

## PHILOSOPHICAL CONSIDERATIONS ON BRAIN DEATH AND THE CONCEPT OF THE ORGANISM AS A WHOLE

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### SUMMARY

*Since intensive care medicine enables us to maintain blood circulation and respiration artificially for some time, the usual criteria for death, such as cardiac arrest and cessation of respiration, are not applicable in all cases. Thus, the irreversible breakdown of the brain functions have come to be accepted as the most prominent factor for the occurrence of death. This criterion is linked primarily to the disintegration of the organism as a whole. Yet the controversy surrounding the moment when a man can be declared dead has not yet been resolved. The decisive weak point in this controversial discussion seems to be that the notion of the "organism as a whole" is inadequately defined. The aim of this work is to fill this void.*

*We developed four general criteria of life: integration, coordination, dynamics, and immanency. Moreover, four additional characteristics are necessary for a living being (organism as a whole): completion, indivisibility, autofinality, and identity. If one of these four characteristics is missing we can only speak of derivative life but not of a living being. In a brain dead body one finds a number of signs of life. These signs of life, however, are not signs of an organism as a whole but signs of a physiological combination of organs whose parts — directed from the outside - are dependent on each other. The brain dead body lacks the four criteria of a living being. Thus it is no longer a living person but purely derivated biological life.*

**Key words:** brain death – person – completion – indivisibility – autofinality - identity

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### INTRODUCTION

When conventionally deciding about human death the brain functions play a central role. According to the medical traditional criteria biological death has occurred when definite signs of life such as respiration and heartbeat are irreversibly lacking. Cessation of these functions leads to a slow, irreversible damage of the brain within 8 to 10 minutes and only this destruction determines death definitively. Resuscitation after this period of time is to be regarded as pointless. Thus, the death of man has already in former times been connected with brain death (BD), even if this perhaps was not understood as such (Powner et al. 1996). However, advances in medical science have blurred the boundary between life and death.

Persons can survive for decades without consciousness and BD bodies can be supported for extended periods (Fisher 1999).

There is tremendous confusion about the fundamental rationale for equating BD with death of the entire organism and therefore human death (Ad Hoc Committee 1968, Bates 1997, Fackler & Truog 1993, Veatch 1993, Truog & Fackler 1992, Rothenberg 1990, Bernat 1992). The common rationale for equating BD with death is that it reduces the body to a mere collection of organs, as evidenced by purported imminence of asystole despite maximal therapy (Fisher 1999, Firsching 1998, Jones 1998). But as the neurologist Shewmon revealed, the tendency to asystole in BD can be transient and is attributable more to systemic factors than to absence of brain functions

per se (Shewmon 1998; Shewmon 1992). He concluded that "if BD is to be equated with death, it must be on some basis more plausible than the loss of somatic integrative unity" (Shewmon 1998). We present a new line of argumentation.

Indeed, the controversy is far from being resolved. On the one hand some philosophers hold the opinion that the fixing of death at the moment of the breakdown of brain functions was much too simple (Powner et al. 1996, Evans 1990, Truog 1997, Halevy & Brody 1993, Jonas 1990). BD persons were thus still living, and as a result the donation of organs for transplants was ethically problematic. On the other hand several ethical groups try to distinguish biological from personal life and declare a man "as a person" to be dead as soon as his consciousness has irreversibly ceased (Truog & Fackler 1992, Singer 1994, Sass 1989). This definition however, would then lead to rather different conclusions: thus organ donation in the case of BD bodies would lack any ethical problem, in spite of the fact that they are still alive; but this approach would also release anencephalics and gravely brain-damaged adults for organ donation (Rothenberg 1990, Beller & Reeve 1989, Churchill & Pinkus 1990).

The aim of the paper is to clarify the dilemma of the moment when a man can be declared dead by adequately defining the notion of the "organism as a whole".

## **EIGHT CRITERIA FOR LIFE AND LIVING BEINGS**

The difficulty of accepting BD as the death of a man is perhaps due to the fact that biological life is to be found with very many variations in the lower and higher forms of life, so that its common features can only be distinguished in an analogous sense (Shewmon 1992). If we just think of a living tree and its dead branches and leaves, of a still viable or already dead sperm-cell, of an isolatedly beating heart, or of living animals and men, the differences of the various manifestations of life are evidently greater than what they have in common. What all notions of life have in common is the idea of the integration of the parts into a unity, where the principle of its unity and order is immanent.

Thus concerning all life we can speak of a delimited unity, characterized by four criteria:

1. **Dynamics** (signs of life): life is a process and not a state. Typical life-processes are metabolism, regeneration, growth, propagation, but also pulse beat, respiration, locomotion etc.
2. **Integration**: the life-processes derive from the mutual interaction of the parts.
3. **Coordination**: the interaction of the parts is kept constant within a certain order.
4. **Immanency**: criteria 1-3 are immanent in life as such, i.e. they spring from life as such.

For the characterization of life and death, as related to our question, the distinction between derivated biological life (isolatedly living cells or organs, cell cultures, heart-lung-compound) and a living being is important. The living cell of a cell culture, however, is a unity integrated in itself where coordination, metabolism, dynamics and processes of division take place. We call it derivated life because it stems from a living being, but is not a living being itself. The living sperm-cell is not yet a living being. Thus integrative unity is a necessary but not a sufficient condition for a living being.

The living being is not only as the derivated biological life an integrated unity, but above that a specifically integrated whole. Because of this integration, coordination and immanency are of a totally different quality in a living being than in derivated life. The specific whole of a living being is characterized by four additional criteria:

5. **completion**;
6. **indivisibility**;
7. **self-reference (autofinality)** and
8. **identity**.

## **COMPLETION**

The very specific completion of a living being becomes apparent first of all by the fact that it is not a part of a greater whole but is definitively completed in itself. When regarding living cells or organs they are parts of a living being but they are not the living being itself. Thus the isolated heart-cell is part of the heart and this again is part of a

frog for instance. When an isolated frog's heart beats it is not the frog but the heart that lives. It is a matter of the life of a (once existing) frog, but not of the frog itself, therefore of a derivated life but not of a living being. The living being, however, is just not a part of a greater unit, but a definitively completed whole.

## **INDIVISIBILITY**

The very specific whole of a living being becomes also apparent in the fact that it is more than the sum of its parts. This is why a living being is neither divisible nor composable of parts. This means that the living being's higher unity expresses itself by the fact that, in the case of a division of a living being into two or more parts, always at least one part remains as a whole (of course not if the living being dies). In other words: the separated part neither robs the remaining subject of its individual totality nor is anything added to it, for instance by implantation. By addition or subtraction of parts the living being possesses more or less but it is not in itself more or less. One cannot speak for instance of a half man or of a half horse but always only of a horse as a totality, regardless how many parts (organs, extremities etc.) are possibly missing. But it makes very good sense to speak of half a house or half a lung!

## **SELF-REFERENCE (AUTOFINALITY)**

The specific whole of a living being becomes also apparent in the fact that its functional processes (as signs of life) — other than in isolated living organs — serve first of all their own self-regulation.

When speaking of living or dead cells or organs one only asserts that they still function (and therefore are transplantable for instance) or that they do not function anymore. That means that isolated organs have got their function and thus their finality beyond themselves. They are aimed at another whole and get their meaning with reference to that other whole. The living being, however, has got its meaning and its finality neither from outside nor from its parts, but it is

founded in itself. It is self-referring. The observable processes of life and the functions of organs serve first of all the self-preservation of the whole, even at the cost of single parts (for instance harm from exposure to the cold). The single parts are unified by an (immanent) shaping principle (the principle of life) which comprises the whole living being. In this sense we can speak of the living being as an end in itself.

## **IDENTITY**

The phenomenon of identity consists of the fact that the living being remains one and the same throughout the passage of time. It can be best observed in the case of change of shape, in metabolism and in the loss of single parts. Thus a living being in its individual totality remains definitively one and the same in spite of the fact that its external phenotype changes totally in the course of time and in spite of the fact that a complete change and renewal of its material substance (metabolism, growth) takes place. The subject does not change, even if single organs become inoperative, i.e. when parts get lost (for instance by the amputation of extremities) or when organs are transplanted. We remain one and the same as we were before the amputation or transplantation. Transplanted cells and organs have no individuality or identity of their own but are incorporated into the identity of the recipient (Pallis 1993).

Hence the essential difference between derivated life and a living being is that the living being is in itself a finally completed whole. Its life-processes are of a self-preserving character. The isolated living organ, however, is extraneously orientated and has only a function-character.

## **THE BD BODY**

We speak of BD when a complete destruction and irreversible breakdown of the brain has taken place as the primary cause of death, while the remaining organs initially remain intact but later fall into decay. Without the brain, a breakdown of all the central coordinative regulation mechanisms

takes place, especially of the adjustment of temperature, the electrolyte- and liquid balance, the permeability of the lungs, of blood pressure and of the endocrine system (Lew and Grenvik 1997; Black 1993). Only by artificial respiration and medical intervention can the blood circulation and the functioning of organs be maintained. In the BD body the physiological reactions and functions are no longer regulated or coordinated and are not integrated into a higher unit by a central controlling part, but have to be artificially held together. At that point the physician no longer exerts a supporting function of an organism which is basically still viable. By his action a living being is imitated at best. The physician's measures are rather aimed at the maintenance of the single organs and are less to be understood as a life-preserving substitutional therapy at the service of the whole. Also, they cannot be continued indefinitely (Shewmon 1998, President's Commission 1981).

The immanency has been lost. Thus, the organism as a whole has no existence deriving from itself. The BD body cannot be taken for a living being, even if the circulatory-respiratory system still "functions" and the greater part of the individual organs are still viable to a great extent. This viability rests (as in the case of a physiological connection of organs) on the immanency of the single parts, but not on the unified immanency of the whole.

Of course, in the BD body some sort of interactions still exist among the individual organs. There is still a kind of symbiosis of individual organs, or parts of organs, which can be maintained in balance, however, only by a massive intervention from outside. This kind of control cannot be called an autofinality in the above sense. It is not aimed at the self-preservation of a higher totality, as in the case of a living being, but at the most at the preservation of the individual parts (Bonelli 1995). Variations of temperature and blood pressure, for instance, are no longer balanced by the centralization of the circulation in favor of the self-preservation of the whole.

In the case of a BD body one could speak of an organic biotope, although only a highly fragile one. This means that the parts and their functions

constitute the whole, whereas in a living being the parts are rather constituted in reference to the whole. Thus the whole is not more than the sum of its parts. The BD body lacks the criterion of a self-referring whole. It is a combination of organs derived from a former person, but no longer the person itself. This becomes even more obvious considering the "divisibility" or incompleteness of the BD body. It is perfectly possible that one part of the body is attached to a pump-oxygenator system (provided for transplantation), whereas separately another part (for instance the lungs) is kept in function by the beating heart or is transplanted en bloc into another person. None of these separated parts could be attributed to a remaining higher totality, in spite of the fact that all the organs as such have remained viable and metabolically active. Neither does any part belong to another. Thus it is not only demonstrated that the BD body is divisible and has no completeness, but also that no consistent identity, in the sense of a living being, can be assigned to it. After the separation two new systems develop, neither of which is identical with the former one (Bonelli 1995). In contrast to this the totality and also the identity of, for instance, a person who has had his arm or leg amputated, is fully maintained, because as a totality he remains one and the same, as he was before he had lost his extremities (or other organs).

## **THE STATUS OF THE BRAIN**

As is well known the brain has a central coordinating and integrating function in the organism. This does not mean, however, that the brain effects this coordination itself, but only that it has become the indispensable precondition for the maintenance of the organism's stable and ordered state. Furthermore the brain not only functions as an organ of central integration, but also as a somehow final organ of a last and insurmountable totality. Hence some, but not all the parts, of a body can be assigned to a greater totality. Thus the heart-cell is part of the heart, which is part of the thorax and this latter belongs to the trunk. The trunk together with the head, however, is not a part of any higher unity, and such a living man can be considered a complete individual, even though legs

and arms may be missing. He can not be divided into parts equating each other. That means that whenever the brain can be localized the criterion of the completion of a living being is also to be found. Only the brain provides completion for a man.

Strictly speaking someone who considers the BD body to be alive, because of certain signs of life (for instance circulation), maintains implicitly that by a transplant of one or several organs en bloc a man is transplanted alive, does not die and survives in the recipient. The argument used by some opponents of brain-death, that in the case of the removal of an organ a man dies is unfounded from this point of view. Which argument could they use to prove that a man has died if his organs are transplanted alive(!) into another organism?

In fact every transplantation is an empirical proof of the threefold function of the brain, as an organ of central integration and identity and as the organ of a final totality, because the possessor of the brain integrates the transplanted organ without changing in any way his identity (Bonelli 1995). Within the transplanted organ a change of the subject but not of the recipient takes place. The brain (especially the cerebral cortex) is also a sensory organ of reception by the aid of which all other organs are centrally registered and made to be incorporated into the organism. By means of the brain we experience our identity as an individual whole. This central, leading function of the brain cannot be transmitted into another organ. It is the brain which determines the identity.

Shewmon demanded an argument more plausible than the loss of somatic integrative unity if BD is to be equated with death (Shewmon 1998). We believe that this is one.

## CONCLUSION

The brain dead body lacks the four criteria of a living being and therefore it is no longer a living person but purely derivated biological life.

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