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## Stop! Are You Sure You Want To Throw Grandpa's Body Away?

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# Stop! Are You Sure You Want To Throw Grandpa's Body Away?

THOMAS A. ROBINSON†

I. INTRODUCTION .....	38
II. VALUE TO SOCIETY .....	42
A. <i>Value of the Vessel</i> .....	44
B. <i>Value of the Contents</i> .....	46
III. VALUE TO INDIVIDUAL .....	50
A. <i>What Is Valued: "Me"</i> .....	50
B. <i>Soul Survivor</i> .....	54
1. DEATH IS A PREDICTION .....	54
2. HOW INDEFINITE LIFE MIGHT BE EXPERIENCED IN A SECULAR WORLD ...	59
IV. SOME IMPLICATIONS, PROBLEMS, AND SPECULATIVE SOLUTIONS .....	61
A. <i>Some Legal Implications</i> .....	61
B. <i>Some Economic Implications</i> .....	66
1. ECONOMIC ANALYSIS FOR THE INDIVIDUAL .....	66
2. ECONOMIC (AND POLITICAL) ANALYSIS FOR SOCIETY .....	69
C. <i>Some Theological Implications</i> .....	77
V. CONCLUSION .....	81

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† Copyright 2008 by Thomas A. Robinson, Professor of Law, University of Miami School of Law, except no claim is made to the images in notes 7 and 29 *infra*. Fair warning: you may find this essay unsettling for the following reasons.

First, it is primarily conceptual. That is, it does not emerge from traditional research; its footnotes are a partial attempt to anchor the text, but no attempt is made to be exhaustive.

Second, I have purposefully embraced the new, and most citations are to websites. This has both advantages and disadvantages. I believe this approach allows the essay to be broader in scope. Among other things, many web sites have no paper analog. Also, I am no historian, academic philosopher, theologian, etc., and certainly am not familiar with each discipline's research base. But indirectly through Google-mediated research, I can generally tie down specific assertions to relatively reliable secondary citations in disparate disciplines. The main disadvantages are that the citations are both less permanent and less authoritative. I have no control over "permanent." As to "authoritative," I have tried, undoubtedly not always successfully, to pick web cites that seem relatively authoritative. If this approach is troubling, please save yourself the aggravation and pass over this essay to others more suited to your scholarly tastes.

Third, I have tried to be honest, addressing and suggesting solutions for an age-old problem: death. My analysis may upset the religious. Sorry about that, but it seems to me that challenging established beliefs is part of the job. Again, if this is troubling, pass on to something more traditional and less threatening.

Finally, fourth, I've been thinking about these concepts for many years and can no longer easily attribute the various strands accurately. Therefore, I apologize in advance to those who should be cited for their contributions herein.

I want to thank Patrick Gudridge for his comments. Sue Ann Campbell and Barbara Cuadras of the UM library were very helpful. Errors are mine. The images in notes 7 and 29 *infra* are the property of AFP and Getty Images respectively and may not be reproduced without the copyright holders' express prior written permission. For other reproductions, please e-mail requests to lawreview@students.law.miami.edu, which will grant your requests or forward them to me.

## I. INTRODUCTION

When the *University of Miami Law Review* approached me to write an essay in memory of John T. Gaubatz, it occurred to me that a fitting homage to John's creativity<sup>1</sup> would be a speculative piece about an overlooked aspect of the estate-settlement process—the decedent's human remains.<sup>2</sup> Strictly speaking, such remains are not "property" in any usual sense<sup>3</sup> nor part of the estate,<sup>4</sup> except, perhaps, for blood, sperm,<sup>5</sup> and cell lines.<sup>6</sup> But rapid scientific advances have uncovered unexpected value in unlikely places. This led me to ask the question: "*might the information imbedded in human remains have value?*" The *Law Review* was game, so read on.

Imagine you could not only look upon the face of Ramses the

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1. Thomas A. Robinson, *John T. Gaubatz: Teacher, Reformer, Colleague & Friend*, 62 U. MIAMI L. REV. 689 (2008).

2. The terms "human remains" and "remains" seem sufficiently precise for my purposes here even though they are part of a conceptual picture that I am, to some extent, challenging in this essay.

3. See, e.g., 2 WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND 429 (University of Chicago Press 1979) (1766); Regimius N. Nwabueze, *Biotechnology and the New Property Regime in Human Bodies and Body Parts*, 24 LOY. L.A. INT'L & COMP. L. REV. 19, 21–23 (2002). Commentators seem to go beyond property concepts and explore which of the interests in human remains should be protected and which should not. See, e.g., E. RICHARD GOLD, BODY PARTS: PROPERTY RIGHTS AND THE OWNERSHIP OF HUMAN BIOLOGICAL MATERIALS 161 (1996); see also Prue E. Vines, *The Sacred and the Profane: The Role of Property Concepts in Disputes About Post-Mortem Examination*, 29 SYDNEY L. REV. 235 (2007), available at [http://www.law.usyd.edu.au/slr/slr29\\_2.shtml](http://www.law.usyd.edu.au/slr/slr29_2.shtml); Alexandra George, *Is "Property" Necessary?: On Owning the Human Body and its Parts*, 10 RES PUBLICA 15 (2004); Michael H. Scarmon, *Brotherton v. Cleveland: Property Rights in the Human Body—Are the Goods oft Interred with Their Bones?*, 37 S.D. L. REV. 429, 449 (1992) (suggesting courts should be leery of finding property rights in dead bodies). The classic text is RUSSELL SCOTT, THE BODY AS PROPERTY (1981).

4. Nwabueze, *supra* note 3, at 28 (citing *Fischer's Estate v. Fischer*, 117 N.E.2d 855, 859 (1954) (Illinois probate court has no jurisdiction over disinterment)).

5. George, *supra* note 3, at 21 (citing the justly famous *Hecht v. Superior Court (Kane)*, 20 Cal. Rptr. 2d 275 (Cal. Dist. Ct. App. 1993) ("... sperm is ... part of decedents estate ... " *Id.* at 850)).

6. See *Moore v. Regents of Univ. of Cal.*, 793 P.2d 479 (1990) (holding that the plaintiff, a living patient, did not state a cause of action for conversion where defendant-physician used plaintiff's cells without permission as the plaintiff did not have an ownership interest in his cells after they were removed). Presumably if a physician could lay claim to the cell line, so could a well-represented patient, and his or her estate. For example, consider the extension of the right of publicity into one that could be owned by an estate under some circumstances. See GOLD, *supra* note 3, at 93–95 (discussing the rights to Elvis Presley's persona after his death).

Great,<sup>7</sup> but talk with him. What might we learn about ancient Egyptian civilization? Or imagine a database comprised of billions of decedents' DNA<sup>8</sup>-genomes,<sup>9</sup> along with their corresponding medical histories and causes of death. What advances might future medicine make? Or imagine that after a painful "death," you awoke to unfamiliar surroundings attended by strangely dressed people speaking an unintelligible language. You might be disoriented, but delighted to find yourself alive. These are improbable speculations, but neither incomprehensible nor beyond the reach of future biotechnology. However unlikely, all might be possible using properly preserved information extracted from human remains.

My central claim is that properly preserved human remains might yield valuable information, for ourselves and our posterity. Coincidentally, it is fitting that I began this essay during the week of Halloween—and submitted it around Easter. My focus is on the information contained in human remains, not the remains themselves. That is, while there is a large and potentially lucrative market in human organs such as kidneys, livers, corneas and the like,<sup>10</sup> that's not the kind of value I wish to explore. There are several reasons for this narrower focus. Among

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"Mummified body of Ramesses II (1304-1237 BC) found in a tomb at Dair al-Bahri" currently located in the Royal Mummy Room, Museum of Egyptian Antiquities, Cairo, Egypt, image from the Bridgeman Art Library XIR 169522 <http://www.bridgemanart.com/image.aspx?key=Ramesses&filter=CBPOIHV&thumb=x150&num=15&page=35&img=6f56aef13cc345e5a31941d03782fe7c> (last visited 12/19/2008). Copyright AFP (used by permission).

8. Deoxyribonucleic Acid.

9. For simplicity, I may use "DNA" and "genome" interchangeably to indicate approximately the genotype blueprint from which a phenotype clone might be created, a slightly different and more purposeful focus than the usual meaning of "genome" as "the genetic material of an organism." MERRIAM WEBSTER'S COLLEGIATE DICTIONARY 522 (11th ed. 2005). I am not a biochemist, but I believe the correlation between DNA "blueprint" and clone is less than perfect. Among others things, I believe not all DNA information would be expressed in creating the clone. Thus, I believe information about which DNA sequences are expressed would have to be added to that contained in the DNA itself for completeness. Also, I believe mitochondrial DNA information may be separately transmitted and may have to be added as well. As research becomes better able to read DNA in terms of the bodily structure expressed, undoubtedly other anomalies will be discovered. Still, I believe the DNA:clone blueprint:structure analogy is a useful approximation.

10. In 1999, a human kidney was bid up to \$5.7 million on eBay before the sale was stopped. *Online Shoppers Bid Millions for Human Kidney*, CNN.COM, Sept. 3, 1999, <http://www.cnn.com/TECH/computing/9909/03/eBay.kidney>.

them are that discussion of human remains can trigger strong primitive emotions, emotions I wish to sidestep.<sup>11</sup> Think Frankenstein's monster. Whistling in a graveyard. Information such as that contained in books or computer files does not have the same distracting emotional baggage. Information also has different properties from the medium used to express it.<sup>12</sup> In this section of the essay I discuss the potential value of human remains and ignore the costs associated with storage, maintenance, and reconstruction (or revival). In a later economics section<sup>13</sup> I will discuss these costs.

Intentional preservation of human remains is common, as exemplified in such cultures as that of ancient Egypt and in more modern times with such examples as Lenin's Mausoleum.<sup>14</sup> Scottsdale, Arizona is home to the Alcor Life Extension Foundation<sup>15</sup> and the frozen remains of Ted Williams.<sup>16</sup> Brains of exceptional individuals have also been preserved for research.<sup>17</sup>

11. See Vines, *supra* note 3, at 236 ("the body as a sacred or semi-sacred object . . ."). I also wish to sidestep the discussion of whether the body is "property."

12. There are a number of differences. Information from human remains may have a positive value, while, on balance, human remains may need, however reverently, to be disposed of, a negative value. Unregulated, relatively fresh remains, or parts thereof, may have an increasingly positive value. See Michael Lachmann, *Research Fuels Grim Trade in Death*, BBC NEWS, Mar. 18, 2008, <http://news.bbc.co.uk/2/hi/health/7302468.stm>; see also SCOTT, *supra* note 3, at 44; Scarmon, *supra* note 3, at 429 (citing *Moore v. Regents of Univ. of Cal.*, 793 P.2d 479 (1990) (discussed *supra* note 6)).

Human remains, or parts of them, are distinct and hard to reproduce. Information, freed from the material expressing it, is endlessly and inexpensively reproducible, as the Recording Industry Association of America (RIAA) has discovered with illegal file sharing of songs liberated from the records and CDs on which they are stored. And in a formal sense, information is valuable as it tells us something we did not know. One gold bar has about the same value as another, but that's not true of information. If we had two intact cells from Ramses, and sequenced the DNA from one, virtually no additional information, as information, would be added by sequencing the second. Taking a different example, where we were able to extract ancient Egyptian spoken language from Ramses' remains, as he spoke it, we would be less interested in extracting the same information from Tutankhamen's. See CLAUDE E. SHANNON & WARREN WEAVER, *THE MATHEMATICAL THEORY OF COMMUNICATION* 62 (Univ. of Ill. Press 1949) ("For example, a computing machine set up to calculate the successive digits of  $\pi$  produces a definite sequence with no chance element. No channel is required to 'transmit' this to another point.").

13. See *infra* text accompanying note 151.

14. See Lenin Mausoleum Home Page, [http://www.aha.ru/~mausoleu/index\\_e.htm](http://www.aha.ru/~mausoleu/index_e.htm) (last visited Nov. 15, 2008). For the history of the mausoleum and photographs of Lenin's body see Lenin Mausoleum History in Photos, [http://www.aha.ru/~mausoleu/m-hist\\_e.htm](http://www.aha.ru/~mausoleu/m-hist_e.htm) (last visited Nov. 15, 2008).

15. Cryonics: Alcor Life Extension Foundation, <http://www.alcor.org/> (last visited Nov. 15, 2008).

16. *Ted Williams Frozen in Two Pieces*, CBS News, Aug. 12, 2003, <http://www.cbsnews.com/stories/2002/12/20/national/main533849.shtml>.

17. See *Why Size Mattered for Einstein*, BBC NEWS, June 18, 1999, <http://news.bbc.co.uk/1/hi/sci/tech/371698.stm>; see also Carl Friedrich Gauss Papers, [http://www.nsula.edu/watson\\_library/gauss/](http://www.nsula.edu/watson_library/gauss/).

Since we are in the realm of speculation, and for purposes of discussion, I wish to use a specific, although hypothetical, example. I hypothesize human remains instantly flash frozen to near absolute zero in such a way that no damage<sup>18</sup> occurs, similar to sperm prepared for storage in a sperm bank.

What information might these frozen human remains contain? If undamaged, each cell would contain a DNA blueprint from which, at least in theory, a “twin” or “clone” might be reconstructed.<sup>19</sup> As hypothesized, these remains would also preserve all of the attributes of the individual that had developed from the DNA blueprint, including such things as his or her specific short and long term memories, ability to ride a bike, or ability to speak a language. In fact, these remains would preserve everything we would need to recognize an individual reconstructed from the information as, potentially, the “same” individual as he or she who was flash-frozen.<sup>20</sup> As hypothesized, even particular status information would be retained; an individual in the middle of a thought might complete the thought upon awaking centuries later.<sup>21</sup>

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18. Sperm banks freeze and preserve viable sperm. See Sperm Bank Directory, <http://www.spermbankdirectory.com/> (last visited Nov. 15, 2008); see also H. Hayakawa et al., *Cryopreservation of Conventional and Sex-Sorted Bull Sperm Using a Directional Freezing Method*, REPROD., FERTILITY & DEV., available at <http://publish.csiro.au/?paper=RDv19n1Ab118> (describing current research into preservation of bull sperm). Currently this cannot be done with larger organisms, probably because non-instantaneous freezing causes damage. See Jocelyn Kaiser, *New Prospects for Putting Organs on Ice*, SCIENCE, Feb. 8, 2002 at 1051, 1051. To my knowledge, no large organism has ever been frozen into “suspended animation” and revived, although some have developed partial protectorates, such as ice structuring proteins. See Stefan Anitei, *How Do Anti-Freeze Proteins Work?*, SOFTPEDIA, Mar. 19, 2007, <http://news.softpedia.com/news/How-Do-Anti-Freeze-Proteins-Work-49714.shtml>; see also ROBERT C.W. ETTINGER, THE PROSPECT OF IMMORTALITY, 9-42 (1964).

One possible approach might be to use the capillary system to perfuse cryogenic agent and freeze each part of the body/human remains from the inside. I have no idea whether this would work. My hypothesis is only that, a hypothesis.

Damage and information destruction are not the same. A computer hard drive might be damaged so it no longer functions, but it might not have lost any information. Were my crashed hard drive to contain the only pictures of my wedding, I would preserve the hard drive even if no one could read it with current technology.

19. And in theory, the DNA could be sequenced into base pairs, these base pairs stored as information in, say, thick books, and then used to resequence an identical set of base pairs that could be inserted into a germ cell and grown into a clone that might be as different from the individual-as-information as twins raised in different countries, with different languages, religions, and value systems might be. Co-discoverer of DNA, Dr. James D. Watson, was recently presented with his DNA genome on two DVD discs. Nicholas Wade, *Genome of DNA Discoverer Is Discovered*, N.Y. TIMES, June 1, 2007, A19. Of course, the information could undoubtedly be compressed. Books have the advantage over DVDs in being a more permanent medium, and more readable as technology changes, but DVDs would be less costly to resequence back into base-pairs error-free.

20. See generally DEREK PARFIT, REASONS & PERSONS (1984) (discussion particularly relevant at p.199 et. seq.).

21. Or the mid-thought might be read and displayed externally, perhaps translated into a new

In the following, I will turn first to a discussion of some possible values hypothetical flash-frozen information from remains might have to society, followed by a discussion of the value they might have to the individual whose remains they are, and finally to a brief discussion of some legal, economic, and theological implications.

## II. VALUE TO SOCIETY

It is my task in this essay to explore the potential value of human remains to society and the individual whose remains they are. Both “society” and “individual” are used in their imprecise, ordinary sense, the former being comprised of the latter; a major distinction being that an “individual” is commonly understood to have an internal subjective awareness and drive for personal survival, which society has at best only in attenuated form.<sup>22</sup> In discussing a particular individual, I will adopt the crude terms “vessel” and “content” by analogy to computer “hardware” and “software.”<sup>23</sup> The analogy is less than perfect on a number of different levels, since we don’t know precisely how the “vessel” or “contents” work.

Then there is the term “value,” a notoriously slippery term. However formed, individuals value certain things. In finding or assigning value to something, we may ask, among other things, value to whom,<sup>24</sup>

language. An individual who accidentally fell into a vat of liquid nitrogen might be discovered, expressed in future language, to be in the middle of expressing “Aw \*#K%!”

22. Currently, I seem to have a privileged kind of access to my stream of consciousness, but not yours. I could be mistaken, but I believe you have similar privileged access to your consciousness. These streams seem leaky. You could describe your current consciousness to me. See, e.g., WILLIAM FAULKNER, *THE SOUND AND THE FURY* (1929), reprinted in WILLIAM FAULKNER NOVELS 1926–1929, at 879 (Joseph Blotner & Noel Polk eds., 2006) (beginning with Benjy’s perceptions). In the text accompanying note 203, I suggest I could, in principle, have access to “your” consciousness as well as “mine.” There is also the implication that a group of us could share a common consciousness.

In addition, I believe my desire for personal survival is at odds with the desire of the society of which I am a part since at some point an aging individual no longer benefits society, but burdens it. See *infra* note 237 for some indications we may not desire indefinite survival.

23. This is not the same as the philosophical distinction between “body” and “mind.” I want to claim that what some see as “mind” is, at present, a product of a functioning “body,” which includes both the “vessel” and the “contents.” (And yes, I do believe there is no reason why mind, even a particular mind, could not be supported by non-biological means, as I suggest below). See *infra* text accompanying note 208. By “contents,” I guess I mean how the DNA-blueprinted structure is filled out by such things as native language, family attachments, skills learned, experiences remembered, and so forth.

24. The value of human remains to one who believes they are the key to “rebirth” may be quite different from another who believes the soul departs leaving behind only a husk. See GOLD, *supra* note 3, at 12.

for what,<sup>25</sup> and when?<sup>26</sup> Different individuals may value the same thing differently, for different purposes, and at different times. With an inevitable conflict in values, we may further ask how values are measured and compared, and how inevitable conflicts are resolved. In many societies individual values are measured in the aggregate through, among others, political and/or market processes such as the ballot box and/or marketplace.<sup>27</sup> But it should not be overlooked that these methods of value aggregation are ways of summarizing data for use and mask the fact that values of individuals may differ. A beloved pet dog may have a negative market value, but not to its owner.

Even within *my* society, I do not have special access to political or commerce aggregation data, to say nothing of the other societal perspectives around the world. Moreover, while flash-frozen hypothesized human remains would continue fixed and unchanged, the value perspectives of my, and other, societies will inevitably evolve and change around these remains.<sup>28</sup> Our perspective on Egyptian mummies is different from the ancients that preserved them. All value relativists have the problem of the “proper” perspective, but my discussion has a special problem. Future biotechnology might “improve” the human genome and thereby change the value perspective of individuals and of the societies of which they are comprised.<sup>29</sup> As a relativist, I cannot anticipate these

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25. *Id.* at 10, 46 (using the multiple values of chalk and wedding rings as examples of how a particular good may have different values to different individuals for different reasons).

As explored below, the information gleaned from human remains may be valuable for medical research. This raises an ancillary point that information about someone may be stored in forms other than human remains. Indeed, were it currently possible, such storage of the information from human remains might be preferable.

26. As one approaches death, the value of certain assets, such as wealth in the bank, may lose subjective value to the dying. You can't take it with you. Thus, the value to the survivors may begin to diverge from that to the dying.

27. Presumably the set of values translated into political action through the ballot box differs from, or at least is a superset including or containing those expressed in commerce. Among other things, political action sets the permissible boundaries of what can be the subject of commerce, see GOLD, *supra* note 3, at 9 (discussing the market in more depth), and can aggregate a broader range of values. Richard Gold also argues that market value may be only one dimension and may not capture essential value. See *id.* at 150–51. Paraphrasing and extending his analogy, were we to simply measure the change in the intensity of the color green in a television broadcast we would be far from being able to intuit the form and color of the program of which green hue is a component. Market value may be only a component of “real” value, and perhaps not the most important part.

28. Societal values evolve, and must evolve as they adapt to, among other things, new technologies. Solomon did not have to resolve the competing claims of surrogate and biological mothers. See 1 *Kings* 3:16–28 (King James).

29. For a relativist, societal values are aggregations of individual values, perhaps with some emergence properties that in turn depend, among other things, on genetics, socialization, and individual variation. As to genetics, we usually assume a fixed human genome. This is understandable. Smiles may have the same emotional value the world over—but not to whales. See Paul Ekman & Dacher Keltner, *Facial Expressions of Emotion: An Old Controversy and New*



changes any more than I can anticipate the normally evolving perspectives of natural societies. What to do? In the discussion that follows, I will assume genetically modern humans and generally current Western values, which is, not coincidentally, the value system of the Western society of which I, and presumably you, are members. That said, the death of individuals is thought to have both natural and spiritual dimensions. I will call on both perspectives in the following discussion and will observe no boundaries between science and theology.<sup>30</sup>

### A. *Value of the Vessel*

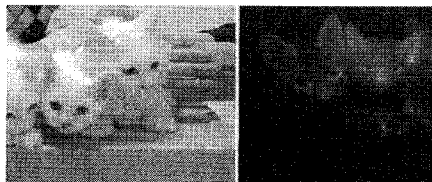
“[I]magine a database comprised of billions of decedents’ DNA-genomes along with their corresponding medical histories and causes of death.”<sup>31</sup>

The list of possible values from human remain information cannot be fully anticipated. Who can see the future? Extraction of information from human remains, except in the grossest CSI<sup>32</sup> sense, is only now within range of modern biotechnology.<sup>33</sup> Prior to the launch of the Hubble spacecraft, who knew the benefits its images would bestow? Who

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*Findings*, 335 PHIL. TRANSACTIONS OF THE ROYAL SOC’Y LONDON B 63, 64 (1992) (“We . . . interpreted the evidence as showing universal facial expressions. . . .”)

One of the challenges facing the modern world is gene mashing, that is, the ability to manipulate genes,



These “cloned [cats] genetic makeup means they glow red in the dark when exposed to ultraviolet light.” Copyright Getty Images (used by permission); Kaori Hitomi, *Genetically Engineered Mice Don’t Fear Cats*, NATIONAL GEOGRAPHIC NEWS, Dec. 13, 2007, <http://news.nationalgeographic.com/news/2007/12/071213-mouse-cats-AP.html>. Advances in medical biotechnology will undoubtedly lead to humans born free of birth defects, with perfect eyesight and hearing. How far behind will be genetic manipulation of morals (a truly scary thought)?

Even within range of values which individuals and their societies can adopt, we need not look far to see the affects of socialization, both historically and currently. In particular, the range of disposal of human remains seems wide. *See, e.g.*, E. BENDANN, *DEATH CUSTOMS: AN ANALYTICAL STUDY OF BURIAL RITES* 45 (Dawsons of Pall Mall 1969) (1930); PETER METCALF & RICHARD HUNTINGTON, *CELEBRATIONS OF DEATH: THE ANTHROPOLOGY OF MORTUARY RITUAL* (2d ed. 1991) (discussing rituals associated with death).

30. I make no claim to be a trained theologian, but believe I have a general understanding of many theological perspectives and arguments.

31. *See supra* text accompanying note 9.

32. *CSI: Crime Scene Investigation* (CBS) (Television program that uses forensic techniques to solve cases, usually involving murders).

33. *See, e.g.*, All About the Human Genome Project, <http://www.genome.gov/10001772> (last visited Nov. 15, 2008).

could anticipate the transformative power of the printing press,<sup>34</sup> sweeping away the cobwebs of the middle ages and ushering in the modern world? Thus, I can only speculate on some possible uses human-remains information might provide.

I turn first to the societal value of DNA from the human remains of “great individuals.” Assume we could clone past historical figures from their DNA as easily as we reconstructed the 1918 influenza virus.<sup>35</sup> Would it be useful for the progress of, say, science, literature, and music, to clone a hundred Einsteins, a thousand Shakespeares, or a million Mozarts? In the right environments, what might these exceptional individuals<sup>36</sup> contribute to the advancement of society?

Another possible use of such DNA is as raw material, as strings of genetic code, from which to “improve” the human genome. The code does not need to be used in its original form. Presumably once a future Champollion<sup>37</sup> deciphers the DNA blueprint and allows translation into the human structure encoded, bioengineers will be able to improve on it, as airfoils allow aerobatic maneuvers only hinted at by a bird’s wing.<sup>38</sup>

Assembled into a database, information from millions or billions of human remains might prove valuable to society for medical research, either as a national database like that proposed for Iceland,<sup>39</sup> or linked to other large databases. For example, the remains information might be

34. See The Printing Press, <http://www.historyguide.org/intellect/press.html> (last visited Nov. 15, 2008).

35. *Researchers Reconstruct 1918 Pandemic Influenza Virus; Effort Designed To Advance Preparedness*, CENTER FOR DISEASE CONTROL & PREVENTION, Oct. 5, 2005, <http://www.cdc.gov/od/oc/media/pressrel/r051005.htm>.

36. Both nature and nurture may be required for genius to flourish; talent is necessary, but world-class transformative talent seems to arise more often in certain nurturing environments such as Classical Athens and the Italian Renaissance. Nobel Laureates are more likely to be found in the United States. See Countries with the Most Nobel Prize Winners, <http://www.aneki.com/nobel.html> (last visited Nov. 15, 2008).

37. Jean-François Champollion who, using the Rosetta Stone, allowed us to read Egyptian hieroglyphics. See Jean-Francois Champollion, [http://www.mnsu.edu/emuseum/information/biography/abcde/champollion\\_jean-francois.html](http://www.mnsu.edu/emuseum/information/biography/abcde/champollion_jean-francois.html) (last visited Nov. 15, 2008); LESLEY & ROY ADKINS, *THE KEYS OF EGYPT: THE OBSESSION TO DECIPHER EGYPTIAN HIEROGLYPHS* (2000).

38. Technological advances usually have dark sides. Genetic “improvement” implies eugenics, which many think contributed to Nazi outrages. See RICHARD WEIKART, *FROM DARWIN TO HITLER: EVOLUTIONARY ETHICS, EUGENICS, AND RACISM IN GERMANY* 145, 232 (2004); see also HENRY FRIEDLANDER, *THE ORIGINS OF NAZI GENOCIDE: FROM EUTHANASIA TO THE FINAL SOLUTION* 4 (1995) (“The term ‘eugenics’ . . . [was] described . . . as ‘the science of the improvement of the human race by better breeding.’”)

39. See Gísli Pálsson & Paul Rabinow, *The Icelandic Genome Debate*, 19 *TRENDS IN BIOTECHNOLOGY* 166–171 (2001), available at [http://www.sciencedirect.com/science?\\_ob=ArticleURL&\\_udi=B6TCW-42RMMT5-S&\\_user=687815&\\_rdoc=1&\\_fmt=&\\_orig=search&\\_sort=d&view=c&\\_acct=C000038378&\\_version=1&\\_urlVersion=0&\\_userid=687815&md5=be83d012626ced4d2d27f074b5e095b9](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6TCW-42RMMT5-S&_user=687815&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000038378&_version=1&_urlVersion=0&_userid=687815&md5=be83d012626ced4d2d27f074b5e095b9). Perhaps privacy concerns might require banking the data for a hundred years or so before analysis and use.

linked to medical histories and grocery receipts (for nutrition), allowing society to make medical advances. Among other things, with the proper analysis, it might be possible to determine whether and to what extent certain drugs generate certain medical outcomes.<sup>40</sup>

It should be noted that many of these benefits can be obtained without the preservation of complete human-remain information.<sup>41</sup> DNA storage is currently possible and offers almost all of the same benefits.<sup>42</sup> There was a Nobel Laureate sperm bank,<sup>43</sup> which presumably preserved information similar to that explored here. Indeed, it seems likely that current trends will generate effectively the same sort of DNA database. Fingerprint databases have expanded well beyond their criminal beginnings.<sup>44</sup> Your author is represented three times: once when I worked briefly for the federal government, and twice more in applying for two states' bars. Nations are developing DNA databases of criminals.<sup>45</sup> Assuming they follow the fingerprint trajectory, voila, a national DNA database without reference to information from human remains.<sup>46</sup>

### B. *Value of the Contents*

"Imagine you could not only look upon the face of Ramses the Great, but talk with him."<sup>47</sup>

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40. Again, this Panglossian vision has a darker side. Unless the data is secure, it could be used by insurance companies to price medical and life insurance policies for relatives, a current concern with databases containing information on genetic predisposition to disease. (The flip side is that insurance may become more affordable for those at less risk.). World War II U.S. Japanese internment camps demonstrate that once data is available, even though confidentiality is promised, governments in crisis have difficulty restraining from using it. J.R. Minkle, *Confirmed: The U.S. Census Bureau Gave Up Names of Japanese-Americans in WW II*, SCI. AM., Mar. 30, 2007, <http://www.sciam.com/article.cfm?chanID=sa003&articleID=A4F4DED6-E7F2-99DF-32E46B0AC1FDE0FE>. The desire to avoid government meddling is one of the reasons Hong Kong British civil servant John Cowperthwaite did not collect economic data. See Milton Friedman, Op-Ed., *Hong Kong Wrong*, WALL ST. J., Oct. 6, 2006, at A14 ("Cowperthwaite . . . refused to collect economic statistics for fear this would only give government officials an excuse for more meddling."). It is also perhaps a reason Hong Kong ranks high on the Index of Economic Freedom. See Index of Economic Freedom 2008, <http://www.heritage.org/Index/countries.cfm> (last visited Nov. 15, 2008).

41. In particular, for many, if not most, life-threatening diseases, information about the brain might be irrelevant.

42. See, e.g., GeneTree, <http://www.genetree.com> (last visited Nov. 15, 2008); About DNA Storage—DNA Analysis, <http://www.storedna.com/html/storage.html> (last visited Nov. 15, 2008).

43. David Plotz, *The "Genius Babies," and How They Grew*, SLATE, Feb. 8, 2001, <http://www.slate.com/id/100331/>.

44. Federal Bureau of Investigation, <http://www.fbi.gov/hq/cjisd/iafis.htm> (last visited Nov. 15, 2008).

45. The National DNA Database, <http://www.homeoffice.gov.uk/science-research/using-science/dna-database> (last visited Nov. 15, 2008).

46. Gautam Naik, *The Gene Police—In Britain, Controversial DNA-Tracing Tactics Are Helping Forensics Experts Crack Unsolved Crimes*, WALL ST. J., Feb. 23, 2008, at A1.

47. *Supra* text accompanying note 7.

Using the flash-frozen hypothetical and venturing further into the realm of speculation, it seems not unlikely that some “content” information would be preserved even though we don’t know where or how this information is stored,<sup>48</sup> much less how it could be extracted. We do know that when I ask someone for his mother’s name, he is able to respond with, for example, “Judith.” Certain brain lesions can remove the ability to access, say, nouns,<sup>49</sup> or recognize one’s children.<sup>50</sup> Content information likely is stored somewhere, somehow, within an individual’s body, undoubtedly in the brain. All of us access such information every day. And it seems likely that at least some of this information, perhaps most of it, could be preserved through a process similar to my flash-frozen hypothetical. If content information were preserved,<sup>51</sup> how might it be read? Currently the only “players” we have are bundled with the body.<sup>52</sup> Science and biotechnology have successfully overcome similar challenges. Birds bundle flight with existence, yet we were able to duplicate flight artificially.<sup>53</sup> Further, we were able to extend flight to destinations unvisited by natural flyers, including the planets.<sup>54</sup> Of course, just because something is conceivable, even theoretically possible, does not mean it is achievable. Extraction and deciphering human remains might never be achieved. Yet only a foolish prognosticator would predict the trajectory of science might not put the information embedded in properly preserved human remains within reach.

Later in this essay I will explore the possible value of the information contained in the human remains for the individual whose remains they are, but here I want to explore the possible value of the information contained in the human remains for society. Again, who can anticipate the consequences of new biotechnology? If we are able to preserve and extract information from human remains, it’s hard, even rash, to attempt

48. See *supra* note 23 for “contents.”

49. See A. R. Damasio & D. Tranel, *Nouns and Verbs Are Retrieved with Differently Distributed Neural Systems*, 90 PROC. NAT’L ACAD. SCI. U. S., 4957 (1993).

50. Sandra Blakeslee, *Memory Disorder Seen As Clue to Brain Function*, N.Y. TIMES, June 14, 1985.

51. Indeed, some information may be lost. For example, when the power goes dark, some short-term memories, which seem to be stored differently from long-term memories, may go with it. See *Retrograde and Anterograde Amnesia*, [http://www.psywww.com/intropsych/ch06\\_memory/retrograde\\_and\\_anterograde\\_amnesia.html](http://www.psywww.com/intropsych/ch06_memory/retrograde_and_anterograde_amnesia.html) (last visited Nov. 15, 2008). This would not happen in my flash-frozen hypothetical, but is not unlikely in real world conditions.

52. Presumably my “player” would be able to read your information, assuming disentangling the player and the content does not also fragment “me” in the process.

53. See, e.g., *The History of Ballooning*, NOVA ONLINE, <http://www.pbs.org/wgbh/nova/balloon/science/history.html> (last visited Nov. 15, 2008). For heavier-than-air powered flight see Bill Gates, *The Wright Brothers*, TIME, Mar. 29, 1999, at 70, 70. .

54. Mars Exploration Rover Mission, <http://marsrovers.jpl.nasa.gov/home/index.html> (last visited Nov. 15, 2008).

to predict the value for society, both good and evil. Nevertheless, I can't resist some speculations.

Information from human remains could provide a means of cultural preservation.<sup>55</sup> Historians extract history from various sources,<sup>56</sup> such as pottery shards, but among the most valuable are written records, which when deciphered, open up new worlds; they let us eavesdrop on thoughts from the past. Some writings are preserved in a near permanent form.<sup>57</sup> For others we are deeply indebted to medieval copyists for preservation. Without records, we are, if not blind, at least vision-impaired. The medieval dark ages are "dark" in part because there are few records.<sup>58</sup>

Instant messages, e-mails, texting, and the like, leave few traces, and even if preserved, may not be readable after a few generations.<sup>59</sup> The hypothetical flash-frozen human remains would, if readable, be a permanent treasure trove of information about the past.<sup>60</sup> Were frozen remains, and the means to read them, available from the past to us now, what might we learn about the battle of Salamis? About Lenin and the revolution? Wouldn't it be interesting to access the memories of those at the Philadelphia Constitutional Convention directly rather than relying

55. Cf. Cultural Preservation, <http://www.earthministry.org/3e/pmap/culture.htm> (last visited Nov. 15, 2008) (explaining the importance to cultural preservation of information in more conventional forms).

56. See, e.g., What Are Historical Materials, <http://www.ndl.go.jp/modern/e/guidance/whats01.html> (last visited Nov. 15, 2008). Independent of preserved "minds," there is a literature on human remains as cultural artifacts, particularly of native peoples. See, e.g., Chris Davies, *Property Rights in Human Remains and Artifacts and the Question of Repatriation*, 8 NEWCASTLE L. REV. 51 (2004).

57. "The oldest [cuneiform] tablets go back to 3000 B.C. They are practically imperishable." Cuneiform Tablets, <http://www.crystalinks.com/cuneiformtablets.html> (last visited Nov. 15, 2008).

58. "Dark Ages . . . from the fall of the Roman Empire in the 5th century to the 9th or 10th century. The term appears to imply cultural and economic backwardness after the classical civilization of Greece and Rome, but indicates more an ignorance of the period due to the paucity of historical evidence." WORLD ENCYCLOPEDIA (2001); see also *The Greek Dark Ages*, <http://www.mnsu.edu/emuseum/prehistory/aegean/pre-greece/greekdarkages.html> (last visited Nov. 15, 2008) ("[W]riting, which had been so important during the Mycenaean [age], was not practiced.").

59. See, e.g., *Digital Preservation*, LIBR. CONGRESS, <http://www.digitalpreservation.gov/> (last visited Nov. 15, 2008); Digital Preservation Coalition, <http://www.dpconline.org/graphics/index.html> (last visited Nov. 15, 2008).

60. See ARTHUR C. CLARKE, 3001: THE FINAL ODYSSEY 20 (1997) (Frank Poole, the story's protagonist, after being accidentally frozen and reconstructed a millennium later "was often able to give them shortcuts and new insights about the events of his own time."). I have focused on society, but families might also find the information contained in their ancestors' human remains valuable in their genealogical research. This interest is shown by companies that do DNA searches of ancestry. See, e.g., Genealogy DNA Testing, <http://www.healthanddna.com/genealogy.html> (last visited Nov. 15, 2008). Cf. *Preserving Your Digital Memories*, LIBR. CONGRESS, <http://www.digitalpreservation.gov/you/digitalmemories.html> (last visited Nov. 15, 2008) (discussing effective ways of preserving digitally stored memories for posterity).

on surreptitious jottings? What could we learn from the preserved human remains of those who left no other record, such as peasants, common Legionnaires, and others? What could Otzi the Iceman<sup>61</sup> tell us about third millennium BC language,<sup>62</sup> know-how,<sup>63</sup> life, and culture? By peering into the past, the Hubble telescope has revolutionized cosmology. What might we learn by seeing into the past preserved in human remains? Moreover, just as the process of textual criticism of ancient texts may have helped launch the scientific revolution,<sup>64</sup> the process of extracting this information may have valuable spin-offs. The point need not be belabored. Accessing the “contents” of human remains could, of course, be immensely valuable to historians and others.

On the other hand, much of the information that might be extracted from human remains is likely to be of little interest or redundant. Memories of someone’s visit to a privy are unlikely to be of interest.<sup>65</sup> Information tells us something new.<sup>66</sup> We wouldn’t need all of the speakers of the English language to speak or read it. One, or at best a representative sample, would be needed. Extracting the experiences of the first Roman gladiator may be valuable, but the hundredth, or ten thousandth, may tell us little new. Like modern accountants, we may only need a representative random sample to get a reasonably accurate picture of what interests us. Therefore the argument that information from *some* human remains does not mean that information for *all*, or even most, human remains would be valuable, nor would all of the information in particular human remains be of equal value. Presumably Otzi’s heart and brain worked pretty much as ours.

61. See Ben MacIntyre, *We Know Oetzi Had Fleas, His Last Supper Was Steak and . . . He Died 5,300 Years Ago*, TIMES (London), Nov. 1, 2003, at 30.

62. Human remains might preserve many languages that otherwise will go extinct. For example, see *Last Alaska Language Speaker Dies*, BBC NEWS, Jan. 24, 2008, <http://news.bbc.co.uk/2/hi/americas/7206411.stm>, which discusses the death of the last native speaker of Alaskan Eyak in 2008.

63. Written information must be only a very small fraction of the know-how and experience contained within societies. There are undoubtedly processes lost to history that we would like to recover. See, e.g., Deborah S. Rogers & Paul R. Ehrlich, *Natural Selection and Cultural Rates of Change*, 105 PROC. NAT’L ACAD. SCI. U. S. 3416, 3417 fig.2 (2008) (“Shape of the [Polynesian canoe] boom and method of lashing varied greatly. They may have had important implications for the types of waves encountered, or may have been constrained by availability of materials, but this knowledge has not been preserved.”). Knowledge could be passed though human remains from the past, enriching the future.

64. I cannot recall the exact source of this insight, but I believe the idea was that ancient texts existed only in corrupt copies, and that comparing texts to discover the (probable) original text involved weighing evidence and arguments, which is a very proto-scientific endeavor engendering skills that could be transferable to the natural world as sort of God’s “natural text.”

65. Leopold Bloom’s defecation scene in *Ulysses* may be the exception that proves the rule. JAMES JOYCE, *ULYSSES* 56 (Hans Walter Gabler et al. eds., Random House 1986) (1922).

66. See discussion *supra* note 12.

### III. VALUE TO INDIVIDUAL

#### A. *What Is Valued: "Me"*

I can be pretty sure in the future that my body will stop working and become what others will then call my "remains." As I am not particularly religious, I assume that "I" will cease to exist in any way now important to me. Others may have memories of me, good and bad, but those memories will eventually fade and disappear. Likely, my life will be represented as a dash between two headstone dates (1943–2043?). Unlike Roland,<sup>67</sup> few of us rate a song—or line of epic verse.

I'm here now, and have certain values concerning my body (my future remains).<sup>68</sup> As a thought experiment, I can reflect on what parts of my body I value. This may give some insight into the value of my human remains to me as an individual. I invite you to explore your own values; you may discover you share all, some, or none of my values.

Let's begin with DNA. Do I value my DNA? Not particularly. I do not even know the exact sequence of base pairs that makes up my DNA. I view it as a sort of blueprint from which a twin copy, a clone, of me might be produced.<sup>69</sup> I have a weak interest in such a clone, but would not, without more, consider it "me" in any important sense.<sup>70</sup> What

67. See generally THE MEDIEVAL LIBRARY, THE SONG OF ROLAND (Israel Gollancz ed., Cooper Square Publishers, Inc. 1967) (1120) (an anonymous epic poem thought to be the oldest major work of French literature).

68. My values may be genetically predetermined, within limits, by natural selection, but, however I came by them, they are still *my* values. My wife seems beautiful to me. It would be interesting to know if this is the result of my medulla being bathed in the hormone estradiol at a particular time in my gestation, but that would not alter my wifely perception. SCOTT F. GILBERT, DEVELOPMENTAL BIOLOGY § 17.3 (Sinauer Assocs., Inc., 6th ed. 2000). Natural selection might affect the desire for personal survival. Note that women generally outlive men. A possible explanation is that women, but not men, are biologically useful as back-up child care for grandchildren, which helps propagate grammy's gametes. See William J. Cromie, *Why Women Live Longer than Men*, HARV. U. GAZETTE, Oct. 1, 1998, available at <http://www.hno.harvard.edu/gazette/1998/10.01/WhyWomenLiveLon.html>. If true, this might be achieved by altering the desire for survival between women and men, but there are undoubtedly more efficient natural selection means of accomplishing this result. It could be argued that I should not wish for long life after my children, even grandchildren, are adults since my estate is better devoted to nurturing them, the next generation. I could acknowledge the truth of this economic allocation, but that probably would not alter the fact that I, and presumably you, do wish to survive. I know of no controlled study measuring the desire for survival as it varies with age.

69. The genome is obviously more than a blueprint, perhaps more akin to a self-programmed biological machine that produces life, but the "blueprint" analogy will serve here. See Biological Eng'g Dep't, Mass. Inst. of Tech., *Laboratory Fundamentals in Biological Engineering*, MIT OPEN COURSEWARE, [http://ocw.mit.edu/NR/rdonlyres/Biological-Engineering/20-109Spring-2006/D2298F25-0A71-459A-8E4C-60C38814CEBD/0/mod3\\_intro13.pdf](http://ocw.mit.edu/NR/rdonlyres/Biological-Engineering/20-109Spring-2006/D2298F25-0A71-459A-8E4C-60C38814CEBD/0/mod3_intro13.pdf) (last visited Nov. 15, 2008) (wondering whether DNA is to a bioengineer what a blueprint is to an architect).

70. I might be interested in the use of this DNA in finding ancestors, perhaps growing a spare heart, and so forth. Cf. Ken Muneoka et al., *Regrowing Limbs: Can People Regenerate Body Parts?*, SCI. AM., Mar. 17, 2008, at 57 (discussing the ability of salamanders to regenerate

about my body, or parts of it? Begin with teeth. Due to a childhood accident, I now have short, permanent bridge between two of my lower teeth. I have lived long enough with this prosthesis that it seems as natural to me as my original teeth would have been. I care about the function, not the medium. What about my kidneys, which are working just fine, thank you? To be honest, I have never seen either of my kidneys and would not recognize them if they walked up and said "hello" to me on the street. I certainly could not pick them out of a line-up with other kidneys.<sup>71</sup> It's pretty hard to form an emotional attachment to something you've never seen and would not recognize. Again, I care about functionality. If biotechnology could transplant, or grow from my stem-cells, a replacement that worked as well, if not better, I'd be perfectly happy with the replacement. In fact, if by way of future miniaturization, Apple produced a newer, better i-kidney as a mechanical replacement, I'd be OK with that too.

Many forms of current death do not involve the brain. Terminal heart disease affects a vital organ that can be, and often is, replaced; many forms of cancer are deadly primarily because they metastasize to organs vital for life.<sup>72</sup> Suppose my brain was healthy, but other essential body organs were about to become non-functional. We currently transplant other organs.<sup>73</sup> If one can transplant other organs, reconnecting their blood supplies, why not brains? None of us would be happy with the dark, sense-deprived subjective world this implies.<sup>74</sup> But what if research allowed for reconnection of the brain to a new body? I assume this is within the grasp of current, or near future, biotechnology. We are making strides toward curing paralysis,<sup>75</sup> which I assume involves regrowing certain nerves<sup>76</sup> and connecting the brain with the body. I don't know about you, but I'd be happy to be transplanted to a new body. I change cars on a regular basis. I'm happy with each new car so long as it provides me with reliable transportation. As my body ages, I

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amputated limbs). But the information, as information, has no more value to me than the sterile reading of the Internal Revenue Code; indeed less, because at least the IRC uses English sentences, however convoluted.

71. If truth be told, I couldn't do it even if the line-up included giraffe kidneys.

72. *Researchers Successfully Inhibit Spread of Cancer in Mice*, U. CAL. NEWSROOM, July 5, 2006, <http://www.universityofcalifornia.edu/news/article/5457>.

73. Medline Plus: Organ Transplantation, <http://www.nlm.nih.gov/medlineplus/organ transplantation.html> (last visited Nov. 15, 2008).

74. *See* Sensory Deprivation, [http://findarticles.com/p/articles/mi\\_g2699/is\\_0003/ai\\_269900310](http://findarticles.com/p/articles/mi_g2699/is_0003/ai_269900310) (last visited Nov. 15, 2008).

75. *See* W. Dalton Dietrich, *Five Steps to a Cure*, MIAMI PROJECT, <http://www.themiami project.org> (last visited Nov. 15, 2008).

76. *See* Paroma Basu, *Scientists Grow Critical Nerve Cells*, U. WIS. STEM CELL & REGENERATIVE MED. CENTER NEWSROOM, Jan. 31, 2005, available at <http://www.news.wisc.edu/packages/stemcells/10648>.



would be perfectly happy to go to Honest John's and exchange my aging body for a new, improved model. And if the new, improved body were largely mechanical, the six million dollar me, and the alternative were six feet under the dirt, I don't think I'd hesitate for a moment. You will have to decide what you'd do.

Focusing more particularly on the brain, my prior hypothetical posited transplanting my brain into a body, entirely biological, a bio-mechanical hybrid (which in fact, with teeth, I am now), or wholly non-biological. Can a similar analysis be extended to the brain, or parts of it? Suppose a stroke damaged my cerebellum<sup>77</sup> so I could no longer walk and chew gum. (Actually I don't recall ever trying this, but believe I could do it.) And assume that future biotechnology could retrofit a bio-mechanical brain device that would serve. After the repair, I would find that I had regained my walk-chew coordination. Would I care how it was done? No. A more sophisticated prosthesis might repair my stroke-damaged Broca's area. Instead of frustration at not being able to express myself, I might find I was more eloquent than ever.

You can see where this is going. Like the proverbial bicycle, bit by bit each biological system in my brain might be replaced until it was all new,<sup>78</sup> and all non-biological. If this worked, it would mean that my consciousness would be supported by non-biological systems. That is, to support what is important to me, I would no longer need the biological support systems of breathing, eating, etc. These are not inconceivable concepts; I suspect science fiction has explored them for some time.<sup>79</sup> Returning to my values, the important message, at least for me, is that my body, and future remains, are important primarily because they support my mental processes. If the only way my mental processes, me, could survive was by a move to non-biological system,<sup>80</sup> if the alternative were disability, or death, I might very well find the move appealing.

You will have to reflect on your own values, but please don't do so

77. See, e.g., RICHARD S. SNELL, CLINICAL NEUROANATOMY 231 (6th ed. 2006), available at <http://books.google.com/books?id=Ucl0mozY1AAC&pg=RA1-PA231&lpg=RA1PA231&dq=cerebellum&source=web&ots=rDvFi3uF5k&sig=C9QSJxAnunPEZQDp0GaylSVacic&hl=en>.

78. Parfit, *supra* note 20, at 234 (imagining a similar spectrum, but with the duplicates consisting of new organic matter); see also THE 6TH DAY (Columbia TriStar 2000) (where the antagonist continually backs his brain up and infuses it into a succession of new body "blanks").

79. "Within a century, it will be possible to scan a human mind and reproduce it inside a machine." Robert J. Sawyer, *Y3K: The Science of the Next Millennium: Artificial Intelligence*, SFWRITER (2000), <http://www.sfwriter.com/y3kai.htm>.

80. See Ray Kurzweil, *The Coming Merger of Mind and Machine*, SCI. AM., Sept. 1, 1999, at 24, 24 ("Perhaps more interesting than this scanning-the-brain-to-understand-it approach would be scanning the brain for the purpose of downloading it. We would map the locations, interconnections, and contents of all the neurons, synapses and neurotransmitter concentrations. The entire organization, including the brain's memory, would then be re-created on a . . . computer.").

in the abstract. Consider the following series of hypotheticals. Start by assuming you are about to die of heart failure and are offered a perfectly functioning long-term heart for transplantation. With it, you continue; without it the black awaits. Or assume you are one of the many unfortunate blinded, deafened, or stroke-impaired victims and you were offered the appropriate prosthetic, non-biological, devices which would restore your sight, hearing, etc. Except for the operation itself, no one, including yourself, would be able to detect the prosthesis. You could see, hear, speak, and walk/chew normally. Be honest. Would you reject the prosthesis? Finally, assume you have been diagnosed with Alzheimer's, which will steal your mind over the next few years. Fortunately medical biotechnology has perfected a "positronic" brain,<sup>81</sup> to which the support for "your" mental processes can be transferred. You wake up in your normal body feeling perfectly fit; you notice no difference in how you feel or think. The alternative is slow decline into darkness. With your new brain, you carry on with your life. Again, be honest; deal or no deal?

The important point, the pay-off, is that my body, my future remains, is primarily important to me only insofar as it and they support my mental processes. If the mental processes, or their potential, could be separated from the human remains, and continue, I would find this appealing.

I suggest that this insight is reinforced by how individuals and society treat human remains when the body no longer functions. Before death, individuals are very concerned with medical care, and society devotes enormous resources to Medicare-like support for elderly bodies.<sup>82</sup> But when the same bodies stop working and are transformed into "remains," except as spare parts,<sup>83</sup> they become nearly worthless, or less than worthless. The same body, now remains, that once supported living, breathing, loved and loving, human being is, however reverently, routinely discarded or destroyed.<sup>84</sup> Attention shifts to the "soul" for many a religious believer in Western societies. Somehow, at some point, many believe a spiritual unscientific<sup>85</sup> "soul" disengages from the body at the

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81. See StarTrek Positronic Brain, <http://www.startrek.com/startrek/view/library/technology/article/70211.html> (last visited Nov. 15, 2008).

82. While the percentage varies, about half of Medicare enrollees were admitted to expensive Intensive Care Units in the last six months of life. See Jonathan Skinner et al., *The Efficiency of Medicare, in ANALYSES IN THE ECONOMICS OF AGING* 129, 142 (David A. Wise ed., 2005).

83. See Nwabueze, *supra* note 3, at 43.

84. See Federal Trade Commission's Facts for Consumers, <http://www.ftc.gov/bcp/online/pubs/services/funeral.shtm> (last visited Nov. 15, 2008).

85. "Unscientific" because, in general, no experiment in "this world" can falsify the belief, and, no, I do not wish to debate the finer points of Philosophy of Science here, thank you. See KARL R. POPPER, *THE LOGIC OF SCIENTIFIC DISCOVERY* 41 (Basic Books, Inc., 1959) (1934) ("[I]t

instant it becomes “remains.” Note that, consistent with my thought experiment, many individuals care very much with what happens to this “soul,” not in itself (who has seen a “soul?”) but as transportation. Like the corporeal body, the spiritual “soul” supports a non-corporeal “me” and conveys me, either immediately or in the future, to another realm, presumably not accessible in current space-time. Through soul encapsulation and transport, I believe “I” survive. Western theologies vary. Some believe in bodily resurrection,<sup>86</sup> but of course that must be in the future. Other theologies posit direct transport to paradise, leaving a worthless husk behind. It’s all very confusing.

At this point, of course, I have crossed a conceptual compartmentalized boundary from science, facts, and the world we inhabit to theology, and I will have more to say about this later. I want now to focus on the concept of “death” as it relates to human remains.

## B. *Soul Survivor*

### 1. DEATH IS A PREDICTION<sup>87</sup>

“Death,” which marks the boundary between living body and inanimate human remains, is usually conceptualized as an observable event which occurs at a fixed time.<sup>88</sup> (“The patient died at precisely 12:45:06 pm, January . . . , etc.”). I wish to argue this view is mistaken, that death is not an event, nor even a process, but rather a prediction; a prediction that such and such an individual will not be seen alive again.

Consider a “massive” heart attack or stroke caused by a clot occluding blood flow to heart or brain. Tissue does not die instantly, but can survive for at least minutes without irreversible damage.<sup>89</sup> The question then becomes when the damage becomes irreversible, and it’s clear

must be possible for an empirical scientific system to be refuted by experience.”). While Popper’s view is not that of all scientists, theologically, I believe, few would consider existence of the “soul” falsifiable by any experiment, even in theory.

86. I’ve often wondered what happens to cannibals with bodily resurrection. Who gets the eaten atoms, the cannibal or the missionary?

87. This section views an individual objectively from the “outside,” the next from the “inside,” that is subjectively.

88. Among the problems created by this concept is that of “simultaneous death,” where the order of death has important inheritance consequences. *See, e.g.*, MONT. CODE ANN. § 72-2-14 (2007) (“An individual who fails to survive the decedent by 120 hours is considered to have predeceased the decedent for purposes of homestead allowance, exempt property, and intestate succession, and the decedent’s heirs are determined accordingly.”). Belief that someone “died instantly” may provide some psychological comfort, for example, in reports of the astronauts killed in the 1986 Challenger explosion. *See* James Oberg, *7 Myths About the Challenger Shuttle Disaster*, MSNBC.COM, Jan. 27, 2006, <http://www.msnbc.msn.com/id/11031097/>.

89. Obviously organ transplantation requires survival of tissue after the death of the body. *See* What Happens to the Body After Death, <http://www.enter.net/~jtmaru/misc/bodyafter.html> (last visited Nov. 15, 2008).

that there is generally no fixed point, there are only times when revival becomes more and more unlikely.<sup>90</sup> Moreover, this time might be

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90. Conceptual confusion may be at the heart of the unsatisfactory “definitions” used to mark death. Death historically was equated with breath. “[D]eath occur[s] when a pathological event . . . produced both *irreversible* loss of the capacity for consciousness and *irreversible* loss of the capacity of breath. . . .” Chris Pallis, *On the Brainstem Criterion of Death*, in *THE DEFINITION OF DEATH: CONTEMPORARY CONTROVERSIES* 93, 96 (Stuart J. Youngner et al. eds., 1999) (emphasis added). In some conceptual systems, the word “soul” is correlated with “breath,” such as “atman” in the Upanishads. India Glossary Atman, <http://www.wsu.edu/~dee/GLOSSARY/ATMAN.HTM> (last visited Nov. 15, 2008). In English etymology,

[w]hile the origin of the English word *soul* is obscure, the word almost certainly had its origin in a word which meant ‘breath’ or ‘wind’ or ‘air’, or something like that. The word *spirit*—generally a synonym for *soul*—comes from the Latin *spiritus*, and clearly meant ‘breath’ originally. *Spiritual* and *respiratory* both derive from the same root!

Frank R. Zindler, *Spirit, Soul, and Mind*, AM. ATHEISTS, Feb. 1985, <http://www.atheists.org/Atheism/mind.html>.

Without belaboring the point, the same problem of conceptual confusion confounds the “cessation of heartbeat” standard see Kenneth V. Iserson, *The Definition of Death: Contemporary Controversies*, 282 J. OF THE AM. MED. ASS’N., 2367–68 (1999), available at <http://jama.ama-assn.org/cgi/content/full/282/24/2367>, and the “brain death” standard see Call To Revamp Death Definition, BBC NEWS, Sept. 12, 2007, <http://news.bbc.co.uk/2/hi/health/6987079.stm>.

What of a sedated patient on a heart-lung machine during an operation? Such individuals are not “dead” in the important sense. Brain and heart tissue, among others, can sustain a period of time without blood circulation and not suffer irreversible damage. Modern stroke treatment provides a “window” during which damage can be minimized. See, e.g., Kenneth Revett & Jay Kola, Apoptosis as a Mediator of Delayed Tissue Damage in Progressive Stroke: A Computational Study (Dec. 17, 2005), [ieeexplore.ieee.org/iel5/11034/34793/01662334.pdf](http://ieeexplore.ieee.org/iel5/11034/34793/01662334.pdf); N.R. Sims & M.F. Anderson, *Mitochondrial Contributions to Tissue Damage in Stroke*, 40 NEUROCHEMISTRY INT’L 511 (2002).

Suppose someone who met the criterion for “brain death” were to suddenly emerge from the coma. Would we want to say that such an individual was “dead,” or would the awaking by definition negate the prior classification as “dead”? See Norman Fost, *The New Body Snatchers: On Scott’s The Body as Property*, 1983 AM. BAR FOUNDATION RESEARCH J. 718, 724 (1983) (distinguishing between “brain-dead” and “dead-dead”). Or suppose someone in a “brain dead” state, with no discernable brain activity, and whose MRI (“Magnetic Resonance Imaging”) scan showed atrophied brain tissue, were to be infused with new stem cells that reconstructed the original brain growth. Lacking any memories, language, or other distinctive characteristics, assume such an individual were to wake up. What would we say? We might say that the original individual was “dead,” we might not, or we might adopt a new classification for this situation.

In 1848, Phineas Gage famously survived an iron spike through his forehead, and people claimed he was not the “same man” afterward. See *Phineas Gage Information*, DEAKIN U. PSYCHOL., Aug. 28, 2006, <http://www.deakin.edu.au/hmnbs/psychology/gagepage/Pgstory.php>. But legally he undoubtedly still owned the same property and was related to the same family. There are not enough cases. We need interim classifications, but perhaps in this regard we could learn from quantum mechanics and the uncertainty principle. Cf. *The Uncertainty Principle*, in STANFORD ENCYCLOPEDIA OF PHILOSOPHY (2006), <http://plato.stanford.edu/entries/qt-uncertainty>.

There *are* events that make it so unlikely that a person will be seen alive again that the event is nearly synonymous with the prediction, such as a marine blown up on Iwo Jima or passengers on the Madrid subway terrorist attacks. See, e.g., Cyril J. O’Brien, *Iwo Jima: A Remembrance*, MILITARY.COM, [http://www.military.com/NewContent/0,13190,NI\\_Iwo\\_Jima2,00.html](http://www.military.com/NewContent/0,13190,NI_Iwo_Jima2,00.html) (last visited Nov. 15, 2008); 2004: *Many Die as Bombs Destroy Madrid Trains*, BBC News, <http://>

delayed by such conditions as submersion in cold water.<sup>91</sup>

But surely there comes a time when revival is impossible. While this is the way to bet, I don't think it is right conceptually. When someone claims he "died" on the operating table when his heart stopped, we would want to say he was mistaken, or at least using the concept of "died" in trivial sense.<sup>92</sup> We are certainly not talking to a dead individual. Carrying this further, what would we say about someone in suspended animation, say in the film *Alien*<sup>93</sup> or *2001: A Space Odyssey*?<sup>94</sup> I doubt anyone would claim that the suspended space travelers were "dead." We understand that the "suspended" travelers could awake.<sup>95</sup>

Thus, I wish to argue that what we mean by "death" is that a given individual will not be seen alive, that is, we are making a prediction. If a missing individual is declared dead, then reappears,<sup>96</sup> philosophically, if not legally, we would say we were mistaken about considering him or her dead, that is, reappearance would negate the prediction of "death." Dipping into Christian theology, Lazarus presumably manifested all the markers for us to make a confident prediction that he would not be seen alive again.<sup>97</sup> For believers, Christ's intervention gave lie to this prediction. Lazarus arose.<sup>98</sup> Would we claim that he was no longer married to his wife, no longer owned his house? I think not. The prediction, how-

news.bbc.co.uk/onthisday/hi/dates/stories/march/11/newsid\_4273000/4273817.stm (last visited Nov. 15, 2008).

91. See Mike Tipton, *Cold Water Immersion: Sudden Death and Prolonged Survival*, 362 THE LANCET 12, (Supp. 1 2003) describing the example of a young girl in such a situation:

The present record is that of a 2-year-old girl who fell into iced water (<5°C) in late spring. She was completely submerged for 66 min [*sic*] and on recovery was cyanotic, apnoeic, and flaccid, with fixed dilated pupils, no pulse, and a rectal temperature of 19°C. With the aid of first-class care and ready access to cardiopulmonary bypass, the child made a full recovery.

*Id.* at 12–13.

92. Anyone Been Officially Dead?, [http://www.answerbag.com/q\\_view/414318](http://www.answerbag.com/q_view/414318) (last visited Nov. 15, 2008).

93. ALIEN (20th Century Fox 1979). This is a classic science fiction film directed by Ridley Scott, where deep-space crewmembers are awakened prematurely from a sort of undefined suspended animation.

94. 2001: A SPACE ODYSSEY (MGM 1968). This is another classic science fiction film depicting, again, a form of suspended animation.

95. That is, at least until the rogue computer HAL terminates life support to the suspended travelers. *Id.* Even here, we could ask in vain precisely when it became *impossible* to revive them.

96. In 2007, a British man, who was presumed dead and ironically named "Darwin," reappeared after five years. See Audrey Gillan, *Missing Canoeist Turns Up 5 Years On—But Wife Has Left for Panama*, GUARDIAN (London), Dec. 4, 2007, at 3.

97. "Then said Jesus unto them plainly, Lazarus is dead." *John* 11:14 (King James). "Then when Jesus came, he found that he had [lain] in the grave four days already." *Id.* 11:17. "Martha, the sister of him that was dead, saith unto him, Lord, by this time he stinketh; for he hath been [dead] four days." *Id.* 11:39.

98. "And he that was dead came forth, bound hand and foot with graveclothes; and his face was bound about with a napkin. Jesus saith unto them, Loose him, and let him go." *Id.* 11:44.

ever reasonable, was simply false. Indeed, Christ's returning from the cross and appearing before the apostles,<sup>99</sup> among other things, gives rise to the central Christian promise that there may be life after death, that is, in the important sense, Christ is not "dead," nor need we be, goes the argument, and the promise.<sup>100</sup>

Another line of argument runs from viruses to humans. Both are replicated from strings of base-pairs arrayed in a particular order, that is, from information.<sup>101</sup> Cartesian dualism is out of fashion; most would assume that two base strings are not different in kind. Indeed, certain strings of base-pairs are common to many living organisms, including humans.<sup>102</sup> It is possible to mix base pairs, producing chimeras, the aforesaid glowing cats and fearless mice.<sup>103</sup> Sequencing the base pairs of viruses has allowed replication of the deadly 1918 flu virus.<sup>104</sup> Presumably, sequencing the appropriate base pairs of a particular individual could similarly produce at least a clone.<sup>105</sup>

This is only a partial argument, because while we're pretty sure that viruses do not have mental processes, this is a property that seems to emerge from the complicated human structure.<sup>106</sup> While we might say the reconstructed virus is the "same" as the 1918, we probably could not claim this for a particular individual. A clone is only part of an individual's identity, and perhaps not the most important part; more would have to be added to the clone for many of us to want to claim that it was the same individual,<sup>107</sup> and perhaps not even then.

99. *Id.* 20:19-31.

100. *Id.* 20:31 ("[B]elieve that Jesus is the Christ . . . and that believing ye might have life through his name."); *Luke* 23:43 (King James) ("Verily I say unto [one of the criminals crucified with Jesus], Today shalt thou be with me in paradise.").

101. As to viruses see Introduction to the Viruses, <http://www.ucmp.berkeley.edu/alllife/virus.html> (last visited Nov. 15, 2008). Both are not only information, but also biochemical engines that act on this information, in both cases with help from a host cell. See discussion *supra* note 69.

102. Genomics and Its Impact on Science and Society, [http://www.ornl.gov/sci/techresources/Human\\_Genome/publicat/primer2001/4.shtml](http://www.ornl.gov/sci/techresources/Human_Genome/publicat/primer2001/4.shtml) (last visited 1/6/2009).

103. See *supra* note 29.

104. See Andreas van Bubnoff, *The 1918 Flu Virus Is Resurrected*, NATURE, Oct. 6, 2005, at 794, 794-95.

105. "Clone" does not mean "identical," just as "identical" twins are undoubtedly not identical, even at birth. For example, their fingerprints are different. See Edward P. Richards, *Phenotype v. Genotype: Why Identical Twins Have Different Fingerprints*, FORENSIC-EVIDENCE.COM [http://forensic-evidence.com/site/ID/ID\\_Twins.html](http://forensic-evidence.com/site/ID/ID_Twins.html) (last visited Nov. 15, 2008), and of course, if raised in different environments, say different countries, the resulting personalities will be quite different.

106. Although it is probably not limited to humans.

107. Perhaps we might use a sort of modified "Turing test," where, if we can't tell if it's *not* the same individual, it counts as the same individual. Actually, Turing was considering the general question of whether machines could "think" and translated that into a discussion of digital computers playing an "imitation game." See A.M. Turing, *Computing Machinery and Intelligence*,

The claim that such and such an individual is the same individual, at least from the “outside” is as uncertain as whether abortion is murder. The growth of a fetus is a continuous process from zygote to baby, but our classification categories are rigid “all or nothing.” We don’t currently recognize a third of a murder.<sup>108</sup> We know the facts presented, but have no fixed way of classifying them. For some, murder; for others, a woman’s right to choose.<sup>109</sup> Neither can be proven objectively wrong. Similarly, how much information would, from the outside, need to be added to the clone to make it the same individual is not an empirical claim, but a subjective one to be answered by each of us, and by society, presumably through political rather than market summation of values.<sup>110</sup>

Nonetheless, for some, I suggest it is possible that if enough information was embedded in the clone it would be recognized as “the same individual,” thus negating the death prediction.<sup>111</sup> I point to a sort of film “thought experiment” presented in the 1997 *Alien: Resurrection*<sup>112</sup> where the female protagonist is resurrected (reconstructed?) from blood samples (stored information?) and “awakens” two centuries later. As we watch the film, we have no trouble recognizing her as both alive, and “herself.”<sup>113</sup>

This leads to a final point concerning the prediction of death. The 1993 film *Jurassic Park*<sup>114</sup> posited regrowing Dinosaurs from mosquito-stored blood fixed in amber.<sup>115</sup> Replicating dinosaurs was only possible

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49 MIND 433, 433–34 (1950). For a variety of philosophical reasons, this may be unsatisfactory. For example, I might recognize one twin as his or her sibling on this test—until the “right” twin showed up. Consider also Derek Parfit’s intriguing teleportation example where two identical copies are produced, *both* of which presumably could pass the Turing test. PARFIT, *supra* note 20, at 200.

108. There are of course degrees of homicide, and the criminal plea bargaining system may introduce additional subtlety.

109. Debate: Should a Woman Have a Right to Choose Abortion?, [http://www.helium.com/debates/65898/side\\_by\\_side](http://www.helium.com/debates/65898/side_by_side) (last visited Nov. 15, 2008).

110. Individual classifications presumably affect political classifications, which in turn influence individual beliefs, which in turn . . . and so forth. Yet as the continuing abortion controversy indicates, the political classification may influence, but not control, individual classifications.

111. The addition of even more information might cause us to revise that recognition, or at least be puzzled, as Derek Parfit’s examples of two identical candidates, or branching streams of consciousness, indicate. See PARFIT *supra* note 20, at 245–46.

112. ALIEN: RESURRECTION (20th Century Fox 1997); see also ALIEN, *supra* note 93.

113. See ALIEN: RESURRECTION, *supra* note 112; see also CLARKE, *supra* note 60 (discussing Frank Poole’s resurrection).

114. JURASSIC PARK (Universal Pictures 1993).

115. For plot purposes, some missing information was filled in with frog DNA. JURASSIC PARK, *supra* note 114. But it seems more likely that were any DNA available, it might be more intelligently filled in as forensic sculptures put faces on skulls. See Facial Sculpture Workshop, <http://www.sculpture.oureach.ou.edu/> (last visited Nov. 15, 2008).

with information preservation.<sup>116</sup> Without the DNA, replication would be, if not impossible, highly unlikely. Information preservation thus made it more likely (in the film) that we could regrow and experience dinosaurs again.<sup>117</sup> Similarly, destruction of human remains makes it, if not impossible, very unlikely, to a close approximation of certainty, that we would see a particular individual alive again. If the information concerning an individual's human remains is preserved, we might be willing to say that such an individual was not "dead" in the absolute sense. There is always the possibility we will see them alive again.<sup>118</sup>

## 2. HOW INDEFINITE LIFE MIGHT BE EXPERIENCED IN A SECULAR WORLD

"[I]magine that after a painful 'death,' you awoke to unfamiliar surroundings attended by strangely dressed people speaking an unintelligible language."<sup>119</sup>

In the previous section I tried to explore briefly some of the issues involved in recognizing, or not, someone else's reconstruction from information embedded in his or her human remains. The available classifications, "survival" or not, alive or dead, seemed too crude to capture the nuanced possibilities. Moreover, as this is a new situation, we are probably open to persuasion as to what the "right" classification ought to be, which may morph into what it *is*, for us.<sup>120</sup>

Here I turn from the external to the internal. How would I feel if "I" were reconstructed from my stored information?<sup>121</sup> As countless science

116. Frozen sperm can be kept indefinitely. See *Q&A: Frozen Sperm*, BBC, May 25, 2004, <http://news.bbc.co.uk/2/hi/health/3745085.stm>. Of course, frozen sperm can die. Unfrozen and allowed to decompose, we can be pretty sure that the sperm will become useless. The same applies to humans. The purposeful destruction of an individual's human remains and/or its decomposition can make it unlikely, to an approximation of certainty, that the individual will not be seen alive again. This raises an interesting point. If congregated in a particular location for efficiency purposes, could a society's preserved ancestral information become a tempting target for its enemies?

117. There is speculation that this could be done with the long extinct woolly mammoth. Robert Roy Britt, *Mammoth DNA Could Spark Resurrection*, MSNBC.COM, Dec. 19, 2005, <http://www.msnbc.msn.com/id/10533418/>.

118. That's not to say that during the "individual-as-information" state we would treat an individual the same as either living before, or after, this middle state. See *supra* text accompanying note 7.

119. *Id.*

120. Value systems change; reasoned conclusions about our value systems can influence what they become.

121. I'm assuming the flash-frozen hypothetical. That is, when my body stops functioning, it is preserved for the information it contains. Later, perhaps centuries later, the information is read, and embedded in a new body, including all of my memories and other attributes of "me-ness." Again, a sort of Turing test might be proposed, but it would have to be an external test, for from the "inside" I would have no means of comparison. Every memory, even false or artificial, would appear to be "mine." See Turing, *supra* note 107, at 433-34; cf. PARFIT, *supra* note 20, at 200.



fiction stories have undoubtedly imagined, it is easy to conceive what “I” would experience were my stored information somehow to be reconstructed.<sup>122</sup> “I” might awaken in a strange room, with presumably strange devices, surrounded by funny-dressed people speaking with a strange accent or an unintelligible language. What I would *not* be confused about is who I was. I don’t think I would have much doubt about “my” survival any more than I doubt my existence and identity now. Unfortunately, this subjective belief is not conclusive. A modern Bedlamite<sup>123</sup> may honestly and sincerely believe he is Napoleon.<sup>124</sup> Presumably, he too is subjectively not confused about his identity. But I doubt Napoleon on St. Helena would believe he, Napoleon, would survive if he were assured that some future nut would sincerely believe to be him. Sincere belief may be helpful, but far from determinative in belief *before death* that I survive.<sup>125</sup>

To return to my flash-frozen hypothetical, assume I am presented with the “sure and certain”<sup>126</sup> knowledge that I would be reconstructed bodily,<sup>127</sup> filled with all of my memories, etc., and wake up believing I had survived. Do I believe, from my perspective now that “I” would survive? I am open to argument about how I should classify this, but can tell you that, I, Thomas Adair Robinson, believe that I would survive in the important sense.<sup>128</sup> You will have to determine whether you share

122. See, e.g., James Blish, *A Work of Art*, reprinted in *MASTERPIECES: THE BEST SCIENCE FICTION OF THE TWENTIETH CENTURY* 116 (Orson Scott Card ed., The Berkley Publishing Group 2001) (“Richard Straus” awakens and creates a new opera, to cheers, but not for him (I won’t spoil the ending for you)).

123. See, *MERRIAM WEBSTER’S COLLEGIATE DICTIONARY*, *supra* note 9, at 109 (A mentally ill person).

124. See, e.g., PARFIT, *supra* note 20, at 229 (imagining an operation through which he is caused to believe that he is Napoleon); Sara Goudarzi, *Mystery of Napoleon’s Death Said Solved*, MSNBC.COM, Jan. 17, 2007, <http://www.msnbc.msn.com/id/16656433/>.

125. This pre-death belief might be helped by “my” likely post-reconstruction belief. Without exploring marginal cases, I’m pretty sure that my survival as me tomorrow will include, among other things, my tomorrow belief that I am the same person as “me” today. This subjective *ex ante* belief might also seem “wrong” to external observers. I doubt we’d be willing to agree with the Heaven’s Gate religious group who apparently believed in soul transport to the Hale-Bopp spaceship. *One Year Later, Heaven’s Gate Suicide Leaves Only Faint Trail*, CNN.COM, Mar. 25, 1998, <http://www.cnn.com/US/9803/25/heavens.gate/>. But, except for soul survival in our space-time dimension, rather than the religious-spiritual one, how is this different from the kind of survival promised by Western theology, which many of us *do* believe counts as survival?

126. See, e.g., Funerals: Church of England, <http://www.cofe.anglican.org/lifeevents/funerals> (last visited Nov. 15, 2008); Funeral Liturgy, [http://www.stdismasparish.net/funeral\\_liturgy.htm](http://www.stdismasparish.net/funeral_liturgy.htm) (last visited Nov. 15, 2008).

127. If reconstructed from information salvaged from my human remains, I would have to factor into my classification that none of the constituent elements of my body continued. On the other hand, one carbon atom is, for all practical purposes, indistinguishable from another. See PARFIT, *supra* note 20, at 199. It seems to me that it is the configuration, not the constituents, that mostly matters, but you may disagree.

128. My valuation of this survival might diminish with distance and time. I value

this belief (or believe I should be outfitted with a paper hat).

In the discussion that follows, I will consider three states. First, that of an existing individual whose mental processes are supported by a living body, second, at the other end, of “the” individual as reconstructed, and finally, the most puzzling, the middle state of what I will call “individual-as-information” or more accurately, “potential individual-as-information,” although I prefer the more succinct label, that is, the individual who (which?) has the potential of being reconstructed from information stored in human remains.<sup>129</sup>

#### IV. SOME IMPLICATIONS, PROBLEMS, AND SPECULATIVE SOLUTIONS

The flash frozen hypothetical raises implications in a number of fields. This essay can touch on only a few, sketching out some observations from the hypothetical’s legal, then economic, and finally theological implications.

##### A. *Some Legal Implications*

The hypothetical presents three stages of individuals for analysis. First is the stage of human existence as we know it; second is the stage of individual-as-information; and third is the stage of the reconstructed individual. I will discuss these out of order, and also divide discussion of the first stage, existing individual, into two, with which I will open and close the four part analysis. That is, I will start with a quick overview of the legal rights of existing human beings, including potential human beings. Then I will move to some speculations about the rights of reconstructed humans, after which I will turn to some possible rights of individuals-as-information. Finally, I will return to the legal rights of existing human beings for some comments about the possibility of an

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reconstruction on Earth more than if, say, my information was beamed to a planet orbiting Alpha Centauri for reconstruction. And I value reconstruction in the near future more than a billion years from now. Also, my valuation of my survival is affected by who survives with me, a point not escaping the appeal of The Church of Jesus Christ of Latter-day Saints (Mormons), which offers not only personal survival but “sealing” to family members for reuniting after death. See LDS.org–Topic Definition–Sealing, [http://www.lds.org/ldsorg/v/index.jsp?vnextoid=bbd508f54922d010VgnVCM1000004d82620aRCRD&locale=0&index=19&sourceId=76f9261bb15b2110VgnVCM100000176f620a\\_\\_\\_\\_\\_](http://www.lds.org/ldsorg/v/index.jsp?vnextoid=bbd508f54922d010VgnVCM1000004d82620aRCRD&locale=0&index=19&sourceId=76f9261bb15b2110VgnVCM100000176f620a_____) (last visited Nov. 15, 2008).

129. After active life, the first state, an individual could remain in this second state forever, or he could be terminated by destruction of the information such that, for all practical purposes, “almost no” chance of reconstruction would become effectively “no” chance. The flash-frozen hypothetical envisions recreation of the “same” person at the end of this period, a highly unlikely but not impossible conjecture. I am assuming the individual entering this second state and the replicated individual emerging from it are “the same,” a big assumption fraught with philosophical controversy, but made for the purposes of discussion here.

individual leaving property to himself or herself, that is, becoming his or her own devisee.

You, the reader, will remember that in this essay I am making certain assumptions<sup>130</sup> and my general perspective is as a member of Western Society. The perspective in this section narrows to that of U.S. law in general terms. This should make discussion a bit more manageable, while still not overly detailed. Of course, since we are dealing with highly speculative possibilities that the ever-practical law has only begun to consider, only some general observations can be made, except for the too-familiar legal rights and duties of the first state, existing individuals.

As to existing individuals, libraries of legal materials are devoted to these rights and duties, which are so familiar that they can be skipped over fairly quickly. Briefly, if a U.S. citizen, an existing individual, has extensive rights and duties, including the right to participate in various ways in the creation, interpretation, and execution of the laws governing him or her; non-citizens have fewer rights, but I assume even “enemy combatants” held at Guantánimo may not, in theory, be arbitrarily killed.

Because it may be relevant to the discussion in part three, individuals-as-information, I note that existing law does have rules for what might be termed potential human beings,<sup>131</sup> which differ from existing individuals. A conceived “child’s” life can be terminated at whim early in a pregnancy,<sup>132</sup> a legal risk that ends at birth.<sup>133</sup> A potential human being need not be conceived, and if conceived can be aborted. Surprisingly, though, even before conception, a potential human being can, in some sense, own property, for example, as a class remaindermen after a life estate. Put another way, an “individual,” not even in existence, can be considered to have property rights in some sense. This means that there is at least one group of potential future human beings who are granted rights in that sense. Interesting.

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130. Among other things, I am positing no future artificial “improvement” of humans, such as “humans 2.0.”

131. Such potential human beings have some interesting legal properties. Like Roman slaves and frozen zygotes, they have the potential of being both owners and owned, simultaneously subject and object, but are not unambiguously either.

132. See *Roe v. Wade*, 410 U.S. 113 (1973). The language of *Roe* is narrower, seemingly leaving the abortion decision to a woman’s physician. *Id.* at 164. However since a woman can choose her physician, she in fact exercises considerable control over the ultimate decision, as noted in dissent by Justice Rehnquist “[t]he Court’s opinion decides that a State may impose virtually no restriction on . . . abortions during the first trimester of pregnancy.” *Id.* at 171. My word “whim” is carefully chosen, for I believe that is what *Roe* has come to stand for in the popular mind. I intend here to make no judgment on the rightness of *Roe*’s reasoning or result.

133. But commences again, though legal process, at majority. See *Roper v. Simmons*, 543 U.S. 551, 578–79 (2005).

Turning now to the last stage, I offer some speculation about the rights of humans reconstructed from the preserved individuals-as-information. Take the easiest case, that of recreation as a biological human, presumably out of biochemical materials, but different biochemical materials than those with which the individual in the first stage was constructed, that is, there is no *physical* continuity.<sup>134</sup> One carbon atom is chemically indistinguishable from another, so while we might know the biological reconstruction material was different because it had a different source, for purposes here we might assume no test could distinguish the reconstructed individual from any normally gestated human.<sup>135</sup>

I believe the legal relationship of the reconstructed individual would be, if not familiar, at least recognizable, sharing many of the rights of other existing individuals. For example, I presume that such an individual would, among other things, have the right to be free from arbitrary harm and perhaps entitled to property accumulated in the post-reconstruction state. But, given the uncertainties of the middle state, what I am calling “individual-as-information,” I believe society would, and should, probably cut off the reconstructed individual from most prior relationships to persons and property. A spouse should be free to remarry, and most property should be reallocated to the living.<sup>136</sup> More than these tentative suggestions may not be productive because reconstruction itself, and the society into which the reconstructed would emerge, are so speculative as to not be worth detailed legal analysis at this point.<sup>137</sup>

The legal status of the middle state, “individual-as-information,” is more or less wide open at this point. There have been “individuals” stored since 1967<sup>138</sup> and more than one company offers this and allied services<sup>139</sup> to, among others, Ted Williams.<sup>140</sup> But it’s not clear what the philosophical status of these individuals is, much less the legal status. There is, as yet, no legal recognition of an individual-as-information, much less any coalescence of rights around such an individual. At best,

134. See generally PARFIT, *supra* note 20, at 199 (discussing a case similar to this).

135. Unless we need to know which is the original, such as when we need to know which is a decedent’s original will and which is merely a copy. For example, we might purposefully introduce a tracking ingredient into the “copy,” or otherwise mark it. See THE 6TH DAY, *supra* note 78 (where the human copy was numerically marked inside the lower eyelid).

136. An interesting question is whether the reconstructed individual was “born” in the United States and counted as a citizen.

137. Perhaps this could spawn a new (academic) legal specialty: “science fiction law.”

138. See Mike Perry, *The First Suspension*, ALCOR.ORG, July 1991, <http://www.alcor.org/Library/html/BedfordSuspension.html>.

139. For a list of cryonics organizations and services see Cryonics Organizations, <http://www.cryonet.org/orgs.html> (last visited Nov. 15, 2008).

140. *Ted Williams Frozen in Two Pieces*, *supra* note 16. His remains are apparently stored at Alcor Life Extension Foundation. *Id.*

the individual-as-information is a potential future human being. Among the possible analogs is a fetus, but there are many differences. Unlike a fetus, an individual-as-information will generally have had a past life and identity. Another unsatisfactory analog is a frozen embryo that could be implanted and grow into a human with rights. Such cases, unlike aborted fetuses, are rare, but they do exist.<sup>141</sup>

The reason that the potential legal status of individuals-as-information is so uncertain is that the legal rights of such "individuals" must be granted by the living. Assuming a self-interested electorate, one would predict ideology would follow economic self-interest and create a set of legal rules limiting individuals-as-information's rights. One cannot imagine current society passing laws encouraging or facilitating the reconstruction of Egyptian mummies.<sup>142</sup>

A later section will discuss the economic implications in more detail, but anticipating that section, the self-interest of those seeking a legally enforceable bridge to future indefinite life might encourage states to create a legally-structured safe haven protecting those rights, attracting the business, and wealth, of those wishing such protection, *ex ante*. After all, unless unreasonably costly, a concern discussed hereafter,<sup>143</sup> existing individuals should be able to arrange to have their information preserved.

This leads to the fourth and final section, which returns us to legal rights of the currently living. Traditionally, in Anglo American law, the living allowed the dead limited, although generous, control over property after death. This was a property limitation usually expressed by a state's Rule against Perpetuities, and could allow dead-hand control for as long as approximately a century. One's relationship with great-great grandchildren is not much closer than that of a stranger, and there

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141. For example, the case of Mario and Elsa Rios sparked major discussion when the couple died in a plane crash, leaving "behind two frozen embryos in an in vitro fertilization clinic in Melbourne, Australia. . . . Currently there are more than 320 law review articles on the legal controversies surrounding frozen human embryos." Randy Alcorn, *Are Frozen Embryos Persons Worthy of Protection?*, ETERNAL PERSP. MINISTRIES, [http://www.epm.org/artman2/publish/ethics\\_medical\\_issues/Are\\_Frozen\\_Embryos\\_Persons\\_Worthy\\_of\\_Protection.shtml](http://www.epm.org/artman2/publish/ethics_medical_issues/Are_Frozen_Embryos_Persons_Worthy_of_Protection.shtml) (last visited Nov. 15, 2008). Frozen embryos have no rights and their fate is controlled by the living, that is, donors and courts. *See, e.g.*, B. M. Dickens & R. J. Cook, *Some Ethical and Legal Issues in Assisted Reproductive Technology*, 66 INT'L J. GYNECOLOGY & OBSTETRICS 55 (1999), available at [http://www.sciencedirect.com/science?\\_ob=ArticleURL&\\_udi=B6T7M-3WT2MGV-F&\\_user=687815&\\_rdoc=1&\\_fmt=&\\_orig=search&\\_sort=d&view=c&\\_acct=C000038378&\\_version=1&\\_urlVersion=0&\\_userid=687815&md5=37d7a7975aaab4c4c862acd4e32d3b16](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T7M-3WT2MGV-F&_user=687815&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000038378&_version=1&_urlVersion=0&_userid=687815&md5=37d7a7975aaab4c4c862acd4e32d3b16); Davis v. Davis, 842 S.W.2d 588 (Tenn. 1992). Davis found that in the case of frozen pre-embryos "[o]rordinarily, the party wishing to avoid procreation should prevail" if "the other party has a reasonable possibility of achieving parenthood" without the embryos. *Id.* at 604; *see also infra* note 171.

142. *See infra* text accompanying note 195.

143. *See infra* pp. 69-77.

appeared little interest in perpetual trusts in the three states that before 1987 had scrapped the Rule against Perpetuities,<sup>144</sup> relying instead on regulating suspension of the power of alienation.<sup>145</sup> That is, for example, private trusts could last forever, but someone must have the power to sell trust assets after a certain point.<sup>146</sup> This changed with the 1986 enactment of the Generation-Skipping Transfer Tax<sup>147</sup> which seemed to favor trusts without time limits. Lead, among others, by Delaware, states began to compete with one another to attract trust business by offering a law stripped of the Rule against Perpetuities.<sup>148</sup> By the law of unintended consequences, this opened another possibility: that one could leave money to oneself in Perpetual Revival Trusts.<sup>149</sup> As reported by the Wall Street Journal, some “wealthy American and foreign businessmen are . . . creating [such] trusts . . . to allow them to reclaim their riches hundreds, or even thousands, of years into the future.”<sup>150</sup>

If, as seems likely, the legal underpinnings of this “leave-it-to-yourself” strategy will, in the long run, depend in large part on the economic implications to individuals and to society, I turn in the next section to a discussion of those economic implications.

144. See, e.g., WIS. STAT. ANN. §700.16(5) (West 2001) (“The common-law rule against perpetuities is not in force in this state.”).

145. See Jesse Dukeminier & James E. Krier, *The Rise of the Perpetual Trust*, 50 UCLA L. REV. 1303, 1313 (2003). Your author’s interest in this area was sparked by a series of articles in *Reflections on the New Biology*, 15 UCLA L. REV. 267 (1968), contributors to which included, among others, Professor Dukeminier, *id.* at 357, Linus Pauling, *id.* at 267, and future U.S. Supreme Court Chief Justice Warren E. Burger, *id.* at 436.

146. See, e.g., WIS. STAT. ANN. §700.16(2) (“The power of alienation is suspended when there are no persons in being who, alone or in combination with others, can convey an absolute fee in possession of land, or full ownership of personality.”). Generally, a person is “in being” if alive when a conveyance in trust becomes irrevocable.

147. 26 U.S.C.A. § 2601 (West 2008).

148. Dukeminier & Krier, *supra* note 145, at 1315; see also Roy M. Adams, *States Repeal the Rule Against Perpetuities*, TR. & EST., June 2000, at 54. There also appeared to be independent calls for the Rule’s repeal. See Keith L. Butler, *Long Live the Dead Hand: A Case for Repeal of the Rule Against Perpetuities in Washington*, 75 WASH. L. REV. 1237, 1237–39 (2000).

149. See Daniel G. Worthington, *The Problems and Promise of Perpetual Trust Laws*, TR. & EST. Dec. 2004, at 15.

150. Antonio Regalado, *A Cold Calculus Leads Cryonauts to Put Assets on Ice*, WALL ST. J., Jan. 21, 2006, at A1. See also Charles Mandel, *Cryonauts Put Fortunes on Ice*, THE GAZETTE (Montreal), Jan. 28, 2006, <http://www.canada.com/montrealgazette/news/business/story.html?id=9c0ef589-68c9-4c54-9fd5-c8a87898bf1b>; Firm Newsletter – Law Firm Eric G. Matlin Attorneys Northbrook, Illinois, <http://www.ericmatlin.com/CM/Custom/TOCFirmNewsletter.asp#takeWithYou> (last visited Nov. 15, 2008).

Lately, there has been a merger of Perpetual Trust planning with the technologies created by the cryonics movement . . . . The “Perpetual Revival Trust” is supposedly being utilized by at least a dozen multimillionaire immortality seekers whose plan is to leave money in a trust that, when they are thawed out in a century or two, will revert back to them.

## B. *Some Economic Implications*

If preserving the information embedded in human remains is valuable to individuals and to society, why is preservation not more commonplace? In part, the answer may be economics; cost as well as value must be considered. A market investment is presumably rational if the present value of the expected return is greater than the present value of the cost and moreover, is greater than any alternative investment, that is, opportunity cost.<sup>151</sup> Societies also make investments that may follow a different and less predictable political logic; the staggering cost of the U.S. Apollo moon landings<sup>152</sup> eclipsed any economic return, but many believe the investment worth the cost.<sup>153</sup>

### 1. ECONOMIC ANALYSIS FOR THE INDIVIDUAL

In the flash-frozen hypothetical, individuals and societies would count many of the same costs, such as processing the human remains, storage (individual-as-information), research, development, and reconstructing “the” individual. Society may have to consider additional costs as well.

Start with the cost of processing the human remains. Since the only practical way information from human remains can currently be preserved is through something like the flash-frozen hypothetical, I will consider in general the costs it might entail. As noted above, tissue does not die instantly.<sup>154</sup> We do not know how or where important identity information is stored, and it is possible that speed in the processing is desirable, which implies a costly team of processing specialists on call.<sup>155</sup> But it is also possible that information, or some of it, could be preserved by

151. Modern economic research indicates that investments are not always rational, particularly at the margins. The purchase of lottery tickets does not seem a rational market transaction, but people do buy lottery tickets, the present value of which can be far below their cost. See generally Christopher J. Mecklin & Robert G. Donnelly, *Powerball, Expected Value, and the Law of (Very) Large Numbers*, J. TAT. EDUC. (2005), <http://www.amstat.org/publications/jse/v13n2/mecklin.html#Figure2> (considering the statistical aspect of lottery games). See John T. Gaubatz’s theory of lottery games *infra* p. 81.

152. One estimate is more than \$100 billion 2008 dollars. See Marcus Lindroos, *The Cost of the Moon Race: \$100 Billion To Land on the Moon*, ARTEMIS PROJECT, <http://www.asi.org/abd/m/02/07/apollo-cost.html> last visited Nov. 15, 2008).

153. David Livingston, *Is Space Exploration Worth the Cost?*, THE SPACE REVIEW.COM, Jan. 21, 2008, <http://www.thespacereview.com/article/1040/1>.

154. See What Happens to the Body After Death, *supra* note 89.

155. Suspended Animation Inc., <http://www.suspendedinc.com/purpose.html> (last visited Nov. 15, 2008). A leading provider appears to charge between \$80,000 and \$150,000. See Alcor: FAQ, <http://www.alcor.org/FAQs/faq01.html#cost> (last visited Nov. 15, 2008); see also Alex Beam, *Immortality and the Chosen, Frozen Few*, BOSTON GLOBE, June 3, 1998, at F1 (“As with everything, it pays to shop around. Wilmington, Del.-based CryoSpan claims to flash-freeze ‘humans and their companion animals at the lowest possible price,’ which turns out to be an annual \$250 for ‘neuro’ (brain only) or \$1,500 for the full monty.”).

less costly means.<sup>156</sup> Until there is a successful reconstruction, we will probably not know for sure.

We need not only consider how fast to act, but how. Advances in other allied fields, such as preservation of human organs for later transplantation<sup>157</sup> or the preservation of human sperm and eggs<sup>158</sup> for use in fertility therapies, may help.

Once the remains, or part of them,<sup>159</sup> are processed, they must be stored, potentially for millennia.<sup>160</sup> Among storage costs are the costs of land, costs of cryopreservant,<sup>161</sup> costs of maintenance and protection of the storage facilities, fiduciary costs of protecting the individual-as-information<sup>162</sup> and any assets that society allows “the” individual to keep.<sup>163</sup> Because storage must withstand financial and other shocks, there should be a comfortable cushion in the fund available for long-term maintenance. Some of the risks, financial and otherwise, might be insurable. Others probably can not. War and terrorist attacks, political upheavals, looting, and such, are real risks, which become more certain

156. See, e.g., Beam, *supra* note 155 (“The Cryonics Society of Canada does not perform cryonic suspensions, but has done permafrost interments . . .”). For a list of cryonics organizations and services, see Cryonics Organizations, <http://www.cryonet.org/orgs.html> (last visited Nov. 15, 2008). Presumably, if the 1918 virus was preserved, other genetic information could be inexpensively preserved as well. See Ned Rozell, *Permafrost Preserves Clues to Deadly 1918 Flu*, ALASKA SCI. F., Apr. 29, 1998, <http://www.gi.alaska.edu/ScienceForum/ASF13/1386.html>.

157. See, e.g., Neil Swan, *Hibernation-Triggering Opioid Extends Life of Organs for Transplantation*, NAT'L INST. ON DRUG ABUSE, Jan.–Feb. 1996, [http://137.187.56.161/NIDA\\_Notes/NNV0111N1/Hibernation.html](http://137.187.56.161/NIDA_Notes/NNV0111N1/Hibernation.html) (discussing research on the use of an opiate-like compound to mimic a blood chemical that triggers hibernation in animals to dramatically extend the time that animal hearts, livers, and other organs can remain viable for transplantation); Long-Term Preservation of Organs for Transplantation, <http://www.patentstorm.us/patents/5066578.html> (last visited Nov. 15, 2008) (describing an improved process, including the “long-term preservation of organs for transplantation”).

158. See, e.g., University of Chicago Hospitals Section of Reproductive Endocrinology & Infertility, <http://www.chicagofertility.org/cryopreservation.htm> (last visited Nov. 15, 2008).

159. Some cryonic companies offer a cheaper head-only option, called neuropreservation. See, e.g., Neuropreservation FAQ, <http://www.alcor.org/Library/html/neuropreservationfaq.html> (last visited Nov. 15, 2008).

160. Obviously, almost all Egyptian mummies are over two millennia old. See Encyclopedia Smithsonian: Egyptian Mummies, [http://www.si.edu/Encyclopedia\\_SI/nmnh/mummies.htm](http://www.si.edu/Encyclopedia_SI/nmnh/mummies.htm) (last visited Nov. 15, 2008) (“About 2600 B.C., during the Fourth and Fifth Dynasties, Egyptians probably began to mummify the dead intentionally. The practice continued and developed for well over 2,000 years . . .”). How long until the technology and desire to reconstruct coexist, if ever, is anyone’s guess.

161. Cryopreservant liquid nitrogen in bulk generally costs less than \$1 per liter, see Price of Liquid Nitrogen, <http://hypertextbook.com/facts/2007/KarenFan.shtml> (last visited Nov. 15, 2008).

162. See Beam, *supra* note 155.

163. Surprisingly, this might depend on the fiduciary’s representation of the individual-as-information in the political process. See *infra* note 177.



as storage time increases.<sup>164</sup> We do have a few examples of intentional<sup>165</sup> or accidental<sup>166</sup> preservation of relatively intact human remains, but they are few indeed, and fewer might still preserve the information from which a potential individual could possibly be reconstructed.

The costs of processing and storage are only the beginning. For the survival pay-off, the individual-as-information must be reprocessed back into a reconstructed “surviving” individual,<sup>167</sup> presumably living and breathing. This is far beyond present biotechnology. But at that point, presumably biotechnology would be able to heal then living individuals and restore them to youthful vigor,<sup>168</sup> so the intermediate “individual-as-information” stage would no longer serve a survival purpose.<sup>169</sup> Like the Apollo landings, no single individual could likely bear the costs of research and development of the reconstruction. This would have to be a societal cost, judged by political rather than market processes.

Some remarks about the valuation of individual survival through the flash-frozen hypothetical are in order. Calculating the expected pay-off, individual survival, offers some surprises. From an individual’s perspective, the value of survival may be high (perhaps higher than that assigned by society) but not infinite. In wartime, soldiers do voluntarily put themselves in harm’s way, often with a high risk of death; people do drive cars, even talk on cell phones while doing so, and incur a higher risk of death than staying home.<sup>170</sup> Whatever this survival value would be for a particular individual, presumably it should be discounted for various uncertainties, such as the possibility of processing, storage, or reconstruction failure, and even then, for the likely possibility that any future society would have neither economic nor political incentives to reconstruct particular individuals to compete for living room with its

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164. In the long run, San Francisco will probably experience another earthquake, Miami another direct hurricane hit, the Earth another killer asteroid, and, eventually, our sun will become a red giant. We might look to the strategies of the later Pharaohs in preserving their remains, including hiding them in the dry Valley of the Kings instead of under expensive monuments that signaled “dig here.”

165. See Beam, *supra* note 155 (modern cryonic freezing), *Ophthalmologist To Examine Ancient Chilean Mummy Eyes*, BIOTECH WEEK, Nov. 9, 2005, at 913 (Chilean mummies 1,000 years old); Encyclopedia Smithsonian: Egyptian Mummies, *supra* note 160.

166. See MacIntyre, *supra* note 61 (Otzi the Iceman, 5,300 years ago).

167. And the reconstruction of this individual must either count as “survival,” or “as good as survival.” See, PARFIT, *supra* note 20, at 289 (describing the concept of a *series-person*).

168. In Greek mythology, Zeus granted Tithonus immortality, but the requestor forgot to ask for eternal youth, and immortal Tithonus kept getting older . . . and older, . . . and still older . . . . See *Tithonus: Greek Mythology*, in ENCYCLOPEDIA BRITANNICA ONLINE, <http://www.britannica.com/eb/article-9072650/Tithonus#56113.hook> (last visited Nov. 15, 2008).

169. Although the information might be valuable for other purposes. See *discussion supra* Part II.

170. Robert Roy Britt, *Drivers on Cell Phones Kill Thousands, Snarl Traffic*, LIVE SCIENCE, Feb. 1, 2005, [http://www.livescience.com/technology/050201\\_cell\\_danger.html](http://www.livescience.com/technology/050201_cell_danger.html).

citizens.<sup>171</sup> Another, different sort of discount is conceptual: the uncertainty as to whether, even if the flash-frozen hypothetical were technically successful, a given individual would count it as personal survival.<sup>172</sup>

In sum, the costs of processing, storage of the individual-as-information, research and development, and reconstructing a particular individual<sup>173</sup> are undoubtedly high, both for the individual and for society.<sup>174</sup> Aggregation of values in the ballot box or marketplace may, as indicated, obscure the dynamics of individual value. Presumably whether the return is worth the cost varies by individual.<sup>175</sup> Some, not many, have purchased a service similar to the flash-frozen hypothetical. This could indicate that for some the “individual-as-information” hypothetical, were it available, might attract some buyers.<sup>176</sup>

## 2. ECONOMIC (AND POLITICAL) ANALYSIS FOR SOCIETY

Societies as well as individuals must balance value and cost.<sup>177</sup> The

171. Laws mandating the destruction of human embryos have raised ethical and practical concerns. See, e.g., Youssef M. Ibrahim, *Ethical Furor Erupts in Britain: Should Embryos Be Destroyed?*, N.Y. TIMES, Aug. 1, 1996, at A1 (concerning the destruction of more than 3,000 embryos); see also *Woman Loses Frozen Embryo Battle*, CNN.COM, Mar. 7, 2006, available at <http://www.cnn.com/2006/LAW/03/07/embryos.ruling/index.html> (discussing the recent tragic case where a woman was denied the right to use six embryos, thus foreclosing her chance to have her own biological children); see also *supra* note 141.

172. See PARFIT, *supra* note 20, at 289, 474.

173. Undoubtedly, there would be other costs not considered here.

174. The prediction of costs of future biotechnology is obviously chancy and depends on unknowable factors, such as whether reconstruction is piecework or mass-produced.

175. An individual may value costs and results differently from others, and also at different stages of his or her life. In early adulthood, the slight chance of death may not register, and an individual may value material wealth. Late in life, staying healthy and avoiding the increasingly likely grim reaper's visit may be much more important than wealth. That is, \$1 million may have one value in my twenties; quite a different value, to me, on my deathbed.

Among the most interesting speculations is “present value analysis,” which presumably primarily follows subjective rather than objective time. Suppose flash-frozen hypothetical resulted in a jump of million years. But subjectively, the individual “awoke” to find no subjective time had passed. To him (or her) the jump was impractically instantaneous. Do we use a million years as the discount or only a few minutes? The subjective discount of survival need not be the same as the parallel compounding of the “individual-as-information’s” assets, if any. Paraphrasing another joke, a cryonics patient invests wisely and “jumps” a couple of hundred years. Upon awaking, he excitedly telephones the bank and is told that his bank balance is now \$10 billion. As he is about to call the Ferrari dealer to place an order, the operator breaks in and informs him, “That will be \$5 billion for the next three minutes.”

176. There is a difference. A cryonics patient may hope to be resurrected, not reconstructed, and have less confusion as to whether the process, if successful, would count as “survival.”

177. There are differences in the ways that societies and individuals balance costs and benefits. Societies aggregate individual values into policies that, of course, do not reflect the variety and depth of the values aggregated. Under normal circumstances, the survival interest of an individual is generally unitary—that is, for most of us, we either survive or we do not. But society may be able to deploy a more nuanced calculus. As mentioned above, some of society's interests may be

individual's cost of processing, storage, and reconstruction are also those of society.<sup>178</sup> But society must consider additional costs. As a practical matter, only society can bear the costs of research and development needed to reconstruct an individual,<sup>179</sup> and society must consider the cost of population pressure and its concomitant environmental impact.<sup>180</sup>

For the flash-frozen hypothetical, many of the interests of the individuals wishing this method of survival and the interests of society would be compatible. In the estate settlement process, the individual may need society's general infrastructure, such as the rule of law.<sup>181</sup> Moreover, since "individuals as information" cannot act for themselves, fiduciaries would be needed, both for protection of remains, and for financial management of whatever individual assets society allows to be devoted to processing, storage, and reconstruction.<sup>182</sup> As experience

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served if only some individuals, either as vessel or contents, survive. Nor need all of an individual be preserved. Even without individual survival, important informational snippets of DNA, or particular language abilities, may be adequate for society.

It need hardly be pointed out that that "individuals-as-information" lack any political power in shaping the decisions that concern them. Even if society were to consider them as individuals with certain rights, society is unlikely to enfranchise them or their fiduciaries. Those without a political presence, such as slaves in the antebellum South (and even under Jim Crow), illegal aliens, "unlawful combatants," intelligent animals, etc., can expect few rights from the enfranchised. It is perhaps not an accident that the Vietnam War was fought with draftees, while, once the voting age was lowered to eighteen, the Iraq war is being fought with volunteers. Children under the age of majority are represented by caring parents, but the "individuals-as-information" would have little representation. Nor is it easy to imagine a system of representation that would not be subverted after a generation or two. Consider the dreadful self-interested management of Marxist countries.

And, of course, individuals as information would be helpless against the physical violence of the living, either sanctioned or unsanctioned. How respectful are we toward the mummies of Egyptian notables and their grave goods? How respectful were we toward the indigenous peoples whose land we coveted in our westward expansion?

178. My household expenditures are also expenditures of the country of which I am a citizen.

179. A society wishing to control individual reconstruction may do so simply by refusing to invest in the appropriate research and development. On the other hand, some individuals may anticipate that general research may provide the solution of reconstruction. A rising tide floats many boats. For example, there has been a great deal of recent research aimed at understanding the human brain. See, e.g., Alexis Madrigal, *Mapping the Most Complex Structure in the Universe: Your Brain*, WIREd, Jan. 24, 2008, <http://www.wired.com/science/discoveries/news/2008/01/connectomics> (discussing research to create a circuit diagram of the human brain, with the help of new machines that automatically turn brain tissue into high-resolution neural maps).

180. See Thomas Dietz & Eugene A. Rosa, *Rethinking the Environmental Impacts of Population, Affluence and Technology*, 1 HUM. ECOLOGY REV. 227, (1994), available at <http://dieoff.org/page111.htm>.

181. See, e.g., Miguel Schor, *The Rule of Law*, in ENCYCLOPEDIA OF LAW AND SOCIETY: AMERICAN AND GLOBAL PERSPECTIVES (David S. Clark, ed., 2007), available at <http://ssrn.com/abstract=889472>.

182. The "individual-as-information" needs fiduciaries, to protect both the "individual" and any property society allows. Experience shows these fiduciaries should be regulated, particularly if, as is likely, the "information" state is a long one. The example of the Cryonics Society of

amply indicates, the potential for fiduciary malfeasance is considerable<sup>183</sup> and societal regulation would be needed to protect beneficiaries from fiduciaries, particularly in the long run.

History also illustrates that the interest of individuals and society are often at odds, and this too seems likely in the flash-frozen hypothetical. Sometimes the interests of individuals seem superior. Particular power blocks or ideologies may hijack the political process and attempt to perpetrate themselves against any fair aggregation of individual values. But even when fairly aggregated, society's majority values may be distorted by such influences as racism, homophobia and anti-Semitism, or descend into hysteria, such as the McCarthy era<sup>184</sup>. And undistorted, fairly aggregated majorities can seek to curtail legitimate individual rights, hence the U.S. Constitution's Bill of Rights.<sup>185</sup>

In some society-individual conflicts, the interests of society seem superior. Society needs wartime sacrifices, even those occluding individual survival, and to be able to quarantine infectious disease carriers. Society also has an interest in setting the outer limits of individual decisions.<sup>186</sup> Heroin addicts may be making rational individual choices, balancing individual short-term values against the cost of a dime bag, but society may keep "impaired" individuals from making harmful or waste-

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California is instructive. See Jane Fryer, *Hundreds of Corpses Wait for Science To Bring Them Back to Life—The Human Deep Freeze*, SUNDAY MAIL (SCOT.) Aug. 13, 2006, at 36 ("Body freezing is not an area to cut corners. In 1981, the cryonics community was rocked when tanks holding corpses at the Cryonics Society of California sprang leaks, leading to bodies thawing and decomposing."). Nor is this the only concern. Laws can change or be changed. Information-as-individuals, and any wealth they are able to retain, would be subject to control of the living on a variety of different levels. See *supra* note 177.

183. One need only point to the Bishop trust. See generally SAMUEL P. KING & RANDALL W. ROTH, *BROKEN TRUST: GREED, MISMANAGEMENT, & POLITICAL MANIPULATION AT AMERICA'S LARGEST CHARITABLE TRUST* (2006) (describing the corrupt handing of Hawaii's largest land trust).

184. See WILLIAM K. KLINGAMAN, *ENCYCLOPEDIA OF THE MCCARTHY ERA* 260–61 (1996); see also David Cole, *The New McCarthyism: Repeating History in the War on Terrorism*, 38 HARV. C.R.-C.L. L. REV. 1, 2 (2003) ("In short, just as we did in the McCarthy era, we have offset the decline of traditional forms of repression with the development of new forms of repression. A historical comparison reveals not so much a *repudiation* as an *evolution* of political repression.").

185. U.S. CONST. amends. I–X; see also THE ANTI-FEDERALIST NO. 84 (Robert Yates), available at <http://www.utulsa.edu/law/classes/rice/constitutional/AntiFederalist/84.htm> (describing the tyranny that could result from a failure to include a Bill of Rights in the U.S. Constitution).

186. I may have a strong desire to have my house destroyed after my death—after all, it's *my* house—and I can't bear the thought of someone else occupying it, but society is unlikely to carry out its destruction after my death.

ful decisions.<sup>187</sup> For example, one must be competent to contract,<sup>188</sup> write a will,<sup>189</sup> or marry.<sup>190</sup> Society also regulates some choices of other individuals, such as the choice to gamble or the choice of minors to drive.<sup>191</sup> For many reasons then, were the flash-frozen hypothetical to become reality and attractive to more than a few outliers, society would undoubtedly exercise regulatory control over the processing, storage, and reconstruction of human remains.

If, in the long run, biotechnology offers the possibility of surviving indefinitely with youth and vigor, as I believe it does, and if, in the short run, it may be possible to preserve the information with which to reconstruct a particular individual,<sup>192</sup> bridging the gap from now to then, we are still left with the problem of a crowded planet struggling to accommodate six billion of the more than one hundred billion<sup>193</sup> or so that have ever lived here, and the approximately fifteen billion it is estimated could be sustained at current living standards.<sup>194</sup> That is, the central obstacle facing those who hope to be reconstructed from stored informa-

187. It could be argued that an individual's valuation of his or her assets close to death is "impaired" in that subjective value may diverge from objective value. As indicated, the subjective value of \$1 million to an individual ten minutes before death may be quite different from its objective market value. Perhaps this partially explains the Mortmain statutes, which protected the family from impoverishment as the faithful tried to buy entrance into heaven by a deathbed religious donation. See *Medieval Sourcebook: Statute of Mortmain*, <http://www.fordham.edu/halsall/source/ed1-mortmain.html> (last visited Nov. 15, 2008). It should be noted that saving an individual from himself has a long ignoble history, such as the inquisition "saving" souls. For example, the case of Diego López Duro, a Jew for whom "[t]he inquisitors labored long to save his soul by inducing him to recant without success; he . . . was burnt alive." 3 HENRY CHARLES LEA, *A HISTORY OF THE INQUISITION OF SPAIN* 192 (1907).

188. RESTATEMENT (SECOND) OF CONTRACTS § 12(2)(c) (1981).

189. See 69 A.L.R.2D § 662 (1960).

190. N.R. GALLO, *INTRODUCTION TO FAMILY LAW* 122 (2004).

191. See U.S. DEP'T OF LABOR, *TEEN DRIVING RULES 1-6* (2005), [wwwhttp://www.uada.com/public/pages/Teen\\_Driving\\_NADA\\_Summary\\_Jan2005.pdf](http://www.uada.com/public/pages/Teen_Driving_NADA_Summary_Jan2005.pdf). For Virginia's paternalistic approach to teens, see Commonwealth of Virginia Department of Motor Vehicles, <http://www.dmv.state.va.us/webdoc/citizen/drivers/learners.asp> (last visited Nov. 15, 2008).

192. And if this counts as survival of that individual, or as good as survival. See *supra* note 167.

193. Carl Haub, *How Many People Have Ever Lived on Earth*, PEOPLEANDPLANET.NET, Jan. 26, 2008, <http://www.patp3.webbler.co.uk/doc.php?id=1820>.

194. Human Population and Its Limits, <http://www-formal.stanford.edu/jmc/progress/population.html> (last visited Nov. 15, 2008). "If fertility stayed at the same level it is now, the world population would be 134 trillion people in 300 years . . . The population density would exceed . . . 10 people per square foot [of land]." Peter Deselaers, *U.N. Says 9 Billion Will Share Planet in 300 Years*, INTER PRESS SERVICE, Dec. 9, 2003, available at <http://ipsnews.net/interna.asp?idnews=21480>. And "[I]f twentieth-century rates of population growth had prevailed since the invention of agriculture, the earth would now be encased in a squiggling mass of human flesh, thousands of light-years in diameter, expanding outward with a radial velocity many times greater than the speed of light." J.R. MCNEILL, *SOMETHING NEW UNDER THE SUN: AN ENVIRONMENTAL HISTORY OF THE TWENTIETH-CENTURY WORLD* 169 (2000).

tion/remains is not biotechnical, but political.<sup>195</sup> Perhaps in the first generation or two, families might be interested in grandpa's reconstruction, but as time passes, and genetic and familial ties dissipate, what interest would strangers in a future society have in reconstructing more than a few representative individuals from the past? The value is slight, the cost great. Suppose reconstruction of Egyptian mummies was possible; would our society allow unrestricted "time immigration" from the past any more than geographical immigration now? I think not. This, then, is the strongest argument against the flash-frozen hypothetical, the overcrowded planet.

As mentioned, the individual-as-information has no political voice, and commands resources only at the sufferance of society's living. Recreation of stored individuals-as-information does offer some limited societal benefits, but crushingly outweighed by costs, included those implied by the crowded earth argument.<sup>196</sup> Can we blunt the force of this argument? Surprisingly, yes. If processing, storage and recreation is a pretty far fetched speculation, I tentatively offer two admittedly weird, but I think plausible, ways of reducing the overwhelming force of at least the crowded earth argument.<sup>197</sup>

The first is the possibility of merger. There were experiments in the 1960s involving severing the corpus callosum, the nerve bridge, between the two hemispheres of the brain.<sup>198</sup> What resulted was two running consciousness in the same body, one controlling the left half and the other controlling the right half.<sup>199</sup> Suppose through a congenital birth defect, a baby was born without a corpus callosum and had developed into two connected individuals, attached like Siamese twins. Could the two halves of the body, like two Siamese twins, marry different women and

195. One can draw together a number of policies that seem to indicate concerns with population growth. Abortion is legal in most countries, at least to save the life of the mother, although it is still not generally allowed on demand. See Summary of Abortion Laws Around the World, <http://www.pregnantpause.org/lex/world02.htm> (last visited Nov. 15, 2008). China has the one child policy for urban areas. Matt Rosenberg, *China's One Child Policy*, ABOUT.COM, Oct. 7, 2007, <http://geography.about.com/od/populationgeography/a/onechild.htm>. Immigration is of great concern to the United States. See A Historical View of U.S. Immigration Policy, <http://web.missouri.edu/~brente/immigr.htm> (last visited Nov. 15, 2008).

196. See *supra* note 194.

197. I think that is my job, to introduce new, even bizarre, ideas. Most such ideas die a quick death, but some may take root (and survive?). You will have to judge.

198. Paul Pietsch, *Splitting the Human Brain*, SHUFFLEBRAIN, <http://www.indiana.edu/~pietsch/split-brain.html> (last visited Nov. 15, 2008); *The Split Brain Experiments*, NOBELPRIZE.ORG, [http://nobelprize.org/educational\\_games/medicine/split-brain/background.html](http://nobelprize.org/educational_games/medicine/split-brain/background.html) (last visited Nov. 15, 2008); see also PARFIT, *supra* note 20, at 245–80 (discussing the philosophical implications of this "two separate spheres of consciousness" *Id.* at 245).

199. I won't speculate on what happened to the "soul" because as argued below, "soul" seems a conceptual construct, which might need to be jettisoned to make way for concepts that more finely discriminate, much as physics had to abandon prior concepts of space and time.

own separate property?<sup>200</sup> I would tentatively answer “yes.” Next suppose that there was an operation that, instead of separating the twins, could regrow the corpus callosum to combine two mental streams into one. Of course, some confusion might arise, say if one half was Democratic and the other Republican but perhaps “consistency is the hobgoblin of little minds”<sup>201</sup>—or mind. A number of sleep cycles might be necessary to sort out the mess.<sup>202</sup>

Similarly, it might be possible to combine two minds previously supported by two human bodies into one, to the detriment of neither and the advantage of both. I might wake up remembering two childhoods and with two sets of parents. Moreover, I might remember these childhoods in different eras, say one in the 1960s and another in the 2050s. Philosophers can work out the implications.<sup>203</sup> My point here is that this is neither inconceivable, nor beyond the reach of future biotechnology, and could solve the problem of excessive strain on the Earth’s resources,<sup>204</sup> a sort of HOV<sup>205</sup> lane for life. For those deciding whether to try and bridge the gap of death with an interim state of individual-as-information, this might soften the force of the crowded Earth argument, if the “gap” were expected to be more than a few generations. If my choice were the black, or some form of merged survival, I might opt for the latter. For those in the future, the prospective of a merged mind may also have some appeal. In our current society, there are those who, entranced, purport to “channel the dead,”<sup>206</sup> indicating at least some fas-

200. See, e.g., Chang and Eng Bunker—The Siamese Twins, [http://phreeque.tripod.com/chang\\_eng.html](http://phreeque.tripod.com/chang_eng.html) (last visited Nov. 15, 2008) (discussing the Bunker brothers, conjoined twins who married different women and together fathered twenty-two children).

201. RALPH WALDO EMERSON, *Self-Reliance*, in *THE WORLD’S CLASSICS VI THE WORKS OF RALPH WALDO EMERSON—I ESSAYS* 25, 33 (Grant Richards 1901) (1841). Actually, the reference is to “foolish consistency.” *Id.* A bit later, the quote continues, “With consistency a great soul has simply nothing to do.” *Id.*

202. See, e.g., William J. Cromie, *Just Sleep on It: And Empty the Brain’s “In Box,”* HARV. GAZETTE, Oct. 26, 2000, available at <http://www.hno.harvard.edu/gazette/2000/10.26/01-sleep.html> (addressing how the purpose of sleep is to process information).

203. See, e.g., PARFIT, *supra* note 198.

204. This has, of course, implications well beyond the “individual-as-information” discussion here.

205. High Occupancy Vehicle, or simply High Occupancy Lanes, are used “to encourage drivers to share cars.” Highways Agency—High Occupancy Lanes, <http://www.highways.gov.uk/knowledge/733.aspx> (last visited Nov. 15, 2008). In the future, we may consider the possibility of sharing bodies, minds, or both.

206. See, e.g., Channeling and Mediums: Dead Spirits in the Living?, <http://www.spirithome.com/parachan.html#channeling> (last visited Nov. 15, 2008). In some of the most humorous scenes in the film *Ghost*, Whoopi Goldberg’s character, Oda Mae Brown, allows a sort of channeling. *GHOST* (Paramount Pictures 1990). In Robert Heinlein’s novel, *Glory Road*, a central character, Star, the Empress of Twenty Universes, appears to merge (sort of) with prior rulers to learn from their experiences, but such merger is part of her job, and not particularly a desirable part: “‘Oh,

mination with something akin to past lives, and, perhaps, as motivation for reconstructing the “dead.” I *said* it was speculative.

Biotechnology might offer a second solution to the crowding problem: that of alternate virtual worlds. Hardcore gamers already spend much of their leisure time exploring virtual worlds, some from a first-individual (shooter) perspective.<sup>207</sup> It certainly seems within the possibility of future biotechnology to hard-wire these gamers *into* their games, avoiding the annoyance of the computer screen interface.<sup>208</sup> For some, waking up in their favorite videogame might be a dream come true.

I will discuss briefly the theological implications in the next section, but how is this scenario different from the offer of some organized religions? “I” survive in another world. If gamers can enter virtual worlds, why can’t reconstructed individuals reenter the actual world by controlling a body? The brain has a finite number of sensory and motor nerves. Air force pilots working at Davis-Monthan Air Force Base remotely pilot Predator aircraft in missions over Afghanistan.<sup>209</sup> Why couldn’t a reconstructed individual have access to both worlds, as a video gamer in a sense already does? Presumably one benefit of this maneuver into blended reality is cost, that is, existence in a virtual world would be cheaper than in the “real” world, helping solve the crowded Earth problem.<sup>210</sup> At the risk of exhausting the reader’s credulity, I note that these two techniques are not inconsistent and could be combined.<sup>211</sup>

As long as in the realm of wild speculation, I cannot resist pointing out an ancillary benefit of “individual-as-information.” Were it to be

forgive me, darling! No, I am not myself. I’m His Wisdom CLXXXII.’” See ROBERT A. HEINLEIN, *GLORY ROAD* 243 (Tom Doherty Assocs. 2004) (1963).

207. To see how realistic this looks, and imagine how it could look as high definition approaches the level of detail where the human brain cannot distinguish it from reality, as is currently the case with movement in film, see GameSpot Video: *Doom 3 Gameplay Movie 5*, <http://www.gamespot.com/video/469881/6103949> (last visited Nov. 15, 2008).

208. Recent research has a monkey’s brain controlling movement across our world. See *Monkey Brains in U.S. Make Robot Walk in Japan*, TECHWEB, Jan. 16, 2008 (“In what researchers tout as a first-of-its-kind experiment, monkeys’ thoughts controlled the walking patterns of a robot in Japan.”); see also Gareth Cook, *Defending DARPA*, BOSTON GLOBE, Aug. 3, 2003, at E1 (describing research of Defense Advanced Research Projects Agency (DARPA) at MIT into brain-machine interaction, and suggesting hooking pilot’s brains into the controls of a jet and thus allowing the pilot to maneuver far more nimbly than today). Why not in a separate world?

209. See *Predator Unit Activated at Davis-Monthan Air Force Base*, <http://ktar.com/index.php?hpage=6&nid=6&sid=580269> (last visited Nov. 15, 2008); Sonu Munshi, *Arizona Air Guard Activates Remote-Control Predator Unit*, CRONKITE NEWS SERVICE, <http://cronkitenews.jmc.asu.edu/?p=24> (last visited Nov. 15, 2008).

210. See Haub, *supra* note 194.

211. Undoubtedly there are other solutions to the crowded Earth problem, such as plague, nuclear holocaust, forced sterilization, or shooting every third one of us. Just kidding.



accepted as survival, why limit it only to the dead? Once informationalized, such an individual need not be simply stored but could be transmitted, not into the future but across space. This could solve some of the transportation problems within our solar system.<sup>212</sup> Months<sup>213</sup> of hazardous<sup>214</sup> travel would not be necessary to travel to the most likely terraformable planet in our solar system.<sup>215</sup> If converted into such information, transmitted at light speed, and reconstructed at the destination, travel to that planet could take less time than an overseas flight from the US to Europe.<sup>216</sup> Whatever the technical challenges, whether “I” would survive seems answered by science fiction depictions, such as Star Trek’s transporter<sup>217</sup> and, perhaps, Stargate.<sup>218</sup> Beam me over, Scotty.<sup>219</sup>

I wish to return now to why society might allow a flash-frozen type of survival for those who wish it, or wish it for others. I assume the answer is the same as the reason modern societies offer any form of economic freedom—to motivate the living. The lessons of the twentieth century seem to favor Adam Smith over Karl Marx. For example, the transformative power of individual interest seems evidenced today in modern China, post Mao.<sup>220</sup> This motivating power includes the power to allow decedents some control over the disposition of their assets<sup>221</sup>

212. See PARFIT, *supra* note 20, at 200 (imagining a Mars trip whereby his body and brain are destroyed, a blueprint is beamed to Mars, and an organic replica is made).

213. Between 85 and 290 days in the case of the amount of time required to make the trip to Mars. Implementation: Benchmarks: Getting to Mars—Routes and Travel Time, <http://www.edb.utexas.edu/missiontomars/bench/rt.html> (last visited Nov. 15, 2008).

214. David Tenenbaum, *How Safe Is Travel to Mars?*, ASTROBIOLOGY MAG., Oct. 23, 2006, <http://www.astrobio.net/news/article2122.html>. <http://ktar.com/index.php?hlpage=6&nid=6&sid=580269>

215. Kevin Bonsor, *How Terraforming Mars Will Work*, HOWSTUFFWORKS, Nov. 6, 2000, <http://science.howstuffworks.com/terraforming.htm>.

216. Traveling to Mars would take from approximately three to a little over twenty minutes at the speed of light. Fun Trivia: Light Speed Travel from Mars, <http://www.funtrivia.com/askft/Question50130.html> (last visited Nov. 15, 2008).

217. “According to *Star Trek Encyclopedia*, the transporter ‘briefly converts an object or person into energy, beams that energy to another location, then reassembles the subject into its original form.’ . . . There’s even a . . . *Heisenberg compensator*, designed to sidestep . . . Heisenberg’s uncertainty principle.” See Transporter (Star Trek), <http://www.daviddarling.info/encyclopedia/T/transporter.html> (last visited Nov. 15, 2008).

218. STARGATE (MGM 1994). I will surely go beyond the pale of speculation if I suggest that information-transportation could also ameliorate some star-travel challenges. Presumably, once centuries of travel had conveyed receiver/replicators to planets on suitable star systems, travel could occur at light speed. Journeys around the British Empire in the days of the Raj could take months, what’s four years to Alpha Centauri, particularly if the subjective time was instantaneous?

219. See *supra* note 217.

220. David Hale, *Economic Development in China—Statistical Data Included*, INT’L ECON., Jan. 2001, at 24, available at [http://findarticles.com/p/articles/mi\\_m2633/is\\_1\\_15/ai\\_78679622](http://findarticles.com/p/articles/mi_m2633/is_1_15/ai_78679622).

221. Virtually all societies allow devolution of property at death, with varying degrees of regulation, including how long testamentary control can last. See *Inheritance—Critiques of*

and, perhaps in the future, will include control over their remains after death.<sup>222</sup>

In addition, some are motivated by the prospect of their names on buildings, streets, schools, and the like. Admittedly more publicized, the information content is no more than found on headstones. The flash-frozen hypothetical would offer immeasurably more information, even were it not to lead to reconstruction and possible personal survival. Were this idea to catch on, society might find it expedient to allow frozen- as well as dead-hand control over property for a reasonable period after the body stops working and converts into human remains.

Among the more powerful motivations is survival, both here and hereafter. As mentioned, the treasure society lavishes on healthcare testifies to survival's value to the living. And the popularity of organized religion testifies to the powerful value of survival in the "next world." In the section that follows, I discuss the possibility of a third way—interim survival. If belief in this third way became widespread, society might harness its motivating power<sup>223</sup> as it has the promises of Gordon Gekko<sup>224</sup> and God.<sup>225</sup>

### C. *Some Theological Implications*

This brings me to a brief discussion of the theological implications of the hypothetical flash-frozen individual-as-information—the possibility of a paradigm shift<sup>226</sup> in how we conceive of ourselves in the world. Science and faith coexist uneasily.<sup>227</sup> Over the last few centuries, science has increasingly encroached on religion, sweeping away Ptolemaic

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*Inheritance*, in ENCYCLOPEDIA BRITANNICA ONLINE, <http://www.britannica.com/eb/article-13090/inheritance> (last visited Nov. 15, 2008).

222. A decedent's control over his or her remains, initially tenuous or non-existent, *see* Nwabueze, *supra* note 3, is, I believe, likely to increase.

223. The trick is to motivate future society in keeping faith with past promises, a topic beyond the scope of this essay.

224. "Greed, for lack of a better word, is good." WALL STREET (20th Century Fox 1987).

225. "He that believeth on me hath everlasting life." *John* 6:47 (King James).

226. If we take the tenets of some religions seriously, they have a vaguely scientific cast to them. *X* event (death) will lead to *Y* result (for example, heaven or hell) because [insert the particular religious tenets here]. Thus, it seems to me not inappropriate to borrow a term from the philosophy of science and apply it here. *See* THOMAS S. KUHN, THE STRUCTURE OF SCIENTIFIC REVOLUTIONS (2d ed. Univ. of Chi. Press 1970) (1962). That is, our bifocal view of the world and our place in it could become transformed into something more unitary.

227. *See, e.g.*, The Evolution, Creationism, and Intelligent Design Controversy, <http://www.law.umkc.edu/faculty/projects/ftrials/conlaw/evolution.htm> (last visited Nov. 15, 2008) (discussing the recent fervor over Creationism and the history of continued conflict between science and religion).

Earth-centrism,<sup>228</sup> and the Great Chain of Being,<sup>229</sup> among other religiously based understandings. Widespread acceptance of a concept like the flash-frozen hypothetical could constitute a further encroachment.<sup>230</sup>

In this essay, I do not have the luxury of discussing theology or its history in detail. I am not a theologian; I simply note that many successful western religions offered an attractive alternative to their early animist, spiritualist, and pagan competitors. Chief among these was the offer of continued life after death, with fringes. If I'm right, future biotechnology offers a competing vision—that of the indefinite continuation of life on this Earth rather than the spiritual “next.”<sup>231</sup> Medicine would restore the living to youth and health. For those bridging the gap via something akin to the flash-frozen hypothetical, in theory, they too would be reconstructed into an enduring, youthful life. Cannot one predict that any self-interested religion would fight tooth and nail to preserve its monopoly?

I note that, theoretically, the earthly and religious visions are not irreconcilable. Indefinite life is not infinite life. Statistically, however long an “indefinite” life, accidents, war, nuclear holocaust, or some such might be expected to eventually destroy the possibility of continued survival, at which point, a back-up religious-spiritual survival would take over, sort of like a remainder following a long life estate. Thus, sequencing could preserve a role for each vision. Nevertheless, an individual offered several millennia of youthful life will likely be less interested in organized religion.

Sequencing also solves a thorny conceptual problem. If I believe in spiritual continuation after death, how can I also believe in earthly survival though the hypothetical's reconstruction? My sense of “my” survival is challenged if there are two “me's” at the same time—one

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228. Or geo-centrism. See *Geocentric System*, in ENCYCLOPEDIA BRITANNICA ONLINE, <http://www.britannica.com/eb/article-9036445/geocentric-system> (last visited Nov. 15, 2008).

229. See *Great Chain of Being*, in ENCYCLOPEDIA BRITANNICA ONLINE, <http://www.britannica.com/eb/article-9037846/Great-Chain-of-Being> (last visited Nov. 15, 2008).

230. In an audiocassette tape produced for Britain's Open University, Derek Parfit posits a thought experiment where my body is scanned and an exact biological duplicate is made, which, upon awaking, is “psychologically continuous” with me. Audio tape: Problems of Philosophy Conference, held by Britain's Open University (date uncertain) (on file with University of Miami Otto G. Richter Library). Although Parfit's inquiry is whether the duplicate is “me,” he alludes to the recreation as a “secular version of resurrection.” *Id.*

231. Professor Bart Ehrman suggests that an analysis of the historical Jesus indicates that he was probably an apocalyptic prophet foreseeing a kingdom *on this Earth*. BART D. EHMAN, JESUS: APOCALYPTIC PROPHET OF THE NEW MILLENNIUM 3, 128 (1999). Professor Ehrman further suggests that Jesus' followers later, brilliantly, adapted his teachings to overcome the inconvenient proselytizing perception of him as “another tragic incident in a long history of tragedies experienced by the Jewish people. . . .” *Id.* at 230–31.

secular and the other spiritual. Which one is or will be the real “me”?<sup>232</sup> With sequencing, the conceptual confusion is reduced. I’m alive, and, with future rejuvenating medicine, I continue with youth and health until the inevitable accident, war, or whatever eventually terminates my earthly existence, at which point, for believers, the spiritual realm becomes home. Or, if something like the flash-frozen hypothetical were to become available, I’m alive, I enter a “individual-as-information” state, I’m reconstructed, and I continue to live until eventual “death” and entry into the spiritual realm, etc. There are lots of snags to be worked out, but, in broad outline, sequencing seems to be a reasonable theoretical way of reconciling the competing visions of science and faith.

Of course, neither organized religion nor society is likely to embrace the flash-frozen hypothetical’s possibilities anytime soon. While the two visions can be made compatible, there is more than a certain competitive tension. Recall that for society, one of the possible benefits of the flash-frozen hypothetical was motivation. But society already has a cheaper motivation paradigm in religion, which requires no processing, no storage, no research and development, and no possible competition for crowded Earth’s resources from “time” immigrants. Souls float costlessly and mysteriously upward (or are pulled downward). If economics helps to shape ideology, this is a no-brainer.

There may be a Darwinian aspect as well. It is obvious that religious beliefs are nothing if not enduring.<sup>233</sup> Natural selection drives (or drove) the evolution of our bodies.<sup>234</sup> Behavior may also be partially driven by natural selection.<sup>235</sup> If behavior, why not beliefs? On the individual level, personal survival much past reproduction and child rearing may not be beneficial; at some point, nature’s grim reaper may force surrender of the farm to the next generation. Societies and their belief systems must also compete; belief in religious survival may bestow a

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232. Derek Parfit argues that there is no real problem here. See PARFIT, *supra* note 20, at 199, 281. However, with something as seemingly important as personal survival, I think many of us would prefer a commonly classified future rather than a philosophically confusing one. (Incidentally, I recall, but have been unable to trace, an amusing short story about an angel railing against God for allowing him to be pulled back to earth by his body’s reanimation from, I believe, his frozen remains.)

233. Many of the World’s predominate religions trace back at least a millennia, or more.

234. See CHARLES DARWIN, *The Descent of Man, in THE ORIGIN OF SPECIES AND THE DESCENT OF MAN* 389, 395–909 (Modern Library 1936) (1871). The volume also references Professor Huxley for the proposition that “to speak of both skull and vertebrae, jaws and legs . . . as having been metamorphosed, not one from the other, as they now exist, but from some common and simpler element.” *Id.* at 337.

235. See EDWARD O. WILSON, *SOCIOBIOLOGY: THE NEW SYNTHESIS* (1975). Wilson’s concluding remarks about the future are especially interesting. See *id.* at 574; see also Hitomi, *supra* note 29 (discussing genetically engineered mice who show no fear of cats).

benefit on the society that embraces it.<sup>236</sup>

As individuals, most of us believe in a spiritual survival after death. We are unlikely to shift to the paradigm offered by the flash-frozen hypothetical.<sup>237</sup> Nor, given the crowded Earth problem, may it be in the interest of individuals to proselytize society. The fewer “individuals-as-information” there are, the more exotic, and therefore, the greater likelihood of reconstruction.

For some, the flash-frozen hypothetical offers a variation on Pascal’s Wager,<sup>238</sup> that is, it provides another chance at personal survival not available if the information from one’s human remains is destroyed. Given two alternatives, death and a very tiny chance of some form of survival, why not choose the latter?<sup>239</sup>

236. Survival of DNA-type information might be supplemented with other information that endures separate from DNA, such as language, and could be said to be subject to evolutionally pressures of a different sort from DNA information. So too culture and religious beliefs, as information, may be subject to non-DNA evolutionary pressures as societies compete. For example, belief in spiritual survival may encourage sacrifice in war (a societal benefit) or belief in religious reward and punishment may provide motivation beneficial to society.

237. Surprisingly, I would predict that if offered youthful immortality outright, most would reject it. In a completely unscientific survey in my Trusts and Estates course, I asked how many would want youthful immortality. The surprising answer for most of my students was “no.” I can only speculate on why. Among my hypotheses is that students are young and assume that they will be more accepting of death as they grow older. Empirical research indicates this is not so, but students may not be able to identify with themselves as elderly, sick, and dying. Given the fight for survival and cost of Medicare for the elderly, I have no doubt that were the elderly offered such an opportunity, at least in increments, say return to health for a ten year renewable term, many would choose it, and then again ten years later, indefinitely.

Another hypothesis is that students do not want to be separated from their loved ones. Interestingly, many western religions offer indefinite life in a pleasant but unspecified locale with a one-way view to current reality and the ability to “watch over” their loved ones, but no particular, with at least one notable exception, access to their loved ones. *See supra* note 128.

Yet another hypothesis might be that students believe in the existence of a far superior heavenly world and wish not to be diverted from that world for more than the usual earthly tour. Even indefinite survival with youth and health pales as a choice for believers.

238. An atheist risks hell, but there is no downside for a believer. In essence this is Pascal’s Wager. *See Pascal’s Wager*, in STANFORD ENCYCLOPEDIA OF PHILOSOPHY, *supra* note 90, <http://plato.stanford.edu/entries/pascal-wager/>.

239. There is a distinct dark side to the hypothetical’s utopian vision of indefinite youthful life. What if we are reconstructed into punishment—or torture? Pope Stephen VII famously dug up his predecessor, Pope Formosus, five years after death and put “him” on trial. Horace K. Mann, Pope Steven VI (VII), in 14 CATHOLIC ENCYCLOPEDIA (1912), available at <http://www.newadvent.org/cathen/14289d.htm>. Instead of eradicating Hitler’s remains in 1970, *see Russia Displays “Hitler Skull Fragment,”* BBC NEWS, Apr. 26, 2000, <http://news.bbc.co.uk/2/hi/europe/725537.stm>, how much more satisfying it might have been to reanimate Hitler for real trial—and punishment. Would Copernicus have published if he thought he could not escape the Church’s wrath by dying? *See, e.g.,* ALEXANDRE KOYRÉ, THE ASTRONOMICAL REVOLUTION 27, 90 (R.E.W. Maddison trans., 1977).

## V. CONCLUSION

As this essay draws to a close I hope I have kept faith with John by exploring the outer bounds of speculation, if not taste, in the preservation of information from human remains. I hope I have suggested that human remains, now discarded, may contain valuable information, both for society and for individuals.

For society to benefit from the preservation of great individuals who have made, and whose clones presumably could make, significant contributions, it need only preserve some individuals, not all. Nor need the information from these individuals be preserved, only their potentialities; presumably a DNA bank would suffice. As to the preservation of valuable cultural information, only some, not all, need be preserved. As to the value to society of individual motivation, illusion, so long as it can be maintained, is cheaper than the more costly possible reality.

For an individual, the preservation of human remains, and his or her particular human remains, offers the possibility of individual survival. It seems not unlikely that the future may hold indefinite, youthful life. Those dying now might wish some way of bridging the gap to this future possibility. Preservation of information in the form of human remains offers a plausible, if unlikely, path to this future. If successful, the value to an individual of the preservation of his or her particular remains is obvious.

Individuals must also confront a conceptual problem including the disorienting possibility of *two* survivals, one earthly, the other spiritual. This can be solved, although not entirely satisfactorily, through sequencing. An individual could have a normal life, followed by a period of "individual-as-information," then a second period of life through replication, and, finally, followed sooner or later by the spiritual backup.

I once had a conversation with John about buying lottery tickets. I argued the purchase was irrational, the present value of the pay-off less than the cost of the ticket. John had an answer. He said he occasionally bought a lottery ticket because, as he put it, it allowed him to dream. Similarly, preservation of human remains may allow each of us to dream of survival, however unlikely the bet.

John, many of us wish you were still with us—in whatever form.