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“Death is a disease”: Cryopreservation, neoliberalism, and temporal commodification in the U.S.

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1. Introduction

In Darren Aronofsky's 2006 film *The Fountain* [39], the protagonist, Tommy—played by Hugh Jackman—proclaims to a laboratory colleague after his wife dies from brain cancer, “Death is a disease. It's like any other. And there's a cure... and I will find it.” While this re-framing of death as a medical diagnosis to overcome and in need of a “cure” may seem facetious—or perhaps, to some, horrifying—humankind's array of religions have spent at least a section of their scriptures trying to explain away death's finality [32]. Until quite recently in human history, death has been less articulated to materialistic notions of the physical but instead has been coupled with discussions about the spiritual.

Somewhat situated at the crossroads of the physical and the spiritual is the transhumanist movement. The transhumanists are a meliorist movement that hope to enhance human intellect and physiology by applying scientific and technological advances to “enhance” individual human bodies. The movement can be traced back to Nikolai Fedorovich Fedorov's “cosmist” movement at the turn of the 20th century whose goals consisted of: establishing universal immortality for human beings, resurrecting the dead, engineering the human body for spaceflight, and freedom of movement throughout the cosmos [41]. One modern enactment of the transhumanist philosophy is that of cryopreservation, or freezing one's body after death with the hope of being reanimated in the future.

In this article, I will be focusing specifically on cryopreservation and two of the American biotechnomedical tenets introduced by Robbie Davis-Floyd and Gloria St. John [5] in their technocratic model of medicine: the “body as machine” and “death as defeat.” These axioms are embraced by both the biotechnomedical establishment as well as the cryopreservation communities when they discuss the future of humankind. In particular, I will be focusing on the political economy of cryopreservation as an embodiment of American neoliberalism—as well as a Durkheimian death ritual—in the twenty-first century. Finally, I will theorize on a future populated by human beings from “the past” and the implications and consequences that may be caused by contemporary humans experiencing a temporal shift from traveling in deep

time *vis-à-vis* cryopreservation.

2. Cryonic assemblages

Cryopreservation is the practice of accepting a body after medical “death” and cooling a patient's body to -196°C in order to “vitrify” them: to replace over half of the water in the human body with chemicals that prevent cell damage caused by ice crystals, and freezing the body to a stable, ice-free state. After vitrification, the patient¹ is stored within vacuum-insulated dewars stabilized at a temperature of -196°C with liquid nitrogen in order to await a future in which biomedical technologies may be able to reanimate them [1]. The idea behind cryopreservation—like many modern technological advancements—was first introduced in science fiction [31]. Robert C.W. Ettinger's [9] book *The Prospect of Immortality* calls for humanity to enter “freezer programs” immediately after medical death in the hopes that one day scientific advancements would be able to restore life or even grant the patient with immortality.

While this may sound like pure science fiction, many cryopreservation advocates claim that the practice is scientifically realizable, even if it cannot be theoretically or technically validated by current scientific methods. However, that is not to say that contemporary medical studies are not experimenting with techniques relevant to cryopreservation. Recent experiments have shown that induced hypothermia after cardiac arrest resuscitation has prevented—or slowed—neurological, renal, and other issues related to the cessation of blood flow from the heart [2,27]. Additionally, there have been cases discussed by Abou Farman [10; 742] of patients resuscitated with little to no cerebral impairment after suffering “accidental hypothermia,” such as falling into frozen rivers, being buried under avalanches, etc. This research has excited cryonic and cryopreservation advocates and proves, in some of their minds at least, the feasibility of cryopreservation. Furthermore, many cryopreservation advocates assert that the criterion for death will continue to shift as biotechnomedicine continues to advance, and a patient placed immediately into cryopreservation after they're pronounced “legally dead” by a doctor in 2018 may not be considered dead at all by a doctor in 2118—but rather, they

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¹ A quick note on this lexical choice: I use the word patient here because this is how cryopreservation institutions refer to those who have elected to be cryopreserved. Many within the current medical profession would view cryopreserved bodies as human remains.

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will be seen as a patient in suspended animation awaiting revival.

Once again, this may not be as fantastical as it sounds if one compares it to the amount of flexibility that existed in when a patient was considered “dead” prior to the Uniform Determination of Death Act. This model state law was designed to standardize when a patient was considered “legally dead,” and as of 2018 it has been adopted by 38 states, including the District of Columbia [7]. However, cryopreservation advocates make a distinction between a “legally dead” patient who has lost brain function and “information theoretical death”—that is, according to the cryopreservationists, the point when the patient’s personality, memories, hopes, dreams can no longer be salvaged—which advocates claim is prevented by immediately cryopreserving a patient who has been declared dead by a doctor [34]. Therefore, death becomes socially constructed, as well as a process, rather than a moment [10]. This also illustrates the fact that terms like “consciousness” and “death” are part of a contested terrain that are shaped more by the political side of biopolitics than the medical side [30]. Through this shift, cryopreservation advocates play out a narrative utilizing current biomedical terminology in order to bound their reality of when “actual” death occurs as being *after* “information theoretical death” [31].

American biotechnomedicine’s relationship with death as a social and legal process has also been quite fluid. Most recently, the phenomena of so-called “beating heart cadavers” has been sensationalized in Dick Teresi’s [38] book on the topic. He highlights the fluctuating moments of death within medicine as sliding between heart-death and brain-death. One doctor interviewed by Teresi [38; 145] refers to brain-dead patients who are kept alive with ventilators as “pretty dead.” That is, their lungs are still breathing, their hearts are still beating, but this medical decision is only pursued so that blood can be circulated throughout the body in order to keep the organs viable for harvesting. In contrast, a person whose heart has stopped beating is considered “dead-dead,” and if this happens to a patient who is already “pretty dead,” medical staff will still attempt to “resuscitate,” despite the patient existing within this liminal landscape of death [38]. It is important to stress that this perspective is explicitly Americanist; for example, Japanese medical professionals and public have long been critical of brain-death equating human-death. In fact, Japanese law allows for citizens to choose for themselves which death will be legally recognized for them: heart-death or brain-death [22]. This critical stance toward brain-death has begun to take hold within the U.S., especially as suspicious symptoms—such as racing heartbeats during organ harvesting surgeries on the “pretty dead”—have been reported by transplant surgeons [38]. Furthermore, a study conducted at Stony Brook University found that of the 2060 survivors of cardiac arrest interviewed, 46% reported “post-resuscitation memories” and 2% reported full awareness after medical death [26]. This leads Teresi [38; 150] to pose the gruesome question: “What does a ‘pretty dead’ patient experience during a three- to five-hour harvest sans anesthetic?”

The Alcor Life Extension Foundation² subscribes to this liminal death model but reaches further than the current medical establishment: “Cryonics is not a belief that the dead can be revived. Cryonics is a belief that no one is really dead until the information content of the brain is lost, and that low temperatures can prevent this loss” [4]. The cryopreservation institution’s entire scientific and business model is dependent on this hope. In a way, cryopreservation is a fight against entropy; a battle against the heat death of the universe within the human microcosm.³

The compartmentalization of death, life, consciousness, and what

exactly it means to be a human is drawn from a radical reimagining of the mind-body separation argued by Descartes, Bacon, Hobbes, and other Western philosophers. This Cartesian dualism was initially inspired by, and is now fused with, the hegemonic institutions of scientific materialism [33]. This scientific hegemony is paired with the “supervaluation of science and technology,” [5; 34] which elevates biotechnomedicine (including cryonics) to a revered status within our technocratic capitalist society—even if cryopreservation may evoke the same smug smirk today that was given to those advocating airplanes in the early twentieth century.

In fact, I would challenge scholars studying cryopreservation to take members of cryopreservation organizations at their word, rather than having to first laugh off the implausibility of it all—much like how Puar [29], in her book *Terrorist Assemblages*, argues against the tendency that before one talks about suicide bombers, one tends to first feel the need to morally condemn them in order to alleviate risk. It is unclear whether these actions are taken in order to perform as the “rational academic” for colleagues and the academy at large, but it levies an amount of unethical disrespect toward research participants. Critiquing cryopreservation is important—and I will be doing a fair amount of that starting with the next paragraph—but a critical position holds far more weight when one *begins* with a relativistic stance. All research on matters concerning the future contain a high level of speculative imagination, and this foundation of uncertainty is shared between academics and cryopreservation advocates alike.

That said, it can be troubling when modern biotechnoscience supports the scientific materialist compartmentalization of human beings—the Cartesian breaking down of people into “body-machine” objects [5; 23]. In Donna Haraway’s [15; 301] recent engagements with her construction of the cyborg, she states that she no longer views cyborgs as hybrids, but instead as “imploded entities, dense material semiotic ‘things’—articulated string figures of ontologically heterogeneous, historically situated, materially rich, virally proliferating relating of particular sorts.” This multifaceted approach to what we consider human—and ways in which cryopreservation interacts with the human and the nonhuman—is what I am calling the *cryonic assemblage*. Puar [29; 217], in writing about suicide bombers, proposes a definition that also works within the cryonic assemblage: “Assemblage here points to the inability to clearly delineate a temporal, spatial, energetic, or molecular distinction between a discrete biological body and technology...” When the human body—or parts of the human body—are drained, vitrified, and encased within techno-dewars that monitor and adjust temperatures autonomously, the cryonic assemblage seems to breach the most popular biological ontology of what it means to be human.

The cryonic assemblage takes seriously Rabinow and Rose’s [30] discussion of the possibility for a new regime of biopower to take shape centered around novel configurations of knowledge, power, and subjectivity within biotechnomedical fields. My proposed cryonic assemblage includes a plea to think outside of the traditional Foucauldian configurations of biopower and to reflect on how contemporary cryopreservation advocates and organizations might be able to colonize and transform pre-existing apparatuses—such as the pharmaceutical industry, government investment, patient and lobbying groups, and biotechnomedical companies—in ways that may fundamentally change the way we think about health and medicine in the United States. These structural “mutations,” as Rabinow and Rose [30; 214] call them, will most likely be minute and diffuse, making it much harder to spot their effects in the short term, if they make a difference at all. However, from the perspective of the future, these new regimes of biopower have the potential to completely reconfigure relations of knowledge, power, and expertise surrounding life, death, and time itself and, if nothing else, that *possibility* should be taken seriously as a subject of scholarly inquiry [30].

² Alcor is a Scottsdale, Arizona based NGO that researches, advocates, and performs cryonic services. As of January 31, 2018 they have 1149 members (those who have elected for cryopreservation), 292 associate members (those who have not made cryopreservation plans but wish to financially support Alcor’s mission), and 155 patients who are cryopreserved.

³ This turn of phrase is owed to Martin Pfeiffer, who elegantly expressed this to me during our conversations on the topic.

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