

Rethinking the Brain Death Controversy:

A History of Scientific Advancement and the Redefinition of Death in Jewish Law



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Introduction

The formulation of a definition of death is in actuality an endeavor to delineate the precise moment at which a person has lost the essential substance that embodies life. Therefore, the definition of death simultaneously entails a comprehension of the fundamental nature of life. For this reason, throughout history, the definition of death has consistently generated a significant amount of heated controversy in Jewish Law.

While, formerly, death was not particularly difficult to define, as all of a person's vital systems failed relatively instantaneously, the advent of modern technology made it possible to generate and maintain certain physiological processes while others had irreversibly gone. Thus, the condition of brain death represents a unique circumstance that requires a more precise demarcation of the border between life and death than had even been possible. Such a precise definition is especially important in light of the ethical and legal implications the definition of death has on heart transplantation. Consequently, the contemporary debate over the validity of brain death as the definition of death in Jewish Law has generated considerable controversy among rabbinic authorities.

However, while the condition of brain death is entirely unique, the controversy has strong historical roots that cannot be ignored, as they too often are. A proper understanding of the contemporary brain death debate is contingent on a thorough understanding of the historical tradition of Jewish Legal responses to scientific advances and changes in the medical understanding of the nature of life and death. It is therefore the goal of this thesis to elucidate the Jewish, scientific and historical context of the brain death controversy, in order to examine the

various ways halakhically¹-minded Jews respond to changes in the scientific understanding of human nature from within their textual tradition.

The first chapter analyzes the definition of death as it was traditionally conceived throughout pre-modern Jewish history, focusing on the interpretation of the most well-known source text for the halakhic definition of death. The chapter thus establishes that the status quo for the definition of death was the absence of respiratory capacity. So long as medical science remained in a state of stagnancy, this traditional halakhic definition of death remained relatively unchallenged and entirely unchanged.

The second chapter recounts the events that led to the first transformation of the halakhic definition of death. The Enlightenment brought about a new scientific understanding of the nature of life and death that resulted in a terrifying medical uncertainty about the ability to determine death. Consequently, the secular world redefined the moment at which death was certain according to the onset of the decomposition of the body. This redefinition of death severely threatened the pre-modern Jewish definition of death, creating major altercations with the external world and also within Jewish circles. The intra-Jewish dispute, which manifested itself as a controversy over delayed burial, resulted in the formation of a major rift between Jews of modernist and traditionalist tendencies. The call for a more conservative definition of death was so forceful and long-lasting that, although the complete reversal of halakha never took hold, the halakhic definition of death proved, nevertheless, to be susceptible to the realities of the modern age. Consequently, Rabbi Moshe Schreiber, who was the biggest opponent of halakhic innovations at the time, required the absence of a pulse to determine death, which was a slight but highly significant change to the halakhic definition of death.

¹ i.e., relating to Jewish Law.

The third chapter summarizes the medical aspects of brain death and the evolution of the conception of the condition. It also discusses the role that heart transplantation had in the acceptance of brain death as a secular legal definition of death. The chapter is therefore devoted to providing the necessary historical and scientific background on brain death to understand how the halakhic debate played out in history.

The fourth chapter deals with the contemporary controversy over the acceptability of brain death as a halakhically valid criterion for the determination of death. In response to the creation and conceptualization of brain death, in the middle of the twentieth century, most orthodox rabbis departed from the traditionally accepted halakhic definition of the moment of death as the loss of respiratory capacity. Though all rely on the same traditional methodology of textual analysis, the departure proceeded in two principal directions, creating a major rift between the two opposing camps of halakhic opinion. The fourth chapter is divided into four sections, devoted to the creation of each camp and its arguments, as well as their responses to one another.

The first section of the fourth chapter discusses the immediate response that many orthodox rabbinic authorities had to the imprecise definition of brain death that they considered as having been created for the purpose of easing the moral burden of removing hearts from living patients for the purpose of transplantation. This camp, called the cardiopulmonary camp and led principally by Rabbi J. David Bleich, followed the tradition of Rabbi Schreiber, and reinterpreted the traditional halakhic sources to support the claim that Judaism has always held that death only ensues after the cessation of both respiratory and circulatory activity. Thus the beating heart of a brain dead person would be considered absolute proof that he was alive.

The second section discusses the subsequent response of a new camp of orthodox authorities, led principally by Rabbi Moshe David Tendler, which developed in response to the more precise definition of brain death as brainstem death as well as the increasing success rate of heart transplantation. This new camp, which I will call the physiological decapitation camp, emerged with an innovative interpretation of a new set of classical halakhic sources that conformed with the new scientific understanding of death that came as a result of brain death. These sources implied that brainstem death was the physiological equivalent to decapitation, which was an independent category of death in halakha, which could be determined despite a beating heart. Consequently the motion of the heart could be discounted, the patient declared dead by analogy to decapitation and the beating heart removed for transplantation.

The third section deals with the cardiopulmonary camp's response to the innovation of physiological decapitation as a definition of death. With a different understanding of the nature of decapitation, the cardiopulmonary camp broke down the halakhic basis for the physiological analogy between brain death and decapitation. While they conceded that the heart was not an absolute proof of life in all cases and that brain-based definitions of death could be consistent with halakha, they required that the total liquefaction of the whole brain be conclusively demonstrated in order to discount the contractions of the heart. The cardiopulmonary camp was thus able to maintain their position in the halakhic debate.

The final section deals with the physiological decapitation camp's final effort to demonstrate the validity of brain death. In the absence of a new innovative interpretation of the classic sources that could cause more people to accept the validity of brain death, a scientific experiment was devised to demonstrate that an anatomically decapitated person was identical to that of a brain dead person. After describing the origins of the experimental design, the section

is primarily devoted to the demonstration's influence on Rabbi Shlomo Zalman Auerbach's opinion on brain death.

This thesis is limited to the controversy that exists within Orthodox Judaism, focusing on the opinions primarily of Orthodox rabbis but also other Orthodox Jews who are considered authorities in the field of Jewish medical ethics. The perspectives of other less halakhically-minded Jewish groups will be left out. The reason for this limitation is two fold. First, there is considerably less debate within Conservative and Reform Judaism, as the vast majority of rabbis accept the validity of brain death. Secondly, the limitation ensures that the authorities mentioned all rely on the same traditional methodology of textual analysis, allowing an examination of the various responses to the advancement of medical science from within the structure of a textual tradition.

The Traditional Definition of Death in Jewish Law

An understanding of the debate on the halakhic validity of brain death as a definition or criterion of death is contingent on a thorough analysis of the definition of death as it was traditionally conceived throughout pre-modern Jewish history. As such, it is imperative to not only analyze the contemporary rabbinic interpretations of classical sources, but to analyze the sources themselves, in their own historical contexts. This way, the halakhic definition of death can be more accurately traced throughout history without the bias of contemporary interpretations. I will therefore discuss the most important classical sources on the definition of death, with the goal of arriving at the most likely originally intended meaning of each. As a whole, this analysis illustrates the actual treatment of the definition of death in Jewish Law throughout history, providing the most accurate understanding of how the sources are used as precedents in the current rabbinic debate.

Death was inherently difficult to define with precision before the advent of modern medicines designed to prolong the functions of certain parts of the body, while the rest continued to deteriorate. For most of human history a person died when all of his vital organ systems failed, which usually occurred within a matter of minutes. The entire person thus died relatively instantaneously, making the delineation of the precise moment, or physiological criterion, that was necessary and sufficient to define death rather elusive, and entirely theoretical. As a result, despite the seeming importance of defining the border between life and death for its own right, the traditional discussion of the definition of death occurs almost exclusively within a separate context, where an unusual event creates the necessary conditions to debate the precise role of individual organs in the definition of death.

The first mention of the definition of death in the classic Jewish sources can be found within a discussion of the conditions under which the laws of the Sabbath can be broken. The Mishnah states:

...every danger to human life suspends [the laws of] the Sabbath. If debris fell on a person [on the Sabbath], and there is doubt whether he is there or not there, or there is doubt whether he is alive or he is dead...they remove the heap from him. If they found him alive they remove him, if dead they leave him [until after the Sabbath].²

The obvious question, which the Gemara attempts to answer, is how one can determine if a person is alive or dead when he is reached as the debris is removed from on top of him. Thus, the Gemara states:

The rabbis taught: Up to where does one examine [to determine if a person is alive or dead]? Until [one reaches] his nose. And some say: Until his heart. If one checked and found the upper ones dead he should not say: the lower ones have already died. There occurred an incident where they found the upper ones dead and the lower ones alive.

Shall we say that [the dispute] of these Tannaim is similar [to the dispute] of these Tannaim. For it was taught in a Baraita: From where is the fetus formed? From his head. As it says: From my mother's womb did you pull me out (*gozi*) [Psalms 71:6]. And it says: Pull out (*gozi*) your hair and throw it away [Jeremiah 7:29]. Abba Shaul says: [the fetus is created] from its navel, and it sends out its limbs in all directions. You can even say that Abba Shaul [agrees to examine to the nostrils], for Abba Shaul holds this view only with regard to the formation [of the fetus], because everything is formed from its middle, however with regard to saving a life, even Abba Shaul would agree that the essential life [is to be found in the] nose, as it is written: All in whose nostrils was the breath of the spirit of life [Genesis 7:22].

Rav Papa said: The dispute is only from the bottom upwards, however if from above downwards, once he has checked up to the nose, he is not required

² Mishnah, Yoma 8:6-7. It is prohibited to move remove or carry items on the Sabbath. However, it is also forbidden to stand idly by the blood of your neighbor (Leviticus 19:16). Whenever the two laws conflict, the requirement to save a life supersedes the laws of the Sabbath. Therefore, if a person is buried on the Sabbath and is determined to be alive, one is required to desecrate the Sabbath on his behalf. However, if he is determined to be dead, despite the requirement to bury the dead within one day (Deuteronomy 21:22f; Sanhedrin 46; see Kottek, The Controversy Concerning Early Burial, a Historic Chapter in Halacha 31), one is forbidden to break the Sabbath.

[to check] any further, for it is written: All in whose nostrils was the breath of the spirit of life [Genesis 7:22].³

This Talmudic discussion serves as the primary source for any discussion of the definition of death in Jewish Law. Long before modern medical technology could separate the death of individual organs and organ systems from each other, the rubble that buried a person after the collapse of a building served to stratify the body and effectively isolate organs, thereby separating the knowledge of the death of individual organs from each other. Just as the modern situation begs for a precise definition of the moment and physiological location of death, so too did the collapse of a building. If a person's death could only be determined from his torso, one would be required to remove debris from on top of him, even if he appeared to be dead from examination of the head. However, if a person's death could be ascertained at the head, the removal of the rest of the debris would be forbidden. It thus becomes necessary to decide where on the body death can be determined, in order to prevent the unnecessary desecration of the Sabbath.

The authors of the Talmud could have intended the passage to be understood in any of three ways. First, as contemporary rabbis typically understand it, the Talmudic discussion could be a debate between checking for residual function of the respiratory system or for the sign of a continuing heartbeat. Secondly, it could have been intended as a debate between checking for the sustained function of the most physiologically integral organ or for the function of the first organ to be produced in a fetus, with the philosophical assumption that the first organ to be produced is necessarily the last to die. Lastly, the discussion could have been intended as a debate about the best location, other than the nostrils, to check for breathing.

³ Yoma 85a. This version is the most commonly published version today and will be referred to as the standard printed edition.

Although understanding the Talmudic passage as a debate about the relative physiological importance of the respiratory versus the circulatory system may be the most obvious and fitting interpretation to the contemporary reader, it appears that this may not have been the traditional rabbinic understanding of the debate. There are several variations of manuscripts of the Talmudic passage, of which the dominant and likely most original versions do not even mention the heart at all. Rather, the debate in these manuscripts, as well as in standard printed edition of the Jerusalem Talmud⁴, is between checking the nostrils and checking the navel. As such, it is difficult to make any conclusions about the role of the heart in the determination of death during the Talmudic period.⁵

Furthermore, manuscripts discussing the nostrils and navel were also of the version that was accessed by most medieval commentators. For example, in their commentaries on the Babylonian Talmud, Rosh, Rif, Rabbeinu Hananel, and Rabbeinu Nissim all explicitly discuss the examination of nostrils and the navel, without mention of the heart. In Rabbi Joseph Karo's commentary on the *Araba'ah Turim*, the debate is also explicitly between the nostrils and the navel. In fact “there is no opinion recorded in the Babylonian Talmud – majority or minority – which *requires* examination of the heart.”⁶ This implies that the traditional debate may not have primarily been between the relative physiological importance of respiration and cardiac activity.

Manuscripts that record the debate between the nostrils and the heart, were, however available to some commentators, including Rashi (1040-1105). An analysis of Rashi's

⁴ Jerusalem Talmud, Yoma 8:5.

⁵ Tal, Nostrils, Navel or Heart? Significant Textual Talmudic Variations Concerning Signs of Life 1-9.

⁶ Bleich, Establishing Criteria of Death 11.

commentary on the Talmud thus reveals the role that the heart may have played in the determination of death in the medieval period. Rashi wrote:

“How far does one check?” if he seems to be dead, in that he is not moving his limbs, how much must be uncovered to find out the truth [whether he is alive or dead]?

“Until his nostrils,” and if there is no life in his nostrils, for he doesn’t find air there, he has surely died, and he must leave him [until after the Sabbath].

“Rav Papa said the dispute is only from below upwards,” the dispute between these tannaim, for one says, “Until his heart” and the other says, “Until his nostrils.” “From below upwards,” that he found his feet first, and he is checking upwards toward his head, for one says, “With his heart he can determine whether he is alive, for his breath pulsates there,” and the other says, “Until his nostrils,” for sometimes life is not recognizable in his heart, but it is recognizable in his nostrils.

“Shear your locks (*gozi nizrekh*)” – and *nezer* refers to the hair on the head.

“You may even say that [the first view is in agreement with] Abba Shaul”—he too holds that [one must check] until his nostrils.⁷

It is clear that Rashi understands the debate in physiological terms as one between the relative importance of respiration and cardiac activity. Understanding the mention of the heart physiologically, he comments that the reason why some people hold that one could check the heart is that physiological beating can be used to determine if life is present.

However, it appears that Rashi’s understanding of the purpose of the heartbeat was significantly different from contemporary medical knowledge. In order to correctly read Rashi and determine how he understood the definition of death, one must not project an anachronistic anatomical or physiological understanding on his gloss, for it is not with this understanding that he wrote. Considering that Rashi’s comments are about the importance of certain physiological

⁷ Rashi, Commentary on Yoma 85a.

functions, assuming that Rashi understood the heartbeat to be a sign that blood was circulating throughout the body⁸ would result in a severe misinterpretation of Rashi's intended meaning.

It was commonly held in medical thought of the time that air ultimately reached the heart after inspiration⁹ and that the movement of the heart is a manifestation of the movement of air through that organ.¹⁰ Rashi goes even further, believing that air goes directly to the heart through the trachea.¹¹ Therefore, anatomically speaking, it seems that Rashi considered the

⁸ William Harvey did not prove the fact that the beating of the heart caused the circulation of the blood until 1628—over 500 years after Rashi's death (Singer, The Work of William Harvey 177-184).

⁹ Claudius Galen (129-217 C.E.) dominated rational medical thought from Talmudic times until the enlightenment, well beyond Rashi's age (King, 'Revolution' and 'Enlightenment' 1). His view of the heart as a respiratory organ was well established in Greek medical opinion (Furley, Galen on Respiration and the Arteries 17). According to Galen, air entered the lung from the trachea, and then was carried to the heart via the pulmonary vein. The heart would separate the impurities from the air and expel them, via the pulmonary artery, to the lungs where they could be exhaled (Singer, Galen's Physiological System 58-60). As such, in Greek medical thought, which was accepted around the world for well over a thousand years, after inspiration, air ultimately reached the heart, which thus had a respiratory function.

While the study of Greek texts is prohibited by the Talmud (Bava Kamma 82b; Sotah 49b; Menahot 64b) there are a number of places where gentile scientific theories are not only discussed but also are accepted over the Rabbis' statements (Pesahim 94b). Notably, Rabbi Moshe Schreiber mentions that even in specific case of the determination of death, discussed in Yoma 85a, there is a possibility that the original rabbinic ruling was based on "a tradition from the ancient students of nature [whose] old knowledge has been forgotten by the medical science of our day" (Schreiber, Shelot u'Teshuvot Hatam Sofer #338, see Freehof, Delayed Burial 239). There is also considerable use of Greek terminology in rabbinic discussions on medical topics (Newmyer, Talmudic Medicine and Greek Sources 37-38). It is therefore probable that the authors and editors of the Talmud were familiar with the Greek medical sources, and that these opinions (of Galen specifically) were incorporated into the Talmud. Jewish legal literature therefore largely coincided with Greek medical knowledge. As such, Rashi, who lived 800 years after Galen and still 500 years before any serious dissent from Galen's opinion, was likely even more familiar with his work.

¹⁰ Galen, who believed that respiration was a process by which the heat of the heart was cooled to prevent the body from overheating, commented that after "penetrating with its cooling virtue, the air refreshes the heart; it then leaves it...it is for this reason that the heart has a double movement...because it draws in as it dilates and empties itself in contraction," (Galen, On the Functions of Parts of the Human Body 25). According to Galen, after being inhaled, air eventually went to the heart, where it mixed with blood and became a more purified *pneuma*, which was "identical with the breath of the soul," in its most purified state (Snowman, A Short History of Talmudic Medicine 10-11; see also Furley, 17-18).

¹¹ Reichman, The Halakhic Definition of Death in Light of Medical History 148-74. Rashi says in a gloss to the Babylonian Talmud Hullin 45b, "there are three vessels; after the trachea enters the thorax, it divides into three...one to the heart, one to the lung and one to the liver." Rashi's anatomical understanding of the direct connection between the trachea and the heart is also supported elsewhere. For

heart, like the trachea and lungs, to be a respiratory organ. It is therefore necessary to keep Rashi's views on anatomy in mind when reading his commentary on the physiology of the heart in order to avoid the interpretive errors caused by anachronisms.¹²

Rashi writes that according to some people, “with his heart one can determine whether he is alive, *she-nishmato dofeket sham.*” Clearly, as Edward Reichman points out¹³, Rashi’s physiological understanding of the functions of the heart cannot be accurately determined without a proper interpretation of the phrase “*nishmato dofeket sham.*” The word “*nishmato*” has the dual meaning of both breath and soul, derived from the Hebrew words “*neshimah*” and

example, in Hullin 49a, Rashi addresses the question of how a needle got stuck in the large vessel of an animal’s liver. He concludes that it was ingested through the trachea and moved down the branch that leads to the liver. Rashi mentions again that the trachea branches into three, leading directly to the three vessels—the liver, lungs and heart.

¹² It is not uncommon for rabbinic sources to gain new interpretations or be disregarded all together as a result of changes in medical theory. The historical debate about performing a caesarean section on a mother who has just died in child-birth, that is discussed at the end of this thesis, demonstrates that even the Shulkhan Arukh can be disregarded and then reinstated as a result of changes in the medical understanding of death. Therefore, it is important to know the medical pretexts of rabbinic writings, because this can alter the ultimate interpretation of the source. Accordingly, Rabbi Eybeschutz says that Rabbi Zevi Hirsch Ashkenazi’s responsa are based on erroneous medical theories and should therefore be disregarded. He writes, “regarding scientific principles based on experimentation, today the hypothesis is one way, and when others observe the opposite phenomenon, they retract the initial hypothesis and replace it with another. And such is always the case. Even now, based on experimentation, they have actually retracted all the assumptions and conclusions of Galen and Aristotle” (Eybeschutz, *Kreti u’Pleti Yoreh De’ah* 40:4, in Reichman, 162).

However, Rabbi Hershel Schachter cites the Chazon Ish, saying that it is irrelevant if the halakhic status of an organ is based on false medical presumptions. All legal categories, including the vitality of organs, are fixed from Talmudic times. Therefore, according to Rabbi Schachter, Rashi’s categorization of the heart as a vital organ based on the Talmud is fixed, regardless of the extra-legal reasons why he believed the heart to be vital (Schachter, Determining Death 38). Thus there is a debate about how Rashi should be interpreted for the legal purposes of defining death. On the one hand, he considers the heartbeat to be vitally important. However, on the other hand, he believes this because he considers the heart to be a respiratory organ. Therefore, Rashi could conceivably be used to argue for either respiration or circulation based definitions of death.

¹³ Reichman, 155-56.

“*neshamah*”, respectively.¹⁴ The word “*dofeket*” means “beats” or “pulsates”, implying the physiological action of the heart. It would therefore be more syntactically consistent for “*nishmato*” to refer also to something physical, because it is awkward to apply a physical motion such as pulsation to the soul. Breathing, however, was understood by Rashi to be a physiological process, which would be consistent with the physical action of “beating.” Furthermore, the physiological action of breathing taking place in the heart is entirely consistent with Rashi’s anatomical understanding of the heart as receiving air directly from the trachea. It is therefore apparent that Rashi believes that the heart is checked for continued beating which was considered to be a sign of life because it was a sign of respiration. Thus, according to Reichman, “when the heart is examined, its movement is a reflection of breathing; its *hiyut* a manifestation of respiration.”¹⁵

With this critical insight into Rashi’s understanding of the reason for checking for the continuing function of the heart, it is possible to come to a full understanding of Rashi’s gloss. Rashi understands the Talmud to be referring only to a person who appears to be dead. For such a person, the determination of death can be made by checking for breathing at the nose, implying that the respiration test is sufficient for the determination of death. However, if a person is buried in such a way that he is uncovered from the feet first, Rav Papa raises the question about the sufficiency of the examination of the heart and thus the necessity of examining the nose. Rashi explains that the question of the sufficiency of testing the heart is contingent on the

¹⁴ There are many words in the Torah that explicitly connect life and breath. In addition to the connection between “*neshimah*” and “*neshamah*”, the word “*ruach*” refers to both wind and spirit. Furthermore, in describing the creation of the life-force in man, the Torah says, “He breathed the breath of life in his nostrils; and the man became a living creature,” (Genesis 2:7). Thus life is explicitly connected to the act of respiration numerous times in the Torah. These words have their analogue in Greek, which uses the word *pneuma* for both breath and spirit or soul.

¹⁵ Reichman, 155.

accuracy of the test of the absence of breathing: some would say that examination of the heart for signs that the breath continues to pulsate is sufficient, while others would say that it is insufficient because “sometimes life is not recognizable in his heart, but it is recognizable in his nostrils.”¹⁶ Hence, according to Rashi respiration is still the most, if not only, physiologically significant function; the heart is only mentioned as a possible location to examine for the presence of breathing.

Another heavily cited pre-Enlightenment halakhic authority to discuss the importance of the heart for the purpose of saving a life, based on Yoma 85a, was Rabbi Zevi Hirsch ben Yaakov Ashkenazi, also known as the Chacham Zevi.¹⁷ In 1709¹⁸ Rabbi Ashkenazi was presented with a question regarding the status of a chicken that was found to be missing a heart during its preparation for a meal. In a lengthy responsa, Rabbi Ashkenazi argues, “the whole point of our words is that it is inconceivable that a creature be born missing a heart, for it is impossible since all life and vitality are dependent on it.”¹⁹ To drive his point home, Rabbi

¹⁶ Rashi, Commentary on Yoma 85a.

¹⁷ I am treating Rabbi Ashkenazi as part of the rabbinic tradition in existence before the scientific revolution of the Enlightenment, even though he was contemporary with its early stages (in fact, he is often considered a pre-Enlightenment rabbi, see Fram, Jewish Law from the Shulhan Arukh to the Enlightenment 369). While he quite explicitly subscribes to the thought process of pre-enlightenment medicine, Rabbi Ashkenazi’s responsa, written after the discovery of the circulation of the blood by William Harvey, contains no mention of this revolutionary idea—an idea that would presumably have made a significant impact on his lengthy discussion of the purpose of the heart. It is therefore apparent that he was unaware of the medical advancements of the enlightenment. Consequently, from Talmudic times until Rabbi Ashkenazi, medical opinion can be thought of as having remained stagnant, in the minds of the rabbinic authorities, for the practical purposes of understanding the root of Rabbi Ashkenazi’s responsa.

¹⁸ The amount of time that passed between these two commentaries on the heart as a possible location to test for continued life is significant. It is clear that Rashi and Rabbi Ashkenazi represent the minority in this regard. While other rabbis, like Rabbeinu Bahya (see below, page 21-22) discussed the importance of the heart during this time period, with regard to the determination of death for the purpose of potentially saving a life, the heart seems to play a minimal role. This is made especially clear, as will be discussed below (see below, page 30-31), by the codes of Jewish law, which uniformly ignore the heart.

¹⁹ Ashkenazi, Zevi Hirsch ben Yaakov. Shelot u’Teshuvot Chacham Zevi #77.

Ashkenazi argues that even if multiple otherwise credible witnesses testify that the heart was not in the chicken when it was first opened up, they are to be considered false witnesses, and it is to be assumed that the heart was present and subsequently lost during preparation.

In the course of his discussion of the possibility of an animal living without a heart, Rabbi Ashkenazi explains and expands on Rashi's commentary about the nature of the heart in Yoma 85a:

Rashi Z”L [of blessed memory] was careful to write “one says, ‘with his heart he can determine whether he is alive, for his breath beats there,’ and the other says, ‘until his nostrils,’ for sometimes life is not recognizable in his heart, but it is recognizable in his nostrils.” Behold, Rashi Z”L agrees with our position that the *neshamah* is in the heart, but that sometimes, even though the *neshamah* is still within the heart, the beating is not noticeable in the heart [externally on the chest] due to its great weakness. The heart is hidden beneath the chest and the beating is not noticeable externally on the chest since the beating is very weak inside. But the *neshamah* coming from the heart by way of the lung is noticeable as long as the heart lives. It is a very clear thing that there is no *neshamah* unless there is life in the heart, for from it and for it come *neshamah*.²⁰

It is clear that Rabbi Ashkenazi agrees with Rashi's opinion about the respiratory nature of the heart. In describing the aspect of the heart that is to be observed, Rabbi Ashkenazi continuously uses the word *neshamah*, which, as noted above, can have the dual meaning of both breath and soul. The syntax in Rabbi Ashkenazi's commentary is much more consistent with the physiological nature of breathing than with the metaphysical soul. Especially considering that Galenic medicine held that air flowed between the heart and the lungs, Rabbi Ashkenazi clearly implies the breath when he writes, “the *neshamah* coming from the heart by way of the lung is noticeable as long as the heart lives.” Furthermore, it would be somewhat heretical for Rabbi Ashkenazi to contend that the soul existed for the benefit of the heart. Surely he means to say

²⁰ Ashkenazi, Zevi Hirsch ben Yaakov. *Shelot u'Teshuvot Chacham Zevi* #77.

that the breath moves through the heart and sustains it, along with the rest of the body. As it is unlikely that he would use the exact same word in the same paragraph to take on two entirely different meanings, it is most likely that the intended meaning of Rabbi Ashkenazi's responsa is that the heart is the seat of respiration. It therefore seems that Rabbi Ashkenazi understood Rashi the same way that I described it: that the heart is the seat of respiration and the beating of the heart is a manifestation of respiratory activity.

Rabbi Ashkenazi goes on to explain explicitly how he understands the connection between the heart and respiration, and does so in a way that is entirely consistent with Galenic medicine. He writes:

So, too, wrote R. Abraham Ibn Ezra on the verse "and He breathed into his nostrils the breath of life." Quote: "The meaning of 'in his nostrils' is that through them a man lives. For they dispel the hot air from the heat of the heart and bring in the other air." It is then clear that the reason life depends on the breathing of the nose is because it is through the nose that the hot air from the heart leaves, and cold air enters to cool the heart.²¹

Essentially what Rabbi Ashkenazi is arguing is that the movement of air, or respiration, is the key to life. Consequently, the absence of the ability to spontaneously move air through one's own body would constitute death. With regard to a person who is buried under a building on the Sabbath in such a way that his heart is reached before his nose, Rabbi Ashkenazi would rule that it is sufficient to check for a heartbeat, however only insofar as it indicates that respiration has ceased.

²¹ Ashkenazi, *Shelot u'Teshuvot Chacham Zevi* #77. According to Galenic medicine, the heart's innate heat is the source of the natural heat of the body. This innate heat was the most important power in the body. However, too much of it was dangerous and therefore the heart brought air into the body to cool its innate heat (Reichman, 150). The idea that the heart provided the vital heat for the body, which had to be controlled by the cooling air, was not disproved until the 17th century, when Giovanni Borelli measured the temperature of the heart, and found no changes as it contracted (Reichman, 162). As a result of the current knowledge that the heart's purpose is not to heat the body and that it pumps blood and not air, Rabbi Ashkenazi's discussion of the importance of the heart would be irrelevant to the halakhic definition of death (Steinberg, Moment of Death).

The first possible interpretation of the Talmudic passage, that it is a debate between the relative importance of the respiratory and circulatory systems in the determination of death is therefore off base. For one, the version of the passage that contains the correct details of the nostrils and the heart was relatively rare. Secondly, those pre-modern rabbinic authorities who had access to this version and understood it purely in physiological terms did not discuss the circulatory system at all, but rather viewed the heart as a respiratory organ. Hence, the physiological debate between checking for breathing at the nostrils versus checking the heartbeat was actually understood to be a debate if the absence of a heartbeat is sufficient to prove that the person has lost the capacity to breathe. According to those few pre-modern rabbis who understood the Talmudic passage as a discussion on physiology, the essence of life is in the movement of air throughout the body; when this function has ceased, the soul has departed.

Another way that the Talmudic passage can be understood is that it is a debate between checking for the presence of the most essential physiological function and checking the organ that is produced first in a fetus, with the philosophical assumption that the first organ to be made must be the last one to die. The origin of this interpretation comes from the apparent inconsistency between the first and second paragraphs²², which are explicitly connected as being “similar to [the dispute] of these Tannaim.” The first paragraph recounts a discussion about the location at which death can be determined, and focuses on the saving of a life. The second paragraph, however, discusses different theories of embryonic development. Furthermore, even

²² In the standard printed edition of the Babylonian Talmud, as it is printed above, the second paragraph begins: “Shall we say...” However, in other versions this paragraph is found after Rav Papa’s comment. Additionally, it appears that Rashi accessed the latter version, as can be seen in the order of his comments. Any mention of “the second paragraph” refers to the standard printed edition.

the main details are inconsistent between the two paragraphs, with the first debating between the nostrils and the heart, and the second between the head and the navel²³.

The most likely intention of the juxtaposition of the two discussions is to make a comparison between the primal location of embryonic origin and the location of the last part of the body to cease to function, implying that the two locations might be analogous. Hence, according to those who consider the fetus to form from the head²⁴, one should check for signs of breathing at the nose, which would indicate if the head is functioning. According to those who believe that the fetus forms from the navel and “sends out its limbs in all directions,” one should examine the heart for signs that the midsection of the body is still functioning.²⁵ In his commentary on the Torah, Rabbeinu Bahya ben Asher expresses an analogous view, “because the heart is the first organ in the creation of man, and the last among the organs of the body to

²³ However, the version in the Jerusalem Talmud discusses the nostrils and the navel as potential locations at which death can be determined, which is more consistent with the details of the second paragraph. (see below, note 25).

²⁴ The debate about the location of the origin of fetal development has its origins in the Greek debate. The Talmudic rabbis who hold that the navel is the origin of embryonic development do so in the tradition of Alcmaeon of Crotona (6th century B.C.E.). Those who argue that the head is the first organ to be formed in a fetus agree with Lactanius of Nicomedia (325 B.C.E.), (Needham, A History of Embryology 78). See also Tal, 5., for a discussion of a few Jewish source texts of the embryological debate.

²⁵ There are two functions that could be implicated here in the examination of the heart. Most obviously, one would check the heart for a pulse, however this function is separated from the navel by some distance. Alternatively, the heart was often considered to have a digestive function, and often implied the stomach region (Psalms 104:15; Gittin 70a; Hullin 59a, see Rosner, The Heart in the Bible and Talmud), which would be more consistent with the examination of the navel area. The fact that the Hebrew word for heart was often interchangeable with the stomach is not surprising considering the greek word *cardia* means both heart and stomach, the Roman *ventriculus* means both heart and stomach, and the Egyptian *papyrus* refers to drugs which enable the heart to absorb food (Snowman, 25).

In the Jerusalem Talmud (Yoma 8:5) the debate is between checking the nostrils or the navel, and not the heart. The analogy that the Gemara proposes between embryonic development and the determination of death is therefore even more consistent with the Jerusalem Talmud, where it appears that one opinion is to actually check the location where the umbilical cord was attached, though the function that one is checking for is less clear in this context.

die, therefore Scripture says, ‘You shall love the Lord your God with all your heart,’ i.e. until the last moment of life.”²⁶

While the intention of the juxtaposition of the two sections is to suggest that the first organ to be produced in a fetus is the last organ to die, the Gemara appears to reject this conclusion in the case of determining death. Abba Shaul, whom the Gemara cites as being of the opinion that the fetus forms from the navel, argues that with regard to saving a life, theoretical embryonic origins have no place.²⁷ Presumably, the saving of a life is too important to rely on a theoretical or philosophical understanding of the body, when empirical physiological evidence shows that the first organ created is not necessarily the last to die.

Thus, according to this interpretation of the Talmudic passage in Yoma, the rabbis are not debating which physiological function defines life. Rather, the Gemara discusses if the analogy between the order of fetal development and the person’s death should be utilized in the determination of death, when the possibility of saving a life is at stake. As such, the debate between checking the nostrils and the heart is only meant to mirror and respond to the embryonic debate. When the Gemara ultimately rejects the applicability of the analogy to the situation where a life can be saved, it concludes, “with regard to saving a life, even Abba Shaul would

²⁶ Bayha ben Asher, Commentary, Deuteronomy 6:5. Rabbeinu Bayha is the only early rabbinic authority who adheres to the view that the heart is the first organ to be produced in the fetus, a view which is consistent with Aristotle (Herring, Jewish Ethics and Halakhah for Our Time: Sources and Commentary 47). It seems that it was a more common view that the fetus formed from the navel, but that the heart, which is very close to the navel, was checked because of its distinct motion.

²⁷ Abba Shaul does not present any evidence to disprove the presumption that the first organ to be produced must be the last to die. This implies that the burden of proof lies in the hands of those arguing that the locations are analogous. The possibility of finding out that this assumption is misguided creates the possibility of letting someone who could be saved die, which is considered sitting idly by the blood of your neighbor, and is tantamount to murder. Therefore, unless the debate over fetal origins can be resolved and its association with the location of death proven, with regards to the saving of a life, “even Abba Shaul would agree” that the determination of death should be based on physiology, not theoretical embryonic theory.

agree that the essential life [is to be found in the] nose, as it is written: All in whose nostrils was the breath of the spirit of life.”²⁸ Hence, according to this understanding of the passage, after the rejection of the analogy there is no longer a debate between examining the nose or the heart, for it is agreed that breathing is the essential physiological function that defines life.²⁹ The Gemara therefore concludes that when determining if a person is dead or alive, one must examine the nose for signs of respiration.

The most likely originally intended meaning of the Talmudic passage, however, was that the rabbis agreed that death is determined by the absence of respiration, and were discussing where breathing can best be detected in the case of a person who is uncovered from the feet first. This is the conclusion reached by Alexander Tal, based on a detailed analysis of the various manuscripts of the Talmudic passage and a reconstruction of the most likely original Talmudic text.³⁰ Tal examined eight manuscripts of the Babylonian Talmud Yoma 85a text and grouped

²⁸ Yoma 85a.

²⁹ Interestingly, the fetus is not considered a *nefesh*, or fully alive, until birth, “when it exits into the air of the world,” and begins to breathe (Rashi, Commentary on Sanhedrin 72b). Although this does not fit precisely with the idea of fetal development as described in the Gemara, it implies that there is still some validity to the notion that the first function of the body is the last to cease. However, in this case it is not that breathing is the first function of the embryo and the last function of the dying adult, but rather that breathing defines the limits of what is considered full human life (Nevins, Dead or Alive? Halakhah and Brain Death 14). The concept of breath defining the borders of what constitutes real human life is also consistent with the creation of Adam. In Genesis 2:6, Adam is fashioned from dirt and only becomes a living being when God breathes into his nostrils. Likewise, Adam would cease to be a living human being when he ceased to be able to breathe spontaneously. Therefore, the Yalkut Shimoni (*lekh lekha*, #77) cites Pirkei d’Rabbi Eliezer (Eliezer ben Hyrcanus, Pirkei d’Rabbi Eliezer, chapter 52) saying that before the time of Jacob, who was the first person to get sick and know that he will die, people died by sneezing a terminal sneeze. Death occurred when the breath of life, which God breathed into the nostrils man left through the same orifice in a sudden sneeze. According to Pirkei d’Rabbi Eliezer, it is for this reason that one should thank God for remaining alive after a sneeze (see Bleich, Establishing Criteria of Death 18). This view was especially popular during outbreaks of the bubonic plague in the middle ages, when sneezing was considered a sign of imminent death (Snowman, 21).

³⁰ There is a debate regarding the importance of manuscript evidence in halakhic rulings. While the Gaon of Vilna often described how the texts had been emended and utilized variations of the texts in halakhic rulings, the Chazon Ish was very much against the use of speculated reconstructions of traditional texts

them into three groups according to locations where death can be checked according to the first paragraphs.³¹ Only two of the manuscripts discuss the nostrils and the heart as possible locations to determine death; this version was accessed and heavily influenced by Rashi and is most consistent with the standard printed version of the text. In two of the manuscripts the rabbis debate between checking the heart and the navel; these manuscripts are considered to be the two most accurate sources for the tractate of Yoma, but are not preserved in any extant commentaries. The four remaining manuscripts, in which the rabbis debate between the nostrils and the navel, were the most common and are the ones most accessed by the medieval commentators. This version is also consistent with the version preserved in the Jerusalem Talmud.

In addition to the textual variations that can be found in Talmudic manuscripts, the second paragraph of the passage, which discusses embryonic development, can also be found, in an almost identical form, in Sotah 45b. The Talmud in Sotah reads:

From where [on a corpse found between two towns] did they measure? Regarding what do they disagree? [One] master [R. Akiva] maintains that the essential life is in [a person's] nostrils. And [the other] master [R. Eliezer] maintains the essential life is in his navel.

Shall we say [the dispute] is like these Tannaim? From where is the fetus formed? From his head. As it says: From my mother's womb did you pull me out (*gozi*) [Psalms 71:6]. And it says: Pull out (*gozi*) your hair and throw it away [Jeremiah 7:29]. Abba Shaul says: [the fetus is created] from its navel,

(Tal, 1). See also Lifshitz, The Age of the Talmud 175-180. and Goldberg, The Babylonian Talmud 340-342. for discussions on the editing of the Babylonian Talmud. In practice, variant readings of Yoma 85a have made little difference in the history of the halakhic determination of the time and location of death. Nevertheless, the reconstruction of the most likely original Talmudic passage remains an intriguing way to discover the views of the original Talmudic authors and editors, without looking through the biased filter of later rabbinic interpretation. As Judaism is a tradition where the earliest authorities carry the most weight, the reconstruction of the original Talmudic passage is not an insignificant task.

³¹ The JTS EMC 218 and Munich 6 manuscripts say that the debate is to check the navel or the heart; the Munich 95, London 400, Spanish printed edition, and the Fr. Ebr. 19 Bassano manuscripts say nostrils and navel; and the Oxford 366 and Venice printed edition say nostrils and heart (Tal, 2-3). See Goldberg, The Babylonian Talmud 351-366. for a list of all known manuscripts of the Babylonian Talmud.

and it sends out its limbs in all directions. You can even say Abba Shaul [agrees to measure from the nose]. Until now, Abba Shaul has said this only with regard to the formation [of the fetus], that when a fetus forms, it is formed from its middle. But with regards to [the essence of] life, everyone agrees it is in his nose. For it is written: all in whose nostrils was the breath of the spirit of life" [Genesis 7:22]³²

As it is highly unlikely that two almost identical paragraphs originated independently in Yoma and Sotah, the paragraph must have been created in one context and later moved to the other. A comparison of the various manuscripts to the Sotah version reveals the process of transformation of the texts that took place during the redaction of the Talmud as well as the composition of the original version.

There are three important factors to consider about the variations in the texts when comparing the passage in Sotah to the various manuscripts of Yoma. For all three factors, it is important to note that while the Yoma text varies extensively in both its structure and details, there is no significant variation among the different manuscripts of Sotah, at least with regard to the factors that are important for a comparison to the Yoma text. First, the location of the duplicated paragraph within each version should be considered. Second is the consistency between the details in each version, and the third factor that should be considered is the variation in the concluding remarks of Abba Shaul.

There are two different structures of the discussion in Yoma. In most of the manuscripts the paragraphs are arranged as they are found in the standard printed edition, with the discussion of embryonic development being found in between the introduction to the discussion and Rav

³² Sotah 45b. The laws of *eglah arufah*, based on Deteronomy 21:1-9, state that the town closest to the site of a murdered corpse must break the neck of a calf in expiation for the killing. As such, the rabbis, in Sotah 45b, discuss from where to measure, should a body be found exactly between two towns. In the case of a decapitated corpse, the discussion focuses primarily on determining the body part that is least like to move and therefore most likely to indicate the cite of the murder. However, when the body is fully intact, the debate turns to finding the essence of life, so measurement can be done from its primary location on the body.

Papa's statement. However, in two of the manuscripts³³ the paragraph about embryonic development is found after the Rav Papa paragraph. The variation in structure of the Yoma passage, where none exists in Sotah, indicates that the paragraph on embryonic development originated in Sotah and was brought to Yoma, where it was integrated in different locations in different manuscripts.

The most obvious difference between the manuscripts is the variation in the details that are being debated. In every case, the embryonic development paragraph discusses the nostrils and the navel, which is consistent with the most common group of manuscripts. Furthermore, as was argued above, a debate between nostrils and heart in one paragraph can also be considered consistent with the discussion of nostrils and navel in the other. However, the two versions of Yoma that record a debate between the navel and the heart in the first paragraph³⁴ are entirely inconsistent with the details of the discussion about fetal origins. This indicates that the section was originally in Sotah, and then transferred to Yoma, where (in most cases) the details of the first paragraph in Yoma were likely corrected in order to better match those of the second paragraph brought in from Sotah. Furthermore, the lack of continuity between the details that still exists in some versions implies the originality of those versions³⁵ according to the principle *lectio difficilior potior*, “the more difficult reading is stronger.” Because no editor would alter a smooth and consistent reading in favor of a more difficult one, the difficulty of explaining the

³³ Oxford 366 and Spanish printed edition. It appears that Rashi accessed a version that was arranged in such a manner.

³⁴ JTS EMC 218 and Munich 6.

³⁵ Furthermore, if the heart was in the original version, and checking for cardiac activity was initially implied as a minority opinion, it is most likely that some early authority would follow that tradition and require checking the heart. However, the absence of such an authority (Bleich, Establishing Criteria of Death 11) may indicate that it was known amongst early authorities that the heartbeat was not the originally intended meaning, and therefore checking for a heartbeat would be a mere suggestion at most.

discontinuity in the details in light of the more common occurrence of continuity in other versions implies its originality. It is difficult to imagine the paragraph from Sotah being placed in a version that already discussed the nostrils and the navel, and then go through a process of editing in which nostrils was replaced with heart, which has no basis in the prior discussion. On the other hand, it is not difficult to image the paragraph from Sotah being brought into the original version discussing the heart and navel, and either of the details being changed to nostrils in order to better match the newly situated paragraph, which claims to be “similar to these Tannaim.”

Furthermore, in the Sotah version, Abba Shaul’s conclusion is always that life is in the nostrils. While different versions of Sotah use the word *neshamah* or *hiyuta*, both words imply the essential aspect of life. In the Yoma text, on the other hand, one version uses the word *neshamah*³⁶, one uses the word *hiyuta*³⁷, one does not contain Abba Shaul’s conclusion at all³⁸, and the five remaining manuscripts say, “with regard to saving a life (*pikuach*³⁹ or *pikuach nefesh*⁴⁰) even Abba Shaul would agree that life is in the nose.” The relative amount of variation in the Yoma text suggests that it has gone through extensive editing, implying that the passage likely originated in Sotah and was subsequently moved to Yoma, where various changes were made in the different manuscripts to try and make the transition smoother.

³⁶ Munich 6.

³⁷ London 400.

³⁸ JTS EMC 218.

³⁹ Munich 95.

⁴⁰ Fr. Ebr. 19 Bassano, Oxford 366, Spanish printed edition, and Venice printed edition.

The purpose of the dispute in Sotah is to establish where the essence of life exists in order to determine from where one should measure on a corpse to the nearest town.⁴¹ The purpose of the dispute in Yoma, however, is with regard to a person who may be alive, and thus involves the potential saving of a life. Hence, “saving a life” is very appropriate in Yoma, and not at all in Sotah, where the discrepancy is with regard to a person who is already dead. Therefore, using the same logic of *lectio difficilior potior* described above, it is apparent that the paragraph originated in Sotah and was transferred into Yoma, where, in most cases, “essential life” was replaced by “saving a life” in order to create some amount of consistency between the two paragraphs.

In this fashion, Tal was able to recreate the most likely initial version of the Yoma text along with the subsequent chain of editorial events. Tal reconstructs the original version as follows:

Our rabbis taught: How far does one check? Until [one reaches] his navel. Some say: Until his heart. If he checked and found those above to be dead, he should not say: those below are surely dead. Once it happened and they found those above dead and those below alive.

Rav Papa said: The dispute is only from below upwards, but if from above downwards, since he examined his head, he need not check any further, as it is said: “All in whose nostrils was the spirit of the breath of life” (Genesis 7:22).

Subsequently, the discussion of fetal development was transferred from Sotah to Yoma⁴², where it was placed either between the two initial paragraphs, or after the Rav Papa statement. In order to aid the transition and increase the correlation between the sections, most editors altered the

⁴¹ The laws of *eglah arufah*, based on Deuteronomy 21:1-9, state that the town closest to the site of a murdered corpse must break the neck of a calf in expiation for the killing. As such, the rabbis, in Sotah 45b, discuss from where to measure, should a body be found exactly between two towns. The debate thus focuses on finding the essence of life, so measurement can be done from its primary location on the body.

⁴² The Sotah passage was likely brought in because of the similarity of the conclusions and proof texts. Both sources conclude that the essence of life is in the capacity to breathe, as can be seen in the verse from Genesis.

details in the first paragraph to better match those in the new addition. Most editors also changed Abba Shaul's conclusion, in order for the new paragraph to better fit the context of saving a life from the collapse of a fallen building.

Based on the reconstruction of the most likely original version of the Talmudic passage in Yoma, it is possible to arrive at a new understanding of the initial Tannaitic dispute and the original intention of the authors of the passage. According to Rav Papa, the dispute is only relevant in the case of a person whose mid section is uncovered before his head. Surely if his head is uncovered first, Rav Papa states, life can be determined by checking for the breath of life at those nose. However, if his trunk is uncovered first, the rabbis debate if the navel or heart should be examined. The only way that the navel and heart can be considered comparable in their ability to indicate the presence of life is if they are being examined for the rise and fall that is characteristic of breathing. Certainly there is no motion of the stomach that can indicate the presence of life clearly enough that it can be compared to the beating of the heart. Therefore, the heart and navel do not refer to different physiological functions, but indicate the general locations of the chest and abdomen that can be examined for breathing.⁴³ It is clear that the original authors of the Gemara were primarily concerned with the detection of breathing, which they considered to be the essence of life, and were only debating the best location to detect respiratory function when the airways are not directly accessible.

In fact, Rabbi Moshe Feinstein, who is considered the most authoritative source on the halakhic validity of brain death, implied this same conclusion:

⁴³ Examination of the heart does not necessarily mean the actual organ or the heartbeat, but is often used to denote the chest region (Sanhedrin 68a; Semahot 9:5; Sotah 1:5; Moed Katan 22b; Menachot 37a; see Rosner, The Heart in the Bible and Talmud 77-85).

But it is clear and simple that the nose is not the body part that gives life to a human...the intent of the verse “the breath of the spirit of life is in his nostrils” is not about the essence of the breath of life, because it is surely not in the nose. But the breath of life we see in the nose.⁴⁴

The Talmud does not imply that the essence of life is in the nose, *per se*, but rather than the essence of life is in the capacity to breathe, which is most readily detectable at the nose. Therefore, the Talmudic debate is not about the nature of the essence of life—it is clear to all that it is presumed to be the capacity to breathe—but it is a debate about the best location to detect breathing. In the original version of the passage, the nose was sufficient to determine death, however it appears that it was not absolutely necessary because the midsection could be examined in its place. Upon the inclusion of the paragraph from Sotah and the subsequent editing to include mention of the nostrils in the first paragraph, the debate about which region of the midsection could be sufficient to determine death was changed to a debate if examination of the midsection for respiration was even sufficient in the first place. The dominant opinion became that examination of the nose for breathing was both necessary and sufficient to determine death, while the minority opinion held that the examination of either the chest or stomach for signs of respiration would be sufficient if the nose was inaccessible. Either way, it is clear that throughout the process of the redaction of the Talmud, the essence of life was defined as the capacity to breathe, and death defined as the cessation of this ability.

Therefore, out of all of the ways that the passage in Yoma could be understood, in every case it was presumed or concluded that the essence of life was in the capacity to breathe. It is

⁴⁴ Feinstein, Igrot Moshe, Yoreh De'ah II:146. This is Rabbi Feinstein's only responsa that deals explicitly with the question of brain death that was left out of Tendler's book Responsa of Rav Moshe Feinstein: Care of the Critically Ill. Curiously, it is also the responsa that appears to be most critical of brain death. Therefore, this responsa was graciously translated by Rita Shtull.

therefore abundantly clear that, according to the Talmud, the absence of respiratory capacity is both necessary and sufficient for the determination of death.

Furthermore, the fact that this conclusion is reiterated in all three medieval codes of Jewish Law suggests that according to normative halakha the determination of death is made exclusively by the examination of the nose for signs of respiration. Maimonides codified the law, “If debris falls on someone...if upon examination no sign of breathing can be detected at his nose, the victim must be left where he is [until after Shabbat], for he is already dead.”⁴⁵ Rabbi Yaakov ben Asher, known as the Ba’al ha-Turim, emphasizes that Maimonides’ ruling to examine the nose applies even to the extreme case of a person uncovered from the feet first, and even when he is highly unlikely to survive:

Even if he is found so severely crushed so that he cannot live for more even a short while, one must clear [the debris] and examine until one reaches his nose. If no sign of life can be detected at the nose, he is surely dead. There is no difference if they had uncovered his head first or his feet first.⁴⁶

Rabbi Joseph Karo reiterated the statement in the Shulkhan Arukh:

Even if he is found so severely crushed so that he cannot live for more even a short while, one must clear [the debris] and examine until one reaches his nose. If no sign of life can be detected at the nose, he is surely dead. There is no difference if they had uncovered his head first. There is no difference if they had uncovered his feet first.⁴⁷

⁴⁵ Maimonides, *Mishneh Torah, Hilkhot Shabbat* 2:19. Maimonides further emphasizes that continuing to remove debris on the Sabbath is not only not required, but is forbidden as it is a transgression of a negative commandment: “When one uncovers the nose and can detect no breathing, it is forbidden to remove any further debris on the Sabbath, for that person is certainly dead,” (Maimonides, Commentary on Mishnah Yoma 8:7).

⁴⁶ Yaakov ben Asher, *Arba’ah Turim, Orah Hayyim* 329:4.

⁴⁷ Karo, *Shulkhan Arukh, Orah Hayyim* 329:4. In Rabbi Karo’s commentary on the Tur he cites the origin of the law in Yoma, “Our rabbis taught: until where does one check? Until his navel. And some say until his nostrils. Rav Papa said...” (Karo, *Beit Yosef, Orah Hayyim* 329:4). It is therefore apparent that Rabbi Karo accessed a version of Yoma that did not mention the heart, and presumably contains the passage originating in Sotah after the statement by Rav Papa.

Therefore, according to all three codes of Jewish Law, death can only be absolutely determined by the absence of respiration at the nose. Until this is proven, some doubt remains if the person is alive, even if it seems obvious that he will not live, and one must make every effort to save him. However, once respiration is determined to have ceased, the person is absolutely dead. Hence, the Chofetz Chaim wrote that the last line in the Shulkhan Arukh implies that the absence of respiration is a necessary and sufficient criterion in the determination of death.⁴⁸

In conclusion, although the discussion recorded in Yoma appears, to the contemporary mind, to be a debate about the relative importance of the respiratory and circulatory systems in the determination of death, the passage was never intended or traditionally understood to discuss circulation at all. Even in the few instances where cardiac activity is specifically mentioned, the heart is considered a respiratory organ, and its beating a sign of respiratory function. Furthermore, in the majority of cases, cardiac activity is simply not mentioned. Rather, the rabbis may have discussed the role of theories of fetal development in the determination of death, concluding that the cessation of respiration should be the only criterion for death. Alternatively, the rabbis may have been discussing different locations on the body where the inhalation and exhalation could be detected. Whatever the original authors and editors of the Gemara might have initially intended, it is abundantly clear that the absence of respiratory capacity was considered both necessary and sufficient for the determination of death throughout pre-modern rabbinic history. In fact, “there is no opinion recorded in the Babylonian Talmud – majority or minority – which *requires* examination of the heart.”⁴⁹ Hence, “the classic definition of death in Judaism as found in the Talmud and Codes of Jewish Law is the absence of spontaneous

⁴⁸ Kagan, *Mishna Berurah* 329:11, see Nevins, 9.

⁴⁹ Bleich, *Establishing Criteria of Death* 11.

respiration in a person who appears dead (i.e., shows no movements and is unresponsive to all stimuli).⁵⁰

Therefore, from the beginning of rabbinic history, until the late 18th century, it was nearly unanimous that death must be determined by checking for the cessation of respiratory activity. The methods for this detection have varied from checking the chest or abdomen for the rise and fall of inhalation and exhalation, to checking for a heartbeat⁵¹, to the examination of the nose with a mirror or feather. For all tests, however, the key physiological function associated with the essence of life was always breath.

Medical historians are unanimous that medical science made no significant progress for the thirteen centuries after Claudius Galen, who died at the beginning of the third century C.E.⁵² Therefore, Jewish thought could not possibly be influenced by any advances in medical science, as no advances existed.⁵³ The authors of the Talmud as well as its subsequent commentators were familiar with the same Galenic medical theories, and therefore had the same underlying medical assumptions about how the human body worked. From the beginning of rabbinic

⁵⁰ Rosner and Tendler, Definition of Death in Judaism 17. The fact that the person in question appears dead was obviously presumed by the author's of the Talmud, who were commenting on the Mishnah, which only applies to the case where "there is doubt whether he is alive or he is dead," (Mishna Yoma 8:7). As such, the Gemara does not discuss what to do when a person moves his limbs, assuming that everyone would know that a person who is crying and waving his arms for help is absolutely alive. For this reason, Rashi clarifies that the Gemara only applies to a person who "seems to be dead, in that he is not moving his limbs," (Rashi, Commentary on Yoma 85a). Rabbi Shlomo Mordechai Schwadron concurs, "absence of perceivable spontaneous respiration is only conclusive in the determination of death if there are no signs of life in other limbs," (Teshuvot Marsham 6:124, See Rosner and Tendler, 20-21). For a debate about the applicability of this commentary to the situation of a person who is incapable of breathing, yet has a sustained heartbeat or other involuntary motion, see chapter 4, below.

⁵¹ The heart, as was noted above, was seen as a respiratory organ, and its movement a manifestation of breathing.

⁵² The first significant dissention from Galenic medicine came in the 16th century and it was not under serious attack until the 17th century (King, 1).

⁵³ Snowman, 9.

history until the Enlightenment, when Galenic medicine went under attack, there was no change in common medical knowledge or new medical discovery to prompt the rabbis to react by questioning the traditional definition of death. It is therefore no surprise that the traditional definition of death in Jewish Law remained relatively unchallenged and entirely unchanged for precisely the thirteen-hundred-year duration of stagnancy in medical science with regard to the understanding of the process of death.

The Transition to Modern Definitions of Death

The traditional definition of the moment of death in Judaism, based solely on the capacity to breathe, began to break down and transform in the 18th century as a result of Western society's changing understanding of death that came with the "scientific and technological redefinition of man's place in nature" during the Enlightenment.⁵⁴ As a result of the broad intellectual and social effects of the Enlightenment, "the boundary between life and death [became] frighteningly indistinct."⁵⁵ This fear of death permeated through all aspects of European society for over a hundred years⁵⁶, creating a social and scientific revolution in man's relationship to death, to which Judaism was forced to respond. With the advancements in the medical understanding of death, the pre-modern Jewish definition of death encountered its first major altercation, which resulted in a significant transformation to the legal conceptions of life and death. Only with this first major dissent from the stagnation of medical thought could rapid changes in the scientific understanding of death instigate a reaction in Jewish Law.

The Galenic system of medicine, which had dominated rational medical science since the second century, encountered its first significant criticism in the 16th century and by the 18th century, Galenism had entirely fallen apart.⁵⁷ The Enlightenment was therefore the first period in history in which widely accepted medical assumptions were questioned and examined since the Talmudic period. With the dissent from Galen and the intellectual turmoil that was brought

⁵⁴ Panitz, Modernity and Mortality: The Transformation of Central European Jewish Responses to Death, 1750-1850 78.

⁵⁵ Pernick, Back From the Grave: Recurring Controversies Over Defining and Diagnosis Death in History 20.

⁵⁶ Aries, The Living Dead 396.

⁵⁷ King, 1.

about by the Enlightenment, people began to reconsider man's nature. Likewise, doctors began to question the nature of death, becoming concerned with a condition known as 'apparent death' where the boundary between life and death became indistinct and a person might simultaneously be both living and dead. At first, the uncertainty of apparent death meant that people saw life infringing on death, with corpses that bled and whose hair grew—signs usually attributed solely to the dead. However, by the 18th century, the uncertainty of death meant that doctors saw the realm of death encroaching on the living.⁵⁸ The signs of life that were often seen in a corpse were reinterpreted as evidence of the possibility that these "corpses" were not fully dead after all. Consequently, the condition of apparent death started while a person was still alive, and the possibility of becoming a living corpse became distinct and terrifying.

Beginning in the middle of the 18th century doctors seized the fear that was aroused by apparent death and condemned premature burial as one of the greatest dangers of the age.⁵⁹ By the end of the 18th century, as a result of an increasing popular interest in the medical advances focusing on the difficulties in the determination of death, the fear of the ambiguity of death spread from the medical community to the laity.⁶⁰ This fear was most often manifested in a deep apprehension over premature burial. People were horrified that a weak pulse and shallow respirations might go unnoticed and return only after burial. Although accounts of such live burials date back thousands of years⁶¹, "an abundant specialized literature took a new look at the

⁵⁸ Aries, 404.

⁵⁹ Aries, 397.

⁶⁰ Panitz, 99.

⁶¹ See Semachot 8:1. The influence of this event on the understanding of the definition of death throughout Jewish history will be discussed below.

old stories...and reinterpreted them in the light of what was known about apparent death.”⁶² As a result, there was a sharp increase in the number of recorded accounts of live burial, which served to augment the rising fear.⁶³ Stories abounded about people exhumed only to find the body outside the coffin, with torn garments and flesh, bloody hands, and broken bones as a result of unsuccessful attempts to extricate themselves from their graves after having been buried alive.⁶⁴ These gruesome tales of premature burial fed the fears and apprehensions of everyone.

Consequently, many people attempted to guarantee that they would not be buried alive. People were sometimes buried in specialized safety coffins that allowed communication to those above ground, or with tools that might come in handy if they needed to extricate themselves from the grave. Other times, they sought to ensure that they were in fact dead before burial and demanded decapitation, bloodletting, or being stabbed in the heart. Still others came up with various extremely painful procedures, designed to wake them up should they be mistakenly pronounced dead. However, the most common precaution against premature burial was a delay prior to internment. Delay reached a morbid extreme in 1858 when the Duke of Wellington’s burial was delayed for two months after his death however, in most cases burial ensued within 2-3 days, as bodies would begin to decay, and the danger of live burial would be gone.⁶⁵

⁶² Aries, 397. The most famous story of premature burial is perhaps that of the woman who was awoken from a newly dug grave by a grave robber when he cut off her finger to take her ring (for accounts of the story, see Aries, 399; Bondeson, Buried Alive: The Terrifying History of Our Most Primal Fear 35-50; Dossey, The Undead: Botched Burials, Safety Coffins, and the Fear of the Grave 348; Pernick, 30). While the actual events in the story may date back as far as the 14th century it became a popularized tale and the subject of numerous paintings in the 18th and 19th centuries. By the beginning of the 20th century the event was attributed to no less than 19 cities in Germany alone (Bondeson, 35-50). The resurgence of the tale, along with the claim that it happened almost everywhere attests to the rising popular fear of premature burial at this time.

⁶³ Dossey, 347.

⁶⁴ Dossey, 347-348; Bondeson, 118-136.

⁶⁵ Dossey, 347-349; Panitz, 80-81.

Cases of reanimation of the apparently dead had always existed, but it was Jacques Benigne Winslow's 1740 book on the fallibility of tests for death that popularized the ambiguity of death.⁶⁶ As the leading anatomist of his century⁶⁷, Winslow's thesis, that even the most modern surgical tests for death were unreliable and that decomposition of the body was the only way to be certain that death had occurred, carried significant weight among his colleagues.⁶⁸ Winslow's book was a huge success. Within 20 years it was translated and reprinted into numerous languages and editions,⁶⁹ having a far-reaching effect on European medical and popular culture.⁷⁰ The ambiguity about the moment that the whole person, as an integrated functional unit, transitioned from life to death led scientists like Winslow to adopt a definition of death that required the death of the whole person, i.e. the putrefaction of the body. For most doctors, the only way to distinguish between actual death and apparent death was the duration of the phenomenon itself.⁷¹ Hence, the only unambiguous sign of death was decomposition, although some argued that even putrefaction could not reliably be distinguished from gangrene.⁷²

While the defeatist perspective that decomposition was the only reliable definition of death was the most common response to apparent death among medical scientists, others took a more optimistic stance. In continuity with the major advancements being made in medical science, they sought to find new and more consistent signs of death.⁷³ New tests were developed

⁶⁶ Aries, 402; Panitz, 79-80.

⁶⁷ Castiglioni, A History of Medicine 595.

⁶⁸ Bondeson, 53-57.

⁶⁹ Pernick, 21.

⁷⁰ Bondeson, 58.

⁷¹ Goldberg, Sickness and Death: The Wager of Emancipation 195.

⁷² Pernick, 21.

⁷³ Bondeson, 137-154.

to determine if the apparently dead were actually dead, according to the simple concept that those who responded to a given stimulus would be “restored” to life, while those that did respond would be defined as dead.⁷⁴

Thus, out of this scientific revolution in the study of apparent death came the science of resuscitation. In the middle of the 18th century, “humane societies” were created across Europe to teach and promote research on new ways to restore the apparently dead to life.⁷⁵ The 1796 Annual Report of the Royal Humane Society of London, begins with the following preface:

“When the trembling pulse no longer beat, the languid eye contract, the vital functions to perform their office—than the pale corpse was extended on the bed of death, and too soon delivered over to the undertaker for an early interment.”—“It was reserved for the eighteenth century to remove this veil of ignorance, as well as to convince mankind of the practicability of

Awakening the apparently dead
into the enjoyments of
intelligent animated existence.”⁷⁶

The new discovery of resuscitative techniques to revive the unconscious, breathless and pulseless had a significant, yet mixed effect on the fear of premature burial. On the one hand, resuscitation reduced the risk of burying the apparently dead. Hence, the London society alone claimed that by the year 1796 “more than two thousand lives have been redeemed from destruction by the Humane Society.”⁷⁷ On the other hand, knowledge that life could be restored to a person entirely lacking all visible signs of animation substantiated the claim that there is no way differentiate between life and death. The response to the London society’s statistics was likely an increased

⁷⁴ As a result of advances in the field of resuscitative technology, which originated in this period, death has taken on a new meaning and become defined as the point at which modern medicine fails to rescue the body. This new understanding of death creates an expectation of near immortality, where death can always be delayed, if only technology will not fail (Cassell, Dying in a Technological Society 31).

⁷⁵ Pernick, 22.

⁷⁶ Hawes, The Annual Report 2.

⁷⁷ Hawes, 6.

concern that the apparently dead were still being prematurely delivered to the undertaker. If 2,000 people were resuscitated, there were likely untold numbers who never got the chance, or for whom the right resuscitative technique was not yet found. Thus, this “veil of ignorance,” over the border between life and death persisted well into the 19th century, despite—and perhaps because of—the best efforts of the humane societies. Therefore, given the sudden uncertainty about traditional tests for death, delayed burial was not surprisingly the most common precaution against premature burial.

Towards the end of the 18th century there was a movement to set up mortuaries where bodies could be observed for the onset of decomposition, thus removing the danger of the uncertainty around the occurrence of death.⁷⁸ This call for delayed burial was often directed specifically at Jews, whose requirement for burial on the day of decease was considered especially dangerous.⁷⁹

On April 30, 1772, the protest against same-day burial turned into a governmental mandate when Duke Friedrich of Mecklenburg-Schwerin issued an edict against his Jewish subjects prohibiting burial until three days had passed since the cessation of vital signs. The edict was brought about by a memorandum written on February 19, 1772 by Olaf Gerhard Tychsen who was an anti-Semitic convert to Christianity. The memorandum rebuked the Jewish practice of same-day burial, calling it “cruel and inhumane,” and suggested that it was a cause of premature burial of the apparently dead. The duke’s counsel advised him to take no action because the Jewish burial rituals included steps such as washing the body that would ensure that

⁷⁸ Bondeson, 88-117.

⁷⁹ The requirement of same day burial originates from the biblical commandment that a criminal who is put to death by hanging must not be left on the tree overnight (Deuteronomy 21:22f). The Talmud extends this prohibition of delayed burial to all the dead, unless a delay will help honor the deceased (Sanhedrin 46a-47a; Jerusalem Talmud, Nazir 7:1; see Kottek 31).

no living person was mistakenly buried. However, given the emotional weight of the thought of premature burial based on the scientific consensus that ascertainment of death was impossible, it is not surprising that the duke must was not satisfied with his counsel's reassurances. As Michael Panitz pointed out, "In the then-modern world view, no amount of care could suffice to guarantee that the living were not being buried."⁸⁰ Accordingly, the first sentence of the duke's edict to eradicate same-day burial charges the Jewish practice with increasing the risk of burying the apparently dead.⁸¹

The Jewish community was alarmed. They immediately petitioned the duke to repeal the order, attempting to alleviate his fear of premature burial by promising to acquire a doctor's certificate of death before any burial took place. Additionally, they requested a temporary suspension of the ordinance in order for Jewish authorities to submit proof that same-day burial was in fact an important part of Judaism. The Duke agreed and suspended the order for three weeks.⁸²

The Schwerin Jewish community then wrote to Rabbi Jacob Emden⁸³ and Moses Mendelssohn to compose the memoranda. When the Schwerin community approached Rabbi Emden, he suggested that Mendelssohn could compose a better letter to the German authorities, but agreed to write a short memorandum emphasizing the biblical origins of same-day burial nonetheless.⁸⁴ Mendelssohn's response acknowledged the duke's concern regarding the potential for the premature burial of his subjects, yet reassured him that in most cases a few

⁸⁰ Panitz, 99.

⁸¹ Panitz, 92-102; Altmann, Moses Mendelssohn; a Biographical Study 288.

⁸² Panitz, 102; Altmann, 288.

⁸³ Rabbi Emden was the son of Rabbi Zevi Hirsch Ashkenazi.

⁸⁴ Panitz, 103.

hours was sufficient to establish that death had occurred, especially with medical certification of death. Mendelssohn also wrote a proof of the biblical origin of the law, albeit from a very different perspective than Rabbi Emden, and reminded the duke that he had assured the Jews freedom of religion. To this the duke responded favorably with a new edict, dated August 31, 1772, that allowed the Jews to practice same-day burial so long as a physician's certificate of death was obtained prior to burial.⁸⁵

The political conflict was therefore relatively minor and short lived. The confrontation was limited to the exchange of a few letters between the Jews of Schwerin and their government and was settled with an amicable compromise. The entire episode lasted only six months. However, at the same time the political conflict came to an end, the debate over delayed burial was just beginning within the Jewish community. Had Jews unanimously resisted the duke's edict—maintaining their traditional understanding that death could be determined with certitude by testing for the cessation of respiration and therefore that same-day burial posed no risk of burying the living—delayed burial would have remained just another example of religious persecution.⁸⁶ However, the Jewish understanding of the definition of death was no longer unified, and therefore neither was its stance on the time of burial.

Along with his letter to the duke, Mendelssohn sent a letter to the leaders of the Schwerin Jewish community and to Rabbi Emden. Much to their surprise, Mendelssohn reproached them for their petition to the duke, arguing that delayed burial saved lives and was therefore permissible because there is always a doubt if death has actually occurred.⁸⁷ Panitz explains that

⁸⁵ Altmann, 289.

⁸⁶ Panitz, 91.

⁸⁷ Altmann, 289-290. If death cannot be determined at a given time, the person in question is at least *sfak chai* (possibly alive) and therefore it is forbidden to even touch or move him, let alone bury him. This

Mendelssohn's private letter to the Jewish community is a testament not only to Mendelssohn's integration into Western society, but also the extent to which he accepted the medical teachings of his day. Tychsen and the duke were willing to allow medical certification of death in place of delayed burial, implying that physician certification could lessen the risk of premature burial. Mendelssohn, however, went a step further, saying that because even physicians are unable to establish death with certainty, there is no practice that could substitute for delayed burial. To support his claim, Mendelssohn reconstructed an image of Jewish history in which premature burial had always been a major concern, even for the earliest rabbis. Even in the Talmudic period, he argued, the rabbis waited three days until burial because only decomposition was a sure sign of death. In the meantime, they were kept in caves, where they could be inspected for signs of life.⁸⁸

Rabbi Emden replied to Mendelssohn with a stern rebuttal. He insisted that the risk of burying the living was negligible in Talmudic times as well as in the present generation. Furthermore, he contended that gentile medical opinions were disruptive to halakha and he warned Mendelssohn not to abandon Jewish customs for its sake.⁸⁹ Maintaining that medical

was made especially clear by Maimonides, who wrote: "A *goses* (a person expected to die within three days) is alive...and one who touches him is spilling blood...one who closes the eyes of one who is passing away is murdering him. Rather one should wait a short while, lest he only fainted [and is not actually dead]" (Maimonides, *Mishneh Torah, Laws of Mourning* 4:5). Rabbi Joseph Karo also wrote: "A *goses* is considered as living in all aspects...anyone who closes his eyes while his soul is departing it is as if that person killed him...and don't bring a coffin into the house until the person dies" (Karo, *Shulchan Aruch, Yoreh De'ah* 339:1).

⁸⁸ Panitz, 108-109. In fact, while accounts of premature burial do date back to the Talmudic period (See Niddah 69b and Semahot 8:1), it did not become a debilitating fear until the middle of the 18th century. As a result of this new fear, the mortuary was developed as a place to watch for signs of reanimation or decomposition, and was thus a development of Mendelssohn's generation. However, the portrayal of Jewish history in this light gave Mendelssohn's claims a sense of validity for a large part of the Jewish community.

⁸⁹ Altmann, 291; Goldberg, *Sickness and Death: The Wager of Emancipation* 197.

opinion was necessarily too uncertain⁹⁰ to have any standing in halakhic discussions, Rabbi Emden did not consider the definition of death to be primarily a medical problem.⁹¹ Rabbi Emden therefore argued that same-day burial was required because death occurred at the moment of cessation of respiration, according to halakha. Although he made no explicit statement regarding the moment of death in his first letter to the duke in support of same-day burial, Rabbi Emden's opinion can be deduced from his quotation of the Psalm, "His breath departs; he returns to the dust on that day."⁹² In response to Mendelssohn's dissent from the traditional definition of death, Rabbi Emden thus upheld the cessation of respiration as the halakhic definition of death.

The intra-Jewish controversy over delayed burial therefore originated as a direct result of the discrepancy between the new medical uncertainty of the definition of death that infiltrated Jewish thought and the traditional Jewish stance that death is simply defined as the loss of the capacity to breathe. Fundamentally focused on the influence of advances in medical science on the traditional definition death, the heated controversy over delayed burial reflects, according to Panitz, a much deeper disagreement about how Judaism should respond to changes in common knowledge.⁹³ Mendelssohn assumed the modernist position that Jewish tradition is not immune to criticism derived from changes in common knowledge. Rabbi Emden represented traditionalist Judaism, maintaining that halakhic tradition is safeguarded from the influence of

⁹⁰ The insistence that medical opinion is disruptive to halakha as a result of its uncertainty raises an interesting question: does medicine lack halakhic credibility because it is necessarily more uncertain than the word of god, or does it only lose halakhic credibility when it admits to be especially uncertain, as it did in the 18th and 19th centuries? Specifically, it is unclear if Rabbi Emden would consider the near universal medical certainty surrounding the diagnosis of brain death today to be disruptive to halakha.

⁹¹ Goldberg, Sickness and Death: The Wager of Emancipation 198.

⁹² Psalms 146:4. For a description of Rabbi Emden's letter, see Panitz, 103.

⁹³ Panitz, 93.

external events and new discoveries. As a result Mendelssohn and Rabbi Emden disagreed about how Judaism should respond to the widespread lay and medical uncertainty of the moment of death. Mendelssohn's letter to the Jewish community, in which he expressed his private beliefs, was perfectly consistent with contemporary medical opinion. In suggesting that waiting until decomposition was the only way to be sure that the living were not being buried prematurely, Mendelssohn rejected not only the traditional requirement of same-day burial but also the traditional definition of death as occurring at the moment of respiratory arrest. On the other hand, Rabbi Emden claimed that medical advancement should have no role in the shaping of halakha, and therefore maintained that cessation of respiration remained the only criterion needed to ascertain death, despite the severe outcry from the non-Jewish world.

Mendelssohn thus represents the first major Jewish dissent from the traditional definition of death. It is important to note that while Mendelssohn's opinion went directly counter to the traditional viewpoint, he did so from a stance that was openly "enlightened." According to Panitz, Mendelssohn thought that same-day burial was dangerous because, as a *maskil*, he was, "predisposed to believe modern physicians on that or any other medical question."⁹⁴ Mendelssohn's predisposition to adopt contemporary scientific sensibilities over religious tradition stems directly from his prior emersion into the contemporary world. Mendelssohn's position is a recurring one in the ensuing history of the halakhic definition of death, where contact with enlightened medical thought often predisposes one to take a standpoint that sanctions its influence on religious tradition.

Although Mendelssohn's dissent may have been the first major attack on the traditional Jewish definition of death from within the Jewish world, his position as a leading member of the

⁹⁴ Panitz, 116.

haskalah made his arguments irrelevant to the halakhic definition of death, as defined by the rabbinic authorities. Furthermore, Mendelssohn's arguments of medical considerations were based on arguments that were outside of pure halakha, and thus considered extraneous.⁹⁵ Coming from outside the orthodox rabbinate and traditional halakhic arguments, Mendelssohn's position on the definition of death did more to widen the gap separating modernists and traditionalists than it did to directly advance any legal change.⁹⁶ As a result, Mendelssohn dropped the issue, and the halakhic definition of death remained unchanged.

Just as the delayed burial controversy did not end with the compromise reached between the Jews of Schwerin and their duke, neither did it end when letters stopped being sent back and forth between Mendelssohn and Rabbi Emden. The political as well as cross-denominational controversies surrounding delayed burial continued for decades across Europe. The belief that burial must be delayed until decomposition because death could not be reliably determined was so widespread and influential in European culture that conflicts arose wherever orthodox Jews and their same-day burial practices could be found.⁹⁷

Not surprisingly, the stranglehold of uncertainty over the definition of death became increasingly severe with time, and as governmental requirements of delayed burial spread, their willingness to compromise declined. Austria's unwillingness to compromise and allow medical certification instead of a delay, in 1787, occasioned a severe response from the *maskilim* who

⁹⁵ Altmann, 293.

⁹⁶ Altmann, 294.

⁹⁷ In Brunswick in 1783, a three-day waiting period was mandated in order to prevent the burial of the living. Delayed burial mandates were also enacted in Bohemia in 1786 and in Austria in 1787. In 1794 the new duke of Mecklenburg reenacted the mandate of a three-day delay prior to burial. In Breslau a delay was mandated in 1797, and two years later a new law required a police permit and professional medical examination 24 hours after death. In 1798 Prussia required a delay of three days. Mandates for delayed burials continued well into the 19th century (Panitz, 120-149).

jumped on the opportunity to advocate for additional governmental mandates. With their rationalist perspective of the Enlightenment, the *maskilim* readily accepted the scientific uncertainty of the definition of death and advocated for delayed burial and, “for the first time in Jewish history, a sizeable group of Jews put their faith in science.”⁹⁸ Not only did growing numbers of central European Jews unquestioningly put their faith in science, but they also began to believe for the first time that traditional Jewish sources could not provide sound information about the physical world.⁹⁹ Therefore, for a large number of Jew, the ability to define death was moving from the jurisdiction of religion to that of science. Consequently, because of its symbolic and emotional import, the delayed burial controversy played a significant role in the demarcation of Jewish modernist and traditionalist groups. Those Jews who shifted their focus to align with a modern scientific world-view advocated for delayed burial against those who sought to retain their reliance on the traditional Jewish definition of death. As a result, the delayed burial controversy “was for a time the principal line of demarcation between the modernists and traditionalists, [becoming] a contest among *maskilim*, doctors and rabbis over religion and science.”¹⁰⁰

However, the debate over delayed burial and the definition of death was to have a wide range of effects that would go beyond the polarization of Jewish modernist and traditionalist groups. The effects of the delayed burial controversy can also be seen in the halakhic debates

⁹⁸ Panitz, 150. Notably, Dr. Marcus Herz became the first Jewish physician to enter the delayed burial controversy. As with Mendelssohn’s predisposition to believe modern medical science, Dr. Herz’s rejection of the traditional definition of death was a direct result of his professional association. The pamphlet on delayed burial, authored by Herz, was the most widely read brief on the subject in that period and referenced Winslow’s book on the uncertainty of signs of death in almost every paragraph (Panitz, 128-129).

⁹⁹ Panitz, 151.

¹⁰⁰ Panitz, 92.

that arose entirely within traditionalist orthodox circles. It is these effects that most clearly demonstrate the effect of the scientific advancement of the age on the definition of death. Because the participants in these debates were traditional rabbis who never rejected the authority of Jewish Law, as Mendelssohn and the *maskilim* did, their disputes were not just a catalyst for change to halakha, but represented the change itself.

The events in Brunswick in 1783 were almost identical to those in Mecklenburg-Schwerin with regard to the conflict between the Jews and their government, except for the fact that the Jews of Brunswick asserted that they already relied on medical certification of death prior to burial.¹⁰¹ Over the 11-year period between the mandates in Mecklenburg and Brunswick, the acceptance of professional medical certification of death over the traditional determination of death by the Jewish burial societies became a natural occurrence. Thus, the unforced reliance on professional medical certification demonstrates that in a very short time the pressure of the great emotional unrest regarding the possibility of premature burial had reached the traditional burial societies.

By the end of the 18th century it had become so common for professional medical certification of death to be required that the *Hevra Kaddisha*, which was undeniably loyal to halakha¹⁰², had to make accommodations to the realities of the contemporary world. These accommodations often necessitated halakhic leniencies allowing doctors to designate a person alive, even though he may not be breathing or even have a pulse. As a result, Rabbi Judah Loeb Margoliouth ruled that one is required by halakha to comply with the physician's diagnosis of a

¹⁰¹ Panitz, 120.

¹⁰² Panitz, 183.

particular patient as living or dead.¹⁰³ Likewise, by 1788 the Hamburg *Hevra Kaddisha* had implemented a policy of delaying burial for one day if there was a medical reason to believe that a person was not actually dead, despite the lack of detectable breathing and pulse.¹⁰⁴ Thus the criteria used by the *Hevra Kaddisha* to determine death also changed. In addition to the traditional tests for the absence of respiration—namely placing a feather or mirror under the patient's nose and watching for motion or mist, respectively—the criteria used by the *Hevra Kaddisha* in determining death now included checking for unresponsive pupils and the absence of heartbeat and pulse.¹⁰⁵ Presumably, anyone who retained any of these physiological functions was considered living. In 1794, the Berlin *Hevra Kaddisha* generalized the changes in the determination of death even more by halakhically sanctioned delayed burials for certain conditions considered by physicians to be especially prone to premature burial.¹⁰⁶

The pervasiveness of the requirement to obtain professional medical certification of death posed an additional legal problem for traditional Jews. In the 1830s there was a heated halakhic debate regarding an occurrence when the only local physician, who was required by national law to issue death certificates, was also a *kohen*, and therefore prohibited by Jewish law from being in the presence of a corpse. As with the delayed burial controversy, the debate if a *kohen* could be the certifying doctor was fundamentally a debate over the time of death. Notably, unlike the majority of the prior delayed burial controversy, the present debate was between two prominent halakhic authorities: Rabbi Zvi Hirsch Chajes of Galicia and Rabbi Moses Schreiber of Pressburg.

¹⁰³ Panitz, 163.

¹⁰⁴ Panitz, 133.

¹⁰⁵ Schneider, History of a Jewish Burial Society: an Examination of Secularization 94.

¹⁰⁶ Panitz, 134.

Although both rabbis were traditionalist Jews, Rabbi Chajes took a very lenient stance on the issue. He argued that a *kohen*-physician should be allowed to examine a corpse and issue a death certificate, because even without vital signs, a patient is considered *sfak chai*, or possibly alive, until decomposition. Therefore, he argued, there remains a chance that the patient can be resuscitated, and a *kohen* is allowed to transgress the purity laws for the sake of saving a life. Chajes argued that in allowing short delays of burial the rabbis of the previous generation had overturned the traditional definition of death. Obviously accepting the contemporary medical belief in the uncertainty of the signs of death, Chajes redefined the term *gosses*, which traditionally implied a person in the throes of death, to apply to someone without vital signs.¹⁰⁷ Arguing that the rabbis recognized that on occasion a person lacking vital signs might reawaken, he claimed that the lack of vital signs is not a reliable sign of death¹⁰⁸. Therefore, because death could occur anytime between the cessation of vital signs and decomposition, such a person is considered a *gosses* and is considered alive in all respects.¹⁰⁹

Significantly, although Rabbi Chajes used arguments very similar to Mendelssohn, he was doing so from a traditional rabbinic post.¹¹⁰ The arguments for a change in the definition of death, coming for the first time from the traditionalist rabbinate, therefore demonstrates the influence of contemporary medical thought on the religious realm of traditional Jewry. It is not

¹⁰⁷ A *gosses* is technically defined as a person who will die within 72 hours. Redefining *gosses* to the point where vital signs are gone, gave Rabbi Chajes three days before a person could be declared absolutely dead, and buried immediately. The redefinition of the term *gosses* was essentially an agreement with the cry for a three-day delay of burial that permeated medicine at the time.

¹⁰⁸ Citing Mendelssohn's explanation of Semahot 8:1 and Maimonides, *Mishneh Torah, Hilchot Avel* 4:5.

¹⁰⁹ Karo, *Shulkhan Arukh, Yoreah De'ah* 339:1. See Panitz, 164-166.

¹¹⁰ Rabbi Chajes was, however, brought up with dual education in Talmud and secular studies. Though his modernist thought should not be attributed solely to his secular education, he was very attracted to history throughout his life, and a modernist historical perspective can often be seen in his halakhic writings (David, *The Dual Role of Rabbi Zvi Hirsch Chajes: Traditionalist and Maskil* 8-12).

surprising that one of the first instances of alteration to the traditional halakhic definition of the moment of death came from Rabbi Chajes at a time when much of the central European Jewish world was feeling an intense pressure to keep pace with the needs of the modern age.

Rabbi Chajes is known to have occasionally made halakhic innovations, accepting the influence of contemporary circumstances on the applicability of Talmudic laws.¹¹¹ According to Bruria David, Rabbi Chajes' goal as a leader in the traditional Jewish world was to be such a well respected defender of classical halakha that he "would be in a position 'to walk amongst those who stand still' i.e., to introduce changes even within orthodoxy when the hour demanded it."¹¹² As such, Chajes' modernist tendency to accommodate the realities of the age is relatively rare compared to his insistence on the permanence of halakha. It is therefore apparent that Rabbi Chajes considered delayed burial and the definition of the moment of death to be one instance in which the realities of the modern world created such controversy in such an important area that the issue would best be confronted by traditionalist Judaism through accommodation.

Rabbi Schreiber, who is well known for saying that "all innovation is forbidden by Torah"¹¹³, therefore did not take Rabbi Chajes' argument lightly. Rabbi Schreiber's response to Rabbi Chajes vehemently denied that the traditional definition of death was ever overturned. He admitted that the *maskilim* did abandon the halakha in favor of the opinion of the doctors of their

¹¹¹ David, 187. Rabbi Chajes did express some disapproval of halakhic innovations, although not from the more typical *machmir* standpoint of Rabbi Schreiber, who claims that "all innovation is forbidden by Torah," (Novak, Modern Responsa: 1800 to the Present 392). Rather, Rabbi Chajes considers innovations to be a source of strife, and should therefore be used only with great care (David, 133).

¹¹² This conclusion is based on an analysis of a gloss of Rabbi Chajes' on Zacharia 3:7, which reads: "If you will follow in my path, if you will guard it...I will grant you places to walk amongst those who stand still." Chajes' gloss reads: "The prophet means to say that if the leaders will act in the proper way, they will be granted the ability to walk [proceed] in keeping with the needs of the age [but at the same time remains] among those who stand still, namely among those, who...reject innovations; [that is] there will be no grounds [for the orthodox] to look with suspicion upon such a man." (David, 188).

¹¹³ Novak, 392.

day, and that in practice the halakha was forgotten in most cases as a result of prolonged conformity to the mandates of delayed burial. However, he argued, it is clear from the responses of Rabbi Emden and the rabbis of Schwerin that the traditional definition of death was never abandoned by the halakhic authorities. Rabbi Schreiber then reaffirms that, no matter how the rabbis of the Talmud initially came up with it, the classical halakhic definition of death is the cessation of respiration and “if all the spirits of the world will fill their hands they will not move us from the place of the holy Torah.”¹¹⁴ Likewise, he argued, in saying that one should wait a while after a patient’s breathing stops, before declaring him dead¹¹⁵, Maimonides did not mean to imply waiting until the onset of decay, but rather only for a few hours. Thus Rabbi Schreiber clearly explains that the rabbis never made the claim that Rabbi Chajes puts forth, that death is only certain at the onset of decomposition.

Rabbi Schreiber then makes an oft-quoted and highly controversial statement: “When anyone lies as a stone, silent and without any pulse, and if subsequently breathing ceases, we have only the words of our holy Torah that he is dead.”¹¹⁶ The obvious controversy is over

¹¹⁴ Schreiber, *Shelot u'Teshuvot Hatam Sofer* #338. The only published translation of the responsa that I am aware of can be found in Freehof, 237-241, however, the translation is incomplete. I thank Rita Shtull for the translation of the complete responsa. It is interesting to note that, although Rabbi Schreiber was strongly opposed to accommodating historical context through halakhic innovations, he admits that there is a possibility that the Talmudic rabbis themselves were influenced by ancient scientific knowledge, which is no longer considered correct. Nonetheless, Rabbi Schreiber seems to argue that more accurate scientific knowledge is no basis for altering a law originally created on false scientific presumptions. His unwillingness to conform to the then modern scientific understanding of death is therefore no surprise.

¹¹⁵ Maimonides, *Mishneh Torah*, Hilchot Avel 4:5.

¹¹⁶ Schreiber, *Shelot u'Teshuvot Hatam Sofer* #338. The controversy in terms of its relation to the brain dead patient will be discussed below. It should be noted here though that whatever Rabbi Schreiber’s intent in including pulse in his responsa, he is most commonly cited as agreeing that absence of pulse is a requirement for the determination of death. Rabbi Schreiber’s responsa has thus become a key source in the efforts of the opponents of brain death criteria to disguise the halakhic innovation of requiring the absence of heartbeat as part of the unchanged classical definition of death.

Rabbi Schreiber's intent in using the word "pulse." As I have already explained¹¹⁷, the traditional definition of death in Judaism had always been the absence of spontaneous respiration in a person who appears dead. Hence, someone is dead if he "lies as a stone, silent...and subsequently breathing ceases." While the heart had been checked in the past, its beating was always considered a sign of respiration. Therefore, the addition of pulse to the halakhic definition of death seems to imply that, according to Rabbi Schreiber, a beating heart is a definitive sign of life that is distinct from respiration.

However, this is an inherently difficult conclusion to arrive at, considering that it is coming from a rabbi who previously mentioned in the same responsa that he agrees that the halakhic definition of death is the cessation of respiration, and who furthermore forbids all modifications to classical halakha. As a result, a common interpretation is that Rabbi Schreiber is not making a general claim about the definition of death, but rather is addressing Rabbi Chajes directly regarding his understanding that death is only certain at the onset of decomposition.¹¹⁸ Therefore Rabbi Schreiber states the natural order of death—unconsciousness, asystole and subsequently apnea—and argues that surely a person has already died by the time his breathing

¹¹⁷ See above, chapter 1.

¹¹⁸ This by itself is a difficult claim to make. There is evidence that Rabbi Schreiber sent his response to Rabbi Chajes without the concluding paragraph, which was subsequently included for publication, with his signature below it. The final paragraph says that it is in fact permissible for a *kohen* to certify death if he is the only local physician. He concludes, "I have not, however, so advised the addressee, lest it be said that I agreed to allow it for their [modernist] reasons, even as they attributed baseless words to Rabbi Emden, claiming that he permitted delays of burial, so will they do it in my case...I have, therefore, decided to maintain a policy of silence." (see David, 452). If Rabbi Schreiber withheld his actual conclusion from Rabbi Chajes on the basis that it might be misunderstood as an agreement on the same terms that Rabbi Chajes had initially suggested, it is difficult to assume that Rabbi Schreiber would use language that could so easily be misconstrued as an alteration to classical halakha towards a broader definition of death. The use of language that could be interpreted as a compromise is especially troublesome considering Rabbi Schreiber wrote in another unpublished responsa that in order to defend the norms of halakha against the modernists, it is preferable to use partially accurate exaggerations over more measured statements that can be misused (Panitz, 174).

stops, therefore *a fortiori* he must be long dead when he starts to decompose. This interpretation also seems consistent with the rest of the paragraph, where Rabbi Schreiber further enumerates the order of events in the dying process: “long before the time of actual death his senses have ceased and he lies in a coma like a stone, near death...”¹¹⁹

However he continues: “...those who are experienced in the matter [i.e., the *Hevra Kaddisha*] stand next to him and watch for the moment that his soul leaves, according to the knowledge that was handed down to them, that is, by his breath and his pulse.”¹²⁰ It therefore seems that Rabbi Schreiber was in fact broadening the halakhic definition of death to include the requirement of the absence of both respiration and pulse.¹²¹ While it has already been mentioned that the *Hevra Kaddisha* watched for pulse in addition to testing for respiration, these procedures were innovations, as the absence of respiration was itself considered necessary and sufficient proof of death. It is therefore striking that Rabbi Schreiber writes that the tradition of checking for pulse and breathing was “handed down to them.”¹²²

The most straightforward understanding of Rabbi Schreiber’s comments on the definition of death is that he was on the one hand defending the classical halakha from assertions that life can remain in a corpse until the onset of decomposition, and on the other hand responding to the realities of the modern age by making the comparatively minor innovation of adding pulse to the

¹¹⁹ Schreiber, *Shelot u’Teshuvot Hatam Sofer* #338.

¹²⁰ Schreiber, *Shelot u’Teshuvot Hatam Sofer* #338.

¹²¹ The invention of the stethoscope in 1816 by Rene Laennec, played a significant role in switching medical attention from breathing to the heart, in the determination of death.

¹²² Though Rabbi Schreiber was against rabbis making extra-halakhic innovations, “he himself was at times quite innovative in his own ruling, which he saw as being within the parameters of the *halakhah* and necessary for its survival,” (Novak, 392).

traditional criteria.¹²³ A close look at Rabbi Schreiber's responsa shows that he never asserts that no alterations to the halakhic definition of death were ever made. In response to Rabbi Chajes' claim that the halakha now allows the possibility of life existing in a corpse until decomposition, Rabbi Schreiber corrects him, saying that no halakhic authorities ever made this particular claim. In fact, he argued, Rabbi Emden and the rabbis of Schwerin refuted such claims made by the *maskilim*. Thus, Rabbi Schreiber is clearly opposed to the complete abandonment of the halakha, as were the rabbis involved in the initial halakhic debate. However, his opposition stops there. He cites Maimonides¹²⁴ saying that one should wait a while before declaring death, in case the absence of respiration is only temporary and the patient has only fainted. While emphasizing that this waiting period was never intended to last until one sees signs of decaying flesh, by citing the source, Rabbi Schreiber demonstrates that he also agrees with Maimonides that the traditional respiratory criteria are insufficient in that the cessation of respiration is not always irreversible.¹²⁵ Rabbi Schreiber therefore made an addendum to the law, requiring both the absence of pulse and breathing in order for a person to be declared dead.¹²⁶

¹²³ Further evidence of Rabbi Schreiber's willingness to accommodate the changing times with regard to this matter comes from his ultimate conclusion with regards to the original question of a *kohen* physician issuing death certificates. Rabbi Schreiber asserts that he knows the physician in question to be a non-observant Jew who, it can be assumed, will break the laws anyways. Therefore Rabbi Schreiber changes the focus of the question, asking if it is permissible for a Jewish community to require his services. By allowing the *kohen* to issue death certificates, Rabbi Schreiber relieved the observant community from their role in the physicians departure from Jewish Law (Panitz, 168-169). Thus Rabbi Schreiber was very cognizant of the changing times and was willing to construct a specific halakhic argument that would accommodate those changes.

¹²⁴ Maimonides, *Mishneh Torah, Hilchot Avel* 4:5.

¹²⁵ Rabbi Schreiber does argue that the revival of those who had been declared dead by respiratory criteria was so rare in rabbinic times that it can only be regarded as a supernatural and therefore could not be considered in the creation of laws (Schreiber, *Shelot u'Teshuvot Hatam Sofer* #338.#338). However, with the new science of resuscitation being practiced all over Europe, revival of the apparently dead could no longer be considered a supernatural event

¹²⁶ In the progression of the discussion of the definition of death in Rabbi Schreiber's responsa, one can see the actual progression of the definition of death throughout the delayed burial controversy. Initially,

It had become apparent, not only to Rabbi Schreiber but to the entire central European world, that no criteria short of the absence of all vital signs would have any cogency as tests for death. Therefore, in response to the changing scientific attitudes towards death in the 18th and early 19th centuries and the intense controversy that was to follow, even some the most outstanding opponents of halakhic innovation eventually decided to accommodate the realities of the modern age.

After thirteen hundred years of stagnation in medical science, the Enlightenment brought about a new scientific understanding of death. Research on apparent death and resuscitative techniques combined to render the moment of death frighteningly uncertain. As a result, the halakhic definition of death, which had remained the absence of respiration since the Talmud, was challenged for the first time. The scientific ambiguity in the boundary between life and death was often confronted with a call for delayed burials, which were considered the best way to safeguard against the premature burial of the living. The Jewish requirement to bury the dead on the day of decease was therefore considered especially dangerous, and governmental mandates of delayed burial were directed specifically at Jewish communities.

"the doctors of our day say that the exact dividing point between life and death is not known except by the decay of the flesh." To this, the *maskilim* subscribe completely, while the halakhic authorities first involved in the political debate resist any changes. However, "since in the kingdom of Germany, they had become accustomed to this delay owing to the order of the king, the Jewish law was forgotten until people imagined that the delay [and its corresponding definition of death] was actually according to the law of the Torah." Thus the traditional definition of death, which "depends on whether there is breath in his nostrils, as is explained in the Talmud Yoma 85a," began to be extended by a few hours and then days, according to a reinterpretation of Maimonides (Maimonides, *Mishneh Torah, Hilchot Avel* 4:5). In the meantime, a debate ensued about the resuscitation of patients who are no longer breathing. While initially the rabbis called this reanimation (referring to biblical instances of the phenomenon of reanimation) "resurrection after their death," they eventually began to modify their tests for death. As a result, "the next day [i.e., later in the controversy] when anyone who lies like a stone, silent, without any heartbeat, and if subsequently his breathing ceases, we have only the words of our Torah that he is dead." As the burial societies began to check for the persistence of all vital signs as part of their tests for death, the halakha itself changed, such that their "traditional knowledge [became] his breath and his pulse."

The ensuing intra-Jewish controversy over delayed burial was fundamentally about the penetrance of scientific advances into the halakhic definition of death. For the first time in Jewish history, a significant number of Jews began to count on science, not religion, to provide them information about the physical world, including the nature of death. Led by Mendelssohn, these *maskilim* showed their acceptance of contemporary science by advocating against delayed burial and the traditional definition of death.

While the Jewish modernists' alignment with the Western scientific world-view served to polarize central European Jewry in the late 18th century, removing the modernists from the realm of traditional Jewry, the traditional Jewish definition of death could not remain completely sheltered. The *Hevra Kaddisha* began to accommodate the realities of the contemporary world, making exceptions to the halakha for particular instances of professional fears of apparent death. Even a minority of halakhic authorities, including Rabbi Chajes, began to align their definition of death with that of the doctors of their day. While this complete reversal of halakha never took hold, the halakhic definition of death proved, nevertheless, to be susceptible to the realities of the modern age. It had become apparent in the late 18th and early 19th centuries that no criteria short of the absence of all vital signs would have any cogency as tests for death in the context of the pervasive scientific uncertainty surrounding death. As a result, Rabbi Moses Schreiber, who was considered the biggest opponent of halakhic innovation in his time, added a distinct criterion of testing for circulation to the halakhic definition of death. While the heartbeat had been checked at least since Rashi's time, this was the first time that the pulse was examined for a physiological function that was distinct from respiration. Thus, for the first time in the history of the halakhic definition of death, a major change in the scientific understanding of death occurred, and eventually resulted in slight but highly significant change to the halakha.

The Evolution of the Brain Death Concept

“Halakha can not be judged in a vacuum.”¹²⁷ The halakha of medical issues in particular, as Rabbi Yitzchok Breitowitz points out, cannot be properly understood without a full comprehension of the medicine that underlies the decision.¹²⁸ As a result, the present halakhic debate over the defining moment of death—namely whether or not brain death is a valid criterion for determining that moment—cannot be fully and accurately understood without first explaining the medical aspects of brain death. Additionally, “some of the early ambiguities in halakhic opinions may have resulted from a lack of concise, clear, and rigid criteria for brain death in the [early] medical literature.”¹²⁹ Therefore, to understand the basis for the halakhic debate as it played out in history, it is necessary to not only have an understanding of the history of the halakhic definition of death, but also to have an understanding of the evolution of the brain death concept.

As has already been explained, in pre-modern times, people died when all of their bodily functions arrested. Because all of the body’s functions ceased to function within a matter of minutes, the scientific definition of the exact moment of death had little practical importance. By the end of the 18th century this began to change as people began to notice that the whole organism did not actually die all at once, but rather certain parts of the body retained function longer than others and that death was a process with gradations. Initially, medical scientists

¹²⁷ Keilson, Medical Aspects of Brain Death 7.

¹²⁸ Breiteowitz, How a Rabbi Decides a Medical Halacha Issue. Rabbi Breitowitz cites Dr. Keilson, who characterizes rabbis as fitting into the categories of the Four Sons from the Hagada: 1) the wise rabbi, who “knows how to ask the proper questions and evaluate the response,” 2) The evil rabbi, who lacks the halakhic competence to make a valid decision, 3) the simple rabbi, who does not understand the issue, and 4) the rabbi who does not even know how to ask, “who rules without even consulting with the physicians as to what the medical facts are.”

¹²⁹ Keilson, 7.

responded with frightful uncertainty; death seemed to be an ambiguous state, whose beginning and end were indeterminate. Lots of research went into resuscitative techniques like artificial respiration. In its early stages in the late 18th century, artificial respiration consisted of blowing a puff of tobacco smoke into the anus of an apparently dead patient.¹³⁰ By the middle of the 20th century the technology utilized in artificial respiration advanced to include mechanical ventilators like the iron lung, which were successful in the assistance of breathing in patients with severe poliomyelitis.¹³¹ With these more technologically advanced forms of artificial respiration, the dying process was prolonged and distorted, making it conceivable, and therefore necessary, to pinpoint the moment and location of irreversible death with exactitude.¹³²

As a result of the unprecedented life-saving support provided by the mechanical ventilator, a class of patients was created with a new neurologic state.¹³³ Patients in this comatose state were in a far worse condition than any other that had been previously described.¹³⁴ While, superficially, these patients appeared to be in a similar condition as other

¹³⁰ Bondeson, 139-140.

¹³¹ Plum, Clinical Standards and Technological Confirmatory Tests in Diagnosing Brain Death 34.

¹³² Technology did not change the concept of death, but rather made it clear that the old definition of death was imprecise. Bernat *et al.*, compare the problem of defining death to the problem of defining the term “going around,” described by William James. James describes a hunter who is chasing a squirrel around a tree. As the hunter moves around the tree, the squirrel also moves so that it is always facing the hunter, but the tree is always between them. Thus the phrase “going around” is ambiguous. According to the cardinal directions, the hunter did in fact go around the squirrel, however, from the squirrel’s perspective of left/right/front/back, the hunter did not go around the squirrel. It is not that the hunter changed the definition of “going around,” but rather exposed the fact that the definition had always been ambiguous. Likewise, the definition of death has always been ambiguous, but this ambiguity was not exposed until technology created a situation where someone’s brain could be irreparably destroyed while their heart continued to beat normally (Bernat *et al.*, Defining Death in Theory and Practice 5).

¹³³ Diringer, Brain Death in Historical Perspective 5.

¹³⁴ United States, Controversies in the Determination of Death: A White Paper of the President's Council on Bioethics 3.

comatose patients¹³⁵, the brains of these deeply comatose patients were massively damaged such that an electroencephalogram (EEG) detected no neurological electrical activity. As a result of this neurological state, these patients had no spontaneous respiration, no brain stem reflexes and no homeostatic control of blood pressure.¹³⁶ Additionally, it was discovered later that, upon autopsy, these patients' brains had become diffuse liquid masses of decayed tissue that poured through the base of the skull, as a result of extensive necrosis.¹³⁷

In 1959 two French neurologists, Mollaret and Goulon, termed this condition of irreparable brain damage "*le coma dépassé*," or "beyond coma." These patients usually died within a few days, despite treatment, and if ventilation or infusion of norepinephrine were discontinued, the patient would go into cardiac arrest and die almost immediately.¹³⁸ Drs. Mollaret and Goulon subscribed to a cardiac-based definition of death¹³⁹ and had no intention of redefining *coma dépassé* as death; they simply proposed that the care for such patients was futile.¹⁴⁰ Nonetheless, their paper raised the question that conceivably these patients were not actually alive, but rather that the technologically maintained signs of apparent life were merely a

¹³⁵ Technological advances allowed the body of a comatose patient to retain stable vital functions. Mechanical ventilation in combination with intubation could maintain adequate airflow to the lungs and the rest of the body, norepinephrine could sustain blood pressure, and electrolytes could be balanced by dialysis (Wijdicks, The Landmark 'Le Coma Dépassé' 1).

¹³⁶ Machado, Brain Death a Reappraisal 8.

¹³⁷ Towbin, The Respirator Brain Death Syndrome 583-94.

¹³⁸ Machado, 8.

¹³⁹ Machado, 8.

¹⁴⁰ Baron *et al.*, Brief Review: History, Concept and Controversy in the Neurological Determination of Death 603. In 1957, Pope Pius XII had suggested to a group of anesthesiologists that, "where the situation was hopeless...death should not be opposed by extraordinary means" (Pius XII, 1957; see Machado *et al.*, The Declaration of Sydney on Human Death 700) and the patient could be removed from a ventilator prior to circulatory arrest (Zamperetti *et al.*, Irreversible Apnoeic Coma 35 Years Later: Towards a More Rigorous Definition of Brain Death? 1716). The article on *coma dépassé*, can therefore be viewed as an attempt to define the precise condition under which the Pope's suggestion could be implemented.

mask of the patient's actual condition.¹⁴¹ It is this interpretation that made the paper famous in the United States a decade later.¹⁴² As a result, death began to take on a new meaning, with brain-based definitions of death emerging and slowly gaining widespread acceptance in the medical community.¹⁴³

This view became especially popular in the wake of the events that occurred in South Africa in 1967. On December 3rd of that year, the first human-to-human heart transplant was conducted and was considered a success, despite the recipient's death 18 days later. The exact timing of the donor's death is unclear and controversial. In addition to admitting that an attempt was not made to resuscitate the donor after cardiac arrest, the surgeons disagreed about what

¹⁴¹ United States, Controversies in the Determination of Death: A White Paper of the President's Council on Bioethics 3. The beating heart was considered the most obvious sign of life in such a patient. However, the paper implied that the heart's movement was not a significant indicator of life in a person who is beyond coma. The heart is able to beat in a patient whose brain is not functioning because the heartbeat is autonomous, and therefore not controlled by the brain or any other part of the body. The heart is composed of cardiomyocytes, which are muscle cells that are capable of generating their own electrical impulses, independently of the brain. A small portion of the heart, called the sinoatrial node has a group of cardiomyocytes with unstable membrane potentials, which allows them to depolarize rapidly and send an electrical signal to the rest of the heart cells before they can contract by themselves. Thus, the sinoatrial node acts as the heart's primary pacemaker, causing the heart to contract in an organized and productive manner. Thus, as long as the heart has access to nutrients and oxygen, provided by the mechanical ventilator, it is able to contract normally, even if the brain is dead or even removed. It is therefore possible to completely remove a heart from a body, place it in a bucket of salt water, and observe normal coordinated contraction for a few hours (Tendler, Halakhic Death Means Brain Death 6).

¹⁴² Pallis argues that the Harvard criteria brought the brain death debate from France to the United States, and subsequently the French paper gained world-wide attention (Pallis, Brain Stem Death -- the Evolution of a Concept 96).

¹⁴³ In addition to the movement towards brain-based definitions of death, fueled by the invention of the mechanical ventilator, other technological advances suggested that a move away from the traditionally accepted life-defining functions was also needed. In 1947, the cardiac defibrillator successfully restarted the first human heart. In 1953, the invention of the heart-lung machine allowed doctors to temporarily provide a mechanical substitute for all cardiopulmonary functions, which could be stopped to facilitate cardiac surgery. Combined with the success of cardiopulmonary resuscitation, it became apparent that the death of the heart was not irreversible and did not always lead to the death of the body, and therefore it should not be the focus of the definition of death (Machado, Brain Death a Reappraisal 3-4).

definition of death should be used before removing the donor's heart.¹⁴⁴ The transplant would be most successful if the heart was still beating, but the doctors had to ensure that they were not murdering the donor. It became apparent that doctors had a choice about where to draw the line between life and death or between those to be considered patients and those to be considered organ sources. If death began a few minutes after cardiac arrest, when resuscitation would be impossible, the heart would be too damaged for transplantation. If, however, the border were defined in such a way that a person who was in the deepest of comas could be considered dead, it would be ethical to remove his beating heart in order to transplant it into another patient. Hence the no-longer-theoretical possibility of performing heart transplants begs the very practical and important question of when, precisely, can a patient be defined as dead.

Within a month, the "Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death," was formed. It was composed of physicians, lawyers, philosophers and a theologian. After six months of work, the committee published its report¹⁴⁵, which suggested that irreversible coma (read: "brain death") could be diagnosed based on four criteria. First, the patient must be completely unresponsive to changes in both internal physiological needs and external stimuli, thus indicating a lack of awareness of the internal and external environment. Secondly, the patient must show no spontaneous movements or respiration. Because the condition of brain death is created by mechanical ventilation, the absence of spontaneous respiration could be determined by watching for signs of an effort to breathe after

¹⁴⁴ Giacomini, A Change of Heart and Change of Mind? Technology and the Redefinition of Death in 1968 1473.

¹⁴⁵ Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death, A Definition of Irreversible Coma.

temporarily turning off the respirator.¹⁴⁶ Thirdly, a brain dead patient will exhibit no reflexes, such as the gag reflex and tendon reflexes.¹⁴⁷ Also the pupils will remain fixed and dilated. Lastly, a flat electroencephalogram was considered of “great confirmatory value,” and should be used when available. All the tests should be conducted twice, twenty-four hours apart. If, in both examinations, all tests were negative, the patient’s brain should be considered permanently nonfunctional, to the exclusion of conditions that mimic brain death, like hypothermia and central nervous system depressants. Thus the committee concluded that these criteria were sufficient to diagnose an irreversibly dead brain. Furthermore, they argued that a person is dead if his or her brain is dead.

The Report was significant in that it formalized a definition of death and gave specific criteria for diagnosing it. For this, the “Harvard criteria” became widely known and were overwhelmingly accepted as valid indicators of brain death, which became defined as death. However, the concise statements of the Committee included no empirical support of the accuracy of the diagnostic tests, nor did it present data on the condition of a brain or of a person in such a state. Thus, the Report standardized a definition of brain death but left the empirical assessment of that standard to prospective research.

¹⁴⁶ Respiration is controlled by vagus nerve, whose nucleus is in the medulla of the brain stem. Spontaneous respiration is impossible with a destroyed brainstem. The ability to breathe thus indicates that part of the brainstem still functions and the inability to breathe is a piece of evidence that the brain stem has entirely ceased to function. Notably, the Report’s second criterion, no spontaneous motion and respiration, is identical to the pre-modern traditional halakhic definition of death (see chapter 1). For an analysis of the current halakhic viewpoints on this issue, see chapter 4.

¹⁴⁷ The inclusion of tendon reflexes in the tests for brain death was soon questioned, as it was realized that the tendon reflex is controlled by the spinal cord, and is therefore irrelevant to a definition of brain death (Pallis, ABC of Brain Stem Death 6).

There has also been significant controversy about the influence of transplantation on the Committee's adoption of brain death as a definition of death.¹⁴⁸ The published report states its purpose and rationale explicitly:

Our primary purpose is to define irreversible coma as a new criterion for death. There are two reasons why there is a need for a definition: (1) Improvements in resuscitative and supportive measures have led to increased efforts to save those who are desperately injured. Sometimes these efforts have only partial success so that the result is an individual whose heart continues to beat but whose brain is irreversibly damaged. The burden is great on patients who suffer permanent loss of intellect, on their families, on the hospitals, and on those in need of hospital beds already occupied by these comatose patients. (2) Obsolete criteria for the definition of death can lead to controversy in obtaining organs for transplantation.¹⁴⁹

However, it remains unclear if this rationale is truthful and representative of the intentions of the committee, or significantly censored for publication. Many people questioned whether their definition of death was a result of rational analysis, which just happened to allow the legal and ethical removal of organs such as a beating heart from a dead patient, or if they rationalized a definition of death that would intentionally allow transplantation to continue. Proponents of the former account of the Committee's intentions argue that technological progress created both a new neurological state and also new techniques to diagnose this state. Technological

¹⁴⁸ The implications of this controversy for the halakhic debate over the definition of death will be addressed further in chapter 4.

¹⁴⁹ Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death, A Definition of Irreversible Coma. Considering systemic death always follows brain death within 2 or 3 days, the debate over the exact moment of death was largely academic prior to 1968. Practically, these patients were kept on respirators until cardiac death, when no doubt was left, and then the respirators were unplugged. However, once the possibility of successfully transplanting a beating heart into another patient became a reality, there appeared a practical reason to remove the period of uncertainty between brain death and cardiac death. Heart transplants could only be conducted if the donor's heart was still beating, so there arose an incentive to define death in such a way that a beating heart would not negate the diagnosis of death. Furthermore, because a brain dead patient rarely retained a beating heart for more than three days, his continued support by the mechanical ventilator was not an extremely costly burden for anyone. It is my opinion that the Committee's actual reason for defining death was therefore most likely the controversy over obtaining organs for transplantation.

advancements thus necessitated a new definition of death, and brain death was the logical outcome. According to the latter account, brain death was created as a direct response to the first heart transplant, as a sort of definitional gerrymandering that would allow doctors to continue practicing the new transplantation procedures. Redefining death in a way that would ethically allow the advancement of transplantation was a means of maintaining medicine's autonomy in response to the public skepticism over the morality of transplantations from comatose patients.¹⁵⁰

The actual origins of the Committee's desire to redefine death are likely a combination of both accounts of its purpose. Technological advancements had created a new neurological state and new tools to examine that state. There had also been discussions about incorporating this new state into a new standardized definition of death. However, the exact timing of the redefinition of death as brain death was unquestionably a direct response to the first heart transplant that was conducted just one month before the Committee was created. It is also likely

¹⁵⁰ Giacomini, 1265-1267. Giacomini analyzed the unpublished dialogue between committee members during the creation of the Harvard criteria and determined that the committee began with the characteristics of the ideal organ donor in mind, and then rationalized a definition of death that would promote transplantation, but that discussion of transplantation in the report would be "detrimental to the rhetoric of redefining death," (Giacomini, 1997). Based on an analysis of the same documents, and the interests of the committee members, Belkin found that their goal was not to define death and advance transplantation but to establish the point at which treatment was unethical (Belkin, Brain Death and the Historical Understanding of Bioethics 358). Wijdicks also analyzed the dialogues that led up to the publishing of the Harvard report, and concluded that while the pressure existed, transplantation did not create or alter the agenda for the committee (Wijdicks, The Neurologist and the Harvard Criteria for Brain Death 975). It appears to me that the committee had a concept of the perfect organ donor in mind when they defined death as brain death, a definition that surely involved some amount of rationalization. The committee then strategically decided to downplay the role of transplantation to maintain the image and acceptability of brain death by only casually mentioning it as a reason for the new definition, and continuing to deny its role in interviews.

With regards to the overall historical influence of transplantation on the evolution of the concept of brain death, Machado traces the histories of the development of brain death and heart transplants, and argues that their misalignment is proof that brain death did not evolve for the purpose of transplantation (Machado, 1-20). However, while it is true that brain death and heart transplants have different histories and therefore it cannot be argued that the brain death condition or concept originated to benefit heart transplants, it is clear that transplantation did have a significant role in the acceptance of brain death as a valid criterion for death. Furthermore, this acceptance was largely due to the Harvard report.

that transplantation played some role in the adoption and acceptance of the specific definition that the Committee created.

On August 5, 1968, the same day that the Harvard committee published its “Definition of Irreversible Coma,” the 22nd World Medical Assembly announced from Sydney, Australia, the “Declaration of Sydney on Human Death.” Though the Harvard and Sydney committees were meeting simultaneously for quite some time, and even published their reports on the same day, it appears that they were unaware of each other’s existence.¹⁵¹ It is therefore interesting that both committees had almost identical explanations for the need to redefine death. The Sydney declaration states:

Two modern practices in medicine...have made it necessary to study the question of the time of death further:

- a. the ability to maintain by artificial means the circulation of oxygenated blood through tissues of the body which may have been irreversibly injured and
- b. the use of cadaver organs such as heart or kidneys for transplantation.¹⁵²

Despite the identical stated origins of the two statements about death, the Harvard and Sydney committees took very different approaches to the problem. While the Harvard Report gave detailed clinical criteria for diagnosing an irreversibly nonfunctioning brain, which they simply state was equivalent to death, the Declaration of Sydney made a philosophical statement about the nature of human death and left the determination of death to “clinical judgment.”

Essentially, the Declaration of Sydney argued, “death is a gradual process at the cellular level with tissues varying in their ability to withstand deprivation of oxygen. But clinical interest lies not in the state of preservation of isolated cells but in the fate of a person.” Without defining “human death,” the Declaration of Sydney argued that if the “person” has irreversibly been lost,

¹⁵¹ Machado *et al.*, 701.

¹⁵² Declaration of Sydney on Human Death, see Machado *et al.*, 701.

the functioning of any additional tissues or organs would not constitute proof of life. The characteristic that defined personhood, and the physiological functions that, when lost, were irreversible, remained to be discovered.¹⁵³

In 1971 two Minneapolis neurosurgeons published an influential paper in which they answered the medical question raised by the Declaration of Sydney. Based on clinical data, they stated, “the state of irreversible damage to the brain stem...is the point of no return.”¹⁵⁴ In their criteria for the determination of brain death, which became widely known as the Minnesota Criteria, they included a series of reflex tests designed specifically to assess the functioning of the brain stem. The functioning of the brain stem, they argued, was the best indicator of irreversible brain death because the brain stem is more resistant to oxygen deprivation caused by ischemia than is the rest of the brain.¹⁵⁵

The Minnesota criteria played a significant role in the development of the UK Code in 1976, which formalized the brainstem-based definition of death.¹⁵⁶ Before 1976, the term “brain

¹⁵³ Declaration of Sydney on Human Death, see Machado *et al.*, 701.

¹⁵⁴ Mohandas and Chou, Brain Death: A Clinical and Pathological Study 215.

¹⁵⁵ That the brainstem makes a good definition of death because of its resistance to oxygen deprivation, combined with the idea that brain death makes for a good definition of death because of its irreversibility, together imply that cardiopulmonary death is identical to brain death. If circulation stops momentarily, one is considered to have suffered a fainting spell. If circulation stops for a few minutes, one suffers severe brain damage from oxygen deprivation. If circulation stops for longer, the person is dead. These are medical facts that are agreed upon by all physicians, regardless of his or her stance on brain death. The medical explanation for these facts is that the cerebral hemispheres of the brain are more susceptible to oxygen deprivation than is the brain stem. If circulation ceases to bring oxygen to the brain for only a few minutes, this causes brain damage due to the death of cerebral cells, but the patient can still wake up because his brain stem, which controls autonomic functions, is not damaged. However, if oxygen is deprived to the brain for long enough to cause damage to the brain stem, the patient cannot wake up, and is considered irreversibly dead. Hence the circulatory definition of death is actually the same as the brain stem definition of death (Pallis, Brain Stem Death -- the Evolution of a Concept 97).

¹⁵⁶ Spoor and Sutherland, The Evolution of the Concept of Brain Death 31. The UK Code was also significant in that it included preconditions that the comatose patient is on a ventilator, that the coma is known to have been caused by structural damage, and that the patient not have a condition that would skew the interpretation of the tests for brain death (Spoor and Sutherland, 31). Interestingly, the UK Code did

death” could either refer to a person who was cerebrally dead, brainstem dead, or whole-brain dead. However, it is now nearly universally agreed upon that cerebral death is not brain death.¹⁵⁷

A person who is cerebrally dead but has a functioning brain stem can swallow, grimace in response to pain and, most importantly, can breathe on his own.¹⁵⁸ A fascinating illustration of the phenomenon of cerebral death can be seen in the story of a botched slaughter of a chicken.

After an attempted decapitation that removed most of the brain, but left the brainstem intact, the chicken, known as Mike the Headless Chicken, continued to live normally for 18 months.¹⁵⁹

Having grown over 5 pounds and having continued to walk and behave relatively normally while being fed with an eyedropper, it is instinctually difficult to argue that the chicken was dead from the moment it lost its cerebrum. Similarly, there is a medical disorder called anencephaly where a baby can be born without a cerebrum. Such a child may have no forebrain or skull; however, he is capable of breathing and is considered alive because he has a brainstem.¹⁶⁰ It is therefore clearly necessary to differentiate between those who are cerebrally dead and those who are brainstem dead and it was not until the UK Code in 1976 that this distinction was made and brain death was formally defined as brainstem death.

As a result of the early ambiguities in the definition of brain death, it was nearly impossible to standardize the diagnostic tests for brain death. As early as 1969, a preliminary

not originally define brain death, *per se*, but a condition that was known to have no possibility of recovery. In 1979, the same condition was equated with death, after pressure from the Transplant Advisory Panel. This implies that transplantation had a significant role in the definition of the condition of total brainstem dysfunction as death (Hill, Brain Stem Death: A United Kingdom Anesthetist's View 160).

¹⁵⁷ Additionally, it is universally agreed upon among rabbis from all branches of Judaism.

¹⁵⁸ Pallis, ABC of Brain Stem Death 3.

¹⁵⁹ Mike's Story.

¹⁶⁰ Pallis, ABC of Brain Stem Death 3.

report was published that radionuclide angiography could be used to visualize the flow of blood to the brain. Doctors could very safely inject a radioactive substance into the patient's blood and watch to see if it shows up in the brain. If the intracranial pressure is greater than the systemic pressure then circulation of blood to the brain is blocked and the brain is denied the nutrients that it needs to survive.¹⁶¹ However, for many years, most physicians only used radionuclide angiography in the carotid artery to visualize the cerebrum, and not the brainstem.¹⁶² The original cerebral blood flow studies, which were used to diagnose "brain death," were therefore only actual evidence of cerebral death. Today, radionuclide angiography is used to visualize the brainstem too, and can therefore be used to diagnose brainstem death.¹⁶³

In 1981, the Presidents' Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research published a Report on the Medical, Legal and Ethical Issues in the Determination of Death. The model for the definition of death, which was published by the Commission as the Uniform Determination of Death Act, was endorsed by the American Bar Association, the American Medical Association, the National Conference of Commissioners on Uniform State Laws as well as every state and territory in the United States.

The UDDA reads:

An individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brain stem, is dead. A determination of death must be made in accordance with accepted medical standards.¹⁶⁴

¹⁶¹ Brock and Hadjidimos, Cerebral Blood Flow and Cerebral Death, Preliminary Report 195.

¹⁶² Walker, Cerebral Death 85.

¹⁶³ However, some physicians question the accuracy of the image in describing the total absence of perfusion to the brain and brainstem (Kunin, Brain Death: Revisiting the Rabbinic Opinions in Light of Current Medical Knowledge 53-54).

¹⁶⁴ United States, Defining Death: a Report on the Medical, Legal and Ethical Issues in the Determination of Death 2. According to Bernat *et al.*, The UDDA is flawed because it gives two equal standards for

The Commission thus combined many of the previous models for brain death that were proposed by the Harvard Committee, the Minnesota Criteria, the UK Code, and the Sydney Declaration. In doing so, it adopted a definition of death for the United States that was based on the death of the whole brain, with specific emphasis on the brainstem, and left the diagnosis of brain death to be determined by accepted medical standards, which change along with technology.¹⁶⁵

death, which therefore can only be taken as evidence that death has occurred and not a true definition of death. They therefore propose:

An individual who has sustained irreversible cessation of all functions of the entire brain, including the brainstem, is dead.

- (a) In the absence of artificial means of cardiopulmonary support, death (the irreversible cessation of all brain functions) may be determined by the prolonged absence of spontaneous circulatory and respiratory functions.
- (b) In the presence of artificial means of cardiopulmonary support, death (the irreversible cessation of all brain functions) must be determined by tests of brain function.

In Both situations, the determination of death must be made in accordance with accepted medical standards (*Bernat et al.*, 8).

¹⁶⁵ The Commission also described a philosophical explanation for brain death, based on the idea that the brain is the body's primary integrator. The brain has a dually significant role in terms of the integrated functioning of the body. On the one hand it is part of the interdependent triad, along with the heart and the lungs, where the loss of the function of any one of the organs almost immediately causes the loss of the others. Additionally, within this integrated triad (and for the rest of the body too) the brain acts as the regulatory organ. If the heart, lungs or any other organ irreversibly ceases to function, it can be mechanically replaced, allowing the body to remain an integrated whole. However, with the loss of the integrating center itself, mechanical regulation of individual physiological functions cannot return the body's ability to respond to itself, and it is this regulatory capacity that defines life. The Commission explains: if a kidney is removed and its functions are taken over by dialysis, the patient's consciousness is a clear testament that he is alive. If a polio patient has lost control of his diaphragm and is unable to breath, an iron lung is able to provide the pressure differences needed to allow gas exchange. However, if a person is decapitated and attached to a machine such that his blood is able to flow back to his heart, and regulatory signals can be sent from the machine to the rest of the body, one cannot argue that the continued beating of his heart is proof of life (United States, Defining Death: a Report on the Medical, Legal and Ethical Issues in the Determination of Death 36).

Brain Death in Contemporary Halakha

The concept of brain death, made famous by the Harvard Committee, aroused considerable debate in the orthodox rabbinic world. As with the prevailing medical uncertainty of the moment of death in the 18th century, the nearly unanimous acceptance of brain death in the western medical and legal world, beginning in 1968, created a particularly intense environment surrounding the halakhic definition of death. The secular redefinition of death as the loss of the integrating capacity of the brain therefore necessitated a rabbinic reconsideration of the moment of death. At the very least, the rabbis had to decide if brain death was consistent with the established halakhic tradition of the moment of death. At most, the evolution of the concept of brain death would cause a complete restructuring of the interpretations and implications of the traditional halakhic sources.

Just as the debate over the definition of death in the delayed burial controversy caused a rift within the Jewish community between modernists and traditionalists, the contemporary debate about the validity of brain death has caused a rift within orthodoxy between those who adhere to, and those who are staunchly opposed to, the modern medical concept of death.¹⁶⁶ The halakhic debate over brain death is thus composed primarily of two camps of orthodox rabbis¹⁶⁷, divided based on the nature of their halakhic reasoning regarding brain death. While the camps

¹⁶⁶ However, unlike the delayed burial controversy, where the traditional halakhic definition of death was considered too liberal in the uncertain eyes of the external world, in the contemporary brain death debate, the halakhic position that is considered more traditional is deemed too conservative by a world that considers the donation of a heart to be the greatest gift one can give.

¹⁶⁷ A third approach, taken first by the Israeli Chief Rabbinate in 1986 (see The Chief Rabbinate Council of Israel, [The Decision of The Chief Rabbinate Council of Israel on Transplants](#)), was a return to the classical halakhic definition of death as the irreversible cessation of breathing. This return to tradition did not and could not occur in the initial wake of the Harvard Criteria, but rather developed as later response to the failings of physiological decapitation demonstrating the halakhic validity of brain death.

do not formally exist and the rabbis within each camp use slightly different arguments and reach slightly different conclusions, it is nonetheless convenient and enlightening to organize the rabbis along these lines.

The first camp, which I will call the “cardiopulmonary camp”, came out very quickly with strong condemnations of brain death as a valid definition of death. They considered brain death to be a term that was closely associated with heart transplantation, which was rarely successful in its early stages. In response, these rabbis took a halakhic approach that would classify a “brain dead” patient as alive, thereby prohibiting the removal of his organs. In the tradition of Rabbi Schreiber, the cardiopulmonary camp reinterpreted the traditional sources and argued that the traditional halakhic definition of death was, and always had been, the irreversible cessation of both respiration and cardiac activity.

In response to the development of this opposition to brain death, as well as advances in the medical understanding of brain death and the success of heart transplantation, a second and more modernist camp formed within orthodox Judaism, claiming that brain death is the physiological equivalent to decapitation, which is an independent category of death according to halakha. This “physiological decapitation camp” argued that a person who is physiologically decapitated is halakhically dead, even though some parts of his body may move spasmodically. The heartbeat, they contended, fit the category of sporadic movement because it was not controlled by the body’s integrating center. As such, the physiological decapitation camp was able to argue that the heartbeat was not an absolute proof of life, and therefore death can be diagnosed in a brain dead person, even if his heart continues to work normally.

Central to the debate over the halakhic validity of brain death is Rabbi Moshe Feinstein’s opinion, which is universally considered to be authoritative. As a result of its influential status,

both camps are engaged in an ongoing battle of entitlement over the interpretation of Feinstein's writings, each trying to justify his membership in their own argumentative camp. As a result, there is no consensus on what Rabbi Feinstein actually concluded regarding brain death. As it is beyond the scope of this thesis to attempt to resolve the conflict over Feinstein's placement in either of the two camps, I will instead present Rabbi Feinstein's writings on both sides of the debate, offering the selective interpretation of his writings that each side uses for support.

The Cardiopulmonary Camp

The cardiopulmonary camp is almost exclusively composed of orthodox *poskim*. Rabbi J. David Bleich, who is perhaps the most vigorous opponent of brain death criteria in the cardiopulmonary camp, has published numerous articles and a recent book that argue that the halakhic determination of death can be made only upon the cessation of both respiratory and cardiac activity. Alongside Rabbi Bleich are Rav Yosef Shalom Elyashiv, the leading Haredi *posek* in Israel; Rabbi Shlomo Zalman Auerbach¹⁶⁸, who was regarded as one of the leading *poskim* in Israel; Rabbi Isser Yehuda Unterman, the former Ashkenazi Chief Rabbi of Israel; Rabbi Eliezer Waldenberg, a former leading member of the Supreme Rabbinical Court in Israel; Rabbi Aaron Soloveitchik; Rabbi Hershel Schachter, as well as many others. As it is beyond the scope of this thesis to examine all of the differences between the rulings of rabbis that are in general agreement, I will treat Rabbi Bleich's point of view as broadly representative of the cardiopulmonary camp, noting major differences in opinion where appropriate. Rabbi Bleich's

¹⁶⁸ Some controversy exists around Rabbi Auerbach's opinion, specifically in the wake of the decapitated sheep experiment. Prior to this experiment, Auerbach was unquestionably part of the cardiopulmonary camp. However, there is a debate if the results of the experiment were enough to change his mind completely or if they were only enough to instill a bit of doubt in his mind. The controversy and its implications will be discussed further below (see pages 116-128).

position was selected as the standard for the cardiopulmonary camp for a two primary reasons. First, while Bleich repudiates brain death criteria with great fervor, the nature of his argument itself is relatively moderate within the cardiopulmonary camp, making it a reasonably accurate representation of the camp as a whole. Secondly, Bleich has written much more extensively on the subject than any other single *posek*, and his citations are notoriously thorough making the elucidation of the nature of his argument much less prone to error.

A primary premise of the argument made by the cardiopulmonary camp is that the definition of death is a religious obligation. Bleich warns that the physician should not confuse medical science's development of the techniques to observe physiological conditions and the implication of those techniques on the reassessment of the definition of death with the autonomy to actually define death as a function of those conditions.¹⁶⁹ While the physician can describe the physical condition of the patient that he observes, the classification of his observations as dead or alive is ultimately a moral and religious one.¹⁷⁰ Therefore, Bleich quotes Henry Beecher, the chairman of the Harvard Committee, saying, "only a very bold man, I think, would attempt to define death...we felt we could not define death. I suppose you will say that by implication we have defined it as brain death, but we do not make a point of that."¹⁷¹ Thus the cardiopulmonary camp begins its endeavor to define death by examining the Jewish sources, for the halakhic framework is the only means by which Jews can define death.

¹⁶⁹ Bleich, Establishing Criteria of Death 6-9.

¹⁷⁰ Bleich, Time of Death 186-187; Bleich, Of Cerebral, Respiratory and Cardiac Death 129. It is likely that Bleich considers the attempt to redefine halakhic death as brain death is a result of the physiological decapitation camp's rabbis' predisposition to think scientifically, as most of the prominent orthodox proponents of brain death are doctors or biological scientists. Hence, Bleich likely considers their attempts to define death as coming from an amoral perspective, which is why their results are so immoral, in his opinion.

¹⁷¹ Bleich, Establishing Criteria of Death 8.

When moral and religious considerations are ignored, as they were in the attempt by contemporary physicians to redefine death based solely on medical facts, Bleich argues, the result is a complete disregard for the intrinsic value of every moment of life. Bleich writes:

Medical scientists employ the term “brain death” even though it is a misnomer because it is a term laymen can comprehend as denoting a physiological state in which any further treatment is not only contraindicated but would be regarded as ludicrous. Introduction of the term “brain death” is a thinly veiled attempt to justify withholding of treatment under the guise of redefinition of terms. The purpose of this lexicographical exercise is to secure moral and emotional approbation for a policy that would otherwise be greeted with repugnance and even indignation.¹⁷²

Commenting on the decision to remove Karen Ann Quinlan from a respirator, Bleich wrote:

No one really wants to sanction murder [however]...confronted with the tremendous emotional and financial toll exacted by the protracted care of a comatose patient, man finds himself impaled upon the horns of a dilemma...the resolution of the problem is to pass between the horns of the dilemma by means of a lexicographical sleight-of-hand.¹⁷³

If people are willing to protect their moral conscience by redefining death in order to save themselves from a financial toll, how much more popular would this definitional gerrymandering be when the horn opposite to the removal of the ventilator was the potential saving of a life through heart transplantation.¹⁷⁴ Thus, it was generally accepted by halakhic authorities, even on

¹⁷² Bleich, Of Cerebral, Respiratory and Cardiac Death 142; Bleich, Brain Death: Medical Myth and Semantic Sleight of Hand 38; Bleich, Religious Traditions and Public Policy 69.

¹⁷³ Bleich, The Quinlan Case: A Jewish Perspective 34. It should be noted that Karen Ann Quinlan was in what is known as a persistent vegetative state (PVS) and was thus able to breathe on her own. The decision to remove mechanical support was not one of defining her as living or dead—for she was considered alive according to all Jewish opinions—but rather one of passive euthanasia for the secular world. Bleich, however, considers neither PVS or brain death as equivalent to death, and therefore his comments are consistent with his opinion on the development of brain death as a definition of death.

¹⁷⁴ The trend of the popularity of brain death increasing proportional to the benefit that is received as a result of that definition is evident in the fact that the French article on *coma dépassé* did not gain any recognition as an argument merely for futile care of these patients. Rather, the article was only recognized in the United States as a precursor to brain death in efforts to secure organs for transplantation.

both sides of the debate, that heart transplantation had a significant influence on the evolution of the concept of brain death.¹⁷⁵

For the members of the cardiopulmonary camp, the connection between heart transplantation and the evolution of brain death taints the integrity of the doctors who defined the term and therefore the validity of brain death as definition of death. Dr. Kunin notes that the adoption of brain death as a definition of death “is based on the nearly unanimous belief that organ donation is a virtue...in a halakhic context, this utilitarian defense of brain death is inadequate. If organ donors are alive when their organs are harvested, then this fact must be acknowledged and scrutinized.”¹⁷⁶ Accordingly, Rabbi Eliezer Waldenberg considers all heart transplants murder because doctors summarily declare living patients dead in order to remove the heart quickly for donation.¹⁷⁷ Likewise, Rabbi Moshe Feinstein wrote, while heart transplantation was still in its infancy:

¹⁷⁵ Rabbi Immanuel Jacobovitz writes, “the entire concept of brain-death emerged directly as a consequence of heart transplants, first pioneered by Christian Bernard in 1967,” (Jacobovitz, Halakhic Debate on Brain Death 29). Dr. Joshua Kunin also wrote that the “defense of brain death is little more than an advocacy for the cause of organ transplantation recipients,” (Kunin, 56). Even Dr. Fred Rosner and Rabbi Moshe David Tendler, who are bitterly opposed to Rabbi Bleich on the issue of brain death, concede that the concept of brain death was principally developed in response to transplantation. They write, “with the advent of heart transplantation, this [traditional] definition of death became inadequate and a new definition of death, so-called brain death, evolved,” (Rosner and Tendler, 14). However, while Dr. Rosner and Rabbi Tendler do not consider this to be detrimental to halakhic validity of the physiological state as a criterion for death, the members of the cardiopulmonary camp consider the connection to have tainted the integrity of the doctors who defined the term.

¹⁷⁶ Kunin, 56-57

¹⁷⁷ Fink, Halachic Aspects of Organ Transplantation 60. Jewish Law holds the preservation of life in the highest regard. Therefore, almost all Jewish laws can be broken in order to save a life. However, Jewish Law strictly forbids the killing of a person, no matter how dire their condition, for the sake of saving the life of another. The Talmud clearly states, “one life cannot be disposed of in favor of another,” (Sanhedrin 72b). Furthermore, Maimonides summarizes this concept, “If one is dying from a fatal illness and the doctors tell him he will be healed by something that is forbidden by the Torah, one must do it. One must be healed by all transgressions in the Torah except by idolatry, prohibited sexual relations, and murder. Even in a place of danger, one cannot be healed by these transgressions. And if he is healed by

Heart transplants involve the murder of two people. They kill the donor by taking his heart while he is still alive according to Torah Law, and they kill the recipient because he could have lived much longer if managed by other medical means...It is clear to me that doctors who permit this procedure do so because they consider the donor's life to be only of limited duration and, therefore, do not regard their shortening of his life as ethically significant.¹⁷⁸

Later, he reiterated his opinion saying, “the donor’s status is also in question, for they have not proven that he was dead [when the heart was removed].”¹⁷⁹ The condemnation of brain death as a result of its connection to heart transplantation therefore permeated through the cardiopulmonary camp.

Consequently, the cardiopulmonary camp responded immediately to the new definition of death by arguing that brain death did not constitute halakhic death specifically because a beating heart is an absolute indicator of life. Therefore, any permutation of the definition of death that could be created by an additional “lexicographical exercise” in order to allow heart transplants, which were nearly completely unsuccessful at the time, would already be in obvious opposition to halakha. However, emphasizing the importance of the cessation of the functions of the heart in the determination of death was a challenging task. The majority opinion in the Talmud is that the determination of death is made at the nose, and not at the heart. Even more so, the minority opinion does not suggest that cessation of heart functions is necessary in the determination of death, but rather that it may be deemed sufficient in certain instances.¹⁸⁰ In fact, as Bleich is

these he is liable to the punishment by a court as is fitting for the crimes,” (Maimonidea, *Mishneh Torah*, *Hilkhot Yesodei ha-Torah* 5:7).

¹⁷⁸ Feinstein, *Igrot Moshe*, *Yoreh De’ah* II:174.

¹⁷⁹ Feinstein, *Igrot Moshe*, *Choshen Mishpat* II:72. Written in 1978, two years after his responsa allowing brain death criteria with a nuclide scan test (see Feinstein, *Igrot Moshe*, *Yoreh De’ah* III:132) Feinstein’s treatment of the donor seems a bit anachronistic. Tendler claims that the patient in question is in PVS and is therefore able to breathe on his own and considered alive. However, the responsa itself makes no statements that lend it to an interpretation of PVS or brain stem death.

¹⁸⁰ Bleich, *Of Cerebral, Respiratory and Cardiac Death* 149.

fully aware, “there is no opinion recorded in the Babylonian Talmud – majority or minority – which *requires* examination of the heart.”¹⁸¹ Furthermore, and perhaps most important, all three medieval codes of Jewish Law rule in accordance with the first opinion in the Talmud, that the examination of the nose is both necessary and sufficient in the determination of death. This implies that, according to classical normative *halakha*, examination of the heart is neither a requirement nor of any practical value. Therefore, while conceding the full *halakhic* importance respiratory criteria, the cardiopulmonary camp was challenged with the addition and emphasis of cardiac criteria in the determination of death.

Bleich thus relegates respiratory criteria to a merely theoretical status, thereby making room for alterations based on more practical considerations.¹⁸² Bleich writes, “although, in theory, the cessation of respiration is the determining criterion in establishing that death has occurred, in practice, this principle is considerably modified so that the absence of respiratory activity in itself is not sufficient to establish that death has occurred.”¹⁸³ In order to modify the theoretical definition of death and create a new operative definition, the cessation of respiration

¹⁸¹ Bleich, Establishing Criteria of Death 11.

¹⁸² If the cessation of respiration is considered only symptomatic of death, the presence of any other clinical signs of life, like the heartbeat, should override the respiratory evidence that death has occurred (Bleich, Establishing Criteria of Death 23).

¹⁸³ Bleich, Establishing Criteria of Death 13. In another article (Bleich, Time of Death 191-193), Bleich quotes the two pages beginning with the above quote. The text is identical except that in the second version, he writes, “In theory cessation of respiration *and cardiac activity* are the determining criteria...” It is unclear why Bleich more recently decided that cardiac activity was not only practically important for the determination of death, but also part of the classical theoretical criteria. It is also unclear what practical modification is taking place to the “theoretical” criteria of cardiopulmonary death. While in the first version, it is clear that the practical change was to include the cessation of cardiac activity in the operative definition, there were no additional changes in the second version to indicate what new criteria was added to the theoretical definition. It is therefore unclear exactly what Bleich meant by the new statement and why he changed it in the first place. Most likely, Bleich’s stance became more extreme over time, and he decided that he no longer wanted to portray respiratory death as even a theoretically acceptable definition of death.

had to be relegated from the status of the definition of death to a merely a criterion of death. In other words, by arguing that the cessation of respiration is not synonymous with death but rather is just a physiological symptom that acts as a sign that death has occurred, the cardiopulmonary camp is able to legitimately make significant changes to the theoretical criteria for the determination of death. Consequently, the cessation of cardiac activity can be added as a criterion in the determination of death if the need for a more precise definition arises.

Bleich notes that, at first glance, there does appear to be some evidence pointing towards respiration being synonymous with life and thus its cessation defining death.¹⁸⁴ Regarding the laws of *eglah arufah*, the rabbis, in Sotah 45b, discuss from where on a corpse one should measure to determine the nearest town to the location of the person's death. The question is clearly stated: "regarding what do they disagree? One master [Rabbi Akiva] maintains that the essence of life (*ikar hiyuta*) is in his nostrils. The other master maintains that the essence of life is in his navel."¹⁸⁵ The accepted laws goes according to Rabbi Akiva, that measurement is done from the nose, because that is the location of the "essence of life", i.e., breathing. Furthermore, the *Yalkut Shimoni*¹⁸⁶ cites *Pirkei de-Rabbi Eliezer*¹⁸⁷, saying that before Jacob, who was the first person to get sick, a person merely sneezed and expired. According to the *Yalkut Shimoni*, the soul, which exists in the breath, leaves the same way it entered¹⁸⁸—through one mighty sneeze. Even the Hebrew language itself seems to equate the breath with the soul, as *neshama* means soul and *neshima* means breath and *ruach* means spirit as well as wind.

¹⁸⁴ Bleich, Establishing Criteria of Death 17-18.

¹⁸⁵ Sotah 45b.

¹⁸⁶ Yalkut Shimoni, #77.

¹⁸⁷ Eliezer ben Hyrcanus, ch. 52.

¹⁸⁸ Adam was created from dust and became a living being when God "blew into his nostrils the soul of life," (Genesis 2:6).

However, Bleich notes that these instances should not be misunderstood to define breathing as life, and its absence as death. Rather, “the clinical symptoms of death [i.e., absence of spontaneous respiration] delineated by the sages of the Talmud were known by them not to be error-proof.”¹⁸⁹ In fact, rabbis throughout history have questioned the ability of the absence of respiration alone to define death. He cites a Talmudic story in which a man was declared dead and buried in a cave but found very much alive a few days later, to show that the Talmudic sages knew that it is possible for someone to live despite previous cessation of respiration.¹⁹⁰ Furthermore, the same story was commonly quoted by the *maskilim* in the delayed burial controversy, as a validation of their fear of premature burial. While, at the time, most traditional rabbis declared the events so rare and unnatural that they had no place in halakha, it appears that the source slowly gained acceptance in the halakhic world, becoming a staple of the argument against defining death solely based on respiratory criteria.

The cardiopulmonary camp made use of a number of other arguments that originated in the delayed burial controversy. During the delayed burial controversy, the traditionalist rabbis responded to the fear of the uncertainty of the determination of death by citing Maimonides, who says that it is possible to differentiate between the loss of breathing that occurs in a fainting spell and the irreversible cessation of respiration that constitutes death.¹⁹¹ The cardiopulmonary camp subsequently shifted the emphasis from the ability to differentiate between reversible and irreversible cessation of respiration to the fact that cessation of respiration can be reversible at all. They therefore argued that Maimonides agreed with their position, that the reversibility of

¹⁸⁹ Bleich, Of Cerebral, Respiratory and Cardiac Death 146.

¹⁹⁰ Semahot 8:1, in Bleich, Establishing Criteria of Death 19.

¹⁹¹ Maimonides, Mishneh Torah, Hilchot Avel 4:5.

the cessation of respiration is proof that it cannot be equated with death. Furthermore, they cite a story in the Mishnah of a man who fell into a well and emerged, alive, after three days.¹⁹²

While one could argue that in the previous cases the possibility exists that respiration had not fully ceased, but rather remained below the threshold of our ability to detect it, in this case, there is no possibility that he was able to breathe under water. The fact he lived for an extended period of time without any respiratory capacity indicated to the cardiopulmonary camp that the cessation of respiration cannot be synonymous with the death of a person.

Therefore, according to the cardiopulmonary camp, the absence of respiration is not to be equated with death directly, but rather it is a physiological symptom that can only be a sign that death has presumably occurred. Hence Rabbi Moshe Feinstein wrote in 1970:

It is clear and simple that the nose is not the body part that gives life to a human...The intent of the verse “the breath of the spirit of life is in his nostrils” is not about the essence of the breath of life, because it is surely not in the nose. But the breath of life we see there in the nose...[breathing] is a more recognizable sign.¹⁹³

Furthermore, Rabbi Sholom Mordechai Schwadron, known as the *Maharasham*, argues that even the statement “the essence of life is in the nose” does not imply that life is synonymous with breathing. Rather, he argues that it means that the examination of the nose is sufficiently accurate in almost all ordinary cases, where there is no evidence to the contrary.¹⁹⁴

If the cessation of respiration is not to be equated with death, but merely indicate that death has already occurred, there must be some other function whose prior cessation can be equated with death. Therefore, the cardiopulmonary camp did not just add the cardiac criterion

¹⁹² Yevamot 121a. See Bleich, Neurological Criteria of Death and Time of Death Statutes 48.

¹⁹³ Moshe Feinstein, Igrot Moshe, Yoreh De'ah II:146.

¹⁹⁴ Schwadron, Teshuvot Marsham 6:124, see Bleich, Establishing Criteria of Death 19.

to the respiratory criterion, arguing that both are always equally important for the determination of death. Bleich argues that the cessation of respiration is only considered a sign of death in the first place because it indicates prior cardiac arrest, which is the more relevant factor.¹⁹⁵ Bleich argues that cardiac activity is the physiological function that is best equated with death based primarily on the arguments made by Rashi¹⁹⁶, Rabbi Zevi Ashkenazi¹⁹⁷ and Rabbi Moses Schreiber.¹⁹⁸

In explaining Rav Papa's statement in Yoma 85a, that the dispute is only when uncovering the body from the feet towards the head, Rashi writes that the reason why some say that you must check until the nose is that "sometimes life is not recognizable in his heart, but it is recognizable in his nostrils." Rabbi Ashkenazi explains that life may not be recognizable in the heart because "the heart is hidden beneath the chest and the beating is not noticeable externally on the chest since the beating is very weak inside." Hence, the reason for checking the nose even when the heart is uncovered first is that the absence of a detectable heartbeat does not mean that the heart is not actually beating or that respiration has definitely stopped, and therefore checking the nose would be a more reliable diagnostic test.

Turning this situation around, Bleich considers the hypothetical situation of a person who is trapped upside down under a pile of rubble, with a detectable heartbeat but no breath emanating from his nose.¹⁹⁹ He argues that according to Rashi, the presence of cardiac activity

¹⁹⁵ Bleich, Establishing Criteria of Death 12.

¹⁹⁶ Rashi, Commentary on Yoma 85a.

¹⁹⁷ Ashkenazi, Shelot u'Teshuvot Chacham Zevi #77.

¹⁹⁸ Schreiber, Shelot u'Teshuvot Hatam Sofer #338.#338.

¹⁹⁹ Bleich, Establishing Criteria of Death 12. This situation is not addressed directly by any pre-modern rabbis that I am aware of. Without a doubt, the presence of a heartbeat would indicate the need for continued digging. The question arises when the nose is reached and no breath is detected. According to

would require further digging, even on Shabbat, to save the person's life. Based on Rashi's comment, "with his heart he can determine whether he is alive, that his soul beats there," Bleich argues that it is the heart—not respiration—that is the essential indicator of life.²⁰⁰ Furthermore, according to Rashi, those who disagree and argue that one must check the nose, do not do so because they reject the fact that life exists in the heart, but only because they are concerned that a weak heartbeat is likely to go unnoticed.²⁰¹

According to the interpretation of Rashi espoused by the cardiopulmonary camp, the presence of a heartbeat is sufficient to allow the full removal of the person from the rubble without checking the nose at all. Rashi explains that implicit in the discussion in the *Gemarah*, is the assumption that the person "looks dead, that he does not move his limbs." Hence as soon as there is any indication that the person does not "look dead" he is no longer bound by the strictures of this particular discussion. According to Rashi the heart is one of the 248 limbs or body parts²⁰² and therefore, if this "limb" moves, it indicates that the person does not look dead. Furthermore, Rashi does not say that by checking the heartbeat one can determine if he is dead, but that "one can determine whether he is alive." Rashi is not arguing that the absence of a

all three medieval codes of Jewish Law, the nose must be checked regardless of the direction the body is uncovered. Hence, presumably, in the present case, the nose must be checked if there is any doubt about the condition of the person. If the person is not breathing, is this sufficient to negate the presence of a heartbeat as an indication of life? This is the ultimate question of brain death and will be addressed throughout the following pages.

²⁰⁰ Bleich, Of Cerebral, Respiratory and Cardiac Death 151. The Hebrew is "*she-nishmato dofeket sham*," which I already noted is best translated not as "his soul beats there," but rather "his breath beats there," for a physical function fits better with the verb "beats," (see above pages 15-16).

²⁰¹ Bleich, Of Cerebral, Respiratory and Cardiac Death 151.

²⁰² Rashi, Commentary on Berachot 45a.

heartbeat indicates death, but rather the presence of a heartbeat indicates life, even in patients incapable of spontaneous respiration.²⁰³

On the other hand, if a person is uncovered from the head first, Rashi agrees, “if there is no life in his nostrils, for he doesn’t find air there, he has surely died.” According to the views of the cardiopulmonary camp, Rashi is saying that the absence of breath in his nose is a symptom of death, and thus merely an indication that he has already died—an indication which must be ignored in the presence of any signs to the contrary. The real indication of death is the cessation of cardiac activity. Therefore, the cessation of respiration can only be relied upon insofar as it is sufficient to indicate that cardiac arrest has already occurred.

Rabbi Aaron Soloveitchik espouses an even more extreme interpretation of Rashi, arguing that he requires the cessation of respiration, cardiac activity and brain function in order to determine death. It is clear that according to Rashi the ascertainment of death is made based on the cessation of respiration in a person who appears dead. Soloveitchik argues that for one to “appear” dead, all other vital bodily functions must be absent. Hence, he argues that in Rabbi Shreiber’s discussion of a person who lies “silent as a stone, with no heartbeat,” the heartbeat qualifies the meaning of lying as a stone, and thus implies that to appear dead, according to Rashi, a person cannot have a heartbeat. Based on the same logic, Soloveitchik argues that according to Rashi, “even if the person is found to be devoid of respiration and cardiac activity but he produces waves on a machine [EEG], he is considered to be alive.”²⁰⁴

²⁰³ Proponents of brain death argue that this is irrelevant because Rashi’s use of the active verb *mezaz* (move) indicates that only voluntary motion is an indicator of life. Considering that the heartbeat is autonomic, its movement is therefore not an indication of life (Tendler, Halakhic Death Means Brain Death 7).

²⁰⁴ Soloveitchik, Death According to the Halacha 42. This is clearly an anachronistic stretch of Rashi’s commentary, and does not imply Rashi’s original intention. Rashi argues that respiration is the determining factor in “a person who appears dead, in that he is not moving his limbs.” Besides the fact

Rabbi Moshe Feinstein also seems to consider the presence of electrical waves on a machine to be indicators that a person does not lie like a stone and is therefore alive. Regarding a patient who is wrongfully declared dead by doctors, he writes, “if someone sees on the electrocardiogram that the “dead” one has some life, in such a case there is not even a majority to say he is dead. And perhaps there is also not a minority. He is alive even if he is not breathing.”²⁰⁵ Thus, it would seem that the presence of waves on an EKG or an EEG would be considered by Rabbi Feinstein to be proof that a person is alive, even if he is not breathing, because he does not appear dead, as required by Rashi.²⁰⁶

The cardiopulmonary camp builds even more support that respiration is the theoretical criterion for death only insofar as it indicates the prior cessation of cardiac activity from Rabbi Ashkenazi’s discussion of the status of a chicken found without a heart.²⁰⁷ Part of the discussion is devoted to a commentary on Yoma 85a, where Rabbi Ashkenazi undeniably states that he believes that the examination of the nose was required only because the absence of respiration in the nose indicated that the heart had stopped beating. According to Rabbi Ashkenazi, the determination of death is made based on the presence of a heartbeat²⁰⁸, which can go unnoticed

that Rashi’s grammar is active, and electrical waves are passive (as is the heartbeat), Rashi qualifies what it means to appear dead with the statement that he does no move his limbs. One could argue that the heart is a limb (indeed Rashi includes it as one of the parts of the body) and that it is indeed moved. However, electrical potentials are not limbs by any stretch of the imagination, and they do not move—they either exist or do not. Therefore, Soloveitchik fits the trend of the cardiopulmonary camp, adding many modern criteria for death together to make a stricter definition of death, and attributing the idea to the early rabbis.

²⁰⁵ Moshe Feinstein, Igrot Moshe, Yoreh De’ah II:146.

²⁰⁶ This seems to be directly contradicted by Rabbi Feinstein’s 1984 letter to Dr. S.S. Bondi, where he writes, “even though the heart is capable of pumping for several more days, nevertheless, as long as the patient is unable to breathe on his own, he is considered dead,” (Feinstein, Letter to Dr. S.S. Bondi).

²⁰⁷ Bleich, Establishing Criteria of Death 12.

²⁰⁸ I noted earlier (chapter 1) that Rabbi Ashkenazi considered the heartbeat to be a manifestation of respiration and therefore was really interested in the ability to breathe.

by direct examination of the chest “since the beating is very weak inside. But the breathing coming from the heart by way of the lung is noticeable as long as the heart lives.” Thus, concludes Rabbi Ashkenazi, “it is a very clear thing that there is no respiration unless there is life in the heart, for from it and for it come respiration.”²⁰⁹ Thus, according to the cardiopulmonary camp’s interpretation of Rabbi Ashkenazi, if a person is not breathing and there are no other indications of life, it can be assumed that the heart has also stopped, and therefore the person declared dead.²¹⁰ Because Yoma 85a allows the determination of death at the nose without checking the buried heart for signs that the person does not appear dead, the Talmud implies that the determination of death can only be excluded based on readily observable signs of life. According to Yoma 85a, because the chances of a heartbeat being sustained despite the absence of breathing are negligible, so long as the heart is buried under rubble, one is not required to check it. However, if a heartbeat is clearly present, as in the case of a brain dead patient who is fully exposed and monitored, the absence of respiration is not enough to declare death—for it does not define death itself, but is merely a symptom of death, which in this case is overridden by the presence of an observable heartbeat.

²⁰⁹ The quote continues “...the reason life depends on the breathing of the nose is because it is through the nose that the hot air from the heart leaves, and cold air enters to cool the heart. And if there is no heart, there is no breathing.” In his discussion of Rabbi Ashkenazi’s opinion, Bleich omits this latter part of the quote, which reveals the medical context of the original statement, for two likely reasons. First, in order to increase the significance of the heart in the halakhic criteria for the determination of death, it is necessary to decrease the significance of respiration, so as to overcome the traditional consideration that life was actually defined by breathing. As such, it would be beneficial for the cardiopulmonary camp to discount the medical context of the original statement, which reveals that Rabbi Ashkenazi considered the heart a respiratory organ, and therefore likely attributes the significance of the heartbeat to this perceived function. Secondly, there is a notion that halakhic categories are fixed, despite changes in underlying scientific knowledge. Rabbi Hershel Schachter cites the Chazon Ish, saying that it is irrelevant if the halakhic status of an organ is based on false medical presumptions, because all legal categories, including the vitality of organs, are fixed from talmudic times. Therefore, according to Rabbi Schachter, Rabbi Ashkenazi’s categorization of the heart as a vital organ (based on Rashi, based on the Talmud) is fixed, regardless of the extra-legal reasons why he believed the heart to be vital (Schachter, 38).

²¹⁰ Bleich, Of Cerebral, Respiratory and Cardiac Death 152.

Rabbi Unterman takes the interpretation of Rabbi Ashkenazi made by the cardiopulmonary camp to its logical extreme, arguing that the heart is not only a necessary organ in the determination of death, but also a sufficient one. As has already been noted, Rabbi Ashkenazi ultimately argues that a chicken found without a heart is kosher because it is impossible for an animal to live without a heart, so it must have been that the heart was lost after it was killed and cut open. Therefore, because a heart is absolutely necessary for life, Rabbi Unterman argues that if a person ever does not have a heart, he is considered dead, despite all evidence to the contrary.²¹¹ In his opinion, a person is not even halakhically allowed to be the recipient of a heart transplant because the moment his heart is removed he can no longer be presumed alive, and therefore, he cannot allow himself to be “killed” by the procedure, even if he will almost definitely come back to life afterwards. Thus, according to Rabbi Unterman, when the heart is removed, even though the body is perfused with both air and blood, and the absence of spontaneous breathing and pulse are both transient, the temporary lack of a heart is sufficient for a person to not be considered alive.²¹²

²¹¹ While this line of reasoning is a logical extreme that is consistent with the increased emphasis on the heart by the cardiopulmonary camp, it goes contrary to the line of reasoning that there can be one criterion for the determination of death, despite the presence of other vital signs. Rabbi Aaron Soloveitchik, who argues that the determination of death is made based on the cessation of respiration, cardiac activity, and brain functions, takes the logical extreme of this second line of reasoning. Soloveitchik argues that the importance of respiration is evident from Yoma 85a, the importance of cardiac activity is evident from Rabbi Schreiber and Rabbi Ashkenazi, and the importance of the brain from Rambam on Oholot 1:6 (which will be discussed below). Thus, Soloveitchik fits into the cardiopulmonary camp because he integrates these minority opinions on alternative methods for the determination of death and argues that they are additive, such that death cannot be determined without the loss of all of the functions (Soloveitchik, Death According to the Halacha 42).

²¹² Fink, 61-62. Rabbi Unterman’s ruling is unusual for a number of reasons. First, he does not prohibit open-heart surgery (Fink, 61), which requires the stopping of the heart, and maintenance on the body on the same heart-lung machine that is used in heart transplants. Furthermore, the absence of the heart and of breathing is only temporary, which would exclude the criteria from a definition of death, which is necessarily irreversible, according to almost all other rabbis.

While the cardiopulmonary camp espouses an interpretation of Rashi and Rabbi Ashkenazi that is not entirely consistent with the original intents of their commentaries, no reinterpretation of Rabbi Schreiber's opinion is needed. Conforming exactly to Rabbi Schreiber's intent, as described in above, Bleich writes that Rabbi Schreiber,

quite obviously views cessation of respiration as itself constituting death rather than as being merely symptomatic of death. However, in developing his thesis [Rabbi Shcreiber] appears to broaden his definition of death by requiring the presence of yet another necessary condition...Without making an explicit statement to this effect, [Rabbi Schreiber] here seems nevertheless to amend his definition of death and now appears to state that death occurs only if both the pulse beat and respiration have ceased.²¹³

While adding a preclusion to the use of respiratory criteria in the ascertainment of death is an extremely difficult proposition to make for someone who considers the cessation of respiration to be synonymous with death, it appears that this was Rabbi Schreiber's original intent. Rabbi Schreiber considered the ability to breathe to define the border between life and death, yet appears to only have allowed the physician to test for the cessation of respiration after all physical signs of life have also ceased, including the heartbeat.²¹⁴ This difficulty does not exist for Bleich as well as the majority of the cardiopulmonary camp, who consider respiration to be merely symptomatic of death in most cases. It is therefore not only that the cardiopulmonary camp will not check for the cessation of respiration until cardiac arrest is evident, but that if they theoretically were to check for respirations when the heart was obviously beating, the absence of spontaneous respiration would be insufficient to determine death.²¹⁵ Therefore, the cardiopulmonary camp is able to follow the precedent set by Rabbi Schreiber and include cardiac

²¹³ Bleich, Establishing Criteria of Death 21.

²¹⁴ Panitz, personal communication, 2010.

²¹⁵ Bleich, Of Cerebral, Respiratory and Cardiac Death 153.

arrest as a necessary criterion in the determination of death, such that a person can never be considered dead until the cessation of *both* respiratory and cardiac function.

As has been noted, even though Rabbi Schreiber claimed that the moment of death was determined by the *Hevra Kaddisha*'s “traditional knowledge, that is to say, by his breath and his pulse,” the inclusion of pulse was actually a major innovation to the halakhic definition of death because for the first time it implied cardiac activity as a function distinct from respiration. Prior to the publication of this responsa in 1839, the only Jews who argued for the inclusion of cardiac arrest in the definition of death were *maskilim* and then some modernist *halakhic* authorities like Rabbi Chajes. Rabbi Schreiber’s responsa thus represents the first significant infiltration of the modernist position into the actual halakhic definition of death.²¹⁶

Just as the cardiopulmonary camp’s interpretation of Rabbi Schreiber’s position makes no significant stretches to the intended meaning, the camp is also consistent with Rabbi Schreiber’s argumentative style in arguing that cardiac criteria did not actually represent an innovation and that it had always been a part of the halakhic definition of death.²¹⁷ Perhaps the most extreme argument that cardiac activity has always been a part of the halakhic definition of death comes from Rabbi Hershel Schachter. Rabbi Schachter uses a series of biblical and Talmudic arguments to demonstrate that the halakhic definition of death has always been the

²¹⁶ It is interesting that this modernist view has become an important precedent for the rabbis who are considered to be the traditionalists in the brain death debate, at least as compared to the scientifically minded modernists of the physiological decapitation camp.

²¹⁷ This stance was apparently extremely effective as Fred Rosner, a noted historian of Jewish medical history and a member of the physiological decapitation camp, wrote, “all rabbis agree that the classic definition of death in Judaism is the absence of spontaneous respiration and heartbeat in a patient with no bodily movements,” (Rosner, Definition of Death in Jewish Law 977).

total cessation of blood flow.²¹⁸ It appears that he does not care that during Talmudic times, it was not known that blood circulated through the body. In fact, it was not even until the 17th century that William Harvey proved that blood circulated in the vessels.²¹⁹ This anachronism clearly demonstrates the pervasiveness of the attempt to demonstrate that the inclusion of cardiac activity (which is now known to cause the circulation of the blood) in the halakhic definition of death was not an innovation, but has always been a major tenant of the ascertainment of the moment of death.

The cardiopulmonary camp therefore developed in response to the imprecise definition of brain death that was created for the purpose of easing the moral burden of removing hearts from living patients to transplant into other people who would likely live longer without the donated heart. Therefore, based on a reinterpretation of the classical Jewish sources, following the precedent of Rabbi Schreiber, the cardiopulmonary camp was able to make a formidable argument against the halakhic validity of brain death and the advancement of transplantation. By demonstrating that the cessation of respiration is only a criterion for the determination of death, and not a definition of death in and of itself, they were able to argue that the determination of death can only be made to the exclusion of all other signs of life. Specifically, they argued that the heart was traditionally the most important organ in the body and that the classical determination of death always necessitated cardiac arrest. The cardiopulmonary camp therefore not only invalidated brain death criteria as they had been conceived, but preemptively invalidated

²¹⁸ Schachter, 34-40. Rabbi Schachter's view is contrasted with the majority of the rest of the cardiopulmonary camp, which argues that the determination of death has always been to the exclusion of cardiac activity, whatever the nature of that activity is.

²¹⁹ Singer, The Work of William Harvey 177-184.

any lexicographical exercise that physicians could use to “pass between the horns of the dilemma” and remove the heart from a halakhically living person for transplantation.

The Physiological Decapitation Camp

In the decade following the first heart transplant and the first attempt to define brain death, some doubt existed as to the halakhic status of a brain dead person. After all, the medical definition of the physiological state was imprecise and there was significant confusion around the applicability of the term “brain death” to cases of different levels of brain damage. Additionally, as a result of the lack of success in the early stages of heart transplantation, there was no significant practical reason to risk redefining halakhic death to take place a few days earlier, even if brain death was technically consistent with halakha. Hence, for those rabbis who theoretically would have accepted brain death criteria as halakhically valid, a strong ethical opposition to the imprecise, and often low, medical standards had kept them from actually arguing for the acceptance of brain death criteria. In the first decade after the medical redefinition of death, it would be more dangerous for a rabbi to accept the imprecise brain death criteria than it would be for him to remain silent on the issue and let a person who is almost certainly dead take up a hospital bed and go unburied for a few days. Without a significant downside to maintaining a brain dead patient on a respirator, there was no strong ethical reason for a rabbi to take such a substantial risk.

However, by 1976, two major changes had taken place that would allow the proponents of brain death as a halakhically valid definition of death to make themselves heard. The first was the UK code’s standardization of brainstem death as a more precise definition of brain death, which excluded cerebral death as a type of brain death. Secondly, 1976 “marked the beginning

of the modern era of heart transplantation,”²²⁰ which was becoming significantly more successful due to the invention of anti-rejection drugs²²¹ and more sophisticated surgical techniques. As the moratorium on heart transplants in the United States began to be removed at the end of the 1970s²²² and successful heart transplantation moved from the realm of the theoretically possible to scientific reality, a significant ethical incentive for accepting brain death arose. The brain death debate no longer pitted the saving of a life against scarce medical resources, but now both sides of the coin were matters of life and death. The moral offense of treating a dead person as if he were alive therefore became significant, as it prevented the saving of another life, and thus violated the prohibition of “standing idly by the blood of your neighbor.” Therefore, by 1976, the precise definition of brainstem death removed the doubt surrounding the definition of brain death and successful heart transplantation created an ethical incentive to publicly argue for a redefinition of halakhic death.

Consequently, those rabbis who previously would theoretically have accepted brain death began to publicly argue that brain death was in fact a valid criterion for the determination of death, according to halakha. Therefore, in 1977, Rabbi Moshe David Tendler coined the term “physiological decapitation” and developed an argument for the halakhic validity of brain death. He argued that a brain dead patient is halakhically dead, because it is as if he were decapitated, which is an independent category of death in halakha.²²³ Thus the advancement of cardiac transplantation brought about an argument for an alternative halakhic definition of death that

²²⁰ Rosner and Tendler, 14.

²²¹ Cyclosporine, a very potent anti-rejection drug, was put into use in 1980, increasing the one-year survival rate of heart transplant recipients from 30% to 80%, with 60% surviving past five years (Durst, An Overview on Organ Transplantation 9; Steinberg, Transplantation).

²²² Christopherson, Heart Transplants 18.

²²³ Veith *et al.*, Brain Death: I. A Status Report of Medical and Ethical Considerations 1653.

encompassed brain death, and an intense debate ensued between the two halakhic camps about the moral, legal and religious issues involved in the determination of the border between life and death.

As opposed to Rabbi Bleich, who diminishes the physician's role in defining death by arguing that defining death is a moral and religious obligation that is merely based on the physiological state as described by the physician, Rabbi Tendler cites Maimonides, that all factors concerning death are determined "by what the doctor tells you."²²⁴ Thus Tendler argues that death cannot be defined without the proper medical and religious expertise:

The interface of ethics or religion and medical practice is a treacherous area because it demands dual expertise to traverse it safely. In the issue at hand, a mastery of the fundamentals of physiology is necessary for the proper elucidation of the Talmudic references.²²⁵

Thus Rabbi Tendler defines the members of his camp as "rabbanim who are able to comprehend both the physiological facts and the halakhic analysis."²²⁶ Consequently, the physiological decapitation camp is composed almost exclusively of orthodox Jews with significant background in the biological sciences. The most outspoken members of the physiological decapitation camp are Rabbi Moshe Tendler, who holds a PhD in microbiology, Dr. Fred Rosner, the Director of the Department of Medicine at Queens Hospital Center and Rabbi Dr. Edward Reichman, who is an Associate Professor of Emergency Medicine at Montefiore Medical Center.

Therefore, as with the *maskilim* at the end of the 18th century and especially Rabbi Chajes, who was still a respected halakhic authority, the rabbis in the physiological decapitation camp are somewhat predisposed to think scientifically and put their initial faith in medicine.

²²⁴ Maimonides, Mishneh Torah, Hilchot Retzicha 2:8 in Tendler, Halakhic Death Means Brain Death 6.

²²⁵ Tendler, Reply to Jewish Law and Time of Death 109.

²²⁶ Tendler Halakhic Death Means Brain Death 6.

Thus Rabbi Tendler argues for the acceptance of brain death first from a medical and scientific standpoint, and then he argues that these bio-medical facts are consistent with halakha.²²⁷ Consequently, the physiological decapitation camp begins its argument with a presumption that empirically demonstrated scientific phenomena are facts, and that these fundamental facts are essential to a proper understanding of the applicability of a set of halakhic sources to the physiological condition.

The primary biomedical facts that Rabbi Tendler and the physiological decapitation camp rely on are the distinction between organismal and cellular death and the integrative role of the brain in the coordination of the organism. The fact that the body does not die all at once had been known throughout history. Significantly, it resulted in the uncertainty and redefinition of death in the 16th to 18th centuries, when the time of death appeared to have expanded from a short moment to a slow progression such that death appeared to extend into the realm of the living. Eighteenth century calls for definitions of death based on putrefaction erred on the side of safety, waiting until practically every cell in the body had begun to decompose rather than risking defining the death of the organism as a whole too early. The fact that no modern society, including Judaism, would use such a grotesque definition of death demonstrates that it is universally accepted that a person dies when his organism dies, and not when all of his cells die. Hence, the Declaration of Sydney on Human Death stated, “death is a gradual process at the cellular level with tissues varying in their ability to withstand deprivation of oxygen. But clinical interest lies not in the state of preservation of isolated cells but in the fate of a person.”²²⁸ It is therefore a scientific fact that certain cells and organs will remain alive for a significant amount

²²⁷ As compared to the structure of Bleich’s arguments, which start with halakhic premises, and then move into the scientific realm.

²²⁸ Declaration of Sydney on Human Death, see Machado *et al.*, 701.

of time after a person is universally considered dead. The moment of death is therefore accepted to be determined not to the exclusion of other sub-organismal “signs of life.”

The biological definition of death is thus contingent on the loss of the biological function that defines an organism. As an organism is differentiated from the sum of its parts by its ability to integrate its organ systems, organismal death is defined by the complete dysfunction of the systems that are integral to the coordination of the whole. The key physiological fact of organismal death is that after an organism dies individual organs and organ system can still function relatively normally, and even for long periods of time if they are nourished artificially. However these individual functions are not integrated and they no longer contribute to the organism as a whole. Hence, as Rabbi Tendler points out:

I could take such an organismically dead...body, remove the heart and keep it alive for years, or take out the lungs and the kidney and keep them alive in a perfusion system for days, and have each of these organs separated in different rooms in the hospital. This would be no different...except for the fact that [in the usual case] the skin would be connecting all of the organs together...When the body loses its integrative capacity, the patient has died.²²⁹

What we are left with is not a living organism but merely have a collection of organ systems.²³⁰

It is a scientific fact that the brain controls the integration of the organ systems in an organism.²³¹ The brain has this central role for two complementary reasons. First, the brain is one of three organs, along with the heart and lungs, whose interrelationship is extremely close

²²⁹ Tendler, Halakhic Death Means Brain Death 6.

²³⁰ Tendler, Halakhic Death Means Brain Death 6.

²³¹ Interestingly, Tendler mentions the endocrine system in passing (Tendler, Halakhic Death Means Brain Death 6) but does not discuss the implications of the continued endocrine function in brain dead patients. As the body's second of two integrative control centers, the endocrine system keeps body of a brain dead person remains hormonally integrated. Therefore Tendler would presumably require both integrating systems to function in order for an organism to remain alive, and therefore the breakdown of the neural system alone would be sufficient to define death. However, Tendler does not comment on the fact that a functioning hypothalamus, which is the central organ in the endocrine system, is maintained during a state of “whole” brain death (See Kunin, 53-54).

and integral to the body's survival, that the dysfunction of any one of those organs almost immediately leads to the loss of the other two and of the death of the organism as a whole. The brain has special significance in this view, because it is the only one of the three organs that cannot be revived or replaced. Secondly, the brain is the most significant of the three organs because it is not only an irreplaceable part of an integrated system but functions as the central regulator of that coordinated system. Consequently the loss of the function of the whole brain means that the body has lost its integrative capacity, which is defined as organismal, or biological, death.²³²

Therefore, from a purely biological perspective, the loss or dysfunction of the whole brain is equivalent to the loss of the integrative capacity of an organism and is therefore equivalent to the death of that organism.²³³ Hence, Rabbi Tendler concludes, "medical science

²³² United States, Defining Death 32. That brain death, which defines organismal death, has been accepted throughout most of the western world is an important part of the physiological decapitation camp's argument. Brain death is not merely a lexicographical exercise, but a medical phenomenon that is accepted by physicians across the civilized world. Rosner and Tendler cite the commentary on the report by the Harvard Committee, published as a "Landmark Article" in 1984, which says that the criteria outlined in the report have been upheld by numerous clinical observations (See Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death, Landmark Article: A Definition of Irreversible Coma). They garner additional support from the President's Commission's report "Defining Death," which states that death can be defined both by the classic cardiopulmonary criteria and also by total and irreversible brain death (see United States, Defining Death). The fact that the report was endorsed by the American Bar Association, the American Medical Association, and the National Conference of Commissioners on Uniform State Laws significantly demonstrates that brain death is a widely accepted medical and legal phenomenon. They further cite the New York State Task Force on Life and the Law, which upheld the Uniform Determination of Death Act, as stated by the President's Commission. Significantly, Rabbi Bleich, a member of the Task Force, was the only dissenting opinion (Bleich, Minority Report: Time of Death Legislation 85 and Bleich, Minority Report: Patient Autonomy and Societal Interests 107). See Rosner and Tendler, 15-16.

²³³ United States, Defining Death 32.

might as well (in the case of a brain dead patient), remove the brain and the head altogether and put the respirator directly into the trachea. This would illustrate how ‘dead’ such a patient is.”²³⁴

With this medical background, Tendler and Rosner reconsider whether or not the classic halakhic sources on the definition of death are the most analogous to the situation of brain death. After all, as Rabbi Yitzchok Breitowitz points out, the definition of the question and selection of the most appropriate analogies is critically important to the halakhic process. He writes:

If an external phenomenon is perceived or described in a certain way, then one set of halachic categories and constructs will be brought to bear. If the situation is perceived differently, other halachic concepts may become relevant. The process of "shaping" or identifying the critical and significant components of the phenomenon is often the most crucial step in being able to resolve the halachic quandary properly. Thus, “sheealat chacham chatzi teshuvah” – “the question of a wise man is half the answer.”²³⁵

Consequently, Tendler and Rosner reexamine the classic²³⁶ and modern²³⁷ halakhic sources on the definition of death and conclude that all the usual sources that were written prior to the

²³⁴ Tendler, Halakhic Death Means Brain Death 6. In fact, a year after Tendler wrote this, Rabbi Doctor Avraham Steinberg conducted just this experiment. The head of a sheep was surgically removed in an ICU setting and a respirator was attached directly to the trachea, after tying off the carotid arteries. The doctors were able to maintain normal blood pressure and a normally beating heart, demonstrating the similarity of the situation of brain death to decapitation in an intensive care set-up (Steinberg and Hersch, Decapitation of a Pregnant Sheep: A Contribution to the Brain Death Controversy 1887). The influence that this experiment had on the halakhic brain death debate will be discussed below.

²³⁵ Breitowitz, How a Rabbi Decides a Medical Halacha Issue.

²³⁶ They explain that Yoma 85a establishes the debate between cardiac and respiratory death and indicates that the cessation of respiration is the defining characteristic of death, according to the bible. Rashi is interpreted as a simple gloss, stating that while some check the heart, the respiratory test is considered more important according to the Talmud. They then cite Maimonides and Rabbi Karo, demonstrating that the authoritative medieval codes of Jewish Law are unanimous that respiration is the only criterion that matters, regardless of the circumstances described in Yoma. The physiological decapitation camp therefore does not reject or modify any aspect of the traditional halakhic definition of death, which is that the cessation of respiration is necessary and sufficient to ascertain death (Rosner and Tendler, 17-20).

²³⁷ Rosner and Tendler mention the modern rabbinic sources that emphasize that a person is dead only when both his breathing and pulse cease, and make no additional statement about the effect of these opinions on their interpretation of the classic definition of death (Rosner and Tendler, 20-22). The text on these jointly published pages is duplicated in a number of Rosner’s solo publications (see Rosner, Definition of Death in Jewish Law 975-977; Rosner, Jewish Perspectives on Issues of Death and Dying

evolution of brain death were dealing with a dying process that was much different than the process that exists for the brain dead. While the classical way to die is analogous to the situation described in Yoma, and is thus subject to the laws derived from that situation, according to the physiological decapitation camp, brain death is a new form of death that is not analogous to the pre-modern dying process that is referred to in Yoma. Therefore, brain death must be examined from a new halakhic perspective.

Along with a number of other bio-ethicists, Tendler published a two-part article, in 1977, titled, “Brain Death: A Status Report of Medical and Ethical Considerations.” In the article, Tendler introduced a novel way to look at the Jewish definition of death in a brain dead patient. In essence, Rabbi Tendler’s thesis amounts to:

In the situation of decapitation, death can be defined or determined by the decapitated state itself as recognized in the Talmud and the Code of Laws. Complete destruction of the brain, which includes loss of integrative, regulatory, and other functions of the brain, can be considered physiological decapitation and thus a determinant *per se* of death of the person.²³⁸

60-67). In these publications, Rosner concludes, “all rabbis agree that the classic definition of death in Judaism is the absence of spontaneous respiration and heartbeat in a patient with no bodily movement.” It appears that Rosner includes the recent rabbinic writings on the importance of the heart, starting with Rabbi Schreiber, as part of the classic definition of death, but that Tendler does not—hence the conclusion’s exclusion in the Jointly published version. However, the jointly published version, does include the recent rabbinic sources themselves, including statements by Rabbi Unterman, Rabbi Waldenberg and Rabbi Bleich saying that death was classically determined by the cessation of both respiratory and cardiac activity. It therefore appears that, while Rosner accepts the influence of these modern rabbis on the traditional definition of death, Tendler considers the heart to be a more recent addition that goes beyond the original definition. The fact that Tendler agreed to include the modern sources implies that he would likely consider them be authoritative in most current cases of “classic death” (read: cases other than brain death), though not part of the traditional halakhic definition of death. Alternatively, it was merely an attempt to be impartial.

²³⁸ Veith *et al.*, 1653.

As a result of this thesis, the physiological decapitation camp formed and brain death became an independent criterion for the determination of death in Jewish Law, alongside the cardiopulmonary definition of death that remained applicable to all other modes of death.²³⁹

²³⁹ The acceptance of brain death and cardiopulmonary death in non-brain dead patients as two equal standards for death was also adopted by the President's Commission in the Uniform Determination of Death Act (United States, Defining Death). Regarding the Uniform Determination of Death Act, Bernat *et al.* argue that having two equal standards for death defies the concept of defining death. They claim that the Commission confuses evidence for a standard of death with the standard itself. They then proceed to argue that a standard must be true in all cases, not just the majority, and therefore brain death is the only definition of death, with the cessation of cardiopulmonary function being evidence that the brain has died due to lack of circulation (Bernat *et al.*, 5-9).

In many instances, Tendler takes the same approach, arguing that the cessation of respiration never defined death, but that it was only the key sign of it. Rather, the definition of death in Jewish Law has always been brain death, and respiration was used to determine brain death prior to the development of more advanced medical technology. Hence, he writes, “a valid definition of death is brain stem death. The classic ‘respiratory and circulatory death’ is in reality brain death. Irreversible respiratory arrest is indicative of brain stem death,” (Tendler and Rosner, Rabbi Moshe Feinstein and Brain Stem Death 32). Similarly, he wrote, “Spontaneous respiration is thus an indicator of the living state. However, it cannot be considered its definition, since a respirator patient whose sole defect is paralysis of the motor neurons to the muscles of respiration due to neurologic diseases [like polio] is surely fully alive despite his inability to breathe spontaneously,” (Veith *et al.*, 1653). Thus, in many instances, Tendler argues that the halakhic definition of death has always been brain death, and that the traditional respiratory criterion for the determination of death was the most significant diagnostic tool of brain death, but did not itself define death.

However, in other instances Tendler appears to argue the exact opposite: that brain death is a diagnostic tool that can be used to determine that someone’s inability to breathe is in fact irreversible and is therefore dead as a result of his irreversible cessation of respiratory capacity. In 1989—long after the term “brain death” was clearly defined as brainstem death and long after Tendler took note of this fact (see Tendler, Halakhic Death Means Brain Death 6, where he argues that this clarification in 1976 caused him to develop the term physiological decapitation)—Tendler wrote that when a patient “meets the Harvard criteria, he is not ‘brain dead’ – a confusing term – but is dead as evidenced, first and foremost, by cessation of independent respiration. In addition, a careful check must be made that he meets the reservation that he appear clinically dead [by the rest of the] Harvard criteria,” (Rosner and Tendler, 27). Tendler thus describes a definition of death that is based on the cessation of spontaneous respiration and movement, with brain death being merely the criterion that can be used to diagnose both aspects of the definition of death.

It therefore appears that Tendler is inconsistent in his description of the relationship between brain death and the cessation of respiration in the determination of death. Evidence of Tendler’s failure to distinguish between the definition of death and the key criteria for determining that the definition has been met can be found in an editorial that Tendler wrote in response to a summary of the brain death controversy written by Rabbi Breitowitz (Breitowitz, The Brain Death Controversy in Jewish Law). Tendler wrote, “the requirement of ‘respiratory failure’...and standards for ‘physiological decapitation’ are identical and not based on ‘somewhat different theories,’” as Breitowitz had written (Tendler, Brain-Stem Death 78).

The origin of the physiological decapitation camp's argument for a definition of death that is based on brain function is in the Mishnah, Oholot 1:6. The Mishnah states:

Humans do not impart impurity until the soul expires. Even if he was chopped up, even if he was in the throes of death, he obligates levirate marriage and he exempts from levirate marriage; he permits the eating of *terumah* and he disqualifies from *terumah* [i.e., he is considered fully alive]. Likewise, a domestic animal and a wild beast do not impart impurity until their souls expire. If their heads are cut off, even if they were still convulsing (*m'parksin*), they are impure, like the tail of a lizard that convulses (*m'parkeset*).²⁴⁰

It is clear from the Mishnah that as long as a person is alive, no matter how close to death he may be²⁴¹, he is considered alive in all regards. Therefore, when the Mishnah explains that when a person or animal is decapitated he is considered dead, it is clear that decapitation is conclusive evidence that death has occurred. Furthermore, the Mishnah cautions that post-decapitation movement²⁴² should not be taken as evidence that the person is living and similar to the one who is “chopped up.” The Mishnah is explicit that a decapitated individual is indisputably dead, at least so long as his movements are considered “*pirkus*. ”²⁴³

Thus, Tendler appears to consider brain death and the cessation of respiration to be entirely analogous and interchangeable.

²⁴⁰ Mishnah, Oholot 1:6.

²⁴¹ According to the 10th century midrash, *Seder Eliyahu Rabbah*, “chopped up” refers to a person who is about to die, while a person who is in “the throes of death,” may survive for some time, although his mind is gone (Kehati, Mishnah 12).

²⁴² Post-decapitation movement was apparently a captivating phenomenon for the rabbis. In Sotah 45b, as part of a discussion of the laws of *eglah arufah*, the rabbis debate which part of the body should be left where it lies and measured from in the hypothetical situation of a person who is decapitated exactly between two towns. Rabbi Akiva suggests that the body should be brought to the head because wherever the head falls, it remains, while “it is the body that continues to run,” (Sotah 45b). Rabbi Ashkenazi also discusses numerous instances of post-decapitation movement in his responsa on the heartless chicken (*Shelot u'Teshuvot Chacham Zevi* #77).

²⁴³ Rabbi Akiva’s authoritative argument that the decapitated body continues to run does not elicit a discussion about whether this movement is considered *pirkus* or not. It is possible, however, that the continued movement mentioned by Rabbi Akiva was just a result of momentum and did not involve movement that was anything like normal running motions.

Essential to the physiological decapitation camp's understanding of the Mishnah is the commentary by Maimonides, who is well known as being a great physician and one of the most influential Jewish philosophers and halakhists. In his commentary, Maimonides discusses the nature of the movement seen in a lizard's tail after it is cut off, alluding to the halakhic relevance of post-decapitation movement. He writes, "This creature's tail convulses a great deal after it is severed. However, this occurs to a number of animals because the power of locomotion is not coordinated from one central location, but rather it is spread throughout the body."²⁴⁴ According to the interpretation of Maimonides espoused by the physiological decapitation camp, only movement that originates from a central, integrated source can be considered a sign of life.

Thus, Tendler argues that Maimonides is alluding to the organismal definition of death, whereby the continued viability of individual organs and cells is not conclusive proof of life in the absence of integration from a central source in the body. As it is a biological fact that the brain is the integrating center of the body, as long as the brain is disconnected from the body, it is reasonable to assume that any movement would therefore be considered un-integrated *pirkus*, no matter how "normal" the movement appears or how long the movement is sustained. As such, Tendler concludes:

The heart would be the worst test of life because the heart is the only organ in the body that has motion unto itself; motion that is not organismal but purely

²⁴⁴ Maimonides, Commentary on Mishnah Oholot 1:6. In his medical writings, Maimonides discussed a debate between Aristotle and Galen about which organ is responsible for controlling movement. He writes, "according to the view of Aristotle, the heart sends powers to the brain and with this power the brain performs its function, and it [in turn] give sensation and movement to other organs...this [thesis of Aristotle] is correct and logical." Hence, according to Maimonides, the single central location is proximally referring to the brain, but ultimately to the heart. Hence, Maimonides concludes, "the heart sends the specific power of life to each organ," (see Maimonides, The Medical Aphorisms of Moses Maimonides 25:70). Nonetheless, we now know that the brain controls locomotion without the heart, but the idea is still just as noteworthy—the controlled movement is required, but uncontrolled convulsions are not indicators of life.

organ related. We can take a human heart out of the body and watch it beat for hours in a bucket of salt water. This is not integrated motion.²⁴⁵

Initially, the exclusion of the movement of the heart as an absolute characteristic of life would seem to contradict Rashi's gloss on Yoma 85a, where he states that a person can only be determined to be dead "if he seems to be dead, in that he does not move his limbs." It would therefore appear that the movement of any organ would be a proof of life according to Rashi. However, Rashi is known for his attention to grammar, and his decision to use the active form "he does not move his limbs" as opposed to the passive "his limbs do not move," is not insignificant. Consequently, the physiological decapitation camp infers that Rashi meant that only voluntary motion is a sign of life, while involuntary, or passive, motion cannot be said to exclude the determination of death. The heartbeat, which is entirely involuntary, would therefore not be the kind of motion that excludes the determination of death, according to Rashi. Thus,

²⁴⁵ Tendler, Halakhic Death Means Brain Death 6. Furthermore, it is known that the heart continues to beat in a fully anatomically decapitated person. Pallis points out that in a published photo of a public decapitation, four spurts of blood can be seen protruding from the neck of the deceased. These blood spurts correspond to the four major arteries that supply the brain with oxygenated blood. It is clear from the picture that the heart was still beating in the decapitated person, who would be considered dead by all halakhic standards.

It is often countered that the heart's movement in a brain dead patient is not *pirkus* because it beats normally for a relatively long period of time (much longer than the arterial spurts seen in the anatomically decapitated), and therefore the heartbeat would be a proof of life. However, to the best of my knowledge, no one has ever argued that a normal heartbeat cannot be considered *pirkus* because it is, by nature, integrated from a central source. While the contraction of the heart is not coordinate by a central external source, the coordination nevertheless comes from a central location—the sinoatrial (SA) node of the heart. The cardiac muscle cells that compose the heart are myogenic, meaning that each cardiac cell is capable of initiating its own contraction. Without any coordination of the individual contractions, which is known as ventricular fibrillation, the heart quivers and does not produce a pulse. In order to generate a pulse, the contractions of the cardiac cells are coordinated by a series of nodes throughout the heart (beginning with the SA node) that initiate contraction before the intrinsic myogenic activity of each cell takes effect. Therefore, while the heart contracts with no external integration, the heart is integrated from the central location of the SA node. Hence Maimonides' statement is consistent with the functions of the heart: when there is no central integration, the organ quivers or convulses. However if it moves in a normal coordinated fashion, it is because there is an integrating center, which does not necessarily need to be a different organ. The heart's motion is not "spread throughout the body" and neither is it spread throughout the heart.

according to the physiological decapitation camp, if a person is decapitated, he is without a doubt considered halakhically dead, despite any observable movement, including a sustained heartbeat. Based on these sources, “it would appear that decapitation is a distinct category of death that is so absolute that *any* sign of life after the decapitation, even something so purposeful as a beating heart, is not life, but *pirkus*.²⁴⁶

Furthermore, the physiological decapitation camp argues that brain death is the physiological equivalent to decapitation and is therefore subject to the same laws surrounding anatomical decapitation. They interpret decapitation as the separation of the head from the rest of the body, which therefore signals the brain’s loss of contact with the rest of the organism. As such, Rosner writes, “it is precisely the irreversible cessation of the integrated function of brain and body that is modeled by decapitation.”²⁴⁷ Thus the discussion of decapitation in the Mishnah is not restricted to the single case of full anatomical decapitation, but is a model for all analogous situations in which the brain and body become disconnected.

In order to make this argument the physiological decapitation camp had to demonstrate that the Mishnah in Oholot does not require full anatomical decapitation in order to diagnose death. In the 1977 article in which he introduced the concept of physiological decapitation as an independent definition of death according to the Jewish tradition, Tendler cites the Talmud Hullin 21a, the Mishnah Torah, Laws of Ritual Defilement 1:15, and the Shulchan Aruch, Yoreh De’ah 370:1 as proofs that a person does not need to be fully anatomically decapitated in order to be defined as dead by decapitation criteria.

²⁴⁶ Kunin, 50. Kunin does not however, consider brain death to be equivalent to decapitation because evidence of residual brain function demonstrates that the brain is not completely separated from the body. Therefore, according to Kunin, the heartbeat of a brain dead person is definitive proof that he is alive.

²⁴⁷ See Nevins, 18.

The Talmud, in Hullin 21a records a discussion about how much of a bird's neck must be cut in order for it to be used for a burnt offering. In this context the Gemara digresses to discuss instances in which a neck injury is fatal for a person, "if someone's neck is broken along with most of the flesh, he contaminates [i.e., he is dead]."²⁴⁸ Consistent with his gloss to the Mishnah Oholot, Maimonides comments that if a person sustains such an injury, he is considered dead even if part of his body continues to convulse.²⁴⁹ Therefore, the physiological decapitation camp argues that clearly a person does not need to have his head fully removed in order for halakha to consider him decapitated. The Gemara then discusses the story of Eli, the High Priest's death as an incident in which a person was considered dead by decapitation even without the tearing of the flesh on the neck. According to the story, Eli fell backwards off his chair and "his neck bone broke and he died."²⁵⁰ Rashi explains that Eli died instantly, without any visible injuries, indicating that his decapitated status defined his death as opposed to constituting an injury that proved fatal shortly after it was sustained. While the Gemara explains that the situation is different in the case of old age, it nonetheless demonstrates that a person can be declared dead by decapitation without any visible wounds.²⁵¹ The Gemara then explicitly discusses the meaning of decapitation in the Mishnah, Oholot. While one opinion maintains that decapitation means that the head is actually cut off, the other two opinions argue that the head must only be

²⁴⁸ Hullin 21a.

²⁴⁹ Maimonides, *Mishneh Torah, Hilkhot Tumat Met* 1:15.

²⁵⁰ 1 Samuel 4:18.

²⁵¹ Tendler, Halakhic Death Means Brain Death 7.

separated (*b'havdalat*) in the same manner that the bird is killed for the burnt offering, which does not require complete removal of the head.²⁵²

Furthermore, in the Shulchan Aruch, Rabbi Karo codifies the law that a person whose neck has been broken is among those who “are considered dead even though they are still alive.”²⁵³ Thus, argues the physiological decapitation camp, a severed connection between the brain and the body is sufficient to constitute an independent legal definition of death according to halakha.²⁵⁴ Seeing as brain death is defined as the loss of the functions of the whole brain, including the brain stem, such a brain is unable to communicate with the body and the connection is severed. Encapsulating the stance of the physiological decapitation camp, Tendler writes, “the concept that total cessation of brain function should be considered physiological decapitation is indeed [as] innovative as it is accurate.”²⁵⁵

In order to further ensure that the connection between the brain and the body of a brain dead person has been severed, Rabbi Tendler requires an ancillary test to those seen in the Harvard Criteria, the Minnesota Criteria and the UK code. Tendler suggested to his father-in-law, Rabbi Moshe Feinstein, that the disconnect between the brain and the rest of the body in a brain dead patient could be reliably demonstrated by means of radionuclide angiography, which

²⁵² Hullin 21a. However, the latter two opinions mention specific requirements of what parts of the neck must be severed to be considered decapitation, if the head is not completely removed (see Bleich, Of Cerebral, Respiratory and Cardiac Death 131-132 for a discussion of the meaning of these requirements). The physiological decapitation camp seems to gloss over the specific requirements in Hullin, preferring an interpretation of decapitation that remains at the surface of the cited opinions.

²⁵³ Karo, Shulchan Aruch, Yoreh De'ah 370:1.

²⁵⁴ Rosner and Tendler, 28.

²⁵⁵ Tendler, Reply to Jewish Law and Time of Death 109.

is a safe and reliable indicator of the absence of blood flow to the brain.²⁵⁶ Rabbi Feinstein responded:

The patient should be tested by means of a nuclide scan test. If it is determined that the blood circulation does not reach the base of the brain, it is obvious that the brain must have begun to show the physical signs of destruction referred to as lysis. When the brain shows extensive lysis, it is as if the head had been removed from the body or the person decapitated.²⁵⁷

Thus, according to Rabbi Tendler's interpretation of Rabbi Feinstein, if radionuclide angiography reveals that no blood flows to the brain, the person is considered halakhically dead by physiological decapitation.²⁵⁸ Rabbi Feinstein reiterates his point in a letter to Dr. S.S. Bondi in 1984:

The Harvard Criteria, which is acceptable by Jewish Law, which is that the patient's brain is 'separated,' meaning the brain is in a state of decay...even

²⁵⁶ Rosner and Tendler, 26.

²⁵⁷ Feinstein, Igrot Moshe, Yoreh De'ah III:132. There is much controversy over Rabbi Feinstein's opinion, especially with regard to his statements in Yoreah De'ah III:132. This is largely because, as Tendler wrote, "the opinions I have publicized in the name of Rav Moshe were not inferred from his writings, but are direct quotations of his statements to me and from what he actually decided in the many cases presented to him," (Tendler, Responsa of Rav Moshe Feinstein 92). Still, there is nearly unanimous support from the people who knew Rabbi Feinstein the best that this interpretation is the most accurate. Rabbi Dovid Feinstein wrote, "I have already written that what our master, my father, my teacher [Rabbi Moshe Feinstein] wrote in Yore De'ah III:132 is authentic and no one should question it, for it is not a forgery and this was his opinion. Some of these details I actually heard from him myself...For further clarification: If he lies like a dead person and there is no movement, even if the heart is beating, since he cannot breathe [irreversibly] he is completely dead," (Feinstein, Determining Death with a Beating Heart -- Opinion of 'Igrot Moshe.'). A similar letter, written by Rabbi Shabtai Rappaport, Rabbi Feinstein's grandson, can be found in Tendler, Rabbi Moshe Feinstein and Brain Stem Death 32.

²⁵⁸ Although it is clear that Rabbi Feinstein considers a person who has no blood flow to the brain to be halakhically dead because it is as if he were decapitated, the reasoning behind his statement is not as evident. It appears that the lack of blood flow to the brain is itself not the reason why the patient is considered decapitated, and therefore "physiological decapitation" may not be the best description of the patient's state or the halakhic status. Rather the person is considered decapitated because it is assumed that the lack of blood flow indicates that his brain has begun to lyse. The significance of this aspect will be discussed below (see pages 112-116).

though the heart is capable of pumping for several more days, nevertheless, as long as the patient is unable to breathe on his own, he is considered dead.²⁵⁹

Consequently, the physiological decapitation camp argues, if the determination of brain death is made based on tests “in accordance with accepted medical standards,”²⁶⁰ the patient is dead according to Jewish Law.

Significantly, one of the tests for brain stem function is the apnea test. Hence, a person can never be declared brain dead if he is capable of any amount of spontaneous respiration, thereby including the classical halakhic criterion for determining of death within the definition of brain death. In fact, in the fifteenth century, long before brain death evolved, Rabbi Yehuda Aryeh of Modinah argued, “all [rabbis] agree that the fundamental source of life is in the brain. Therefore if one examines the nose first, which is an organ of servitude of the brain, and there is no respiration, none of them doubt that life has departed from the brain.”²⁶¹ Hence, according to the physiological decapitation camp, brain death always defined death, though the halakhic requirements to determine brain death changed with time and technology. Previously, testing or respiration at the nose was itself sufficient to determine death, however, now that more advanced means of examining the condition of the brain exist, rabbis require additional tests to reliably determine the destruction of the brain, and therefore death.²⁶²

²⁵⁹ Feinstein, Letter to Dr. S.S. Bondi. Again, Rabbi Feinstein qualifies his statement that brain death is equivalent to decapitation by saying that brain death signifies that the brain is physically decaying, an argument that is not part of the physiological decapitation argument. Rabbi Feinstein further qualifies the statement by intertwining the determination of death based on brain decay with the definition of death based solely on respiration. Likewise, in other places Feinstein argues, “the sole criteria of death is the total cessation of spontaneous respiration,” (Feinstein, Determination of Death).

²⁶⁰ United States, Defining Death 2.

²⁶¹ See Rosner and Tendler, 28.

²⁶² While this appears to be the thesis of the physiological decapitation camp, Tendler himself is not entirely consistent with regard to the relationship between the cessation of respiration and brain death (see above, note 237).

Herein lies a significant distinction between different forms of brain death that have been proposed over time, which has resulted in much confusion within and about the halakhic literature. After it first appeared in the medical literature in the form of the Harvard Criteria, the medical definition of brain death was constantly being adjusted and refined for a number of years. In 1971 the Minnesota Criteria suggesting the particular importance of the brain stem in defining death. This suggestion was not formalized until 1976, when the UK Code was published, essentially re-defining brain death as brain stem death. Hence, before 1976, brain death was a vague term that at the same time referred to both brain stem death and cerebral death, in which the patient is capable of spontaneous respiration. Though the Harvard Criteria did require a negative apnea test, proving that the patient is incapable of spontaneous respiration, the lack of a specific term that differentiated brainstem death from cerebral brain death meant that a rabbi could not guarantee that a person declared “brain dead” had in fact lost the functions of the brainstem, including the respiratory centers. Because there was doubt if such a patient was brainstem dead or cerebrally dead and thus capable of breathing on his own, there was a concern that respiratory centers in his brain stem continued to function. If part of the brain continues to communicate with the body, the patient cannot be considered physiologically decapitated, and can therefore only be considered dead based on the traditional criteria for death. Obviously if the patient can breathe spontaneously there is no opinion in the traditional sources that would consider the patient dead.

According to Rabbi Tendler, an understanding of this distinction is essential for an accurate understanding of the position of Rabbi Moshe Feinstein. According to Tendler, all of the responsa in which Rabbi Feinstein argues that the removal of the respirator or heart from a patient is murder are referring to cerebral death and not brainstem death. In some cases, this

distinction is clear based on the responsa itself. For example, in 1970, when brain death was in its infancy, and brainstem death had not been conceived, Feinstein wrote:

[About] what the doctors say, that signs of life and death are in the brain—that to their thinking if the brain is not working the person is considered dead, even though he is still breathing—[this is] contradicted at length...So long as he breathes he is alive.²⁶³

The patient that Rabbi Feinstein describes is able to breathe, yet is summarily declared dead by the doctors according to a brain-based definition of death. Rabbi Feinstein is thus undoubtedly referring not to a brainstem dead patient, who is unable to breathe by definition, but to a cerebrally dead patient or even a patient in a persistent vegetative state who may also retain some higher brain functions.²⁶⁴

In the other responsa in which Rabbi Feinstein prohibits the determination of death according to brain death, the conclusion that Rabbi Feinstein was referring to cerebrally dead patients as opposed to brainstem dead patients is not readily inferable from the texts themselves. Rather Tendler argues that his conclusion is “not inferred from his writings, but are direct quotations of his statements to me.”²⁶⁵ Such is the case regarding a heart transplant that was conducted in Israel, in 1978. Feinstein wrote, “the donor’s status is also in question, for they have not proven that he was dead [when the heart was removed].”²⁶⁶ Written two years after Feinstein affirmed the use of brain death criteria²⁶⁷, the statement is quite puzzling based solely on the very brief text, which does not give any clues if the patient was brain stem dead or cerebrally dead. Rabbi Tendler holds that the responsa was written with regards to a potential

²⁶³ Moshe Feinstein, *Igrot Moshe, Yoreh De’ah* II:146.

²⁶⁴ Tendler, *Rabbi Moshe Feinstein and Brain Stem Death* 31.

²⁶⁵ Tendler, *Responsa of Rav Moshe Feinstein* 92.

²⁶⁶ Feinstein, *Igrot Moshe, Choshen Mishpat* II:72.

²⁶⁷ Feinstein, *Igrot Moshe, Yoreh De’ah* III:132.

donor known as a *tzemach* or a vegetable, which he interprets as a person in a persistent vegetative state, and thus able to breathe spontaneously.²⁶⁸

Therefore, in response to the redefinition of brain death as brainstem death and the increased success rate of heart transplantation that occurred by 1976, the physiological decapitation camp began to endorse the halakhic validity of brain death. They argued that the scientific basis of organismal death implies that brain death requires a better halakhic analogy than the classical modes of death discussed in all of the previous literature on the determination of death in halakha. Accordingly, they argue that brain death represents the physiological equivalent to decapitation, which is an independent criterion for death in halakha. Furthermore, any movement after decapitation is considered *pirkus* and is halakhically irrelevant to the determination of death. As a result, the physiological decapitation camp was able to counter the cardiopulmonary camp by arguing that a beating heart is not an absolute indicator of life, and can therefore be legally and ethically removed from a brain dead patient for transplantation.

Excision and Total Liquefaction

In order to maintain their position that brain death was an invalid criterion for the determination of death according to halakhah—and thereby prohibit the removal of the heart of a brain dead person—the cardiopulmonary camp needed to find a way to justify its stance against brain death in the face of the new sources and interpretation. They could no longer argue that the heart was necessary in all cases, for surely a fully anatomically decapitated person is dead, even though his heart continues beat. Thus they needed to argue not that decapitation was an invalid determinant of death but either that no form of physiological decapitation could be analogous to

²⁶⁸ Tendler, Rabbi Moshe Feinstein and Brain Stem Death 37.

anatomical decapitation, or that brain death in particular did not qualify as a halakhically valid physiological analogue to decapitation. Considering the difficulty of arguing against the inclusion of all hypothetical physiological forms of decapitation, the most cogent response was to define decapitation in such a way that some physiological analogues to decapitation could be considered criteria for death, but that brain death itself was not the physiological equivalent to decapitation.

Before responding to the specific characterization of decapitation, the cardiopulmonary camp, which had no choice but to recognize decapitation as an indication of death, had to find a way to uphold a definition of death based on cardiopulmonary function. Specifically, they had to maintain that death could only be determined in a patient who appears dead despite an acknowledgement that even movement of the heart is not proof of life in an anatomically decapitated person. Hence, Bleich wrote:

Severance of the head, as described in *Oholot* and defined in *Hullin*, is not a novel definition of death in terms of decapitation in the sense of destruction of the brain, but rather that the severe loss of blood as a result of decapitation renders all residual motion or movement of limbs or organs, including the heart, spasmodic in nature. Thus, the essential and intrinsic criterion of life is motion that is vital in nature; cardiac activity...is simply one form and indeed the primary example, of vital motion.²⁶⁹

The cardiopulmonary camp was thus able to maintain that a definition of death based on the absence of cardiopulmonary function and movement is still at work in the extreme case of a decapitated person with a beating heart. Hence, decapitation is a criterion for the determination of death specifically because it is an indicator of cardiopulmonary death in that the severe and rapid loss of blood negates the vital nature of both cardiopulmonary function and other movements.

²⁶⁹ Bleich, Of Cerebral, Respiratory and Cardiac Death 132.

Having preserved their interpretation of the halakhic definition of death, the cardiopulmonary camp had to define decapitation in a way that prevented brain death from being considered physiologically equivalent. The physiological decapitation camp had argued that decapitation is the separation of the brain from the body, and one of the most important parts of their argument was that the severance of this connection could be reliably determined by radionuclide angiography. Indeed, it appears that the blood flow test was the decisive factor in Rabbi Feinstein's acceptance of the argument that brain death was equivalent to physiological decapitation. Therefore, in 1976, when the physiological decapitation camp was just forming, he wrote that the absence of blood flow to the brain indicated that the brain had begun to decay and can therefore be considered separated from the body.²⁷⁰ Thus, Feinstein qualified the significance of the absence of blood flow by saying that it indicates that the brain has undergone extensive destruction or lysis, which was often observed upon autopsy. Hence, according to Rabbi Feinstein, the halakhic separation of an organ from the rest of the body appears to be determined by the onset of the decay of the flesh. Therefore, if radionuclide angiography indicated that blood did not flow to the brain, which is evidence that the brain has begun to decay, Rabbi Feinstein argued that the brain had been separated from the body and the person could be declared dead.

Rabbi Bleich saw two aspects of Rabbi Feinstein's responsa that could be contended. Therefore, Bleich promptly responded, in 1977, with an article entitled "Neurological Criteria of Death and Time of Death Statutes," in which he first questioned Feinstein's interpretation of the

²⁷⁰ See Feinstein, *Igrot Moshe Yoreh De'ah* III:132. Feinstein reiterated his point in a letter to Dr. Bondi a number of years later (see Feinstein, Letter to Dr. S.S. Bondi).

nature of decapitation, and then questioned if Feinstein's evidence of the onset of decay was sufficient to make an analogy with his own understanding of decapitation.

While the physiological decapitation camp had argued that decapitation is the separation of the brain from the body, Bleich countered that decapitation was best viewed as a situation in which the brain has been excised and is absent from the body.²⁷¹ This new perception of the condition of decapitation allowed Bleich to introduce a new set arguments, just as the physiological decapitation camp's new perception of the process of death in a brain dead patient allowed them to introduce the relevance of decapitation in the first place. Hence, an understanding of decapitation as the separation of the brain from the body produced one set of sources and arguments, while an understanding of decapitation as a condition of brain absence allowed Bleich to utilize another. Accordingly, while the physiological decapitation camp had argued that total dysfunction of the brain is equivalent to the separation of the brain from the body, and is therefore the physiological equivalent of decapitation,²⁷² for the cardiopulmonary

²⁷¹ This thesis that decapitation is best understood halakhically as brain absence seems to go counter to the discussion in Hullin 21a of the meaning of decapitation in Ohilot 1:6, where only one of the three opinions holds that the head had actually been removed, while the other two argue that decapitation is the severance of the spinal cord, trachea and esophagus, along with some external flesh.

²⁷² However, the cardiopulmonary camp points out that even brain death is not equivalent to total dysfunction of the brain. Each of the diagnostic tests for brain death serves only as proof that the particular function tested is absent (Bleich, Of Cerebral, Respiratory and Cardiac Death 136). Implicit in this argument is the idea that the cessation of one function is insufficient to prove that functions controlled by adjacent parts of the brain have also ceased. However, the physiological decapitation camp would counter that the dysfunction of the brain in a brain dead person is the result of trauma, which affects broad areas. Furthermore, the nuclei of the neurons in the brain stem are so close to one another that examining the various functions basically "probes the brain stem slice by slice," (Pallis, ABC of Brain Stem Death 7-8).

camp, a severed connection is not equivalent to excision and dysfunction is not equivalent to nonexistence.²⁷³

Therefore, according to the cardiopulmonary camp's interpretation of the phenomenon of decapitation, the onset of the decay of the brain tissue was not sufficient to be considered analogous to the total absence of the brain. Only "*total*" destruction of the brain might then be equated with decapitation, and the patient pronounced dead after total destruction has occurred.²⁷⁴ While evidence of partial decay of the brain tissue might be sufficient to demonstrate the dysfunction of the brain and its severed connection with the body, only total necrosis of the brain could be considered equivalent to its excision. Indeed, the Talmud indicates, "if the flesh decayed then we view it as if it does not exist."²⁷⁵ The fact that it had been recognized quite early that the brains of brain dead patients became diffuse liquid masses of decayed tissue as a result of extensive necrosis²⁷⁶, would therefore seem to indicate that their brains would qualify as halakhically nonexistent. However, the Talmud continues, "What is 'decayed'? Rev Yehoshua said: whatever the doctor would scrape away to leave [only] healthy flesh."²⁷⁷ The Talmud thus implies that only the part of the tissue that can be scraped away is

²⁷³ This can be seen in the distinction between a person who has had his testes removed and a person whose testes are dysfunctional. The former is forbidden from mating with a female Jew, however the latter has no such prohibition (Bleich, Of Cerebral, Respiratory and Cardiac Death 135).

²⁷⁴ Bleich, Neurological Criteria of Death and Time of Death Statutes 54.

²⁷⁵ Hullin 53b.

²⁷⁶ Towbin, 583-94.

²⁷⁷ Hullin 53b. An alternative Talmudic definition of decay that Bleich notes is tissue that is "so dry that it crumbles by a fingernail," (Hullin 46b, see Bleich, Of Cerebral, Respiratory and Cardiac Death 135). However, this definition of decayed flesh only applies to internal organs, while an external organ only has to be dry enough that "if pierced it does not emit a drop of blood." The reason for this distinction, according to the Gemara, is that an external organ "is exposed to the wind [and therefore] it does not become healthy again. But the lung, which is [inside the body and] not exposed to the wind will become healthy again." Therefore, the question arises of if the distinction between internal and external organs, which is based on false medical presumptions, should stand as a fixed halakhic category, or if the logic

considered decayed, and therefore considered as if it had already been scraped away or removed. Therefore, only the part of the brain that has liquefied and would fall through the base of the skull, if the head were removed upon autopsy, is decayed enough to be halakhically considered nonexistent. However, “early on in the era of brain death, data began to emerge that questioned the assertion that the clinical diagnosis of brain death meant the destruction of the *whole* brain.”²⁷⁸ Thus Bleich notes that while

autopsies performed on patients pronounced dead on the basis of neurological criteria reveal that the brain has become a spongy, liquid mass [as a] result of lysis or liquefaction of the brain...total lysis apparently does not occur in such patients; only a portion of the brain turns to liquid...[Total liquefaction] is not present at the time ‘brain death’ criteria become manifest.²⁷⁹

Therefore, according to the cardiopulmonary camp, at most, only a portion of the brain of a brain dead person can be considered as if it was removed. Consequently, a brain dead person cannot be considered fully decapitated and his death cannot be determined based on neurological criteria.

behind the creation of those categories should be the determinant of the law (see above, note 12, for a similar discussion on the treatment of the heart in Rashi’s commentary). According to the former stance, the brain is an internal organ and therefore brain tissue must be so dry that it crumbles for it to be considered decayed. Therefore, according to this view, the brain cannot be considered removed and the person cannot be considered decapitated, by the cardiopulmonary camp’s standards. However, the latter view reveals an entirely different conclusion. The premise behind the distinction between internal and external organs is that certain organs can be revitalized, while the loss of other organs is irreversible. While it is known now that exposure to the wind is not a factor in this distinction, the distinction exists nonetheless. One of the primary reasons why the brain is considered such a good organ to define death by is that its loss is irreversible. Therefore, the brain would fit better into the category of external organs, as it “does not become healthy again.” Consequently, all that would be required to consider the brain dried up and decayed, such that it would be considered nonexistent is that “if pierced it does not emit a drop of blood.” If radionuclide angiography determines that there is no blood flow to the brain, surely it would not be able to emit a drop of blood if pierced. As such, the absence of blood flow to the brain would prove that the brain was sufficiently dry as to be considered nonexistent. Therefore, according to the actual reasoning behind the creation of the original Talmudic categories, a negative blood flow study would be sufficient for the person to be considered decapitated by both camp’s standards, namely the severance of the connection between the brain and the body and the complete excision of the brain.

²⁷⁸ Kunin, 51, my emphasis.

²⁷⁹ Bleich, Of Cerebral, Respiratory and Cardiac Death 133.

The thesis that decapitation could only be analogous to the complete decay of the entire brain therefore became extremely popular in the cardiopulmonary camp. It had become quite obvious that “the brain tissue of a patient pronounced dead on the basis of neurological criteria does not match, or even approximate, these levels of degeneration.”²⁸⁰ Thus the cardiopulmonary camp seized the opportunity to deny the validity brain death criteria using scientific evidence, which was in fact a new interpretation of the halakhic category of decapitation. Thus, Rabbi Aaron Soloveitchik wrote, “a sharp distinction must be drawn between partial and total destruction of the brain. [Partial destruction] cannot be equated at all with the state of decapitation.”²⁸¹ Rabbi Shlomo Zalman Auerbach takes a more explicit approach, arguing that there must be proof that every cell in the brain is dead, in order determine a person’s death based on neurological criteria.²⁸² Moreover, there is no diagnostic method in existence, short of autopsy, that can positively confirm cellular decay of the brain, let alone the total liquefaction of the entire brain tissue. Therefore, the cardiopulmonary camp could be confident that its new argument against the halakhic validity of brain death would be sustained.

The Decapitated Sheep Experiment

The argument that brain-based definitions of death were theoretically acceptable according to halakha, but that brain death did not fulfill the requirements to be considered

²⁸⁰ Bleich, Of Cerebral, Respiratory and Cardiac Death 136.

²⁸¹ Soloveitchik, Jewish Law and Time of Death 109.

²⁸² Auerbach’s decision was not a response to the development of the physiological decapitation argument. In fact, from his first statement until 1991, his position was staunchly against all brain-based definitions of death. After watching a video of an experiment in which a pregnant sheep was decapitated, Rabbi Auerbach changed his stance on brain death, considering it a state of possible death. A further discussion of the experiment and how it affected Rabbi Auerbach’s opinion will be discussed below.

analogous, brought the interpretive innovation of the brain death debate to a standstill. Since 1977, no new and innovative interpretations of newly relevant texts have been brought to the debate as a result of groundbreaking interpretations of the condition of brain death, as had been the case for the past two years. Therefore, as the halakhic debate continued, the two camps simply continued to develop the same arguments that they had already introduced into the debate.

The physiological decapitation camp had attempted to circumvent the sources that suggested the necessity of the heart in the definition of death. While they were able to establish that movement and heartbeat are not absolute indicators of life in all cases, they were also met with a seemingly unshakable opposition to the classification of brain death as the physiological equivalent to decapitation. The acceptability of brain death as a halakhically valid definition of death hinged almost exclusively on an interpretation of the definition of decapitation, for which two equally valid interpretations existed. If decapitation were interpreted as separation of the brain from the body, the cessation of all brain functions would be sufficient to indicate that the body was in a decapitated state²⁸³, the heartbeat rendered halakhically spasmodic and the person declared dead. However, if decapitation were interpreted as the absence of the head, the heartbeat could not be discounted without conclusive proof of the decay of every brain cell in

²⁸³ While Tendler defined death as the physiologically decapitated state, Rabbi Feinstein considered the definition of death to be the irreversible cessation of respiration, while brain death was just criterion to diagnose the irreversible nature of the lost capacity to breathe. Therefore, argues Reichman, implicit in Feinstein's requirement of the nuclide scan is that the requirement for physiological decapitation is only relevant to the functions that define life, i.e., respiration. In other words, the nuclide scan test determines that, with respect to the capacity to breathe, the brain is effectively detached from the body and respiration is irreversibly gone. Therefore, Reichman concludes, "while varying percentages of patients may have ongoing, recorded physiological function or brains that remain partially anatomically intact, ALL (100%) of these patients have no spontaneous respiration, and if disconnected to the ventilator, NONE (0%) of these patients will breathe spontaneously," (Reichman, Don't Pull the Plug on Brain Death Just Yet 65-66).

order to establish the organ as missing. Without the development of an innovative new perspective, any further debate on the meaning of the classic sources would not resolve the conflict but would just lead to further polarization along the lines of the rift that had already developed.

The physiological decapitation camp could therefore not expect to convince more people of the halakhic validity of brain death by responding to the argument that total liquefaction was required with a new interpretation of the sources. The sources could not provide any more evidence that decapitation was more analogous to physiological dysfunction than it was to total liquefaction. Thus the physiological decapitation camp took a new and more direct approach to demonstrate the validity of brain death criteria.²⁸⁴ If it could be demonstrated, scientifically, that the body of an anatomically decapitated person was identical to that of a brain dead person it would be substantial evidence that physiological decapitation was in fact analogous to the decapitation described in Oholot.²⁸⁵ Furthermore, if it could be demonstrated that certain physiological functions that are considered by others as absolute proofs of life can in fact be

²⁸⁴ Another argument that proponents of the halakhic validity of brain death made at the time was for the return to the classic definition of death, which was simply the irreversible cessation of respiration. In 1986, The Chief Rabbinate Council of Israel ruled that the definition of death, based on the Talmud (*Yoma* 85a), Rabbi Moses Schreiber (*Schreiber, Yoreh De'ah* #338) and Rabbi Moshe Feinstein (*Igrot Moshe, Yoreh De'ah* III:132) had always been the irreversible cessation of respiration (The Chief Rabbinate Council of Israel, 3). Furthermore, they argued that brain death was a valid diagnostic criterion to determine the irreversibility of the cessation of respiration. While Rabbi Feinstein made the same argument at times, his written opinions also discuss notions of physiological decapitation and the invalidation of the absence of respiration in the presence of waves on an EKG. Therefore, The Chief Rabbinate's reliance solely on respiration was in fact a digression, though an unoriginal one, from previous authorities. The return to the traditional definition of death is therefore further evidence that there was no new and innovative interpretation that could be influential in the ongoing halakhic debate

²⁸⁵ It is not the scientific evidence itself that is the argument in the halakhic debate but rather that the science demonstrates in which ways a certain situation is analogous to a selection of sources. Ultimately, what matters is the interpretation of the sources that fit most closely to the situation.

maintained in an anatomically decapitated person, it would demonstrate that those functions should not discount brain death as a valid determinant of death.

In January of 1992, Rabbi Shlomo Zalman Auerbach, who was widely regarded as one of the greatest *poskim* in Israel, was presented with the case of a pregnant woman who had been declared brain dead and asked if it were permitted to perform a caesarean section to save the life of the fetus.²⁸⁶ While the situation has a substantial history in the halakhic literature, applying it to the situation of brain death was inherently difficult.²⁸⁷ The Talmud, in Arachin 7a, discusses the situation of a pregnant woman who is about to be executed. The Gemara establishes that there is a principle that when a woman dies, it is assumed that her fetus dies first, due to its frailty.²⁸⁸ Because the fetus is not considered fully alive until it exits the womb and takes its first breath, the fetus is considered a part of the mother. Therefore, even if the fetus continues to move after the mother has died, its movement is “analogous to the tail of a lizard which moves” after being cut off.²⁸⁹ Thus, according to the physiological decapitation camp, the fetus of a

²⁸⁶ Tendler, Brain-Stem Death 78. Outside of Israel, this procedure had been done with success (Dillon *et al.*, Life Support and Maternal Death during Pregnancy 1089-1091), however because it is difficult to imagine that a live baby can be removed from a dead mother, Auerbach remained suspicious that brain death could actually be considered death.

²⁸⁷ This difficulty was despite, or perhaps because of, the fact that the problem of removing a fetus from the womb of a dead mother has been intimately tied to the discussion of the halakhic definition of the moment of death. Therefore, the experiment fit into a long tradition of the complicated relationship between fetus and mother at the moment of the latter’s death. Just as the brain death controversy complicated the definition of death, brain death also complicated the laws of conducting a caesarean section on a dead mother.

²⁸⁸ The Gemara is specifically referring to a woman who dies of natural causes. It explicitly says that if the woman is executed and dies suddenly, she dies before her fetus, and therefore subsequent fetal movement would not be considered *pirkus*. Thus, as Bleich pointed out (Bleich, Brain Death; Medical Myth and Semantic Sleight of Hand 37), the subsequent experiment where the sheep was suddenly decapitated proved little of halakhic importance. However, the image of a dead animal producing live offspring was apparently powerful enough that the experiment nonetheless had a significant affect on the acceptance of brain death criteria in the orthodox world.

²⁸⁹ Arachin 7a.

brain dead woman has a similar halakhic status to the woman's beating heart—both are considered *pirkus* and are not regarded as absolute proof that the mother is alive.

The Gemara continues to allow the desecration of the Sabbath in order to save the life of the fetus:

If a woman who has been sitting on a birth-stool died on Shabbat, one may bring a knife and cut her womb open to take out the child...But what is this informing us? That in a case of doubt one may desecrate the Sabbath! Surely we have learnt already: if debris falls upon someone...²⁹⁰

The Gemara thus compares a fetus trapped in the womb immediately after its mother's death to a person trapped under a collapsed building. If there is even a question that the person is alive under the rubble, one is required to break Shabbat in order to save him. Likewise, because the fetus could still be saved it is required to do so²⁹¹, even though there is no presumption that a fetus is alive until after it leaves the womb and takes its first breath²⁹².

The Shulkhan Arukh codifies the law, "if a woman is sitting on a birth-stool and she dies, one brings a knife on the Sabbath, even through a public domain, and one incises her womb and removes the fetus, since one might find it alive."²⁹³ Rabbi Moshe Isserles, known as Rema, amended the law in the sixteenth century, saying, "however, today we do not conduct ourselves according to this, even during the week, because we are not competent to recognize precisely the

²⁹⁰ Arachin 7a-b, citing Yoma 85a.

²⁹¹ The Gemara does not explicitly say that this law is with regard to the traumatic death of the mother. It appears that it would implicitly refer to traumatic death, as the fetus is considered alive, and mother died suddenly on the birth-stool. However, the mother dying on the birth-stool could also be considered a natural death—certainly it is not a case of execution—and the principle that the fetus dies first is only an assumption and not an absolute fact. Therefore the discussion about removing a fetus from the womb of its dead mother could apply to situations of natural or traumatic death.

²⁹² Although the fetus does not have the legal status of a person until it emerges from the womb, it nonetheless has a number of rights that are traditionally reserved only for real people (See Shafran, A Lack of Authority: On the Borders of Life and Death 246-249 for a discussion of the halakhic status of the fetus).

²⁹³ Karo, Shulchan Aruch, Orach Chayim 330:5.

moment of maternal death.²⁹⁴ Initially, Rabbi Isserles probably meant that in the few minutes it would take to verify her death precisely the fetus would surely have already died and thus, without the possibility of saving a life, it would be forbidden to desecrate the body of the dead.²⁹⁵ However, in light of the delayed burial controversy and the uncertainty of the moment of death, his comments are almost universally interpreted as an argument that death cannot be differentiated from a swoon, and thus removing the fetus would cause the death of the mother, who could be considered a *gosses*. Nevertheless, in light of advances in modern technology, Dr. Jacob Levy wrote an article in 1971 urging rabbinic authorities to rule that Rabbi Isserles' suggestion be disregarded in favor of the original practice, according to the Talmud and Shulkhan Arukh. He argues that in the current state of medicine, doctors are capable of distinguishing death from fainting, and therefore there is no fear of accidentally killing the mother in an attempt to save her fetus.²⁹⁶

Therefore if the time of death can be precisely determined, the fetus may be removed without fear of killing the mother. If brain death were to be considered a halakhically valid criterion for determining death, it would be permissible to perform a caesarean section and save the life of the fetus. However, in situations where brain death comes on naturally, it would be assumed that the fetus was dead; any subsequent fetal movement is considered *pirkus* by the Talmud, and would not be considered of vital significance.²⁹⁷ The paradox is that if a caesarean

²⁹⁴ Isserles, Moshe. Commentary, Shulchan Aruch, Orach Chayim 330:5.

²⁹⁵ Panitz, 157-159.

²⁹⁶ See Bleich, Establishing Criteria of Death 15.

²⁹⁷ If brain death occurs as a result of trauma, the fetus never has the status of *pirkus* and it is considered possible for it to live inside its dead mother for a short period of time. Therefore, the paradox is not applicable to traumatic brain death. Interestingly, this would mean that the experiment itself was not an applicable situation. Regardless, it was conducted, and its results have had a significant influence on the

section were performed, the removal of a live fetus would seem to negate the original presumption that its movement was not critical. The removal of a live fetus would thus *ex post facto* prove that the mother was in fact alive, according to Rashi and Rabbi Schreiber who argue that the movement of a limb (the fetus) is proof that a person is alive. Therefore, the operation would be considered murder. Consequently, so long as the mother's presumed death can be negated by the altered status of the removed fetus, the performance of the caesarean section is forbidden, and the fetus must be allowed to die inside its already dead mother.

Thus, at the request of Rabbi Auerbach²⁹⁸, an experiment was conducted to prove that an unquestionably dead mother can incubate a fetus, and that the fetus can therefore absolutely change status, during the process of delivery, from *pirkus* to fully alive without casting doubt on the status of the mother. The experiment was also used to demonstrate that a normally beating heart could be considered *pirkus*, and thus could not be considered an absolute proof of life.

The experiment was arranged by Rabbi Tendler and Rabbi Yigal Shafran, and was conducted at the Hadassah-University Hospital in Jerusalem.²⁹⁹ A pregnant sheep was anesthetized, intubated and connected to a respirator. Over the course of a three-hour procedure, the head of the sheep was surgically removed. Thirty minutes after decapitation was complete, a live and healthy lamb was delivered by caesarean section. Throughout the procedure, the heart rate and blood pressure were carefully monitored and maintained using only lactated Ringer's solution (which mimics normal blood plasma) and dopamine (which increases heart rate). Heart

acceptance of the analogy between brain death and decapitation, if not because of the fetus than certainly because of the condition of the heart throughout the experiment.

²⁹⁸ Tendler, Brain-Stem Death 78.

²⁹⁹ Siegel-Itzkovich, Ultra-Orthodoxy and Organ Donation.

rate, blood pressure, hemoglobin levels, oxygen saturation, and the fetal heart rate were all maintained within normal physiological ranges.³⁰⁰

The experiment therefore clearly demonstrates:

...the viability of the heart and the viability of the fetus can be preserved in a decapitated animal. A decapitated animal is by all logical, theological, and philosophical criteria a situation of clear organismal death, certainly an irreversible condition, and nonetheless is not disproved by continued cardiac function and viability of the fetus.³⁰¹

However, the experiment proved little with regard to the paradox of the status of the fetus. The experiment was clearly a case of sudden and traumatic death, for which the fetus can outlive the mother, according to the Talmud. Therefore, the fetal movement was never relegated to the status of *pirkus* in the experiment, and was always considered proof that the fetus was alive. Nevertheless, the experiment had a significant affect on the understanding and acceptance of brain death as a halakhically valid determinant of death.

The experiment's primary significance was in establishing the accuracy of the analogy between brain death and decapitation. By demonstrating that a mechanically ventilated animal can maintain normal and stable "vital" functions, when the only organ missing was the brain, the experiment established that "on theoretical grounds the only organ that is valid for the definition of life and death of an organism is the brain."³⁰² Furthermore, the experiment removed the doubt if brain death could be analogous to decapitation that existed as a result of the sustained normal heartbeat in a brain dead patient. One of the primary contentions that the cardiopulmonary camp held against brain death criteria was that a sustained normally beating heart was considered

³⁰⁰ Steinberg and Hersch, 1887.

³⁰¹ Steinberg and Hersch, 1886.

³⁰² Steinberg and Hersch, 1887.

absolute proof that a person was alive. The heartbeat was considered vitally significant, and by very nature of its seemingly coordinated motion, the heart's movement could not be considered "convulsive" in nature, and would thus negate any declaration of death.

After watching a video of the experiment, Rabbi Auerbach commented, "I had thought that this was impossible. I had thought that a heart cannot beat in a dead person, but the experiment proved that it can beat."³⁰³ The experiment thus provided proof that the halakhic category of *pirkus*, which had loosely and misleadingly been understood as "convulsive" or "spasmodic" motion, can apply to an organ whose movement is sustained and appears entirely normal and rhythmic. The experiment thus proved to Rabbi Auerbach that, "it is correct that if a brain is completely and absolutely dead, he is considered dead."³⁰⁴ Rabbi Steinberg wrote, "Rav Shlomo Zalman Auerbach told me specifically...I have written his words and he checked it and agreed for it to be published...a person can be defined as dead even though his heart is still beating. What is important to Rav Auerbach was brain function."³⁰⁵

Rabbi Auerbach's initial opinion on removing a heart from a brain dead donor was co-published along with Rabbi Elyashiv, another one of Israel's leading orthodox *poskim*. In 1991, they wrote:

We have been requested to declare our view, *da'as Torah*, with respect to the transplantation of a heart or other organs, for the benefit of a sick person whose life is in danger, at a time when the heart of the donor is beating and his entire brain including his brain stem is not functioning at all, which is known as 'brain death.' It is our view that it is absolutely not permissible to remove any of his organs; and to do so would involve the taking of a life.³⁰⁶

³⁰³ Siegel-Izkovich.

³⁰⁴ Auerbach, in Kunin, 50.

³⁰⁵ Steinberg, in Berman, Done with Brain Death.

³⁰⁶ Auerbach and Elyashiv, A Statement From Agudath Israel of American 11. This ruling is a primary reason for low organ donation rates in Israel (Ilan, Mitzvah, Not Murder).

It is clear from this ruling and other statements issued by both Rabbis that so long as the heart is beating the person is considered fully alive. Therefore, the removal of a beating heart would necessarily constitute murder.

However, a few months after the decapitated sheep experiment, they jointly re-published the same ruling, with slight but noteworthy modifications. The second ruling says:

We have been requested to declare our view, *da'as Torah*, with respect to the transplantation of a heart for the benefit of a sick person whose life is in danger and similarly with respect to the transplantation of other organs for the benefit of sick people whose lives are in danger: As long as he is being respiration and the heart of the donor is beating, even in a situation where his entire brain including his brain stem is not functioning at all, which is known as “brain death,” nonetheless, it is our opinion that it is absolutely not permissible to remove any of his organs, and to do so raises a concern of the taking of life.³⁰⁷

The most significant change in the ruling is in the consequence for removing an organ from a brain dead person. In the first ruling, doing so “involves the taking of a life.” In the second ruling, however, the same act only “raises a concern of the taking of a life.” Rabbi Avraham Steinberg explains that, even though the statement was published jointly, this change is the result of a difference of opinion between Rabbi Auerbach and Rabbi Elyashiv. He writes, “According to Rav Elyashiv the brain-stem dead person is alive because his heart is still pumping, while according to Rav Auerbach the reason was that such a person is ‘*safek met safek gosses*’ (it is unknown if the person is dead or in the process of dying).”³⁰⁸

³⁰⁷ Auerbach and Elyashiv, in Jeret, Rabbi Shlomo Zalman Auerbach's P'sak on 'Brain Death' Reconfirmed 37.

³⁰⁸ See the comment from the Halachic Organ Donor Society on “Rabbi Shlomo Zalman Auerbach and Rabbi Shlomo Elyashiv on Brain-Stem Death,” <<http://www.hods.org/english/h-issues/ArticlesE.asp?Sort=>>>. Some people argue that they republished the almost identical opinion, which states that it is forbidden to remove the heart of a brain dead person, in order to dispel confusion about their original opinion (Jeret, 37). Indeed Rabbi Elyashiv wrote immediately after the experiment, “the only result was the sheep’s needless suffering,” (Ilan). In addition, Rabbi Jakobovits wrote that

A more extensive look at Rabbi Auerbach's opinion reveals the reasoning behind his conclusion, and the influence of the decapitated sheep experiment. The decapitated sheep experiment showed Rabbi Auerbach that the death could theoretically be defined by the functioning of the brain, and that neither a normally beating heart or a live fetus could be considered absolute proof of life. Rabbi Auerbach was therefore persuaded to adopt the argument that total liquefaction of the whole brain would be equivalent to decapitation. According to Steinberg, Rabbi Auerbach maintained that the "death of all the cells of the brain constitutes death according to halakhah even if the heart is still beating and even in the case of a brain dead pregnant woman whose baby is delivered alive."³⁰⁹

Furthermore, Rabbi Auerbach was apparently theoretically willing to accept a negative blood flow test as sufficient proof that the brain had begun to decay and that a brain stem dead person could be considered dead. He wrote in a letter to Rabbi Tendler just a few months before the sheep experiment was conducted:

Since it is determined by the radioactive injection that the brain is not being perfused with blood, if this test is performed, and if the experiment now being planned to prove that a pregnant sheep can continue to gestate a lamb even after decapitation will so confirm, a brain stem dead patient is tantamount to one who has been decapitated or as an elderly man whose neck was broken even if there is no external wound.³¹⁰

Rabbi Auerbach told him personally that the experiment did not convince him to alter his opposition to brain death criteria (Jakobovits, 30). However, the consensus is that Rabbi Auerbach amended his understanding of brain death, and thus modified his opinion with regards to transplantation.

³⁰⁹ Steinberg, Medical-Halachic Decisions of Rabbi Shlomo Zalman Auerbach (1910-1995) 34. This summary of Auerbach's stance on various medical issues is based on an analysis of sources that were authorized and subsequently approved by Auerbach himself (see Steinberg, 31).

³¹⁰ See Tendler, Responsa of Rav Moshe Feinstein 93.

However, Rabbi Auerbach had doubts about the ability of physicians to demonstrate the extent of the destruction of the brain.³¹¹ He also expressed concern over the safety of the nuclide scan test, suggesting that it would involve the moving of the patient, who is considered a *gosses* until death is confirmed.³¹² In any event, Rabbi Auerbach concluded the brain stem death, as it is currently diagnosed, is insufficient to conclusively determine halakhic death. He summarized his opinion as follows:

If in the future a test is discovered which can definitively and unequivocally determine that all brain cells are dead without any doubt, and if after removal of the respirator it is apparent that the patient does not breathe for thirty seconds—and, in addition, if the test itself does not violate the laws of a *gosses*, that is to say that the test does not involve moving the patient or injection of a substance into the body—one might consider whether this situation is equivalent to decapitation and then allow organ transplantation from such a corpse even if the heart still beats.³¹³

The sheep experiment did, however, have a tangible affect on Rabbi Auerbach's view of brain death. While he could not concede that clinically diagnosed brain stem death was sufficient proof that death had occurred, he was significantly more convinced of the analogy between brain death and decapitation than other rabbis who had used similar arguments before him. In fact, he seems to have been entirely convinced that brain death constituted physiological decapitation, but felt that the routine clinical tests were insufficient evidence of the actual condition. He therefore argued that brain dead patients were *safek gosses, safek met*, possibly dying and possibly dead. Because modern medicine cannot precisely define the border between

³¹¹ Kunin, 50; Steinberg, Medical-Halachic Decisions of Rabbi Shlomo Zalman Auerbach 34.

³¹² Tendler strongly refutes the argument that the test is either unsafe or involves the touching or moving of the patient (Tendler, Responsa of Rav Moshe Feinstein 94).

³¹³ See Tendler, Responsa of Rav Moshe Feinstein 94.

the rabbinic categories of *gosses* and *met*, or dead and dying, Rabbi Auerbach extended both categories into a gray area, which could be governed by slightly different rules.

Rabbi Auerbach thus rules, “it is forbidden to disconnect a respirator from a terminally ill patient [a *gosses*] unless the patient is clinically diagnosed as brain dead.”³¹⁴ A *gosses* is a person who is in the throes of death, though considered fully alive by halakhic standards. It is therefore forbidden to do anything that would hasten the death of such a person, including disconnecting the respirator. However, a brain stem dead patient, according to Rabbi Auerbach, is not a *gosses*, *per se*, but a *safek gosses*. Because it is likely that such a patient is already dead, it is not considered euthanasia to remove the ventilator.³¹⁵

After the respirator is removed from a brain dead patient, Rabbi Auerbach rules that the person can be conclusively declared dead after the heart’s contractions have stopped for thirty seconds.³¹⁶ Furthermore, Auerbach writes, “if one can successfully revive the heart, one may use [the patient’s] organs for transplantation.”³¹⁷ Rabbi Auerbach thus allows a brain dead person to be an organ donor, despite the uncertainty surrounding the ability of the clinical tests to prove his belief that the medical condition of brain death accords with the halakhic requirements for decapitation.

After viewing the decapitated sheep experiment, Auerbach thus takes a middle ground approach to the controversy over brain death. Theoretically accepting brain death as halakhic death yet remaining unconvinced of the accuracy of the clinical tests, Rabbi Auerbach is forced

³¹⁴ Steinberg, Medical-Halachic Decisions of Rabbi Shlomo Zalman Auerbach 35.

³¹⁵ Tendler, Brain-Stem Death 78.

³¹⁶ Steinberg, Medical-Halachic Decisions of Rabbi Shlomo Zalman Auerbach 34.

³¹⁷ See Tendler and Rosner, Brain Death 94. Despite the significantly lower quality of the donor heart after 30 seconds of arrest, some transplant surgeons in Israel have agreed to follow Rabbi Auerbach’s requirements, if given no alternative (Siegel-Itzkovitch).

to rely on cardiopulmonary criteria, even after being entirely convinced that a heartbeat is not conclusive proof that a person is alive. With regard to his initial question of performing a caesarean section on a brain dead woman, Rabbi Auerbach ruled in the affirmative, even though the mother's heart was still beating.³¹⁸ Based on this actual ruling, it is apparent that Rabbi Auerbach truly felt that a brain dead person was indeed dead. When presented with the life and death case of the fetus, and no alternative of waiting thirty seconds for the mother's heart to stop beating, the doubt was insignificant enough for Auerbach to sanction the performance of the operation and cause the cardiopulmonary death of the mother.

Summary

In response to the imprecise definition of brain death that appeared to have been created for the purpose of easing the moral burden of removing transplantable hearts from living people, a group of halakhic authorities spoke out harshly against the validity of brain death. Following the precedent set by Rabbi Schreiber, the cardiopulmonary camp reinterpreted the classical Jewish sources, contending that the determination of death always necessitated cardiac arrest as distinct sign that the circulatory system had ceased to function. Arguing that the traditional respiratory definition of death was in fact merely a criterion for the determination of death that could only be conclusive in the absence of all other signs of life, the beating heart of a brain dead person became proof that he was alive, despite the absolute certainty that his capacity to breathe was irreversibly gone. Consequently, heart transplantation from a brain dead donor became an act of murder.

³¹⁸ See Tendler, Brain-Stem Death 78.

However, by 1976 the precise definition of brainstem death removed the doubt surrounding the definition of brain death, and the greatly increased success rate of heart transplantation created an ethical incentive to publicly sanction brain death criteria. Consequently, a new group of rabbis emerged with an understanding of organismal death that was so dissimilar to the classical process of death, that the traditional halakhic sources could no longer be considered analogous. Introducing a new set of sources and commentaries that suggested that movement is only considered vital when it is coordinated from the brain, the physiological decapitation camp constructed an innovative halakhic argument for the acceptance of brain death. Brain death, they argued, was the physiological equivalent to decapitation, which was an independent category of death in halakha that was so absolute that any subsequent movement would be considered halakhically irrelevant to the determination of death. Based on a reinterpretation of Rashi, they argued that the involuntary contractions of the heart would constitute the worst test for life in a brain dead patient, and therefore the beating heart could be legally and ethically removed from a brain dead person for transplantation.

Just as the physiological decapitation camp reinterpreted brain death to conform to the halakhic category of decapitation, the cardiopulmonary camp subsequently reinterpreted the halakhic category of decapitation so that it would be incompatible with the condition of brain death. Maintaining that decapitation is the excision of the brain and not just the severance of the connection between the brain and the body, the cardiopulmonary camp required proof of the total liquefaction of the whole brain, which was known to not even approximate the condition brain death. Consequently, the acceptability of brain death as a halakhically valid definition of death hinged almost exclusively on an interpretation of the definition of decapitation, for which two equally valid interpretations existed.

In response to this interpretive disparity that was insurmountable by further textual arguments, the physiological decapitation camp took a new and more direct approach to demonstrate the validity of brain death. By decapitating a pregnant sheep, maintaining her heartbeat and delivering a live lamb by caesarean section, the physiological decapitation camp was able to empirically demonstrate the analogy between brain death and the halakhic category of decapitation. The experiment was so forceful that Rabbi Auerbach, one of the world's foremost *poskim*, changed his position on brain death, theoretically accepting it as a valid definition of death according to halakha, although he had reservations about the ability of clinical tests to divulge the true nature of the condition.

Conclusion

The contemporary brain death debate fits into a long history of controversy over the penetrance of advances in the scientific understanding of death into the halakhic framework. Every time medical science has taken major strides towards a new understanding of human death, halakhic authorities have responded by reexamining the traditional definition of death. From Talmudic times until the Enlightenment, when medical science was in an extended state of stagnation, this meant that the halakhic definition of death could develop into a relatively unchallenged and entirely unchanged status quo. Hence, for precisely the thirteen hundred year duration of the dominance of Galenic medicine, the definition of death according to halakha was the absence of spontaneous respiration. However, when the Enlightenment brought a major change to the medical understanding of life and death, the halakhic definition of death was naturally revisited, generating a significant amount of heated debate. Thus a pattern of scientific advancement and a parallel halakhic controversy developed with regard to the definition of death.

Every historical change to the medical understanding of death has resulted in near unanimous secular acceptance of the new definition of death. This secular unanimity creates a domineering environment for the traditional halakhic definition of death. While Rabbi Emden and the other traditionalist rabbis of the eighteenth century made a valiant effort at preserving the traditional definition of death, it soon became apparent that the sweeping changes to the medical understanding of death necessitated a reconsideration of the criterion for the determination of death. This reconsideration resulted in a major rift forming along the lines of the willingness to accommodate scientific advancement. On the one hand were those modernists who conformed in some way to the new understanding of death, and on the other hand were those who

constructed a more conservative fence in order to better protect the traditional definition of death. At the root of the divergence was Rabbi Schreiber's addition of pulse to the criteria for the determination of death, which—at least so far as it was interpreted by later halakhic authorities—was at the same time an indication of a willingness to conform to scientific advancement and an example of the construction of a more conservative fence around the traditional definition of death. As the delayed burial controversy transformed, after sometime, into the contemporary brain death debate, the controversy became more polarizing and the rift that had developed within halakha grew ever wider. One side of orthodoxy was becoming more accommodating of the role of scientific advancement in the definition of death, while the other side grew increasingly conservative in order to protect their understanding of the traditional definition of death from the ever-deeper penetrance of science.

The beginning of the delayed burial controversy was the first time that Judaism had to fight to maintain its traditional definition of death. While Rabbi Emden had succeeded in preserving the definition of death against outside attacks from the government, the preservation of respiratory death proved ultimately unsuccessful. Hence, in response to Rabbi Chajes' appeal to adopt decomposition as the only certain determinant of death, Rabbi Schreiber made a simple alteration to the traditional definition of death that ultimately prevented the calls for delayed burial from being an even more significant threat.

Correspondingly, when brain death was first accepted as a definition of death by the Harvard report, many rabbis followed Rabbi Schreiber's lead, making minor innovations in order to protect the roots of the classical definition of death. By adding the heart to the definition of death, the cardiopulmonary camp built a fence that protected the living from being summarily declared dead based on extra-halakhic scientific standards. The initial innovations of the

cardiopulmonary camp were therefore made with the goal of making a more conservative definition of death that would better withstand external pressures. For this reason, many members of the cardiopulmonary camp created more extreme variations of the definition of death, requiring the cessation of all three vital organ systems, or arguing that the absence of a heart alone would be sufficient to determine death.

In response to the development of the physiological decapitation camp, the protective fence was built even stronger by requiring complete cellular death of the whole brain. With the knowledge that this did not occur in brain dead people, it was a minor concession to keep the traditional definition of death secluded from a major confrontation with scientific advancement. Thus, the cardiopulmonary camp follows the historical trend of one side of the recurring controversy over the definition of death in Jewish Law, reinterpreting the traditional sources to make a more conservative definition of death in order to seclude it from the penetration of scientific advancement into the halakhic framework.

The delayed burial controversy also represented the first time that a significant number of Jews put their faith in science and conformed to the medical conception of death at the time. However, these *maskilim*, with their open departure from tradition, were only a catalyst for the change that would arise within halakha when Rabbi Schreiber, one of the most outstanding opponents of halakhic innovation eventually decided to make a slight accommodation to the realities of the modern age.

Subsequently, the development of the physiological decapitation camp, which almost exactly coincided with the medical conception of the nature of death and the criterion to diagnose it, was the largest innovation to the Jewish understanding of death that had ever arisen completely from within the textual tradition. Tendler even went so far as to say that the

traditional definition of death has always and should continue to go by what the doctors say. Moreover, the penetration of scientific tendencies into the halakhic definition of death reached its pinnacle when a scientific experiment was designed and conducted as a halakhic proof. The increasing willingness to reconsider the traditional definition of death in response to scientific advancements is therefore most appreciable in the reversal of Rabbi Auerbach's opinion on the status of a brain dead person, as a result of the experiment.

The halakhic brain death debate is therefore part of a complex historical recurrence of controversy over the influence of scientific advancement on the definition of death in Jewish Law. The delineation of two camps in the controversy is a consequence of the early divergence of opinion about the appropriate response to the penetration of scientific thought into the halakhic structure. Only within this historical framework can the unbiased intended meaning of both the classical and modern sources be elucidated. The historical perspective thus allows the current debate over the validity of brain death to be understood for what it really represents: a case study in the various suitable response to scientific advancement that can arise out of the halakhic framework of a textual tradition.

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