

# The diagnosis of the absence of life

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## Transplantation, the dead-donor rule and the definition-criteria-tests model of death

The problem of the diagnosis of death only plays a vital role in the debate on the moral (im)permissibility of organ transplantation if the “dead-donor rule (DDR)”<sup>1</sup> is endorsed as a true and valid premise. According to DDR, any transplantation of organic material (cell[s], tissue, organe[s] and/or organ system[s]), i.e. any explantation of organic material (the explant or transplant) from some person P<sub>1</sub> (the donor of the explant or explantee) destined for the subsequent implantation of

Whether the explantee is killed by an explantation of some of his organic material depends on the answer to the following two questions (cf. figure 1): (1) What kind of organic material is to be explanted? (2) Is the explantee dead or alive? If the organic material to be explanted is vital organic material,<sup>3</sup> removing this kind of organic material would result in and cause the certain death of the explantee; such explantation constitutes a violation of DDR and must, in consequence, be considered morally impermissible. If the organic material to be explanted is not indispensable to (the explantee’s) life<sup>4</sup>, its explantation does not violate DDR.<sup>5</sup> Fur-

Figure 1: Transplantation and the dead-donor rule

		Kind of organic material explanted from the explantee for implantation into a living implantee		
		Explantation of vital organic material (i.e. of organic material indispensable to life)	Explantation of non-vital organic material (i.e. of organic material not indispensable to life)	
Status of the explantee	Alive/ Living (→ premortal explantation)	<p><b>Premortal transplantation of vital organic material</b></p> <ul style="list-style-type: none"> <li>➤ <i>Causes the death of the explantee</i></li> <li>➤ <i>Violation of the Dead-Donor-Rule</i></li> </ul>	<p><b>Premortal transplantation of non-vital organic material</b></p> <ul style="list-style-type: none"> <li>➤ <i>No violation of the Dead-Donor-Rule</i></li> </ul>	Possible for auto-, iso- and allogenic transplantations
	Dead (→ postmortal or post mortem explantation)	<p><b>Postmortal transplantation of vital organic material</b></p> <ul style="list-style-type: none"> <li>➤ <i>No violation of the Dead-Donor-Rule</i></li> </ul>	<p><b>Postmortal transplantation of non-vital organic material</b></p> <ul style="list-style-type: none"> <li>➤ <i>No violation of the Dead-Donor-Rule</i></li> </ul>	Only possible for iso- and allogenic transplantations

this organic material (the implant or transplant)<sup>2</sup> into a living person P<sub>2</sub> (the recipient of the implant or implantee), that results in and causes the death of the explantee is morally impermissible.

thermore, an explantation (of either vital or non-vital organic material) can only be the cause of the death of the explantee if the explantee is not yet dead at the beginning of the explantation procedure. So, while an

1 The DDR (in German: “Tote-Spender-Regel”) states that “patients must be declared dead before the removal of any vital organs for transplantation” [1, p. 674]. Also cf. [2, p. 4]: “Lebenswichtige Organe dürfen nur von toten Patienten entnommen werden; lebende Patienten dürfen nicht für oder durch eine Organentnahme getötet werden.”

2 Explant and implant are two expressions for the same object, namely the transplant. From the perspective of the explantee, the transplant is called explant; from the perspective of the implantee it is called implant.

3 Vital organic material is organic material that is indispensable to (the explantee’s) life. Examples of vital organic material are non-paired organs such as the heart, liver or pancreas.

4 Examples of organic material that is not indispensable to (the explantee’s) life are paired organs such as the kidneys and lungs, but also blood, bone marrow, tissue (e.g. cornea), parts of the intestines or parts of the liver.

5 This does, however, not automatically mean that the respective explantation is morally permissible; this would be an invalid conclusion. It only means that it is not morally impermissible due to a violation of the DDR.

explantation from a dead explantee cannot constitute a violation of DDR,<sup>6</sup> the moral permissibility of an explantation from a living explantee can be in violation of DDR depending on the kind of the organic material that is to be explanted.

Therefore, whether the transplantation respectively explantation of some vital organic material constitutes a violation of DDR depends on the answer to the question whether the explantee is dead at the moment of the beginning of the explantation procedure or not: If he is, DDR is not violated; if he is not, DDR is violated. But, how do we diagnose the explantee's (or generally speaking: a person's) death? In order to answer this question, contemporary ethical debate usually draws on the so-called "definition-criteria-tests (DCT) model of death" (as initially proposed by [3]; also cf. [4], [5, p. 200]). We should, however, not content ourselves with this three-level model. For, as can be argued, it is incomplete.

It is beyond dispute that within the DCT model the definition of death enjoys logical primacy; it is only possible to establish criteria for determining that death has occurred and to define specific medical tests showing whether or not these criteria have been fulfilled, if one knows what it is that should occur to begin with. Thus, in order to be able to diagnose death one has to first answer the question "What is death?". And it is exactly while trying to find an answer to this question that the fact that the DCT model is lacking something becomes obvious.

### Death as the absence of life

For, what is death? We know that death is the only thing on earth that is certain; we also know that death marks the end of a process we call dying. But, this does not tell us anything substantial about death. And I dare to claim that we cannot make any direct or positive substantial statements about death at all. As an object of investigation death is drenched in impenetrable darkness; it eludes our attempts to get a direct (scientific or philosophical) grasp of it: "Von dem 'Eigentlichen' des Todes aber kann niemand eine unmittelbare Erfahrung haben – es sein denn, vielleicht, der Sterbende selbst. Und diese Erfahrung, das gehört zu ihrer Natur, ist nicht mitteilbar." [6, p. 23] This does, however, not mean that the question "What is death?" must remain unanswered and that any definitory effort is in vain by necessity. It just means that the only way we can think about death is as an absence or negation; the answer to the question "What is death?" cannot start with "Death is ..." but only with "Death is not ..." or "Death is the absence of ...". So far, I have not come

across a single definition of death that does not define death as the absence of something ...

So far so good. But what is it that is supposed to be absent in death? Well, what is absent in death is not primarily some brain or cardiopulmonary activity or the capacity for these (or some other) activities (although all this is absent, indeed); what is absent is life.<sup>7</sup> In the end, the only substantial answer to the question "What is death?" and thus the only definition of death we can give is that death is the absence (in the sense of completed and irreversible loss) of life, that it is not-life (or: non-life, no-life).

### A four-level model of (the diagnosis of) death

Accepting this insight has, however, grave implications on the problem of the diagnosis of death: As death is defined as the absence of life and as the criterion of and tests for death are mere concretions and operationalisations of the definition of death, the criterion of and tests for death are necessarily dependent and presuppose a definition of life, i.e. an answer to the question "What is life?". Therefore, the widely accepted tripartite understanding of death as given by the DCT model of death has to be supplemented by a fourth level, namely the definition of life (cf. figure 2).

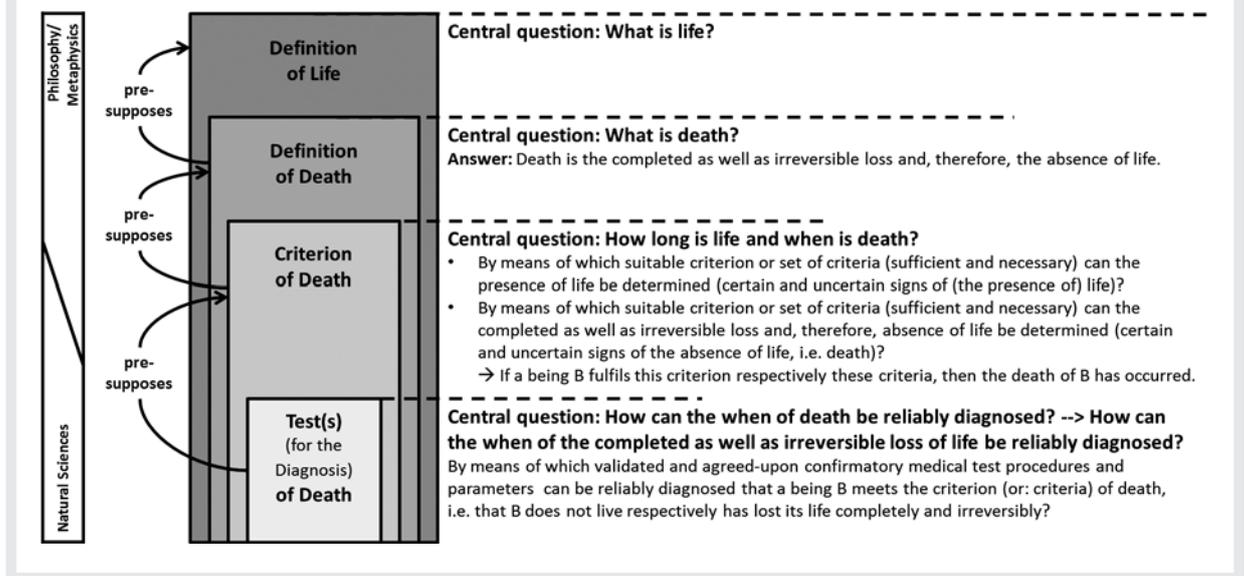
Given the fact that death is the absence of life, the task of establishing a set of criteria of death amounts to establishing a suitable set of criteria (sufficient and necessary) of the absence of life; being able to establish these certain and uncertain signs of death, however, presupposes the antecedent identification of a suitable set of criteria (sufficient and necessary) of (the presence of) life; and this, in return, requires knowledge and a definition of what it is that is supposed to be present, namely life. Only after all these steps have been taken, one can set out to compile a list of those confirmatory medical test procedures and parameters that are suitable to reliably diagnose the death of some person (or for our purposes: explantee). In short: The death of an explantee can only be diagnosed cogently if the tests and parameters for death are a logical deduction, concretion and operationalization of the answer to the question "What is life?".<sup>8</sup> So, instead of arguing about the wrong question we should set aside our preoccupation with the nothing that is death and rather focus our efforts on the everything that is life.

<sup>6</sup> This does, however, not automatically mean that the explantation of (either vital or non-vital) organic material from a dead explantee is morally permissible. As explained in the previous footnote, this would be an invalid conclusion.

<sup>7</sup> Death can be defined as the absence of these (or some other) activities only if and insofar as these activities are taken to be constitutive of life. Death and life are mutually exclusive and exhaustive categories and, therefore, contradictory opposites; where there is death, there can be no life.

<sup>8</sup> Establishing a definition of life is not within the scope of this article and does not need to be because I have answered the question "What is life?" elsewhere (cf. [7]).

Figure 2: The quadripartite or four-level model of (the diagnosis of) death



### The whole brain definition of death and the definition of life inherent to it

The insights gained so far can be taken one step further. According to the four-level model of (the diagnosis of) death every definition of death first and foremost is the negative formulation of a definition of life that is logically prior to it. So, regardless of its actual content every definition of death is only as meaningful and tenable as the definition of life it implicitly negates. This means that the definition of death that seems to dominate contemporary philosophical debates and transplantation policies, namely the whole brain definition of death, must also be the negative formulation of an underlying implicit definition of life that has yet to be explicated. What is the definition of life that the whole brain definition of death is the negation of? According to this definition death consists in the complete and irreversible cessation or loss of activity of the entire brain, including the brain stem. As death is the absence of life, we can, therefore, deduce that the definition of life that underlies the whole brain definition of death is that life is the presence of brain activity.

According to this definition, human beings are alive not only as long but also as soon as they exhibit brain activity. So, when can human beings be said to exhibit brain activity for the first time? The earliest point in time they can be said to do so is once at least some basic brain-like structures start to develop. The development of the structural precursors of a human being's brain starts 19 days after conception (Carnegie stage 7) with the formation of the neural plate which is the key developmental structure and basis for the entire nerv-

ous system.<sup>9</sup> Given this fact we are led to conclude that a proponent of the whole brain definition of death has to accept the position that human beings are definitely not alive during the first 19 days of their existence.

There is, however, another way to answer the question of when human beings can be said to exhibit brain activity for the first time. As has been said above, whole brain death requires the loss of all brain activity. This means that whole brain death requires the loss of the activity of all parts of the brain.<sup>10</sup> An activity can only be lost if it has been exhibited before. In order for the brain and its parts to be able to actually exhibit activity that is comparable to the brain activity that must be lost for the diagnosis of whole brain death, the brain as well as all of its parts have to be developed and exhibit activity. According to this interpretation of the whole brain definition of death a human being cannot be alive until his brain and all of its parts have developed and exhibit activity.<sup>11</sup> Although the prosencephalon, the mesencephalon and the rhombencephalon become distinguishable some 25 days after conception (Carnegie stage 9) and although the prosencephalon and the rhombencephalon start to differentiate five weeks after conception, the maturation of the human brain and its

9 A most helpful and informative overview of the organogenesis of the human brain and the human nervous system can be found on the homepage <http://www.embryology.ch> (which also is the source for this article's explanations of the development of the human brain).

10 This includes the forebrain/prosencephalon (which is composed of the telencephalon and the diencephalon), the midbrain/mesencephalon and the hindbrain/rhombencephalon (which is composed of the metencephalon (which consists of the pons and the cerebellum) and the myelencephalon).

11 Accordingly, he has to accept the position that anencephalic human beings are never alive during the course of their existence.

parts continues even after birth. This means that – depending on how strict the condition that the brain and all of its parts have to be developed and exhibit activity is interpreted – human beings become alive 25 days after conception, 5 weeks after conception or some time after birth.

Wrapping things up we can, therefore, put on record that a proponent of the whole brain definition of death has to at least accept the first of the following two propositions: (1) The earliest point in time a human being can be said to be alive is 19 days after conception. (2) The latest point in time a human being can be said to be alive is once his brain and all of its parts have developed and exhibit activity; depending on the interpretation of this condition this point in time can be 25 days after conception, 5 weeks after conception or some time after birth. As has been said above, every definition of death is only as tenable as the definition of life it negates. I will leave it up to the reader to decide whether the definition of life inherent to the whole brain definition of death is tenable or not. It would, however, be interesting to see whether the proponents of the whole brain definition of death are actually prepared to accept the – to put it mildly – counterintuitive propositions that can be deduced from the whole brain definition of death.

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