

Professor Gert's views on death: An analysis and critique

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Abstract

In this paper I analyze and critique Gert's views on death, tracing the evolution of his ideas throughout his career. I argue that the definitions-criteria-tests framework that he and his colleagues introduced, along with their approach to death as a biological phenomenon to be understood in biological terms, are immensely important and largely correct. However, there is no scientific justification for claiming that brain dead bodies are biologically dead bodies. Furthermore, continuing to use the language of "death" to describe such bodies as a matter of public policy constitutes paternalism. I use Gert's analysis of the justification of paternalism to argue that the paternalism inherent in the language of "death" is unjustified.

Introduction

Few authors have had as profound an effect on the literature on death and brain death as Professor Bernard Gert and his colleagues. While it is certainly the case that Gert and colleagues have not settled the debate and much dispute remains, nonetheless the imprint of Gert's work can be found throughout the brain death literature. In this paper I will describe and analyze Gert's views on death, arguing that although his work is insightful and important, he is ultimately unsuccessful in establishing either the scientific or moral validity of describing brain death as equivalent to death. Perhaps somewhat surprisingly, one of Gert's other important bioethical contributions, on paternalism, will be helpful in making the moral case against his view on equating brain death with death as a matter of public policy.

The definitions-criteria-tests framework

Gert and colleagues' most significant and enduring contribution to the brain death literature is surely their widely cited description of the three-part distinction for understanding death (Bernat, Culver, and Gert 1981), known as the definitions-criteria-tests framework. On this view, the first step is to formulate a definition of "death" that makes the ordinary meaning of the term explicit, which is considered primarily a philosophical task. Next, the physiological criteria, or necessary and sufficient physiological conditions for the instantiation of that definition must be determined (a combined medical/philosophical task), and finally, tests must be devised to discern when those physiological criteria have occurred (solely a medical endeavor)¹. This framework has structured much of the literature on brain death over the last 30 years. Although it is not universally accepted, it is nearly universally addressed. Whether accepted or challenged, it is never ignored.

Given this framework, Gert and colleagues have argued that a number of background assumptions hold. First, the formulation of the definition of the word "death" involves making explicit what the term has always meant, in its ordinary use. That is, "death" is not (or not solely) a technical term; rather, it is an ordinary word that we all use reasonably correctly. The task of defining "death", therefore, is to clarify and make explicit what the term has always meant. In its most straightforward and literal use, "death" refers to an event, not a process, that separates the process of living (or dying) from the process of disintegration and decay. Furthermore, although a commonsense term, "death"

¹ Although (Bernat, Culver, and Gert 1981) is widely cited in association with the aforementioned framework, the ideas go back somewhat earlier, at least to (Capron and Kass 1972). Capron and Kass introduce a 4-part framework, including the *basic concept* of death, the *general physiological standards* for recognizing the instantiation of the concept of death, *operational criteria* for those general physiological standards, and finally *specific tests and procedures* to determine if the operational criteria have been realized. For example, one way of cashing out this framework might be to claim that the concept of death involves the irreversible cessation of the integrated functioning of the organism as a whole; the physiologic standard for this to occur is the irreversible cessation of all circulo-respiratory function; the operational criteria for this standard is the absence of blood flow and the absence of gas exchange at the alveoli and in cellular metabolism; and the tests for determining whether this has occurred involve feeling for a pulse, looking for blood flow in the retinal vessels, watching for the chest to rise, and feeling for the expiration of air from the mouth.

refers to a biological event, and thus its cognates (e.g., “dead”) cover biological organisms as such. The same word, “dead”, applies to a human family member, the family cat, as well as the mouse that the cat brought in. All and only biological organisms can literally die, according to Gert and colleagues.

This is important because a number of other influential views, often taken as challenges to Gert’s views on death, actually address orthogonal questions. Considerations involving personhood or personal identity, the ability to meaningfully interact with the environment, and the determinants of moral worth are important issues to consider when addressing questions about end of life care, resource allocation, and organ transplants. But, at least for Gert and colleagues, the first question to address is a descriptive biological question: Is the organism biologically dead?

Gert and colleagues initially defined “death” as the permanent cessation of functioning of the organism as a whole (Bernat, Culver, and Gert 1981; Culver and Gert 1982). They argued that permanent loss of functioning of the entire brain is the criterion for death, as it is “perfectly correlated with the permanent cessation of functioning of the organism as a whole because the brain is necessary for functioning of the organism as a whole” (Bernat, Culver, and Gert 1981, 391). They endorsed an early set of tests (Beecher 1968), but subsequently accepted refined versions of the diagnostic tests, of which the essential elements are cerebral unresponsiveness (allowing for spinal reflexes), brainstem areflexia, and apnea, coupled with a known, irreversible cause of coma (Wijdicks et al. 2010).

Gert and colleagues make clear that they intend their claims regarding the criterion and tests for death to be empirically testable and validated assertions about biology, not conceptual points about personhood or moral status. As such, these claims are vulnerable to evidence. I therefore refer to their thesis that the absence of neurological function is a criterion for biological death as “the brain death hypothesis”.

Before considering the revisions to these ideas that Gert and colleagues later proposed, let us first take a look at what we ought to say in light of some empirical evidence regarding “brain dead”

bodies, while granting all of Gert's background assumptions and conceptual framework. I will first address the adequacy of the tests and then the adequacy of the criterion.

To avoid confusion with the unclear and loaded term "brain death", I'll introduce the term "state X". By "state X" I mean the irreversible cessation of clinical functions of the brain, as judged by cerebral unresponsiveness, brainstem areflexia, and apnea, coupled with a known, irreversible cause of coma. Thus, any patient that satisfies the standard clinical diagnostic tests noted above is, by definition, in state X, though I intend this term to be neutral with respect to biological death as well as the irreversible cessation of *all* functions of the brain.

Empirical evidence has shown that bodies in state X can maintain organized cortical and subcortical electrical activity, including normal or near-normal sensory evoked potentials (Halevy and Brody 1993). They also can develop a febrile response to infection, thus exhibiting thermal regulation, and, with blankets, can regulate temperature in the absence of infection (Shewmon 1998, 2001). Children in state X have grown and sexually matured (Shewmon 2001), and pregnant women in state X have gestated fetuses (Powner and Bernstein 2003). Approximately half of bodies in state X maintain free water homeostasis through hypothalamic osmoregulation (Joffe 2010). Each of these observations constitutes evidence that the combination of apnea, brainstem areflexia, and cerebral unresponsiveness is consistent with the preservation of some neurological function², and hence, the tests generate false

² Electrical activity measured with an electroencephalogram reflects the coordinated activities of thousands of cortical neurons, not just a "nest" of cells, which suggests some preserved function. Maintenance of evoked potentials is stronger evidence of preserved function, since surely one of the functions of the peripheral and central nervous systems is to transduce ambient energy into electrochemical signals and pass that sensory information along a dedicated sensory information channel; and this is what an evoked potential reflects. Growth, sexual maturation, and fetus gestation all require hormonal stimuli, and thus the secretion of hypothalamic releasing hormones which control anterior pituitary hormones, providing the necessary hormonal signals in the general circulation. Hypothalamic osmoregulation is a paradigmatic example of both a brain function as well as a "function of the organism as a whole", as described further in the text, in the following section.

positives (indeed, the positive predictive value of these tests is, at best, 50%, an extremely poor test by any standard³).

Furthermore, the preservation of neuroendocrine function is significant. Gert and colleagues write “the functioning of the organism as a whole means the spontaneous and innate activities carried out by the integration of all or most subsystems (for example, neuroendocrine control)...” (Bernat, Culver, and Gert 1981, 390), and specifically mention the hypothalamus as a part of the brain that must be destroyed for their physiologic criterion to be satisfied:

Many other functions of the organism as a whole including neuroendocrine control, temperature control, [etc.] ... reside in the more primitive regions (hypothalamus, brainstem) of the brain. Thus total and irreversible loss of functioning of the whole brain and not merely the neocortex is required as the criterion for the permanent loss of functioning of the organism as a whole (Bernat, Culver, and Gert 1981, 392).

It follows that, on Gert’s view, preservation of neuroendocrine function is inconsistent with both the criterion for death (since some brain function is preserved), and the definition of “death” (since neuroendocrine control is a function of the organism as a whole).

In addition to the inadequacy of the tests, empirical evidence has also shown the inadequacy of the criterion. Gert and colleagues state that permanent loss of functioning of the entire brain is perfectly correlated with the permanent cessation of functioning of the organism as a whole. The

³ Positive predictive value is a standard measure of the utility of a diagnostic or screening test. Its value tells us, given a positive test result, how likely the individual who tested positive actually has the disease in question (that is, it is a ratio of true positives to the sum of false and true positives). Since half of patients in state X maintain hypothalamic osmoregulation (a brain function by all accounts) yet are declared to be brain dead (i.e., declared to lack all brain function), it follows that the ratio of true positives (those patients with lack of *all* brain function) to the sum of true and false positives (those patients with the lack of all brain function plus those patients with maintained hypothalamic function who are falsely labeled as lacking all brain function) is equal to 50%.

notion of “functioning of the organism as a whole”, as a biological concept, is typically understood in terms of homeostasis and the resistance of entropy, and Gert and colleagues cite with approval Korein’s early attempts (Korein 1978; cf. Korein and Machado 2004) to define the brain as the critical system controlling the organism as a whole in terms of entropy (Bernat, Culver, and Gert 1981, 391). Bodies in state X clearly maintain homeostasis through the preservation of a variety of functions of the organism as a whole, including, in addition to neuroendocrine functions, gas exchange at the alveoli, cellular respiration, circulation, elimination, detoxification, and recycling of wastes, wound healing, nutrition, immune responses to infection (Shewmon 2001), hemodynamic and endocrine responses to incision (Pennefather, Dark, and Bullock 1993; Hill, Munglani, and Sapsford 1994; Fitzgerald et al. 1996), gestation of fetuses (Powner and Bernstein 2003), and growth and sexual maturation for children (Shewmon 2001). Such bodies can be maintained for many weeks and in some cases, for years (Yoshioka et al. 1986; Sugimoto et al. 1992; Shewmon 1998).

This was acknowledged in the recent President’s Council’s white paper:

Nonetheless, *something like health* is still present in the body of a patient [in state X]. This can be seen clearly in the ‘donor management’ procedures ... [that] aim to maintain the body in a relatively stable state of homeostasis so that [...] the organs remain as healthy as possible. Thus, there is some degree of somatically integrated activity that persists in the bodies of patients [in state X] (President’s Council on Bioethics 2008, 39; emphasis in the original).

Furthermore, Gert and colleagues argue that permanent cessation of brain function is an adequate criterion for permanent cessation of the organism as a whole “because the brain is necessary for functioning of the organism as a whole” (Bernat, Culver, and Gert 1981, 391). Yet as Shewmon has pointed out, patients who suffer spinal shock at the cervico-medullary junction are clearly alive, yet in

this case the body is completely divorced from communication with the brain (Shewmon 1999). The spinal shock case shows that although the brain is normally an important modulator of organic integration and maintenance of homeostasis, with adequate medical and nursing support, integrated maintenance of homeostasis and thus biological life can continue in the absence of neurological modulation. Finally, many patients in state X are indeed more homeostatically stable than some other patients not in state X, when those other patients are clearly alive (Shewmon 2010, 259). Therefore the evidence has shown that patients in state X are able to maintain homeostasis and resist entropy – that is, to function as an integrated whole – for a considerable period of time, and hence are biologically living (irrespective of any questions about personhood or moral status).

Changing definitions

As is apparent, Gert and colleagues' early views equating state X with death are empirically inadequate. The evidence has shown that both the tests and neurologic criterion generate false positives in which patients are declared dead despite the fact that they do not meet Gert and colleagues' definition or criterion for death. In subsequent publications, they revised their view on the definition of "death", but not on the criterion or tests. Here are the evolving definitions of "death" (I've italicized the changes from each predecessor definition):

- (1) We believe that the permanent cessation of the functioning of the organism as a whole is what has traditionally been meant by death (Culver and Gert 1982, 182).

- (2) We believe that the permanent cessation of *all clinically observable* functioning of the organism as a whole *and the permanent absence of consciousness in the organism as a whole and in any*

part of that organism, is what has traditionally been meant by death (Gert, Culver, and Clouser 1997, 261).

- (3) We believe that the permanent cessation of all *observable natural* functioning of the organism as a whole, the permanent absence of consciousness in the organism as a whole, and in any part of that organism is what has traditionally been meant by death (Gert, Culver, and Clouser 2006, 293).

The proposed modifications are unsuccessful because they do not achieve empirical adequacy, and there are a number of philosophical reasons for their insufficiency as well, which I detail presently. Ultimately, their original framework and definition of “death” remain conceptually adequate and ought to be retained; the evidence simply shows that patients in state X are biologically alive.

The first shift appends the phrase “clinically observable” to “functioning of the organism as a whole”. This is a common move, though it is problematic for several reasons. First, in all three definitions, Gert and colleagues endorse the very next line from their first book, *Philosophy in Medicine*:

This definition retains death as a biological occurrence which is not unique to human beings; the same definition applies to other higher animals. We believe that death is a biological phenomenon and should apply equally to related species... This is supported by our ordinary use of the term *death*, and by law and tradition (Culver and Gert 1982, 182).

Thus, they recognize that death itself is a biological phenomenon, and is therefore amenable to explanation according to the conceptual and evidentiary frameworks of scientific biology. In light of this, it should be clear that clinical observability is irrelevant. It makes no difference to the biological

reality of death whether a neurologist needs a penlight to look for pupillary reflexes, imaging technology to look for blood flow, or a blood test to look for neuroendocrine hormones. No biologist would say, for example, that DNA is irrelevant to understanding the heritability of genetic disease because DNA is not clinically observable. The move is ad hoc, and, worse, it conflates metaphysics (the nature of biological death) with epistemology (the epistemic means by which doctors know that biological death has or has not occurred). Biological death, as a biological phenomenon, is not relative to a neurologist's penlight.

Additionally, it doesn't save the hypothesis anyway, as almost all of the preserved functions are clinically observable. Hypothalamic osmoregulation is observable through normal urine output; gas exchange and cellular respiration are observable via skin color, as the patient would be cyanotic without these functions; circulation is observable by feeling for a pulse; thermal regulation can be observed by touching the patient's skin; growth and sexual maturation are observable over a period of years, and so forth.

Clearly, the move to clinical observability is unsuccessful in saving the hypothesis, since a number of preserved functions are clinically observable. The next move from definition 2 to 3 changes the phrase "all clinically observable" to "all observable natural" functioning, but this sets up a dilemma. By "observable", they must mean either "observable relative to some parameter" (e.g., current technology or current clinical practice, i.e., clinically observable), or not, in which case it can only mean "observable in principle". The first horn conflates metaphysics with epistemology, as argued above, and is unacceptable. As I mentioned, the nature of biological death is not relative to a neurologist's penlight, nor any other epistemic means of accessing it. On the second horn however, "in principle" observability asymptotes into all biological functioning, since in principle, technology can continue to improve until all possible biological functioning is observable. In this case, observability does no work and the definitional phrase collapses into, "all functions of the organism as a whole".

The “natural” criterion seems similarly unnecessary. As Tomlinson (1984) has argued, it is not the substrate that performs the function that matters, rather, it is the function itself. Gert and colleagues introduced this criterion so that if nanochips can be implanted into the brainstem of a patient in state X and regulate autonomic and other brainstem functions, they would still be declared dead. But I can’t see why it would matter whether a medical device enables the organism to function as a whole, so long as the organism continues to maintain homeostasis and resist entropy. Pacemakers, dialysis machines, insulin, and many other medical devices enable organisms to function as an integrated whole, and without them, the individuals who need them would be dead, but this does not imply that they are already dead. I don’t see what difference it would make for the medical device to be implanted in the brainstem rather than the heart or somewhere else.

Finally, the consciousness requirement was added in definition 2 and retained in definition 3 in order to account for the gruesome practice of cutting off animals’ heads and then showing that they still respond to stimuli; thus, the unfortunate creature appears to still be conscious for a brief time after its beheading. In order to consider the conscious head to be alive, they added the requirement that consciousness may not be present in the organism as a whole nor in any part of the organism, though this seems an unnecessary move as well.

It seems equally plausible to state that the conscious head is a mutilated whole organism that continues to function as an integrated whole (and is thus covered under the original definition), than to say that it is a part of an organism. If the headless body were also maintained, it too would be a living yet mutilated organism, functioning as a whole. As to concerns about division of organisms, I don’t see any reason why one living organism cannot split into two distinct living organisms. If the head is still conscious, the person that once existed still exists and is instantiated by the head (which is now a distinct living organism), and the biologically living body is alive but no longer instantiates a person. In

this circumstance, Gert and colleagues' original definition of "death" continues to be satisfactory and explanatory for these cases, and mention of consciousness is not conceptually necessary.

So where does this leave us? Gert and colleagues' basic framework and set of assumptions are useful and important. I don't have space to defend them from objections here, but I do endorse the basic framework (Nair-Collins 2010). Their original definition of "death", with death understood as a biological phenomenon, is entirely adequate and there was no reason to change it. It can be made slightly more precise by way of the concepts of homeostasis and entropy, and indeed, this remains the best theory of biological death on offer, which draws on one of the most important and ubiquitous biological concepts, that of homeostasis. The various revisions that Gert and colleagues made throughout the years were not based on new theoretical or empirical advances regarding death itself, rather, they were unsuccessful attempts to save the brain death hypothesis from empirical refutation.

Indeed, it is interesting that, in contrast with what is known as "evidence-based medicine", the empirical evidence did not change clinical practices; rather, clinical practices changed what counts as evidence. Once it was discovered that the clinical diagnostic tests are not sensitive to neuroendocrine function, neuroendocrine function ceased to matter, despite the fact that it was previously held up as a paradigm of functioning of the organism as a whole⁴.

In any case, the evidence simply shows us something that may not be welcome because of its potential ethical and public policy implications: Individuals in state X are biologically alive. Gert and colleagues' claim that patients in state X are biologically dead is not scientifically justified. This is to say nothing of personhood or moral status, which are different issues. But given the evidence on the biological status of patients in state X, an additional moral concern now arises, if we continue to identify state X with death as a matter of public policy.

⁴ Parenthetically, it is worth noting that the laws which give statutory authority to declare an individual dead by neurological criteria are based on the Uniform Determination of Death Act, which states that an individual is dead when *all* functions of the *entire* brain have ceased. Physicians currently lack the statutory authority to declare an individual with a functioning hypothalamus to be dead since some brain function remains.

Paternalism and the language of “death”⁵

In basic outline, the concern is this. Using the word “death” to describe biologically living patients in state X is misleading to the general public, and this is so even if state X patients are not persons, not moral agents, not moral patients, or not considered members of the moral community. Patients in state X are biologically alive though irreversibly comatose; therefore, using the word “dead” to describe them is misleading. But does this constitute paternalism?

Consider any arbitrarily chosen adult, whom I shall name Smith. I’ll argue that the misleading language of “death” interferes with Smith’s autonomy, disregards Smith’s preferences or values, and achieves a benefit for Smith in so doing; therefore we ought to construe the language of “death” as paternalism⁶.

Smith’s autonomy, her ability to direct her life according to her reasons and her values, is limited, because she lacks basic information about state X, believing it to be the death with which she is familiar. If she uses that misinformation to make healthcare decisions (e.g., by signing a donor card) then her ability to direct her life based on informed reason is diminished, since she may not have wished to be biologically killed in order to donate her organs. Furthermore, Smith’s ability to participate in the political process is diminished, since her support (or lack of opposition) to the practices of transplant medicine, which involve biologically killing organ donors, is based on her mistaken belief that state X is death in the sense with which she is familiar.

Second, the misleading language reflects a disregard or indifference for her preferences and values. Assuming a clear understanding of state X, Smith might agree with Veatch (Veatch 2003; Veatch 2004) that the individual in state X is not owed moral regard in the same sense that she was prior to her

⁵ I only outline the arguments here; please see the paper from which this section is drawn (Nair-Collins 2013) for a fuller presentation.

⁶ I am drawing from Dworkin’s treatment of paternalism; see (Dworkin 1999, 2010). I’ll briefly argue that Gert’s definition of paternalism is satisfied as well.

injury or illness. She might agree with Miller and Truog that organ retrieval from those in state X is licit because those in state X are beyond harm (Miller and Truog 2012). But Smith might agree with Byrne (Byrne et al. 1982-1983; Byrne and Weaver 2004) and the many other authors who recognize that state X is not biological death, but who also support the dead donor rule and thus oppose organ retrieval from state X patients. Smith might have religious commitments that imply that biologically living humans have souls, or inherent dignity demanding they not be killed, irrespective of their capacity for psychological states or self-ventilation. Whatever her values, the use of misleading language that prevents Smith from informed deliberation and informed political participation shows an indifference to those values.

Finally, the misleading language is to Smith's own benefit, since it is a benefit to Smith to have the legal and political possibility of a transplant should she or a loved one ever need one (in the same way that wearing a seatbelt is to my benefit even if I never get into an accident), and quite plausibly, *the language of "death" is what makes transplant medicine politically and legally possible*. Without describing organ donors as "dead", it is entirely plausible that removing organs from patients in state X would be not be politically or legally possible. Removing vital organs from a patient in state X is the direct and immediate cause of the biological death of that patient; hence, organ removal kills the donor. Since directly and intentionally killing a living human is nowhere legal in the United States (except for the death penalty) and is only practiced in a handful of nations, it only stands to reason that similar policies would be enacted with respect to organ removal, and in that case, the institution of transplant medicine would be severely curtailed, as the majority of transplanted organs come from patients in state X⁷. It is important to note that this argument holds even if patients in state X are not persons or not considered to be members of the moral community, since it is the language of "death", not the

⁷ Organ removal in so-called "donation after cardiac death" introduces its own set of problems that I won't address here, but similar problems with forthright communication and doubts about whether such bodies are truly biologically dead arise in that context as well.

language of “personhood”, “moral agency”, or “moral community”, which makes transplant medicine politically and legally possible, while simultaneously misleading the general public (Smith included).

Similar arguments can be made that this satisfies Gert’s views on paternalism as well (cf. Gert, Culver, and Clouser 2006, ch. 10): (1) The medical and bioethics community calling patients in state X “dead” makes transplant medicine possible and thus benefits Smith; (2) the medical and bioethics community recognizes that using false or misleading language in general requires moral justification; (3) there is no reason to believe that the general public (including Smith) will or would consent to being misled; and (4) all agree that the general public believes it can make its own decisions on the matter.

As Gert and colleagues correctly argued, not all paternalism is unjustified; however, all paternalism requires justification. The first step of their justificatory procedure is to identify the morally relevant features. They list ten questions to be addressed in doing so (Gert, Culver, and Clouser 2006, 264-265), but for the sake of brevity I will only address two: What moral rules would be violated? What benefits would be caused? The moral rules to be violated include “do not deprive of freedom” (since the public lacks the freedom to meaningfully participate in the political process regarding whether to allow causing biological death for organ removal), “do not deceive” (since the language of “death” is misleading), and “do not kill” (since organ removal kills the donor). The benefit is that transplant medicine will continue, and hence people with organ failure who receive a successful transplant will live when they would otherwise die.

The second step is to ask:

Would the foreseeable consequences of that kind of violation being publicly allowed, that is, of everyone knowing that they are allowed to violate the moral rule in these circumstances, be better or worse than the foreseeable consequences of that kind of violation not being publicly allowed? (Gert, Culver, and Clouser 2006, 267).

It seems to me that the breakdown of trust in the medical profession would be quite severe upon learning that medical professionals are allowed to kill unconscious patients for the purpose of organ removal, while misleading the general public and surrogate decision-makers by using the language of “death”. And this holds regardless of whether such bodies are no longer persons, no longer moral agents, or no longer considered to be members of the moral community, since this is not the language used to describe patients in state X: The medical profession describes such bodies as “dead”. This breakdown of trust in the medical profession would presumably have significant consequences, since public trust is a necessary condition for the practice and institution of medicine. Furthermore, there is a logical problem that shows that this paternalism *could* not be justified (assuming Gert’s theory of the justification of paternalism), since the consequences of the public knowing that the public is misled would necessarily result in the public no longer being misled and the moral rules prohibiting deprivation of freedom and deception would no longer be violated, thus removing the paternalism. Thus, it seems to me that the paternalism is not justified.

Conclusion

Gert and colleagues’ body of work on death represents some of the most clear-thinking, straightforward, and insightful contributions to this literature, in characteristic Gert fashion. He and his colleagues were not able to establish a scientific justification for equating brain death with death. Further, continuing to use the language of “death” to describe patients in state X, as a matter of public policy, appears to constitute unjustified paternalism. However, their work forms a crucial foundation upon which others will continue to build in furthering our understanding of death, both as a biological phenomenon and as an event with tremendously important social, moral, and legal implications, requiring sensible, forthright, and scientifically informed public policy.

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