stopping the respirator does not cause death, because death results from another cause, the disease or injury. From the theological point of view it is very important to differentiate between the action and the effect.

The definition of death is a scientific definition, not a theological one, and theology is not concerned with this point, the Pope said. He says that when the vital functions finally stop then even if the organs are alive there is no longer life in the body. This is very important because it makes a clear distinction between vegetative life in the organs and superior life in the vital functions. The vegetative life is not considered by the Pope to be life in the spiritual sense.66

Dr. Starzl addresses himself to this point made by Dr. Cortesini and the difference in presuppositions become manifest as one reads his words:

I think all the members of this meeting would support the view that extraordinary measures to prolong vegetative life are not justified. In turning off a respirator, we are discontinuing a form of extraordinary care. However, when we talk about removing between that time and the time of circulatory arrest, our role...
is no longer passive. Positive action is taken which can further harm the patient — further shorten his declining curve of life, and if unpaired organs such as the heart or the liver are removed, the physician would be the direct instrument by means of which that curve is terminated.67

Dr. Louisell agrees with Dr. Starzl that in the present state of the law life still continues in the conventional sense — e.g., if there is still a heart beat — and that a doctor would incur the danger of a possible charge of homicide if by removal of an organ he causes death, if life still continues in the conventional sense. For the law to be changed there apparently has to come a social and philosophical consensus on this point. Dr. Louisell advises the cooperation of theologians, philosophers, and physicians in the formulation of a judgment of propriety before it is crystallized into a definite statutory rule. He considers that the five criteria of Dr. Alexandre,68 supplemented by the two of Dr. Revillard,69 might be the starting point for a legal evolution.70

Dr. Schreiner points out the philosophical difficulty he has with accepting Dr. Starzl's description of a "declining curve of life":

This description implies to me that life is quantitative and depends on some biological function. Does this mean that we progressively become less alive? In effect life can be described in terms of blood pressure or biological function, but this brings us right back to the original trap because then one is endowing each specific organ and cellular function with the definition of human life. Heart muscle is particularly viable: electrocardiograms on a dead person sometimes go on for a very long period of time, and long after the heart action has stopped hair growth continues, and so on. To push this to its ridiculous logical conclusion, the lady who gave the HeLa cells from her cervix for tissue culture is now living all over the world in glass bottles in every laboratory that grows tissue cultures. I can't accept a cellular or a quantitative definition of life. Philosophically one has to have at least a concept that a co-ordinating vital principle exists which is either there or not there. Our problem is how do we ascertain that the external manifestations of this co-ordinating principle (vital principle) are no longer expressing themselves in this individual? There has to be some medical definition and not a quantitative concept.71

Dr. Hamburger shows the difficulty in answering the question about the life or death status of the criminal whose head has been cut off by

67. Id. at 98.
68. See p. 770 supra.
69. See p. 770 supra.
70. Ethics in Medical Progress, supra note 28, at 99-100.
71. Id. at 100 (emphasis added).
the guillotine but whose heart and lungs can be kept going for days.\textsuperscript{72} Dr. Pickering clarifies the several kinds of death and points out how some of his medical colleagues are concerned with \textit{cytological} death when the concern ought to be \textit{physiological} death and how best to establish this physiological death.\textsuperscript{78} He tells the story of a former Professor of Biology at Cambridge who went to the market and bought a piece of beef.

He cultured the muscle cells in tissue culture in the laboratory and pointed out to his class that there are several kinds of death. Though this meat had apparently come from a dead animal, the cells were alive. He said the extreme form of death was \textit{cytological} death. The next form is \textit{physiological} death when the vital functions have ceased. Another stage is \textit{intellectual} death, which to my mind is immortalized by Gracie Field's song: "He's dead but he won't lie down!". Then there is \textit{spiritual} death, \textit{theological} death and \textit{social} death. What our medical colleagues want is cytological life, and what we are all concerned with in this instance is physiological death.\textsuperscript{74}

Dr. Muller summarizes what he considers to be the duty of the doctor when this physiological death has been established from irreversible brain damage:

Once he is certain that the nervous system is dead and no longer able to take over its controlling functions in the body, the doctor should give up the struggle on his own responsibility. Clearly he cannot ask the opinions of the family or their permission to stop maintenance of vegetative life, but he must collect all the relevant clinical, biological and electroencephalographic information and maybe after consultation with others participating in the maintenance work draw up a statement justifying his decision to abandon his efforts. If his action is challenged by any authority, he will then have the means to defend his decision.\textsuperscript{76}

If these procedures are followed, possibly the consensus will develop for the gradual acceptance by all concerned of the principal criterion of death to be irreversible brain damage testified to by an agreed time interval of a silent or negative EEG.

\textsuperscript{72} \textit{Id.}
\textsuperscript{73} \textit{Id.}
\textsuperscript{74} \textit{Id.} at 100–01.
\textsuperscript{75} Muller, \textit{Legal Medicine and the Delimitation of Death}, 14 \textit{World Med. J.} 142 (1967).