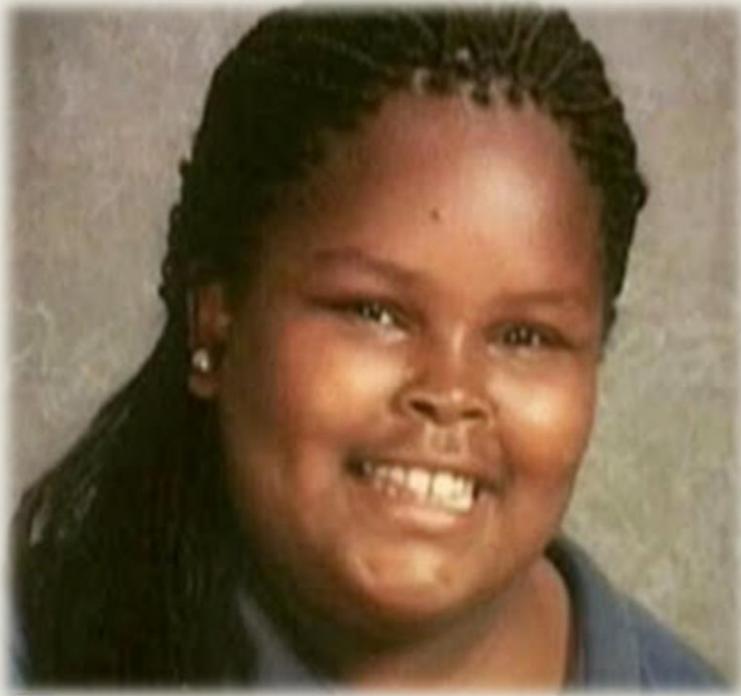




Why Brain Death Is Death

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Jahi McMath's mother insists brain-dead girl is 'not a corpse'



Jahi McMath

- December 9, 2013, Children's Hospital, Oakland, CA
- 13 year old Jahi McMath has adenotonsillectomy
- Post surgery she develops excessive bleeding, suffers cardiac arrest, and is placed on life support
- December 12, 2013 – Declared “brain dead”
- Family appealed to court stating that declaring her dead violated her freedom of religion and privacy. Court grants extension until January 7, 2014
- January 5, 2014 - “Body” released to Alameda County Coroner who then released body to the mother
- Jahi McMath was then transferred to facility in New Jersey and is now reportedly being sustained on artificial support in an apartment in New Jersey.

Brain-dead Canadian woman dies after son's birth – February 2014

(CNN) -- A ventilator kept Robyn Benson breathing for (seven) weeks so the baby growing inside her could survive. Doctors delivered the brain-dead Canadian woman's son on Saturday. She died the next day.





Arthur Caplan (Director of Division of Medical Ethics
NYU Langone Medical Center)

“To keep Jahi's body on machines is ethically wrong because definitive brain death is death and maintaining a corpse by artificial means is only slowing the inevitable decay and collapse of bodily remains. ... Medicine cannot do anything for patients diagnosed as brain dead. Unlike those in a coma or in a permanent vegetative state like Terri Schiavo, a Florida woman whose family fought unsuccessfully to keep her alive, or Ariel Sharon, the former Israeli prime minister who's been in a coma for eight years, no one recovers from brain death. Take away the machines and breathing and the heart stops. Keep the machines going and the body goes into slow, inevitable deterioration in which digestion fails, skin breaks down, and the body loses control of temperature and blood pressure, as well as the ability to urinate and defecate. ... It is wrong for health care providers to treat someone who is dead. It is wrong for lawyers to ask judges to overrule medical expertise when **it is doctors -- not jurists -- who know when death occurs.** It is immoral in the extreme not to try to get Jahi's parents to come to terms with her death.”

<http://www.newsday.com/opinion/oped/caplan-the-case-against-care-for-those-who-are-brain-dead-1.6767446>

Ostrich Bioethics



- Total brain failure (brain death) is a legally accepted criterion for determining death. But is it justified?
- Caplan and others ignore the significant challenges to the standard justification for accepting total brain failure as a criterion for determining death.
- Defining and deciding on criteria for determining death is not a strictly biological or medical matter, but involves philosophical, moral, and cultural considerations.
- Need to avoid the old mistake in bioethics of thinking that what is fundamentally a philosophical or axiological matter can be resolved by medicine or biology.
- D. Alan Shewmon: In order to obtain informed consent from prospective organ donors, the donors should be informed about disagreement over whether brain death is death.

1968 Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death

- 1960's advances in life-sustaining technology and organ transplantation
 - Improvements in assisted ventilation
 - Dr. Christiaan Barnard performs first human heart transplant on Dec 03, 1967 in Cape Town, S. Africa
- “Irreversible coma” proposed as new criterion for determining death
- Justification:
 - Irreversible loss of consciousness
 - or
 - Irreversible loss of bodily integration?

Consequences

- 1970 Kansas adopts recommendation of Harvard Committee
- Dead in Kansas but alive in Missouri?

1981 President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research

- Definitions of Death

- 1. the permanent cessation of the integrated functioning of the organism as a whole**

2. departure of the animating or vital principle

3. irreversible loss of personhood (consciousness related or “higher brain” formulation of death)

Explanation

- “On this view, death is that moment at which the body’s physiological system ceases to constitute an integrated whole. Even if life continues in individual cells or organs, life of the organism as a whole requires complex integration and without the latter, a person cannot properly be regarded as alive.”

President’s Commission, *Defining Death*, p. 33

1981 Commission's Rationale for Accepting the Loss of All Brain Functions as Death

- Individuals with total brain failure have irreversibly lost their internal organic integration, because the brain is necessary to integrate functioning (brain is the control center for the organism's internal organic integration). An artificially sustained whole-brain dead body is merely a collection of disintegrated organic parts and not an integrated organism as a whole.

Uniform Determination of Death Act

- “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 brainstem, is dead.”

President’s Commission, *Defining Death*, 1981, p. 2.

- Note: Individuals in persistent vegetative state (PVS) are alive, because they retain brainstem functions.

Legal Exceptions

- New Jersey: “conscience clause” in the law allows individuals who do not accept brain death as death to have only the traditional criterion of irreversible cessation of circulation and respiration apply (Section 26:6A-5 of the New Jersey Declaration of Death Act)
- New York: allows but does not require physicians to accommodate family views on the definition of death

A Rising Chorus of Discontent

- **Brain is not necessary for integration of the organism as a whole**
- 2006: President's Council on Bioethics revisits whether brain death is death
- Cases of post-mortem pregnancy
- Case of T.K. (whole-brain dead male sustained over twenty years, D. Alan Shewmon, M.D.)
- Somatic effects of total brain failure are identical to those of brain disconnection resulting from high spinal cord transection between C3 and cervico-medullary junction
- Artificial support is irrelevant to whether the organism is integrated

Physiologic Evidence of “Somatic Integration” despite total brain failure

- **Homeostasis** of a countless variety of mutually interacting chemicals, macromolecules and physiological parameters, through the functions especially of the liver, kidneys, cardiovascular and endocrine systems, but also of other organs and tissues (e.g., intestines, bone and skin calcium metabolism; cardiac atrial natriuretic factor affecting the renal secretion of rennin, which regulates blood pressure by acting on vascular smooth muscle; etc.)
- **Elimination, detoxification and recycling of cellular wastes throughout the body**
- **Energy balance**, involving interactions among liver, endocrine systems, muscle and fat

- **Maintenance of body temperature** (albeit at a lower than normal level and with the help of blankets)
- **Wound healing**, capacity for which is diffuse throughout the body and which involves organism-level, teleological interaction among blood cells, capillary endothelium, soft tissues, bone marrow, vasoactive peptides, clotting and clot lysing factors (maintained by the liver, vascular endothelium and circulating leucocytes in a delicate balance of synthesis and degradation), etc.
- **Fighting of infections and foreign bodies** through interactions among the immune system, lymphatics, bone marrow, and microvasculature

Criticisms Continued

- Many practitioners do not equate total brain failure with death. (Youngner and Joffe)
- Artificially sustained individuals with total brain failure do not appear dead to ordinary people, as they are still warm to the touch, appear to be stable, etc.
- Shewmon: “... any biologist would say, ‘Well, of course this (the artificially sustained whole-brain-dead individual) is a living organism. This is a comatose apneic living organism’” (Transcript of Meeting of President’s Council on Bioethics, November 9, 2007).

Is brain death death?

2009 President's Council on Bioethics

The majority on U. S. President's Council now admits that the previous justification of the 1981 President's Commission for why the individuals with total brain failure are dead is mistaken. Such artificially sustained individuals are not just collections of organic parts without internally integrated functioning. (*White Paper: Controversies in the Determination of Death, 2009*)

What should we do?

- Turn back the clock: Reject the neurological criterion for determining death and return to using only the traditional criterion of irreversible loss of circulation and respiration

OR

- Redefine “death” in a way consistent with the neurological criterion

2009 President's Council on Bioethics"

- Redefine “death” in terms of what it means for a human organism to cease to function as an integrated organism as a whole
- Individuals with total brain failure are no longer living organisms as a whole, because they have irreversibly lost the capacity to engage in commerce with the surrounding world to secure their sustenance. Because individuals with total brain failure lack the spontaneous “drive” and “felt need” to breathe and interact consciously with the world, they are no longer alive.

Criticism of the 2009 Rationale

D. Alan Shewmon

- Why define wholeness of an organism in terms of externally directed work as opposed to internal organic integration?
- Why prioritize breathing over other equally essential physiological functions such as the digestion of nutrients, elimination of wastes, wound healing, etc?
- Why is it so significant that the ability to breathe be natural or spontaneous, as many other patients that require artificial support are clearly alive?

Criticism of 2009 Rationale Continued

D. Alan Shewmon

- Unclear why the actual exchange of gases across the alveolar membrane does not count as self-preserving respiration of the organism as a whole. Why must the organism have a “felt need” or inner “drive” for this form of self-preservation?
- Counterexample: a human fetus has neither a drive to breathe nor to consciously interact with the environment, yet it is clearly a whole living organism. Placenta is analogous to ventilator and feeding tube in individuals with total brain failure.

Other Criticisms of the 2009 Rationale

- Since neither the loss of consciousness nor the loss of spontaneous drive to breathe is individually sufficient for death, why are both jointly sufficient? Note: individuals in permanent vegetative state who require a ventilator should now be considered dead.

The Underlying Problem with the 2009 President's Council's View

- The concepts of “vital work,” “felt need,” and “drive” that the Council relies on are not biological concepts at all but are metaphysical concepts. These concepts are not found in modern biology textbooks. Jointly, they are a stand-in or “functional shorthand” for the metaphysical concept of the soul (*anima*). Under the guise of biological talk about an organism's integration with its environment, the Council is in effect defining death as the departure of the animating or vital principle from the body.

Support for this Interpretation

- Transcripts of the Proceedings of the President's Council on September 7, 2006 reveal frequent references to the "soul":
- PROF. MEILAENDER: If you have lost higher brain capacity but you are still breathing independently of mechanical assistance and your heart is beating, then yours is, as far as I am concerned, still an animated body with the anima still present. . . .
- DR. EBERSTADT: . . . (Leon Kass) mentioned one thing in particular that I think might be apposite to add to our discussion. And that is the discussion of the human soul. . . .
- DR. CARSON: . . . it really gets back to what you were saying, you know, about the soul or about that part of us that when gone, no longer allows you to function as a human being. . . .
- PROF. LAWLER: So the organism can be a whole and in a certain way from the traditional point of view, without a soul in a way, in a controversial way, because the organism then becomes no brain and all body. And it keeps going. It keeps ticking literally. So this presents us with a problem. . . .

Transcript Continued

- PROF. MEILAENDER: I find myself in the, for me, unusual position of wanting to issue a caution with respect to language that is thought of as religious. That is to say the soul language though, of course, it doesn't necessarily have to be necessarily religious. It can be sort of a purely philosophical language. But I was sitting here when Ben was talking about the danger of this language [sic] is that people are going to connect soul language to certain kinds of higher brain capacities. And think that the loss of the soul is the same as that.
And sure enough, five minutes later, Peter (Lawler) talked about a functioning body from which the soul or brain is gone. I think that is a mistake. And I don't think that is the way the soul language needs to be understood. I just want to point out that it is a danger.
From my perspective, any proper understanding of soul language is such that if you got a living human body, there is a soul there, you see, and you actually don't know that the soul is gone unless and until you don't have a living human body by whatever criteria you determine that any longer. If it is animated, the anima is there. . . .

Transcript Continued

- DR. HULBURT: ... trying to avoid the word “soul,” we have lost the functional shorthand for what a lot of people - what relates to a lot of people’s concept of what is going on in these realms.

If we could in a gingerly sort of way reenter into that category without any disposition of prejudice toward any one formulation, we might really come to some valuable insight and help our society reformulate what was meant by soul but in a more pluralistic and more material physiologically-related description.

In other words, I think that we might be offered the unique opportunity to clarify the meaning of soul and psyche in modern terms would be a really wonderful thing to do [sic] because there is a lot that is being lost by not using the word soul. . . .

- CHAIRMAN PELLEGRINO: From the ontological point of view, I believe that death occurs when the soul leaves the body. I take the Aristotelian point of view on the soul and the unity of the body and soul, as some of you [have already] said. And I don’t think that we are going to be able to discern that moment by any test that I know. (President’s Council 2006; parenthetical names and remarks added)

Why all this talk about the soul on a President's Council on Bioethics?

Does talk about the soul or anything not strictly biological have anything to do with the matter of defining and determining death?

If not, should we reject total brain failure as a criterion for determining death?

Yes, if we accept the biological definition of death as the irreversible loss of the integration of the organism as a whole.

However, there is another option: Redefine death in another way consistent with the neurological criterion.

President's Council Recognizes a Third Option

“There is a well-developed third philosophical position that is often considered alongside the two This third position maintains that there can be two deaths—the death of the *person*, a being distinguished by the capacities for thought, reason, and feeling, and the death of the *body* or the *organism*. From the perspective of this third philosophical position, an individual who suffers a brain injury that leaves him incapacitated with regard to certain specifically human powers is rightly regarded as ‘dead as a person.’ The still living body that remains after this death is not a human being in the full sense. Philosopher John Lizza discusses the living organism left behind after the ‘person’ has died in the following way:

President's Council recognizes a third option

Advocates of a consciousness-related formulation of death do not consider such a being to be a living person. In their view, a person cannot persist through the loss of all brain functions or even the loss of just those brain functions required for consciousness and other mental functions... [W]hat remains alive must be a different sort of being...a form of life created by medical technology... Whereas a person is normally transformed into a corpse at his or her death, technology has intervened in this natural process and has made it possible...for a person's remains to take the form of an artificially sustained, living organism devoid of the capacity for consciousness and any other mental function (Lizza, 2004).” |

President's Council, White Paper, pp. 50-51

My view

An artificially sustained whole brain dead body is no longer a living human being or person, but a kind of biological artifact created by medical technology. It may be a living organism of some sort, but it is no longer a human being or person. It no longer counts as one of us.

The Metaphysics of Waldo



Experiments in life-support

- 1623 William Harvey maintained the body of a decapitated rooster by inflating the lungs with a bellows
- 1930's Soviet Institute of Experimental Physiology reportedly revived the bodies of dogs after 15 minutes of induced cardiac arrest
- Report of decapitated pregnant sheep artificially sustained for 30 minutes to deliver a healthy lamb
Steinberg A, Hersch M: Decapitation of a pregnant sheep: a contribution to the brain death controversy. *Transplantation Proceedings* 27:1886-1887, 1995.

Russian patent diagram for Autojektor Doctor [Sergei S. Bryukhonenko](#)

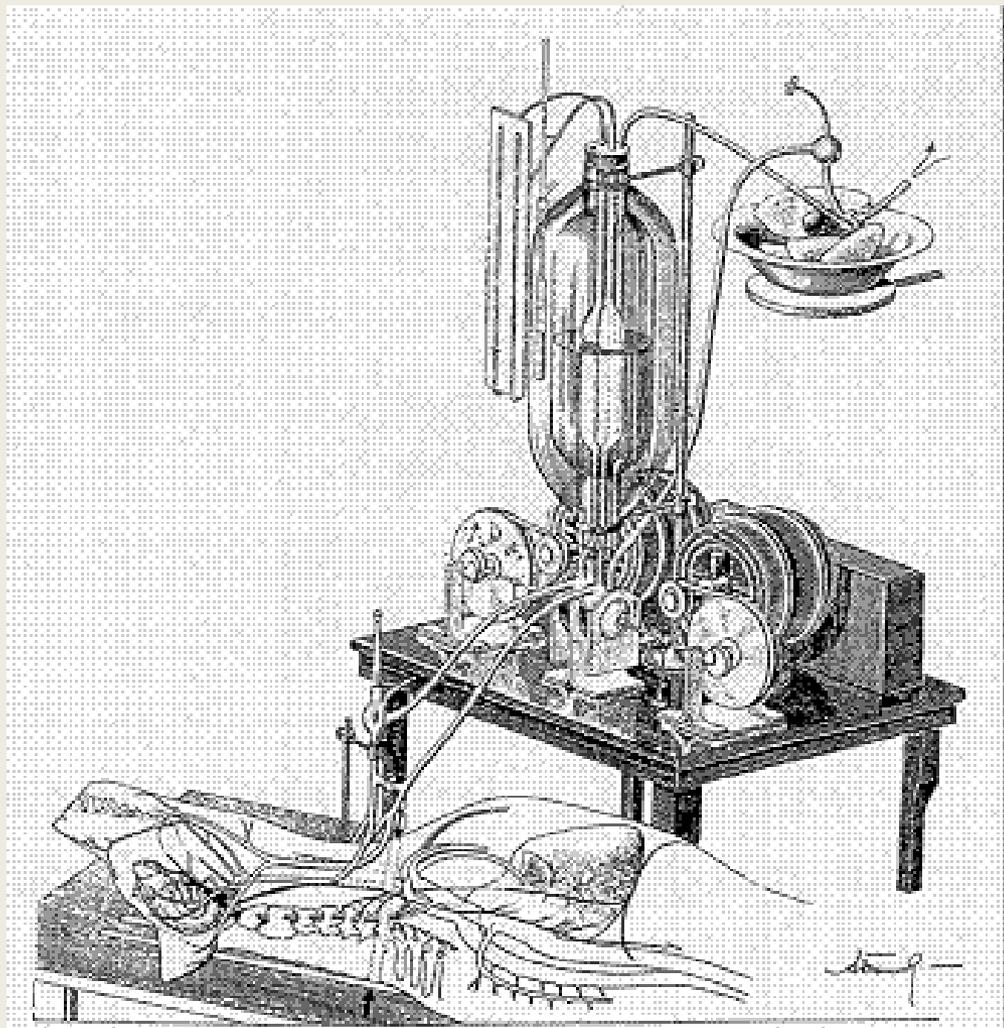
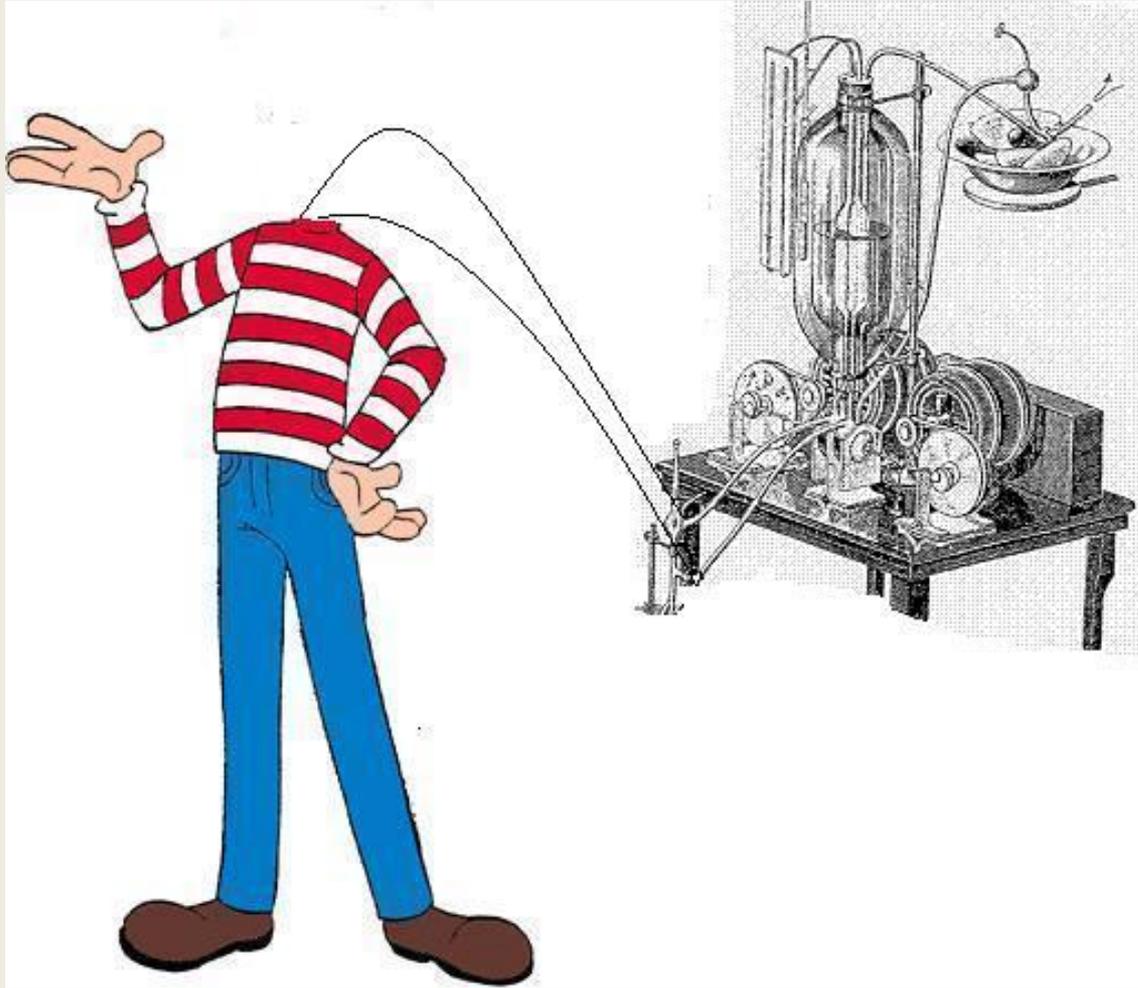


Рис. 2.

Waldo's body on Autojektor



Consciousness Related Definition of Death

- Artificially sustaining a physically decapitated human body is similar to artificially sustaining a physiologically decapitated human body (a brain-dead body) in terms of somatic integration that may remain. Both are the live *remains* of a human being or person. If the artificially sustained decapitated body does not count as one of us, neither should individuals with total brain failure.
- Brain death is death because it results in the irreversible loss of psychophysical integration.
- Minimally necessary to have the potential for some type of mind to count among the living “we.”

Objection from those who reject brain death as death

- Shewmon, Marquis, Truog, Miller, Joffe: An artificially sustained, decapitated human body is still alive and therefore still counts among the living “we.” Waldo has not died despite being decapitated.

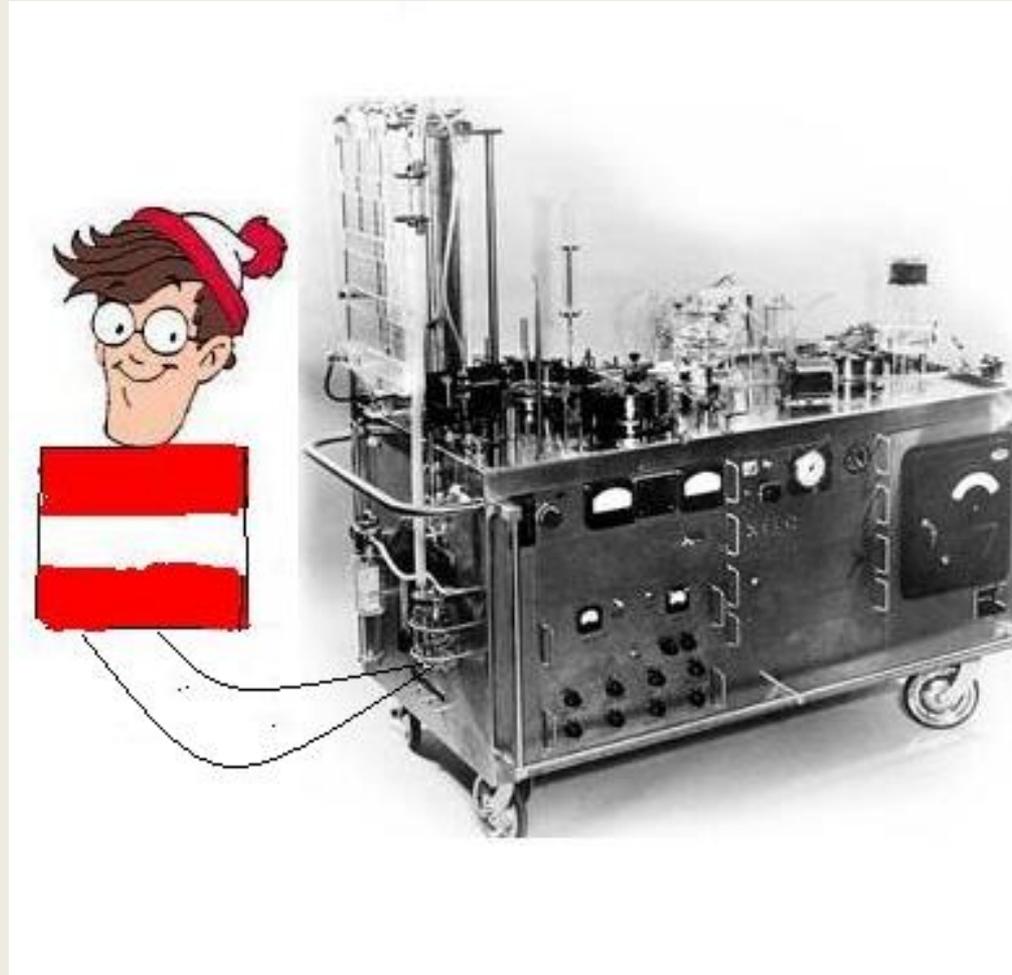
I'm back.



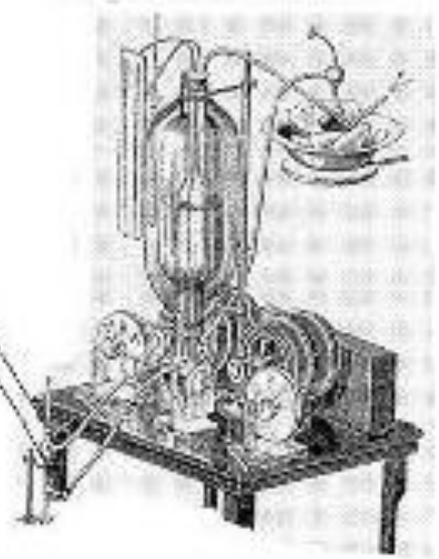
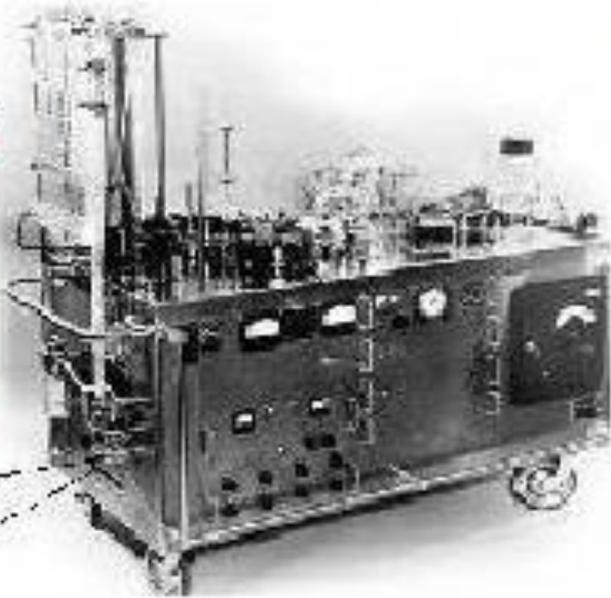
Experiments Involving Artificial Support of Brains

- Bryukhonenko and Cechulin showed life could be maintained in the severed head of a dog by connecting the carotid artery and jugular vein to an artificial circulation machine (1928)
- White R J, Wolin LR., Masopust L, Taslitz N and Verdura J. Cephalic exchange transplantation in the monkey. *Surgery* 1971; 70: 135-139.

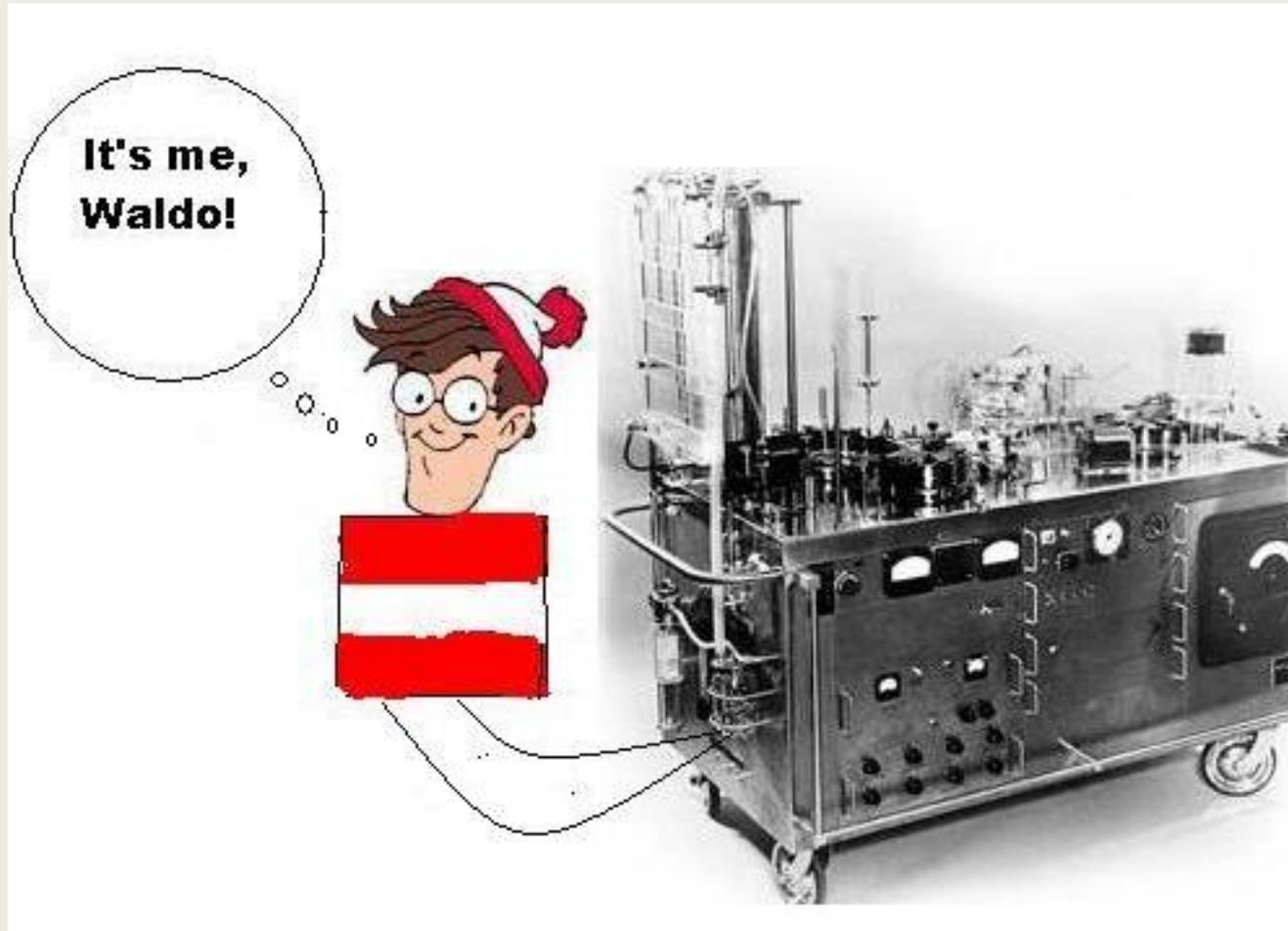
Waldo's Head on Gibbon Heart-Lung Bypass Machine



Where's Waldo?



Where's Waldo?



Explanation of the Thought Experiment

- “the importance of consciousness to a conscious organism has no counterpart in nonconscious animals or plants” – Bernard Gert
- If persons can literally live in ways that other non-conscious beings cannot, then it seems reasonable to think that they can also die in ways that non-conscious beings cannot, i.e., by irreversibly losing psychophysical integration. Indeed, this is the reason all along for accepting brain death as death. **This is why brain death is death.**

Implications of Consciousness-related Rationale for Brain Death

- Would this rationale entail that individuals in persistent vegetative state (PVS) are dead?
- Yes and No. When is there no longer a potential for consciousness?
- Continuum of cases from one month after becoming vegetative with possibility of recovery to “permanent” (one year after traumatic brain injury or six months after global anoxic injury). Probability of recovery diminishes over time.

Recent Research on MCS and PVS

Functional Neuroimaging

Laureys et al. (2002, 2005) PET measurements of brain metabolism showed differences in brain function between vegetative and minimally conscious states (MCS) when induced by external stimuli (pain and spoken words). Both showed activity in the brain stem, thalamus, and primary somatosensory cortex, but the rest of the brain failed to respond in VS. Auditory stimuli triggered large scale, higher-order cortical activity in MCS but not in VS.

Recent research on MCS and PVS

- Schiff et al.(2005) Functional MRI on patients in minimally conscious states revealed language networks activated when a meaningful story was read to them by a familiar voice. Content matters. Confirmed by Laureys et al. Infant cries and patient's own name induced much more activation in MCS patients than meaningless noise.

Recent Research on MCS and PVS

- Owen et al. (2006, 2008) Functional MRI study of patient five months after traumatic brain injury in PVS. Patient demonstrated brain responses to commands to perform mental imagery tasks (playing tennis and walking through house) indistinguishable from healthy control subjects. Note: Patient was not yet in a permanent vegetative state and still transitioning to MCS.
- Naci and Owen (2013) Functional MRI study of one patient in PVS for 12 years after traumatic brain injury demonstrated brain responses indicative of conscious selective attention and communication

Words of Caution

Joseph Fins (2008)

Need to refine descriptive categories of disorders of consciousness like VS and MCS into more discrete diagnostic categories with their own etiology and expected outcomes

- Need to link imaging studies of small number of patients with larger epidemiologic studies to understand the natural history of these brain states
- Adopt a prudential ethic of resisting pressure to use neuroimaging in routine clinical practice until more is known about their sensitivity and specificity

Objection 1 by President's Council

- No way to know when the specifically human powers (e.g., thinking and feeling) are irreversibly gone from the body
- Reply:
 - Raises problem for operationalizing the neurological criterion for determining death, not the definition of death or why we accept a neurological criterion
 - Accept current whole-brain criterion for now until we refine our ability to reliably use an empirically based, consciousness-related criterion

Objection 2 by President's Council

- Acceptance of a consciousness-related definition and criterion of death would change the ordinary biological meaning of death. It would make the death of human beings or persons distinct from the death of other living organisms. But, death is the same for all living organisms.

Beyond Biology

- Bernard Gert: “the importance of consciousness to a conscious organism has no counterpart in nonconscious animals or plants”
- Justice Stevens: “for patients ... who have no consciousness and no chance of recovery, there is a serious question as to whether the mere persistence of their bodies is ‘life’ as that word is commonly understood, or as it is used both in the Constitution and the Declaration of Independence.”

Nancy Beth Cruzan, by her Parents and Co-Guardians, Lester L. Cruzan et ux. v. Director, Missouri Department of Health et al., 497 US 261, 1990.

Beyond Biology

- Hans Jonas (1974): “the decision to be made [on how to treat individuals who have lost all brain function] is an axiological one and not already made by clinical fact” [it must ultimately be settled by] “a definition of man and what life is human.”
- “Where’s Waldo?” is not resolved by biological considerations alone

Beyond Biology

- John Dupré: “Once we follow the logic of Darwinism in disposing of the idea that an organism has an essence that determines its necessary place in a unique nested hierarchy of kinds, there is no reason to exclude the possibility of a variety of classificatory schemes, suited to a variety of purposes, some scientific and some not, that may criss-cross and overlap one another in various ways.”

Humans and Other Animals

Beyond Biology

- President's Council's own notions of "spontaneous drive," "vital work," and "felt need" are not grounded in contemporary biology but reflect a metaphysics of ensoulment. President's Council has actually moved away from a biological definition of death to a philosophical one.
- Differences in metaphysical views explain why people disagree about the definition of death.

Beyond Biology

Daniel Callahan (1988) writes:

Biological data, however great the details and subtlety of scientific investigation, do not carry with them self-evident interpretations. There are no labels pasted by God or nature on zygotes, primitive streaks, or fetuses that say “human” or “nonhuman.” Any interpretation of known facts is going to be the result not only of our particular interests as we go about establishing criteria for interpretation, but also of the kind of language and the type of analytic-conceptual devices we bring to bear to solve the problems we set for ourselves. This is only to say, at the very outset, that a purely “scientific” answer to the question of the beginning of human life is not possible. “Science” itself is a human construct – a set of methods, terms, and perspectives – and any use of science to answer one particular question, particularly when the answer has moral implications, will be a human use, that is, a use subject to human definitions, distinctions, and decisions.

- Callahan’s remarks about the beginning of life apply equally well to the end of life.

Beyond Biology

- Callahan suggests that to approach the question of whether a zygote or fetus is a human being, we need to bring to bear the concept of a human being that is already embedded in our current language and that paradigmatically applies to fully developed human beings. This concept of *human being* is informed by multiple disciplines, including zoology, biology, psychology, anthropology, philosophy, and religion. Also, we must consider why we are asking our questions in the first place, since the context provides the framework for any meaningful answer.
- The same applies to whether an artificially whole-brain-dead body (or an individual in persistent vegetative state) is dead.

Conclusions

Critics of brain death

- (1) fail to attend to our interests and purposes in asking for a legal definition of and criteria for determining death
- (2) fail to recognize how concepts of humanity and personhood bear on what will count as an acceptable answer to our questions about defining and determining death

Conclusions

- Retain the current whole-brain criterion for determining death, not because total brain failure entails the irreversible loss of organic integration, but because it entails the irreversible loss of consciousness
- Refine our understanding of and ability to diagnose permanent vegetative state so that it can be used in the future as a criterion for determining death
- Adopt a more pluralistic legal definition and criteria for determining death. Retain total brain failure as legal default criterion but allow individuals to opt out in favor of non-brain or consciousness-related criteria. (Note: No chaos in NJ and NY.)

Margaret Lock

- “In this transnational world of increasingly pluralistic societies, we must begin to recognize a multiplicity of ways of comprehending and legalizing the process of dying, and the management of death.”
 - *Twice Dead: Organ Transplants and the Reinvention of Death*, University of California Press, 2002: 253.