The Problematic Role of “Irreversibility” in the Definition of Death

Is death to be defined as irreversible cardio-pulmonary cessation, or more specifically, "when there is an irreversible cessation of the flow of the vital fluids of blood and breath?"[1] Or should this traditional conception of the death of a human organism be replaced by a definition of death as the "irreversible cessation of functions of the entire brain, including the brainstem."[2] Or perhaps we are essentially persons rather than human organisms and a person dies when the upper brain irreversibly loses the capacity to realize consciousness. This would give us as a definition of death something like "the irreversible loss of the capacity for consciousness or social integration."[3] Notice that what all the accounts have in common is a mention of "irreversibility." It is this that causes trouble for *any* account of death. I am not going to defend a particular approach to defining death. My aim is rather to show that whatever version is correct, it should not make any reference to whether doctors can *reverse* the condition.

For the sake of simplicity, let us for now consider just one of the above-mentioned accounts of death: the traditional cardio-pulmonary one which involves someone's lungs and heart stopping.[4] Sometimes a person's lungs and heart stop and then they "restart" on their own. This might happen to a sailor who is swept off the deck of a ship by a large wave and held for a couple of minutes under the surface

before the currents thrust him up onto shore. Once out of the water, without anyone giving him CPR or administering any other life-saving technique, he starts to breathe again. I doubt that the reader would want to say that the sailor was dead and then came back to life when without any outside intervention his heart resumed beating and his lungs started again to pump air on their own. Since such a claim about coming back from the dead seems farfetched, the reader would likely find more appealing the description that the person swept overboard never died. This judgment might make the reader receptive to Lawrence Becker's account that death occurs when certain biological functions of the organism are "arrested" in a way that the organism "cannot reverse" [5]

Defending Becker's Account of Death's Reversibility

However, the initial plausibility of Becker's claim may vanish when one considers situations in which a human organism cannot "reverse" the "arresting" of certain biological processes but paramedics or emergency room doctors can revive the individual.[6] On Becker's "self-restarting" criterion, this would mean that the organism in question has been brought back to life. This has the strange consequence that every day thousands of human beings are coming back from the dead and some of these people even more than once! However, before we too hastily reject the "restarting" condition, let us examine whether there are not even more unwelcome

consequences stemming from the alternative that a human being is not dead until there is no technique that can revive the individual.[7]

Consider a possible future where virtually everyone whose heart and lungs stopped and could not start up again either on their own or with the help of the medical community were cryogenically preserved. This procedure is undertaken with the hope that centuries in the future they could be revived and their disease or injury countered.[8] By preserving them at the moment that their heart and lungs stop and cannot be reversed, this prevents any decay in the physical capacities needed for biological life. It could turn out that most of the earth's population could be placed in such states for thousands of years. Do we really want to say that they are not dead because it is possible that some day science will know how not only to reverse the cancer or heart disease that caused their lungs and heart to cease but will also have the technology to thaw them out without tissue damage and restart their vital organs? If we do take this approach, we can not declare anyone dead as long as there is the prospect of the disease or injury being reversed and the being "reanimated." So it seems that in such a future, the only people who could be declared dead are those whose lives end as a result of terrible explosions, collisions or due to some other violence that prevents them from being preserved intact. Millions, even billions of people would be alive for centuries.[9] And almost as strange is that if the prospect of

revival for some of these frozen beings were to turn out to violate the laws of biology, then they were dead all along for centuries, although no one would know of their demise since the complete scientific corpus of laws was not known.

The reader cannot avoid counterintuitive consequences by claiming that the correct definition or even criterion for death should be irreversible loss of brain function or irreversible cardio-pulmonary cessation given *presently available* techniques and technology. Such a position would mean that some men may be considered dead at a resource-poor hospital in an underdeveloped part of the world yet deemed alive while in the same physical condition at a state of the art US clinic because of the different medical technology available. And it will not help to appeal to a standard of *presently existing* technology rather than presently available technology for then some people will be considered alive in the present who would have been considered dead in the past despite being in a physically identical condition. And if this lifesaving technology presently exists but is not known to us here in the United States (or on Earth!) then many people would have been *prematurely* declared dead. Moreover, an appeal to presently existing technology will only delay the onset of cryogenic-caused problems. The future described in the above passage will perhaps someday become the present technology. People will be "frozen alive" as they await transport to medical centers with the appropriate technology. But

suppose that during this brief transport period, the technology were lost - perhaps a rare natural resource necessary to the cure was depleted or that a new generation of technicians were not trained in the procedure and that the last of the old generation had just taken the knowledge to the grave. If this were the case then the frozen people would go from alive to dead without undergoing any nonrelational alteration.

So while there are problems plaguing the "self-restarting" provision of Becker's account, it seems far more counterintuitive to maintain any of the following: some people are dead at a particular time and place but others in more technologically advanced eras and locations are alive despite their being in identical physical states; millions of cryogenically frozen human beings spend centuries in a non-dead state because of future technological breakthroughs; or large numbers of "frozen" people are dead for eons but coroners are not able to declare them so because they are unaware of what biological conditions science will never be able to reverse. I take it that we do not want an account of death so dependent upon future or even present technology. Moreover, any ontological skepticism a philosopher has about relational properties should resurface here since the definition of death makes reference to scientific capabilities external to the organism to reverse the organism's organ failure. But whatever one's attitude about the metaphysical reality of relations, the counterintuitive scenarios surveyed in the preceding two paragraphs suggest death

is best thought of as a nonrelational alteration in an individual's body or organs. "Death" is a biological concept (and a nonrelational one) and thus should be determined solely by biological factors rather than technological features of the future.

Saving the Irreversibility Condition by Identifying Death with Nonexistence

It might be thought that some of the problems future technological developments pose for a definition of "death" that includes an irreversibility requirement could be avoided if death was identical to nonexistence. Consider the possibility that the damage to vital organs actually caused their destruction. If the organs necessary for life do not continue to exist in even an inoperative state, having instead ceased to exist, then it doesn't matter what technological developments the future brings because there is nothing left to repair and reverse. For the sake of argument, assume that irreversible brain death marks the death of the organism. If the brain undergoes such a degree of damage and cell death, perhaps large parts of it even liquefying, then neither a technological breakthrough nor divine intervention would be able to repair and thus reverse the condition of the destroyed organ because it no longer exists. In such scenarios, the determination of death would not be held hostage to future developments in medical science. Consequently, we wouldn't have to tolerate such unwelcome scenarios as two individuals of different eras in identical

physical states, but one classified as dead because the science of the time cannot reverse the condition, while the other is still alive because such technology is available. Nor would anyone go from dead to alive because of a medical breakthrough.

If the reader is partial to the view that an organism is *essentially* a living being, then when its life ends, it also ceases to exist. Since the organism dies and ceases to exist at the same time, only the *remains* of the organism would be found at the location where a moment earlier there had been a living entity. The remains of the organism do not compose an entity that is identical to the earlier living being, just as the remains of a destroyed house do not still compose a house, even an uninhabitable one. A number of philosophers, most prominently Peter van Inwagen and Eric Olson, believe that even if the atoms that composed an individual's brain before its destruction were reassembled, the result would *not* be the original brain and the revival of the earlier organism.[10] It instead would be a creation of a duplicate. This is because an organism persists through time only if its parts are where and how they are as a result of earlier biological processes. Each biological state of an enduring organism is *immanently* caused by the previous. A divine or advanced technological gathering and reassembly of the atoms that had composed the organism at the last moment of its existence, would mean that the resulting organism's parts are where

they are because of a miracle or technological breakthrough and not earlier biological processes. Thus there wouldn't be identity-preserving biological continuity with the earlier organism. The divinely or scientifically-produced organism would be a new organism and not a later stage of the organism that had earlier lived. In other words, intermittent existence is impossible for biological entities.

This identification of death with nonexistence and the impossibility of intermittent existence is overlooked in D.J. Cole's discussion of reversibility.[11] He just argues that the concept of "irreversibility" is not part of the meaning of "death." He is right that there is no *logical impossibility* of someone being dead and yet the condition being reversible. However, if the dead don't exist, then bringing them back into existence and restoring their life functions may indeed be *metaphysically impossible*. Cole overlooks the distinction between metaphysical and logical impossibility. He groups together a car that no longer functions because its engine is dead, a cathedral that has been destroyed but then all of its material components restored to their earlier positions, and the death of an organism. He says the "ordinary conception of death is univocal with the above cessation of functions."[12] But while the "dead" car still exists, there is much less reason to believe that the cathedral continued to exist in the interim period as a scattered object or has gone out and come back into existence. To better appreciate this claim, the reader should imagine that

either a tornado miraculously caused the parts of a destroyed cathedral to resume their previous locations, or a second group of skilled artisans, by some amazing coincidence, reassemble the matter that once composed the Cathedral in the exact same manner. The result may well be a duplicate of the original cathedral because the parts are not where they are due to the intentions of the original architect and the skilled handiwork of the original craftsmen. Somewhat analogously, the original organism would not be restored to life if all of its matter at the time of its death is put back to where it was and function restored. The previously existing living being has not been resurrected because its life processes did not immanently cause the biological states of the present organism. Instead of the restoration of the original organism, a duplicate has been produced. If this account of duplication is true, then it would be metaphysically impossible for a nonexisting organism to have its death reversed. The vital organs no longer exist, thus leaving nothing to ever be repaired.[13]

I believe that there may be reasons to reject the above attempt to preserve the idea of death's irreversibility by identifying death and nonexistence. The proposed account of organ death occurring only when the damage reaches the point that there are no longer existing vital organs to be repaired, might be better understood as just a description of nonexistence. There might be a gap and thus a distinction between the organism's death and its nonexistence, just as there is a difference between a non-

functioning (dead) engine and a (nonexisting) engine that has been destroyed. For example, the car undergoing engine repairs may still exist, it just doesn't work. Likewise, the non-functioning organ (or organism) might be dead because its life processes have ceased, yet still exist if it is intact, decay not yet having taken its toll, perhaps being delayed by mechanical ventilation or in a future by freezing. If there is this gap, if a dead organism can still be an existing organism and not the *remains* of a no longer existing organism, then its malfunction can be reversed just as the dead car engine can be fixed and the original vehicle restored to an operational state. But if irreversibility is part of the definition of "death," and death is not the same as nonexistence, then there still are the bizarre consequences mentioned in the initial submission. People could be alive for eons if cryogenically frozen. And we may also not be able to tell who is alive and who is not for thousands of years because we don't know what debilitating conditions future medical technology will be able to reverse. And two physically identical beings in different eras may not *both* be dead if the technology of their eras differ and the more recently injured or ill individual can be preserved and revived while the other decays and goes out of existence.

However, even if we were to identify death and nonexistence, the most plausible way of doing so will still vindicate Becker's account of death. The identification of death and nonexistence gives rise to the problem of determining

when an organism no longer exists. That is, how much structure can it lose and still exist? This limit on structural loss shouldn't be determined by our perceptual judgment that it appears that just enough of the body or vital organs still appear intact, so the organism still exists. Our perceptual habits shouldn't be decisive, especially in light of the drastic changes in physical form an organism can undergo throughout its life span and the vast changes in chemical processes that occur at the microscopic level when the heart and lungs cease, despite little immediate change in appearance at the macro level. If death and the end of existence are to be identified, it should be done on the grounds that the capacity for organic functioning no longer remains – the ability to metabolize food, assimilate oxygen, maintain homeostasis etc. But if we claim that as long as the *matter* of the original organism can have such organic functioning restored, it is still alive, then we are only limited by what is technologically possible. Yet we surely don't want to allow the future technological capability to track and reassemble the atoms (i.e. the original matter) of the cremated to mean that they never died. My contention is that if we try to capture a notion of sufficient structure for existence and life remaining that makes reference to the technological restoration of functioning, we cannot draw the correct line. We will end up including as still alive the reassembly of atoms that should really be classified as either the resurrection of the original organism or the creation of its duplicate. So to

avoid the problem of a technological criterion of the restoration of organic function, we are forced back to something like Becker's account of the organism being able to restart itself. [14]

Readers might be thinking that Becker's account has been vindicated but at the cost of abandoning the reversibility of death. This isn't so. Identifying death and nonexistence will not eradicate the intuitive pull to abandon the irreversibility requirement since we will find it plausible to maintain that the paramedics' standard technology has resurrected the drowned rather than created duplicates of them. And making intermittent existence appear more plausible are our intuitions about the essentiality of our original matter. Many of us believe we could have come into existence through other means than sexual reproduction as long as we initially possessed most of the matter that composed us at our actual origins. For example, instead of being conceived sexually, we could have arisen from in vitro fertilization. Or we could have come into existence if (most of) the actual atoms at our origins came to be so arranged through deliberate atom by atom manipulation rather than through the fusion of gametes. If we could have initially come into existence through very different processes than we actually did, it becomes less objectionable to accept that we could come back into existence if the atoms we possessed in our last previous living state were reassembled by technology rather than caused to be so arranged by

previous biological processes.

It might be thought that the irreversibility condition is further undermined if it is known that a condition is reversible but that it won't be.[15] It is very strange to consider someone alive if life processes have ceased and it is known to be a contingent truth that they won't be restarted. However, some philosophers don't believe that we can know such things about the future because there are no facts about future contingencies. A consequence of there being no fact about whether certain conditions will be reversed is that there would be people in the present who are neither dead or alive.

It might be claimed that we do not have to accept the existence of such a metaphysical limbo because there is a fact of the matter regarding whether someone's condition will be reversed, we are just unable to access this fact. If it is true that the technology will be developed and applied to the individual in question - suppose the person is cryogenically frozen - then the person in question is still alive. If the technology will never be developed or applied to that individual, then that person is not alive. Thus there would be a fact about the status of the frozen or otherwise preserved, though there wouldn't be a testable criterion in the present.

There are a couple of problems with the above position. The more obvious one is that we still need to be provided with a persuasive argument that there are contingent facts about the future. If readers maintain that some form of correspondence theory of truth is correct, it is difficult to see what *presently* is the truth-maker (i.e., fact or ontological ground) that renders true the proposition that someone will *later* be revived or not. An ancillary worry is that facts about the future would seem to entail fatalism. There is nothing we can do to prevent such a future if it is now true that it will come about. I propose we sidestep these metaphysical quandaries because even if there is not a problem concerning the truth of propositions about future contingent events, there looms the unwelcome prospect of having to accept backward causation. And this is enough to doom the suggested approach. If future events determine whether someone is *now* alive or not, then the persistence of someone in the present is caused by a later event! This is hard to believe. Later events may determine whether an earlier battle is or is not the beginning of a world war and whether a tree is in the early, middle or last years of its life, but they can't determine whether that battle or tree existed at the earlier time in question. But if later events are to determine whether someone is now dead or alive, then the cause of someone's present survival lies in the future. Any conception of death that leaves us having to accept backward causation is obviously unwelcome.

The Ethical Implications of Death's Irreversibility

Given all the problems canvassed above, I suggest that whatever account of death one ends up defending, that a provision be included which maintains that human beings are dead when they cannot revive themselves, i.e., the pertinent organs cannot resume their functioning without external intervention.[16] This would allow us to say that the sailor swept overboard was not dead and it would permit us to declare that the millions of cryogenically frozen people were dead. But notice that this means that on the traditional account of death, those individuals whose hearts and lungs can not start breathing and beating again on their own, but can do so only with medical assistance, have come back to life. They were dead but now are no longer deceased. And this point can be extended just as well to the whole brain (including the brainstem) conception of death or an upper brain account of the death.

If death is indeed reversible, the loss of life does not provide a sufficient condition to take someone's organs. The doctors of the transplant team would be wronging the dead if the organ procurement would result in the death not being reversed. It is easy to imagine that the procurement of multiple organs would cause someone to pass from existing in a dead state to be being nor more, i.e., not existing. So the guidelines governing organ procurement should include the following principles: if reversibility is foreseeable because it is either technically feasible in the

present or likely to soon become so, then organ procurement which prevents death's reversal would be unacceptable even if the state policy is one of Presumed Consent or Routine Salvage. If reversibility is not foreseeable, but the patient is willing to finance his being cryogenically frozen, then unless there are compelling arguments in favor of rationing or resisting the commodification, it would be unacceptable to take the organs of a person willing to pay for his preservation.[17]

1. Robert Veatch .*Dying and the Biological Revolution*. (New Haven, Yale University Press, 1976) 39. Veatch is merely stating the traditional view, not advocating it. His personal view is that in the main text corresponding to note #3. See also the traditional definition of death offered in *Black's Law Dictionary* 4th ed. (St. Paul: West Publishing, 1968)

2. "The Uniform Declaration of Death Act" proposed by the "President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research" in their "Defining Death: Medical, Legal and Ethical Issues in the Determination of Death." 1981. Washington D.C.: US Government Printing Office: 73.

3. Veatch. *Death, Dying and the Biological Revolution.* Op. cit. 39.

4.The following arguments work just as well for the whole brain (including the brainstem) conception of death or an upper brain account of the death of the person. The reader can just replace cardio-pulmonary cessation with scenarios

where the upper brain or brain stem or whole brain has ceased to function. In some cases, the organ in question can begin to function again without outside intervention, in other cases, medical intervention determines whether the organ will ever function again.

5. Lawrence C. Becker. “Human Being: the Boundaries of the Concept.” *Philosophy and Public Affairs*. no. 4 vol. 4 Summer 1975: 353-354. One may accept Becker’s “cannot reverse” condition without advocating all the particulars of his account of death, such as his denial that brain death is the death of the organism.

6. Becker’s account has received little attention and most of that has been negative. Karen Gervais labels his claim of reversing death “inconsistent” in her *Redefining Death.* (New Haven, Yale University Press, 1986) p. 54. David Lamb also attacks the notion in his “Diagnosing Death.” *Philosophy and Public Affairs.* 7 no. 2 Winter 1978 151. Green and Wikler express their sympathies to all the details of Becker’s account of the biological death of the organism except for this idea of “self-restarting” in their “Brain Death and Personal Identity.” *Philosophy and Public Affairs.* 9, no. 2 Winter. 1980. pp. 113-114 nt.18.

7. Today, in most countries, the established medical account of death is

irreversible loss of total brain functioning. The reversibility depends upon the technology of the day and the degree of cognitive damage. For a sense of the dominant approach in the U.S. see the "Uniform Declaration of Death Act" proposed by the President's Commission in 1981. Op. cit.

8. I am assuming that this cryogenics technique or something like it will be perfected in the future. The existing cryogenic freezing technology reportedly damages cells which would make their reanimation impossible.

9. Or if the reader thinks that the proper description of their cryogenic status is that they are neither dead or alive, it will still be true that there will be millions of people who still have not died in the hundreds of years after their births. Moreover, these people cannot be considered dead until the world suffers some cosmic disaster, or their individual cryogenic state is disrupted and then decay, mishap or violence destroys their physical capacities for "reanimation." For an account of such an intermediate status see Fred Feldman's *Confrontations with the Reaper*. (New York: Oxford University Press, 1992) pp. 61-66.

10. Olson, Eric. *The Human Organism: Identity Without Psychology*. (Oxford: Oxford University Press, 1997) pp. 140-142. See van Inwagen's *Material Beings.* (Ithaca: Cornell University Press, 1990) pp. 169-182 and his "The Possibility of

Resurrection." *International Journal of Philosophy of Religion.* Vol IX No 2 1978.

11. An anonymous reviewer for this journal brought to my attention that David Cole had anticipated some of the points of my Becker-inspired defense of death being irreversible in his 1992 article "The Reversibility of Death" in the *Journal of Medical Ethics.* 18 pp. 26-30. So while my thesis is basically a defense of Becker's 1975 position, some of what I say could also be interpreted as a defense of Cole's 1992 thesis.

12. Cole. "The Reversibility of Death." Op. cit. p. 29.

13. According to van Inwagen and Olson, an organism ceases to exist as soon as enough decay destroys the brainstem's *capacity* to cause the rest of the organism's parts to participate in life processes.

14. For a much fuller defense of intermittent existence, see my two articles: "The Metaphysical Problem of Intermittent Existence and the Possibility of Resurrection." *Faith and Philosophy*. Forthcoming January 2003. "Van Inwagen, Zimmerman and the Materialist Conception of Resurrection." *Religious Studies: An International Journal for the Philosophy of Religion*. 38 pp. 1-19. 2002.

15. I am indebted to an anonymous reviewer who prodded me to discuss the case in which it was possible to reverse death - no biological or metaphysical impossibility was involved - but as a matter of contingent fact the reversal would not take place.

16. Some readers may think that “death” is ambiguous, that is, a number of people use it in a way that suggests it occurs when the organism can’t itself reverse its condition, but others use it to mean that the loss of function can’t be reversed through internal or external means. There are pragmatic reasons to disambiguate the term by dropping one of the uses. An individual with a destroyed brainstem and another individual with an existing but nonoperational brainstem will give the same results in tests for apnea and brainstem reflexes. Given the fact that there is no way to know, short of autopsy, whether the brain is destroyed and thus beyond repair, it may be best to promote only the interpretation that makes death a condition that the organism cannot reverse on its own. This would keep death from becoming an external relation, dependent upon technology, and often unknowable.

17. I would like to thank Nathan Salmon and two anonymous reviewers for their helpful comments on earlier drafts of this paper.