5. Determining Brain Death
Controversies and Pragmatic Solutions

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1. Introduction

Part of the explanation of why questions of medical ethics in the field of transplantation are of enduring interest as well as enduring tenacity is that they arise from fundamental conflicts between ethics and anthropology. This is very much the case in the question of brain death. What sustains the debate on the ethical side are two convictions shared by most people engaged in the field: First, that transplantation of human organs from dead patients is a highly beneficial practice which should be extended rather than restricted. It saves a great number if lives and, in innumerable cases, raises the quality of life of otherwise severely ill patients. This practice should not be jeopardized by the seemingly never-ending debate about the validity of the brain death criterion as a criterion of death. Second, the conviction that organs for transplantation, with the exception of live donation of paired organs such as kidneys, should be retrieved only from patients that are truly dead. For the majority of transplantation surgeons, the appropriately named 'dead donor rule' is a central condition of the ethical legitimacy of their practice. Conversely, considerable uncertainties remain about the anthropology underlying the brain-death criterion, especially among the general public (see the recent survey of more than 1,400 students of the University of Göttingen, Schicktanz et al. 2017, 254). Among the brain death sceptics, as they might be called, there is a lingering uneasiness about whether brain death is a satisfactory and legitimate criterion of death. This divergence of perspectives is mirrored in an analogous gap between the views expressed in legal and professional documents on the one hand and popular ways of thinking about life and death on the other. While there is a high degree of consensus in legislatures and the official positions of international and national medical organizations that brain death is, or should be, regarded as identical with human death, both the general public and part of academia continue to hold reservations about the acceptability of the identification.

Doubts about the validity and legitimacy of the brain death criterion come from many quarters. Remarkably, however, some of these doubts continue to come from bioethicists. One of the early dissenters was philosopher Hans Jonas. In 1968, when the Harvard Ad hoc Committee published its proposal to identify human death with brain death, Jonas immediately attacked the proposal as a 'pragmatic re-definition of death',

designed to legitimize postmortem organ transplantation but at odds with the traditional understanding of death as the irreversible cessation of bodily functioning (Jonas 1980). Jonas implied that the proposal was manipulative; it was, without saying so, created to safeguard the practice of explanting vasculated organs by securing its compatibility with the dead donor rule. Indeed, this was one of the aims of the proposal (Harvard Ad Hoc Committee 1968). Another one was to define a point in the development of a patient's disease at which treatment, curative or palliative, should be withdrawn. There can be no doubt, however, that this was only a secondary motive. The coincidence of the publication of the proposal with the emergence of transplantation medicine was in no way accidental. Even today, the ethical controversy regarding the validity of the brain death criterion is far from settled, as was recently demonstrated by a split vote in the *Ethikrat*, the German national advisory committee on bioethics, on this question. Remarkably, only a minority of the physicians on the committee voted with the majority that brain death should be identified with death.

It is useful to distinguish between the questions of whether brain death is a valid *definition* of death and whether it is a valid *criterion* of death. Even if many proposals make brain death the definition as well as a (or *the*) criterion of death, the two are conceptually distinct. The first question asks how 'death' should be understood in the relevant context. The second question seeks to specify the signs that indicate that the relevant definition of death has been met (Veatch 1989, 34ff.; Bernat et al. 1981). A criterion necessarily refers to something beyond itself; if observed, it allows us to draw the conclusion that the conditions of the thing or event for which it is a criterion have been fulfilled. For example, one criterion for the intensity of pain is the value given to it by a patient on a ten-point scale, from very weak to unbearably strong. Unlike the thing or event it indicates, a criterion must be publicly observable or measurable. Furthermore, the relation between the criterion and what it indicates is, as a rule, empirically verifiable. It is an empirical matter whether the ten-point scale of pain intensity is a good, bad, exact, or inexact criterion of pain intensity. By contrast, the definition referenced by any given criterion is an a priori matter for which empirical evidence is not directly relevant. A definition identifies the conditions that have to be met for a thing or event to answer a certain description, and these conditions must be clear before one is able to decide which criterion is most appropriate to indicate their being fulfilled. Furthermore, for a given concept, there can be more than one criterion, and more than one valid criterion.

2. Good and Less Good Reasons for Doubt

Among the reasons for doubting the identification of death with brain death – understood as the complete and irreversible cessation of brain function – some deserve closer attention than others. One such argument by Hans Jonas in his seminal article belongs to the weaker sort: the argument that defining death the complete and irreversible cessation of brain functioning is too "uncertain" to serve as a basis for the practice of explanting organs (Jonas 1980). This objection seems to be based on the misunderstanding of the function of a definition; a definition seeks to explain what is, or should be, meant by a certain expression. As such, it cannot be right or wrong, precise or imprecise, reliable or unreliable in the way an empirical indicator can be. As

an a priori matter, a definition does not depend on how the world is – at most it can be judged as adequate or inadequate, intelligible or intelligible, fruitful or sterile, or the like. The standard by which its validity is measured is a semantic or pragmatic standard, such as its agreement with common usage, with traditional conceptions, or with certain specified purposes. Given that it is now possible to maintain the biological functions of an organism with its brain functions completely and irreversibly lost, it is necessary to adapt the definition to the new options. There may be good reasons to doubt the wisdom of the Harvard Committee's choice, but these reasons cannot find any direct support in issues of veracity or conformity to fact.

There are, however, more compelling reasons to cast doubt on the identification of death with brain death. For example, one could argue that the definition of death used to assess the merits and demerits of a proposed criterion of death should be essentially *biological*. It is evident that life and death are primarily biological concepts. Therefore, their application to humans and non-human animals should follow the same criteria, at least as far as they do not essentially differ in their biological functioning. Because life and death in a non-human animal do not depend on the presence of consciousness or self-consciousness, it follows that mental aspects, and the brain functions on which they depend, cannot be crucial for deciding whether a human being is alive or dead. It is perfectly sufficient that central life functions such as circulation, breathing and metabolism are intact. This, at least at first sight, seems a strong reason to attribute life even to a brain dead human patient whose life functions are maintained by a ventilator, regardless of the fact that the patient has lost the capacity of consciousness and self-consciousness (DeGrazia 2005: 11ff.).

This argument gains support from further considerations that make the role of consciousness, and mental life in general, accidental rather than essential in the attribution of life and death. One is that the human organism is without consciousness over long stretches of time without thereby losing its property of being alive, for example in dreamless sleep or in deep narcosis. The life of consciousness is temporally embedded in biological life, which suggests that its emergence and continued existence is dependent on the life of the organism. One does not have to be an epiphenomenalist to assume that mental phenomena are causally dependent on a physical substrate. Another consideration is the observation that, ontologically, mental life is a phenomenon, not a substance. For one, the Cartesian thesis that 'l'âme pense toujours' is not borne out by experience, and the existence of consciousness without some physical substrate, though logically possible, does not seem compatible with the fundamental laws of the universe. Men are not, as has been said by dedicated dualists, "embodied minds" (McMahan 2002: 66f.) who accidentally happen to be provided with a physical body; rather, they are physical bodies that happen to be provided with minds and whose basic mechanisms are not essentially different from those of lower animals that lack mental life. Indeed, one striking phenomenon that convinces many observers that it is absurd to view the brain dead as 'really' dead is the range of complex bodily functions that are maintained, or can be maintained, in this state with relatively little outside stimulus, among them digestion, excretion, sweating, temperature regulation, wound healing, and, with the help of the fetal brain, prolonged pregnancy up to the birth of a healthy child.

Another reason to define life and death in purely biological terms, independently of the presence or absence of brain functioning, is the logical asymmetry that results

from classifying a brain dead patient as dead while maintaining the common view that human embryos are alive, irrespective of whether their brain is functioning or whether the embryonic or fetal brain has developed to a stage in which it can be legitimately be said to function as a system of its own (Sass 1989). Both states, however, are structurally analogous. Given that life is defined as self-organization supported by external resources (Quante 2002: 69ff.), the processes in the early embryo and fetus and in brain death both satisfy the conditions for being alive. Self-organization means that the individual components of the organism interact in a systematic and coordinated way – a condition met in both cases – and depends for its maintenance on an external resource: the embryo and fetus on the resources provided by the uterus and the maternal organism, the brain dead patient on the stimuli coming from the ventilator. If the life of the embryo is 'real' life, so, it seems, is the life of the brain dead.

In response, it is sometimes objected that these two states are not really comparable because of two crucial differences: their very different temporal position in the course of a human life and the differences in potential. Of course, embryonic life comes before, and brain death after, the biographical life of the person, and there could be no greater difference in potential for further development. It is doubtful, however, that these features are relevant to the issue at hand. The differences in temporal position and potential do not affect the basic structural similarity between the two states (McMahan 2002: 436).

Due to its purely formal character, this argument on the side of the sceptics is particularly robust. It is independent of the question of which definition of life and death is most adequate. It does no more than to require consistency in the attribution of the concept of life to structurally similar states.

3. Good and Less Good Reasons for the Identification of Brain Death with Death

On the side of the defenders of brain death as a valid criterion of death we also find arguments of different persuasiveness. A particularly strong case for identification maintained by some medical committees is the holistic integration argument, which states that with the complete and irreversible loss of brain function the organism has lost its central control organ – the control room as it were, from which all different parts and functions of the complex mechanism of the body are monitored and controlled (see, for example, SAMW 2011: 5). Furthermore, the body needs this central control to function as an integrated whole instead of being fragmented into a number of separate systems, which may work simultaneously but are not coordinated by a functioning brain as a central organ of regulation. This argument has played a prominent role in the justification of the brain death criterion by the German Medical Association, from the beginnings of brain death diagnostics (Birnbacher et al. 1993) through to its most recent relevant statement (Brandt/Angstwurm 2018). It is worth noting that this argument, again, is purely biological and does not refer to anything that might be distinctive for animals endowed with a mental life or for humans with a mental life including self-awareness and rationality. Its strength, however, essentially depends on the premise that the integration of bodily functions into a whole by a central regulative agency is a necessary condition of being alive, so that the irreversible cessation

of the functioning of this agency becomes a sufficient condition of not being alive. This premise is doubtful, and it has been challenged.

Critics of this argument maintain either that it ascribes the brain a more exclusive position in the regulation of bodily functions than it really deserves, or that the brain's regulatory function is itself dependent on the autonomous functioning of integrative circuits outside the brain. In both arguments, the brain does not have the dominating position in the control of the organism as a whole ascribed to it by the holistic integration argument. Both theses were forcefully developed, among others, by the American neurologist Alan Shewmon in essays he published from 1998 onwards. These essays had considerable impact in the United States, challenging the President's Council on Bioethics to think anew about the definition of death. The majority of its members signed a White Paper designed to strengthen the criterion and to provide it with a less vulnerable foundation (President's Council on Bioethics 2008). Against the thesis that the brain holds an exclusive position in the regulation of bodily functions, Shewmon argued that the majority of somatic integrative processes are not, or not necessarily, mediated by the brain but are instead autonomous (Shewmon 2002: 311), which explains why so many them remain intact when brain-stem functions, such as the stimulation of the breathing reflex, are replaced by a ventilator. Shewmon further argued that most of the regulatory functions of the brain are in turn dependent on integrative mechanisms outside the brain. Indeed, the complex bodily functions that are maintained in the brain dead, such as blood circulation, digestion and wound healing, require the goal-directed coordination of a great variety of bodily mechanisms. They are not just isolated happenings, like the decay of a single cell, but holistic functions presupposing a system of interacting causal mechanisms. How else should it be possible, for example, that a brain dead patient manifests the so-called 'Lazarus sign' – raising both upper body and hands in reaction to being touched by a nurse – something that requires the coordinated integration of unconscious perception, motor impulses and muscle innervation? What Shewmon could not show, but only asserted, was that the sum of these autonomous bodily circuits and networks constitute a unity or whole comparable to that provided by a functioning brain. The rather vague way in which he formulated this unity, "an implicitly existing, intrinsically mediated somatic unity" (Shewmon 1998: 141), betrays some uncertainty on this point. It is, however, an open question how far this undermines his counterarguments, since the meaning of "somatic unity" is itself far from clear and is open to multiple interpretation. If it is taken to mean that the brain is strictly necessary for the control of every bodily function, this is obviously incompatible with the demonstrated capacity of the bodily functions of brain dead patients to remain intact with the support of a ventilator for days, weeks, and even months. If it is taken to mean that the body deprived of a functioning brain is no longer a complete whole, this is trivial because it is a truism that a human organism without a functioning brain can hardly be said to be complete. So far, it has not been made sufficiently clear what makes an organism governed by a functioning brain an 'integrated whole' in a sense that is illuminatingly distinct from when the same organism shows a number of autonomously working integrated circuits under stimulation from some artificial device (Truog/Robinson 2003: 2392).

A second argument put forward to bolster the brain death criterion was suggested by the President's Council in its abovementioned White Paper. In its majority vote it defined a living organism as consisting of three components, all of which must be

absent for it to be legitimately classified as dead: "1. openness to the world – that is, receptivity to stimuli and signals from the surrounding environment; 2. the ability to act upon the world to obtain selectively what it needs; 3. the basic felt need that drives the organism to act as it must, to obtain what it needs and what its openness reveals to be available" (President Council on Bioethics 2008: 61). This definition, or rather re-definition, of death was a courageous step. It was one of the rare attempts to transcend the level of criteria and to confront the question of definition. However, addressing this question did not prevent the Council from pursuing a thoroughly pragmatic purpose: namely, to defend the legitimacy of the brain death criterion against the attacks of prominent critics such as Alan Shewmon, Franklin G. Miller, Robert D. Truog and others. This purpose was explicitly stated. The proposed definition should help "understand why an individual with total brain failure should be declared dead, even when ventilator-supported 'breathing' masks the presence of death" (ibid.: 61). It is doubtful, however, that this defense was as successful as the Council intended. One problem is condition one – openness to the world. If the definition is valid, the organism should have lost the capacity to receive anything from the outside world. But in fact it receives something from the outside world: the oxygen coming from the ventilator. Without this receptivity, it would be hard to explain why its lungs are taking in air and, in consequence, blood circulation and many other vital functions start working in roughly the same ways as in a living organism. Insofar as the organism is receptive to outside stimuli such as the oxygen, it does not meet all of the three components of the Council's definition and should not be classified as dead (Miller/Truog 2009: 189). In this case, consequently, the brain death criterion would become invalid. It would not show that the patient fulfils the requirements inherent in the concept of death.

A more promising defense of the brain death criterion that emerged from the discussion of the White Paper focused on the second condition, the capacity to act on the world. According to this argument, the brain dead patient is dead not because its organism is unreceptive (or insufficiently integrated) but because it is no longer able to breathe, or to show any other sign of vitality, on its own. In other words, any vital function it may exhibit is dependent on external impulses. This argument has been used in the recent defense of the brain death criterion by a working group of the German Medical Association. What is crucial, according to this argument, is that the brain dead organism is no longer able to initiate any "goal-oriented and purposefully directed activity" (Brandt/Angstwurm 2018: 678). It has lost, in short, the ability to do anything on its own. If the organism of the brain dead patient is still receptive, it is in a completely passive way, reacting to external impulses but in no way actively exerting any influence on the world except insofar as it is itself prompted by external impulses. If the organism reacts to a haptic stimulus with the "Lazarus sign", this may well be taken to constitute something the organism *does*, and such physical movements necessarily have an effect on the outside world. But they are not movements initiated by the organism itself. The crucial feature of life, according to this argument, is the autonomy of the organism in sustaining its own life by an autonomous integration of vital functions (Condic 2016: 257ff.). Accepting this argument leads to a full legitimization of the brain death criterion.

This conclusion is, however, bought at a price. Even if the autonomy-based definition of being alive or dead seems plausible for the standard situation of the brain dead patient on a ventilator, it inevitably has implications for non-standard situations.

Think, for example, of a situation, probably in the not-too-distant future, in which the ventilator of today is replaced by a device implanted into the brain. There can be no doubt that even such a device would have to be classified as 'external' to the organism, so any organic functioning enabled by this device in the absence of any capacity for autonomous functioning would not preclude classifying the organism as dead. The reason is that it does not seem to make a difference whether the device is outside or inside the organism as long as it is not part of the organism. In theory, it would not even make a difference whether this device is 'artificial' in the sense that it is a product of human engineering, mechanical or otherwise. Even a special kind of medicine might be suited to the task. It might even be a substance or mechanism that is completely 'natural'. The only property that it would have to possess in order to count as 'external' is that it is not part of the organism itself but an add-on deliberately used to maintain biological functioning which the organism itself cannot sustain on its own.

This suggestion invites the criticism that if followed to its logical conclusion, even a device like a pacemaker implanted to maintain the heart function of an indubitably living patient would have to be counted as an "external" condition of the maintenance of organ function, with the paradoxical result that a patient whose life depends on the functioning of this device would have to be counted as dead because he or she has irreversibly lost the capacity to maintain these functions autonomously (Deutscher Ethikrat 2015: 92f.). This is, no doubt, an objection of considerable weight. It shows that even if this argument is accepted in principle, it has to be qualified in order to avoid counterintuitive consequences, which means it cannot be valid in its most simple form. How might we qualify this argument? One suggestion is to add the proviso that it is only applicable when the patient concerned does not show any further sign of being alive, such as possessing the capacity for conscious experience. While it is possible to be alive without the capacity for conscious experience, this capacity seems categorically incompatible with death. That is, whether a patient is alive or dead cannot be determined by the presence or absence of consciousness or the capacity to be conscious. But it seems logically impossible for somebody to be simultaneously conscious and dead. It cannot be denied that any qualification of the argument along these lines amounts to a considerable weakening of its force. For one, the succinctness of the argument is dissolved. The definitions of being alive and being dead prove to be no less complicated than the brain death criterion and the neurological tests by which it is operationalized for practical purposes. An even weightier objection is that (re)introducing consciousness, or other mentalistic criteria, even as an additional component of the definition, falls back on a line of argument that most participants in the debate thought had been excluded once for all.

4. How to Decide?

We have come to an impasse. There are, on both sides of the controversy, good and less good arguments, raising the question of who should have the last word. Even after mustering the most relevant arguments for and against, plenty of room remains for reasonable dissent regarding both the plausibility of the individual arguments and their relative weight. Again, it is worth stressing that this dissent does not concern the adequacy of the brain death criterion as such nor the tests into which it is translated

for practical purposes; it concerns the underlying conception of what it means to be, or not to be, alive – the depth dimension, as it were, which is often left unmentioned but which constitutes the undissolved knot that explains the controversy's persistence and intensity.

In this situation there are various options we might choose to follow, some of them more obvious than others. Unfortunately, as will be shown, most of them have serious drawbacks, so that the help offered by passing the options in review is limited.

One proposal often heard in public discussion is to leave the accepted concepts of being and not being alive unchanged and to instead practice what has been called *definitional tutiorism* (Walton 1980: 22). This strategy promises to minimize irritation and controversy, which are inevitable when dealing with innovations that touch upon deep existential concerns. However, the problem with this proposal is that it is far from clear what the accepted view is. Public opinion is not unanimous on the matter, and even though the formal representative bodies of physicians generally favor a definition that legitimizes the brain death criterion, there is, even among them, a dissenting minority. Traditional views of life and death were suited to dealing with traditional cases and cannot resolve doubts about cases that have been made possible only by the rapid progress of medical technology in the 20th century. Traditionally, the signs of death occurred more or less simultaneously. Only modern medical technology has enabled the temporal separation of the cessations of brain activity and vital functions like respiration and circulation, respectively. The result is that the boundary between life and death has become ambiguous and drawing it requires a deliberate decision.

A second strategy favored by a great number of physicians is *naturalism*: basing the definition of death as far as possible on scientific fact. Again, this approach seems unlikely to be successful with regard to fundamentals such as the definition of life and death. Certainly, scientific medicine and especially neurology play a crucial role in formulating and spelling out the criterion of death as well as conducting the tests that make this criterion applicable in practice. Furthermore, medical science is essential for assessing the reliability of criteria and tests and, in the public sphere, correcting unjustified fears about their validity. Scientific expertise alone, however, cannot answer the central controversial question of how to define being and not being alive. Although any discussion of the adequacy and legitimacy of a certain definition must take into account the scientific evidence, the decision to accept or reject this definition cannot be based on this evidence alone. That is, scientific competence is a necessary, but not sufficient, condition for a decision of this kind.

A third methodological strategy is *pluralism*, which splits the concepts of being alive and being dead in two or more concepts, each adapted to certain contexts and not to others. There is more than one proposal in the literature to make such a split. Some propose concepts that refer to different points in the process of dying, for example 'passing away' versus 'deanimation' (Shewmon 2010). Ralf Stoecker proposed to add a third category to the dichotomy of being alive and dead in order to denote the 'hovering' of the brain dead patient between life and death (Stoecker 2010: XLVff.). The most prominent theory of this kind is the conceptual dualism proposed by the Oxford ethicist Jeff McMahan (2002). According to McMahan, there are two concepts of death with distinctly different ethical implications. According to the primary concept, a human being is dead when its capacity for conscious awareness is irreversibly lost – an openly mentalistic concept. The secondary concept is biological, according to which a

human being is dead when its organism has irreversibly ceased to function. Both concepts have as their counterparts corresponding concepts of life. Life in the mentalistic sense begins and ends with the beginning and end of the capacity to have conscious experience. Life in the biological sense begins with conception and ends with the irreversible end of biological functioning. One of the consequences of this dichotomy is that there can be considerable differences between the respective – mental or biological – lifespans of a person. Sometimes they differ drastically, as in the case of the coma patient Nancy Cruzan, on whose tomb two dates of death are recorded: the end of her conscious life and the end of her biological life seven years later (ibid.: 423).

Obviously, duplicating the concepts of life and death along these lines is not merely strategic; it is rooted in a view of human life that goes beyond the issue at hand and has far-reaching metaphysical ramifications. McMahan's view is based on a spiritualist conception of human existence in which the mind is embodied but could, in principle, exist without embodiment, or at least the kind of embodiment we find in nature. Hence the priority given to the mentalistic concept of life. By contrast, materialists and evolutionists, who view the human being as a particularly gifted animal, would, if they were to adopt conceptual dualism, presumably reverse the equation and give priority to biology. Apart from that, any strangeness that this theory may have at first sight dissolves as soon as we interpret it as phenomenological account of the factual division of how we view our own life compared to the lives of others. From the first-person perspective, the central object of concern is the period of conscious experience. From this perspective, our life begins with the first "awakening" to consciousness at some unknown point in fetal development and comes to an end when we irretrievably lose the capacity for conscious experiences. From the third-person perspective, from which we view the lives of others, we tend to think in biological categories and take it for granted that their lives begin at the early embryo stage and end when their organisms have irreversibly ceased functioning.

The duplication of concepts of life and death only safeguards the dead donor rule if the mentalistic concept is given priority. Only then is it possible to say that the brain dead person is 'sufficiently' dead to allow the explantation of organs without infringing the rule. However, if this strategy were used to decide all cases in which it is applicable, it could lead to any patient who has irreversibly lost the capacity for consciousness to be declared dead, going far beyond the line drawn by the brain death criterion, which is commonly understood to require the irreversible cessation of *all* brain functions. This consequence is accepted by only a minority of medical ethicists (see, for example, Veatch 2004).

There are pragmatic reasons to avoid a duplication or multiplication of the concepts of life and death. The first is that these concepts function as fundamental orientations in thinking about ourselves and others and serve as reference points of communication about existential topics. Dissolving these concepts into a plurality of concepts risks confusion and irritation, such as those already provoked by the widespread use of the term 'clinical death', which misleadingly suggests that a patient who survives 'clinical death' has benefitted from some kind of miracle. Another reason is the requirement to provide a unitary concept for legal purposes; a multiplication of concepts would severely complicate the legal rules applying to life and death. A further reason to maintain a unitary concept of death is that multiple concepts can solve the conflict between the ethics and the anthropology of organ transplantation only when combined with

the priority thesis. This thesis, however, will be acceptable to only very few of those involved in the practice of organ transplantation. Only few ethicists accept that organs can be explanted from irreversibly comatose patients or from anencephalics. And physicians tend to share the naturalistic worldview and to favor the evolutionary picture – according to which the mind phylogenetically emerged, and ontogenetically emerges, from living matter – in contrast to the Platonic view that a pre-existent soul is provided, at conception, with a body in which it then spends a lifetime.

The reservations expressed against the multiplication of concepts of life and death similarly apply to a fourth strategy to dissolve the definitional dilemma, *cultural pluralism*. It is a fact that although the brain death criterion is incorporated in all legal systems in countries where postmortem organ transplantation is practiced, acceptance of it in the general population differs greatly between cultures (Laurels 2005). For a long time, it was outright rejected by the populations of many East Asian countries, with the consequence that transplantation surgeons were charged with murder or manslaughter (Lock 2001). Often, religion plays a role in these cultural traditions, such as in orthodox Judaism and Christian fundamentalism, though most religious communities are no less divided on the issue than broader populations worldwide. Though cultural pluralism is a debatable option and was even indirectly defended with the proposal to leave the decision on the definition of death to individual choice (Veatch 1989: 30, 54ff.; Veatch/Ross 2016: 152), it meets with the criticism that, in a world increasingly characterized by more intensive communication, interaction, co-operation and international exchange, it seems misguided to leave central concepts like life and death to cultural particularism. Apart from that, the clear international convergence of legal criteria (which unfortunately co-exists with a great deal of divergence in required test procedures and quality safeguards) can be expected to lead, in the long run, to a similar convergence in opinion and attitude.

5. A 'Pragmatic' Justification of the Brain Death Criterion

Instead of proposing a solution that heavily depends on uncertain *metaphysical* reasons, one might argue for a compromise between ethics and anthropology for more directly *pragmatic* reasons, with 'pragmatic' understood in a positive and constructive sense (Wiesemann 1995). After all, the concepts of life and death are not Platonic ideas, existing independently of language and convention. They are open concepts, leaving room for interpretation and specification. And how they are interpreted and specified can legitimately be made according to pragmatic, not least on ethical, reasons. Concepts are *man-made*, and the standard on which they have to be judged is not whether they are true or false but whether they are meaningful or not, adequate or not, and whether they serve their purposes.

Another methodological consideration is that, given the background of great differences between cultures, traditions and individuals in the interpretation of these concepts, it seems more appropriate to regard the quest for the *definition* underlying the brain death criterion as the quest for what in the philosophy of science has been called *explication* (Birnbacher 2018). An explication is an interpretation of an unclear or controversial concept that does not purport to mirror any common understandings but instead proposes a convention that, on the one hand, preserves the core of the var-

ious meanings given to the concept, and, on the other, is adapted to the purposes it is designed to serve in theoretical or practical contexts. Because there can be more than one context in which a concept needs explication, there can be more than one explication to a concept – as was explicitly conceded by Rudolf Carnap, who introduced the concept of explication in the context of probability. According to Carnap, explications can be introduced to meet more than one requirement, and these can have different weights in different contexts. One of Carnap's examples is the pre-scientific explicandum "fish" (1963: 6) for which there might be more than one scientific *explicatum* (the result of the explication), depending on the ends this explicatum is designed to serve and what amount of semantic agreement with common usage seems desirable.

The four requirements explications should meet, according to Carnap, are *similarity* with the explicandum, *exactness*, *simplicity* and *fruitfulness*. In the context of the concepts of life and death, similarity of meaning means that the conventionally fixed meaning of the explicatum should not deviate too heavily from the meaning or meanings traditionally associated with the *explicandum*. The criterion of exactness can be taken to mean that the explication should be consonant with well-confirmed anthropological theories and should not bring in speculative elements. As a matter of course, not all explications of life and death one may think of satisfy this condition, e.g. theological or esoteric conceptions of a substantial immaterial soul or an astral body governing bodily functioning. A further component of the exactness requirement is that the explicatum is sufficiently amenable to operationalization to be detected or measured by empirical methods. In the case of the concept of death, this implies that scientifically sound criteria and tests are available to determine whether the concept applies. Operational criteria are especially indispensable in the legal domain.

The third requirement, simplicity, is an obvious desideratum, especially in the case of everyday concepts such as life and death. The explication should make the concept easier to understand than in its original form. Furthermore, if we think of the necessity, in an increasingly integrated world, to communicate about life and death between individuals of different cultural backgrounds and different world views, the explicatum should ideally be acceptable even to people holding world views distinctly different from the scientific one.

The fourth requirement, fruitfulness, can be interpreted, for practical contexts, as the maxim to explicate a concept so that it is consonant with all or a substantial portion of the ethical principles and intuitions applying in the relevant domain. In analogy to fruitfulness in the theoretical field, where it means, among other things, the capacity to be introduced in and related to scientific laws, fruitfulness in the practical field can be understood as the capacity to become part of an ethically justified practice.

On this background, it may be argued that these requirements are in fact best served by an explicatum of the concept of death that corresponds to the brain death criterion, i.e. the irreversible and complete cessation of brain function. An explication along this line does not fully meet the first and the third requirement, but it meets the others better than its alternatives.

As to the first requirement, it cannot be denied that an explicatum of this kind deviates to a significant degree from both the traditional meaning of death and the meaning given to it by a great number of people today. These meanings, however, are profoundly inexact. For example, the proposed explication "death is the permanent cessation of the critical functions of the organism as a whole" (Laureys 2005: 900)

leaves open exactly which functions count as 'critical'. By contrast, the explication of death as the irreversible cessation of the functioning of the whole brain is less ambiguous and enables physicians to unequivocally test the presence or absence of life in a patient. If done professionally and in accordance with the rules, no brain death diagnosis has ever been put in doubt by the "awakening" of a patient. Furthermore, these rules have been progressively differentiated on the basis of clinical experience and fine-tuned for special situations.

As far as simplicity and intelligibility are concerned, the definition of death as irreversible and complete cessation of brain activity is, admittedly, unsatisfactory. For many people, the definition is hard to accept because of its remoteness from the concrete experience of dying. In the situation of the intensive care unit, death has ceded its place in the *lebenswelt* to something purely cognitive and abstract, no longer accompanied by signs accessible to direct experience.

This defect is, however, more than offset by the important practical advantage that this explication enables the practice of postmortem organ transplantation without infringing the dead donor rule. Abandoning the brain death explication of death would either seriously limit the highly beneficial practice of organ transplantation or infringe a rule that is held by most physicians to be indispensable. Furthermore, abandoning it would require legislations that would greatly complicate the legal rules pertaining to life and death.

The question arises which normative status can be claimed for a pragmatically motivated explication that is, at least in part, motivated by 'pragmatic', in this case: ethical and praxeological considerations. Authors who tend to reject the identification of brain death and death have spoken of the brain death definition as a 'legal fiction' (Shah/Miller 2010). This manner of speaking can be interpreted as pejorative – a way of saying that brain death is only so-called death. Alternatively, it can be interpreted more neutrally, as a pragmatic manner of speaking aimed, in the first instance, at relieving the transplant surgeon from the risk of being held responsible for manslaughter. However, there is a crucial difference between this 'legal fiction' and others such as the fiction of a 'legal person'. In the case of 'legal persons' such as institutions and companies, it is clear to everyone that the term does not refer to a real person. The identification of brain death with death is different. By now, it has gained so much social acceptance that the conflict it is designed to solve is only rarely brought to attention. If acceptance increases in the future, the conflict between ethics and anthropology from which the debate started will largely be a matter of the past.

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