

# Bioethical Considerations of Potentiality at the Beginning and End of Life

John P. Lizza, Ph.D.

Department of Philosophy

Kutztown University of Pennsylvania

[lizza@kutztown.edu](mailto:lizza@kutztown.edu)

# Potentiality at the Beginning of Life

- Abortion
- Research on human embryos
- Moral status of frozen embryos
- Standard Argument

# Potentiality at the End of Life

- The moral status of individuals with total brain failure (brain death), those in permanent vegetative state (PVS), and those with severe dementia.
- When does death occur? What is the meaning of “irreversibility” in the definition and criteria for death? Irreversibility and potentiality are complementary concepts.
- Are non-heart beating organ donors dead?

# Potentiality and Research on Human Embryos

“An embryo is, **by definition and by its nature** potentially a fully developed human person; its potential for maturation is a characteristic that it *actually* has, and from the start. The fact that embryos have been created outside their natural environment – which is to say, outside the woman’s body – and are therefore limited in their ability to realize their natural capacities, does not affect either the potential or the moral status of the beings themselves. A bird forced to live in a cage its entire life may never learn to fly. But this does not mean that it is less of a bird, or that it lacks the imminent potentiality to fly on feathered wings. It only means that a caged bird – like an in vitro human embryo – has been deprived of its proper environment. There may, of course, be good reasons to create human embryos outside their natural environments – most obviously, to aid infertile couples. But doing so does not obliterate the moral status of the embryos themselves.”

President’s Council on Bioethics, *Human Cloning and Human Dignity: An Ethical Inquiry* (2002): 177-178.

# Potentiality at the End of Life

“As with the potency for sight, the potency for these functions [human intellection and will] ultimately resides not in the organ, but in the organism. Theoretically, if brains could be reconstituted (e.g., through implanted futuristically transformed neuroblasts), a “brain-dead” person could be made to regain consciousness and other human functions, although perhaps with a clean mnemonic slate and new personality traits...

Thus, if “brain death” does not cause loss of somatic integrative unity (as it now seems not to), then neither does it cause a loss of essential human properties, i.e., a loss of potency for specifically human functions – potency at the most profound ontological level, at which the occurrence or note of substantial change is determined.”

Shewmon, D. Alan, “Recovery from Brain Death: A Neurologist’s Apologia,” *Linacre Quarterly* (1997) 64(1): 74-75, bracketed remarks added.

# Active Potentiality

- Active potentiality: an organism's intrinsic "power of setting itself in movement and arresting itself (Aristotle *De anima* 2.1.412, a28-29)
- Jason Eberl: "Something has an active potentiality if it has within itself everything necessary, given its proper design environment, to actualize itself in the relevant manner." (Jason Eberl, "Persons with Potential," in J. Lizza, ed., *Potentiality: Metaphysical and Bioethical Dimensions*, Baltimore: Johns Hopkins University Press, 2014: 98.)
- A human embryo's active potentiality to develop self-consciousness and rationality lies in its **genetic and epigenetic matter**.
- A substance has the active potentiality regardless of whether the potentiality is ever realized or developed.
- The unfolding of an individual's active potentiality does not change the kind of thing it is. It remains the same substance throughout the change. A human embryo is a person with potential, not a potential person.

# Passive Potentiality

- Jason Eberl: “something has a passive potentiality if it can be the subject of **externally directed change** such that it can become what it is not already now.” (Jason Eberl, “Persons with Potential,” in J. Lizza, ed., *Potentiality: Metaphysical and Bioethical Dimensions*, Baltimore: Johns Hopkins University Press, 2014: 98.)
- For example, a block of wood has the passive potentiality to become a statue if acted upon.
- For example, a pile of building materials has the passive potentiality to become a house. The building materials lack an internal power to become a house.
- Embryonic and somatic cells lack the genetic and epigenetic factors to direct their development to become self-conscious and rational in the natural or normal environment.
- Embryonic and somatic cells need to be acted upon in ways that change the kind of things that they are. They are not persons with potential but potential persons.

# Disagreement over Material Conditions for Active Potentiality

- When does an organism have or lack an active potentiality? What biological substrate is necessary for the potential for self-consciousness and rationality?
- Does an embryo with a genetic defect that will prevent it from developing self-consciousness and rationality lack the active potentiality to develop self-consciousness and rationality? Or is the genetic defect just an impediment in the realization of the active potentiality that it has at a more fundamental level in virtue of its nature as a human organism?
- Does a cryopreserved human organism, an artificially sustained brain-dead human organism, or an individual in PVS lack the active potentiality for self-consciousness and rationality? Or are these conditions merely impediments in the realization of the active potentiality that the human organism has at a more fundamental level in virtue of its nature as a human organism?

# Cryopreservation

- Does a cryopreserved human body have the active potentiality for self-consciousness and rationality?
- YES: van Inwagen: a cryopreserved organism has the active potentiality since “it is disposed to expand to its normal state at the moment sufficient energy should become available to it.”

# van Inwagan

“Before the cat was frozen, its life consisted of mostly chemical reactions and various relatively large-scale physical processes (the breaking and establishing of chemical bonds, the movement of fluid under hydraulic pressure, the transport of ions); when the cat was frozen, its life was “squeezed into” various small-scale physical processes (the orbiting of electrons and exchange of photons by charged particles). Its life became the sum of those subchemical changes that underlie and constitute chemical changes and large-scale physical change. But the life was *there*, disposed to expand to its normal state at the moment sufficient energy should become available to it. I, who am fond of oxymorons, would describe the cat as a living corpse.”

P. van Inwagan, *Material Beings*, Ithaca, NY: Cornell University Press, 1990: 146-147.

# Cryopreservation

- NO: Jason Eberl: A cryopreserved body lacks “its own motive principle” to reanimate itself and thus has at most a passive potentiality. “A cryopreserved body is not sufficiently disposed to be a living (ensouled) organism,” since it does not have the internal capacity to coordinate its vital metabolic functions.
- Subchemical changes also persist in a corpse.

Jason Eberl, “Potentiality, Possibility, and the Irreversibility of Death, *Review of Metaphysics* (2008) 30(4): 75.

# Brain Death

- Eberl vs Shewmon: No active potentiality in a brain-dead body. It has lost its vital functions. It no longer has an intrinsic motive principle to breathe on its own. Contrast someone who needs bypass surgery but still retains “some control” of vital functions.

# Potentiality and Impediments

- Shewmon (2010, 272): Recognition of the capacity to develop a capacity for X should not be overly restrictive. It need not develop spontaneously but should accommodate instances where “external elimination of some impediment is required for the development to proceed.”
- Distinguish potential for X without assistance, potential for X with assistance, and performance of X by an external agent

# Shewmon's Examples

“For example, we should not adopt an interpretation of radical capacity so strict that the facts that the healing of large wounds requires sutures, the healing of fractures requires plates, and recovery from serious infections requires antibiotics would negate the body’s radical capacity for self-healing. Similarly, the radical potential for sight should be understood as present in someone with dense cataracts, even though ophthalmologic surgery is necessary to actualize the potential. The hidden regenerative potentials of mammals, including humans, which are actualizable through epigenetic suppression, are now beginning to come to light. If a certain kind of self-repair requires assistance to become actualized, that should not negate the existence of a radical capacity for self-repair, any more than requiring external assistance to survive negates being alive.”

D. Alan Shewmon, “Constructing the Death Elephant: A Synthetic Paradigm Shift for the Definition, Criteria and Tests for Death,” *Journal of Medicine and Philosophy* (2010) 35: 272.

# R. Alta Charo

“Both (skin cells and in vitro embryos) need a culture medium. For skin cells, the medium is found in the cytoplasm of an enucleated cell, but a medium it is nonetheless. The skin cell needs an electric shock. Again, however, it is unclear why electricity, as opposed to the warmth of the incubator used in ordinary management of an in vitro embryo, is of ontological significance.”

R. Alta Charo, “Every Cell is Sacred: Logical Consequences of the Argument from Potential in the Age of Cloning,” In. P. Lauritzen (ed.), *Cloning and the Future of Human Embryo Research*, New York: Oxford University Press, 2001: 86.

# R. Alta Charo

“In addition, the “implicit nature” of a skin cell is also to divide and grow. With the discovery that the genes coding for non-skin functions are merely dormant rather than dead comes the observation that the nature of skin cells and that of embryonic cells are not terribly different. ... Furthermore, when current research on somatic cell nuclear transfer cloning unlocks the secrets to the role of the egg cytoplasm in regulating the expression of genes that code for development of an entire organism, the next step in cloning will be to eliminate the need for fusion with an enucleated egg; all the material needed to regulate gene expression is present in the cytoplasm of the skin cell as well, and turning that expression on by manipulation of the skin cell alone will be the final step in eliminating all pertinent difference between embryonic cells and adult cells.”

# Gametes and Somatic Cells

- Charo: Somatic cells have the same active potentiality as frozen embryos to develop self-consciousness and rationality. If the nucleus of somatic cells are acted on in certain ways, e.g., transplanted into an egg from which the nucleus has been removed, they have the intrinsic capacity to develop self-consciousness and rationality.
- DiSilvestro: Human gametes and somatic cells do not have the same active potentiality as frozen embryos to develop self-consciousness and rationality. If embryonic and somatic cells are acted on in certain ways, they undergo a change in the kind of thing that they are. Only the new kind of being (the embryo) has the active potentiality.

# Issue

- Any appeal to the distinction between an organism undergoing a change in kind versus a qualitative change to resolve the issue of whether an artificially sustained brain-dead body has the active potential for self-consciousness and rationality will not help, since at issue is whether such bodies are dead, i.e., whether they are still members of the kind, *human being*. Are we intervening in an individual with the active potential with assistance or an individual who lacks the potential even with assistance?

# Dilemma of Potentiality

- If artificially sustained brain-dead bodies have an active potentiality for self-consciousness and rationality, why not attribute it to other kinds of bodies, such as cryopreserved bodies, corpses, and apes?
- If human bodies that require artificial support for vital functions do not have an active potentiality for self-consciousness and rationality, shouldn't we deny that anyone dependent on artificial support is alive and therefore lacks the potentiality?

# Dilemma of Potentiality at the Beginning of Life

- If defective embryos that can be assisted have an active potentiality for self-consciousness and rationality, why not attribute it to other kinds of bodies, such as embryonic and somatic cells that require the assistance of being implanted into an enucleated egg or of gene desuppression?
- If embryonic and somatic cells do not have an active potentiality for self-consciousness and rationality, shouldn't we deny that defective embryos requiring assistance lack the same active potentiality?

# Medical or Technological Potentiality

- The potentiality for an organism in these borderline situations is neither active nor passive. Since it depends on being acted upon, it is not simply an intrinsic, active potentiality. Since it depends on its having some intrinsic but insufficient potentiality, it is not simply a passive potentiality. The new technology has created another sense of potentiality: medical or technological potentiality.

# Is potentiality ethically relevant?

- If the technological potentiality of many impaired individuals at the end of life requiring life support gives them as much moral standing as individuals that do not require life support, the technological potentiality of individuals with more extreme impairments, such as total brain failure and PVS, would give them as much moral standing as individuals that do not require life support.
- It is absurd to think that individuals in total brain failure or PVS have a such a high moral standing, because they have at some fundamental level the potential for self-consciousness and rationality.
- So, whether an individual has a passive, active or technological potentiality in itself cannot be what gives an individual special moral standing.

# Is potentiality ethically relevant?

- If the technological potentiality of embryos requiring intervention gives them as much moral standing as embryos that do not require intervention, the technological potentiality of embryonic and somatic cells would give them as much moral standing as embryos that do not require intervention.
- It is absurd to think that embryonic and somatic cells have such a high moral standing, i.e., that they are persons with potential and not potential persons.
- So, whether an individual has a passive, active or technological potentiality in itself cannot be what gives an individual special moral standing.

# What makes potentiality ethically relevant?

- Ethical considerations relevant to the context
- Actual possibility and probability to realize the potential

# Non-Heart-Beating Organ Transplantation and Potentiality

Potentiality and irreversibility are complementary concepts. If a condition is irreversible, there is no potential for it to be reversed.

In NHBD protocols, death is declared on the basis of the irreversible loss of circulatory and respiratory functions. Following 2-5 minutes (75 seconds in some reported cases) of cardiac arrest, organs are removed. Is the donor dead? Has the donor satisfied the criterion of irreversibility in the declaration of death? Is there a **potential** for the cessation of circulation and respiration to be reversed?

# Irreversibility and Death

- Don Marquis: Since it is actually possible to reverse the cessation of circulation and respiration of the donors, the donors have the potential for circulation and respiration and therefore are not dead.  
(Don Marquis, “Are DCD Donors Dead?” *Hastings Center Report* 40:3 (2010): 24-31)
- Do the DNR orders and expressed wishes of the donors to participate in the transplant procedure affect what it means for these donors to have a potential for circulation and respiration following cardiac arrest?
- Tom Tomlinson: There are various meanings of “irreversibility.” “Irreversibility” means one thing in an emergency room and another thing in the context of hospice care or non-heart-beating organ transplantation. The relevant meaning of irreversibility in the criteria for determining death is determined by ethical and legal considerations related to the medical practice of declaring death.

# Meanings of Irreversibility

Tom Tomlinson

- **Metaphysical** – can never be reversed/not reversible in any possible world
  - Could never know whether anyone was dead
  - Meaning of irreversible must be understood relative to the actual world and our accepted practice and context of declaring death
- **Physiological** – not reversible by organism itself, i.e., by auto-resuscitation (irreversibility is an *internal* property of the organism)
- **Medical** – not reversible by medical means (irreversibility is a *relational* property, dependent on knowledge and ability)
  - Note: possible for one of two people in the same internal physical state to be alive and the other dead
- **Ethical** – not ethically reversible: ethical considerations determine whether physiological or medical irreversibility is the appropriate concept to apply in a given context, e.g., in the emergency room, hospice, or organ transplantation  
(Tom Tomlinson, “The Irreversibility of Death: Metaphysical, Physiological, Medical or Ethical?” in J. Lizza, ed. *Potentiality: Metaphysical and Bioethical Dimensions*, Baltimore: Johns Hopkins University Press, 2014)

# Meanings of Potentiality

- **Passive** – the potential for an organism to be or become X in any possible world by external intervention
- **Active** – the intrinsic potential for an organism to be or become X, given a natural or normal environment
- **Medical or Technological** – the potential for an organism to be or become X with technological assistance in the actual world (potentiality is a relational property, dependent on knowledge and ability)
- **Ethical** – ethically relevant potentiality: Ethical considerations determine which sense of potentiality (passive, active or medical/technological) is relevant in a given context. Actual possibility bears on whether certain potentialities exist and whether they are ethically relevant.