

JOHN TEMPLETON FOUNDATION

**Immortality Project Research Review**

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## I. EXECUTIVE SUMMARY

### **IMMORTALITY RESEARCH PROJECT ASKS: COULD WE LIVE FOREVER — AND SHOULD WE?**

The prospect of living forever has fascinated human beings for millennia. Virtually every human culture holds that it is possible for us to evade or transcend death — and thereby attain some form of immortality. This yearning for immortality is a perennial feature of human life. As Ambrose Pierce cheekily put it, immortality is “a toy which people cry for, and on their knees apply for, dispute, contend and lie for, and if allowed would be right, proud, eternally to die for.” But should we invest our hopes in immortality?

This question was at the forefront of the recently completed Immortality Project, a three-year research initiative headed by Distinguished University Professor John Martin Fischer (University of California, Riverside) and funded by the John Templeton Foundation. With funding of \$5.1 million, the Project is one of the largest humanities grants ever awarded. Using a competitive international evaluation system, the Project funded 34 projects related to the science, philosophy, and theology of immortality. The Project generated a large volume of scholarly research into immortality, including books and articles by scientists and humanists, works of science fiction, popular writings, and documentary films.

Much of the Project’s research addressed the chances of technological or medical breakthroughs that might greatly extend human lifespan. Researchers investigated how the lifespans of such species as mice or insects can be extended, and how it is possible for the simple aquatic hydra not to age at all. Other researchers investigated the forms that immortality might take from within religious perspectives, considering whether there could be states of limbo or purgatory, or even whether immortality requires an afterlife at all.

Another strand of Project research examined whether we have adequate evidence to believe we survive death. Project researchers systematically investigated whether the phenomenon of near-death experiences offer compelling evidence of our capacity to survive death, as many popular treatments of near-death experiences allege.

Project Researchers also investigated the ethical or political ramifications of extending the human lifespan. If science could, for instance, halt human aging, would we welcome a society in which such anti-aging technologies were available to but a few — a society where a select group lives for thousands of years but most have only the typical human lifespan of around 75 years? Would a world in which some are immortal but some are not be a just world, or a recipe for resentment and social turmoil?

The Immortality Project has been one of the most ambitious and impactful interdisciplinary research projects in recent years. Its researchers have shed invaluable light on the human preoccupation with death and immortality and put in place a foundation to catalyze research in coming years.

## II. INTRODUCTION

The instinct to survive, procreate and extend our lives into the future is one human beings share with other creatures. But thanks to our uniquely sophisticated cognitive capacities, we human beings are also (depending on one's perspective) blessed or cursed with the knowledge that our efforts on this front ultimately appear fruitless — that we, like every other living being, will eventually die. Our species is thus distinctive in being compelled to live with the knowledge of our mortality, a condition the twentieth century German philosopher Martin Heidegger called “being-toward-death”. Yet the very same cognitive capacities that enable human beings to know of our mortality — our ability to conceptualize the self, to measure and anticipate the passage of time, to distinguish between temporary and permanent change, to envision alternative ways the future might unfold — has also led us to speculate about whether death *must* be our end. Is death in fact unavoidable and essential to the human condition, or is there some prospect that we might evade or transcend death? This question — whether human beings should believe in or hope for immortality — is a central theme of many of the earliest known works of art, literature, and philosophy. *The Epic of Gilgamesh* (circa 1800 BCE), one of the world's oldest surviving literary works, is a five-part Mesopotamian poetic epic whose second half describes its grief-stricken protagonist's ultimately fruitless search for the secret to eternal life. The Hindu *Upanishads*, composed approximately a millennium later, hypothesize that human beings undergo the cycle of *samsara*, a continual process of life, death, and rebirth that, if a person lives well enough to perfect her soul, will culminate in eternal bliss. In approximately the same era, Thales, generally credited as the first philosopher in the Greco-Roman tradition, affirmed the immortality of the soul, and the question of whether death could be survived became central to that tradition. In dialogues such as *Phaedo*, Plato would later systematically attempt to argue for the soul's immortality. Zoroastrianism, Judaism, Christianity, and Mayan religion share a salvific conception of immortality, according to which a person's choices, character, or piety determine whether the afterlife will be contented or tormented. The ancient Aztecs, in contrast, held that one's posthumous fate depends less on the course of one's life overall than on the specific circumstances of one's dying (whether a person died of disease, in battle, etc.).

This philosophical and artistic interest in the prospect of immortality is corroborated by evidence from the empirical social sciences. Comparative anthropological evidence suggests that beliefs concerning the afterlife, including hopes for immortality, permeate funerary and grieving practices in almost every culture. (Parkes, Laungani and Young 1997). Some scholars have concluded that this human preoccupation with immortality reflects a larger species-wide ‘anxiety’ surrounding death. Ernest Becker's Pulitzer Prize-winning *The Denial of Death* (1973) advanced the claim that the ‘denial’ of one's mortality is necessary for adequate psychological functioning, and as such, individuals pursue various heroic “immortality projects” whose symbolic significance enables them to be reassured of their place in cultural domain apart from finite, physical reality. For Becker, belief in immortality functions as a salve or ‘cure’ for the anxiety engendered by the human awareness of death. Other scholars view the human aspiration toward immortality as a chief source of intergroup conflict and social evils. “Groups are always seeking modes or combinations of modes of immortality and will celebrate them endlessly,” wrote the historian Robert Jay Lifton (1987), and are all too ready to “fight and die in order to affirm them or put down rivals who threaten their immortality system.” More recent scholarly

research assigns an even greater role to the aspiration toward immortality in human culture. Inspired by Becker, *terror management theorists* have conducted empirical experiments seeking to verify the centrality of death-related anxiety to human motivation and human culture in general. In these experiments, test subjects are exposed to stimuli that enhance the psychological salience of death and then asked to perform tasks or form judgments related to culturally important symbols (e.g., a Christian cross) or narratives (speeches advocating military responses to terrorist attacks). The experimenters find that subjects with enhanced mortality salience tend to show a greater willingness to defend these symbols or narratives, a result terror management theorists take to validate their claim that adherence to “cultural worldviews” is central to human efforts to imbue their “sense of reality with order, meaning, and permanence” and thereby sustain individuals’ self-esteem and sense of personal significance. (Solomon, Greenberg, and Pyszczynski 2015) According to terror management theory, anxiety related to mortality, and the consequent fascination with immortality, are not merely among the many factors that prime and shape human belief and culture. Rather, these are the most prominent factors that prime and shape human belief and culture. As Stephen Cave puts it in his widely-read book on immortality, the “will to immortality is “the underlying driver” to human civilization and achievement, “the wellspring of religion, the muse of philosophy, the architect of our cities and the impulse behind the arts.” (2012)

Though concerns about immortality are thus ubiquitous in human thought and culture, immortality has been given only sporadic scholarly attention, and as a result, has been undertheorized in scientific, theological, and philosophical circles. The Templeton-funded Immortality Project, among the largest humanities research grants ever awarded, aimed to redress this situation by supporting research on a wide array of questions related to immortality. Led by Distinguished University Professor of Philosophy John Martin Fischer (University of California, Riverside), the Project utilized a competitive evaluation system to identify 34 projects for funding.

The objectives of this report are to catalog, analyze, and appraise the public significance of the scholarly research generated by the Immortality Project. Section III provides additional background necessary to situate the research supported by the Project. In Section IV, we describe nine items of Project-supported research that demonstrate the breadth of that research, are of high scholarly quality, and are likely to draw widespread interest among the non-academic public. Section V identifies five areas of future research on immortality that we judge to be especially promising or urgent. Section VI contains bibliographies of the research supported by the Immortality Project and of other research cited in this report. The Appendix organized the Project research into categories and describes how the Project-supported research has contributed to our knowledge of immortality.

### III. RESEARCH BACKGROUND

#### 1. Varieties of Immortality

As will become apparent as this report proceeds, immortality is an enormously complex philosophical and scientific subject, with numerous intertwined threads. One central complication is that immortality can be imagined or represented in different ways. The conception of immortality most familiar in Western societies — a theistic conception in which, at or soon after death, the person is assigned perpetually either to heaven or hell as befits her moral character, faith, etc. — is but one of many possible conceptions of immortality. Serious misunderstanding of philosophical, theological, and scientific disputes surrounding immortality is likely to result absent careful attention to these diverse conceptions of the nature of immortality.

Conceptions of immortality can be divided into two broad categories: literal and symbolic. According to literal conceptions of immortality, human beings can evade death either by delaying it or by surviving the process of dying. Literal conceptions thus hold that immortality is primarily a metaphysical fact: We humans — or some essential aspect of individual human nature — are not inevitably destroyed by death, because (again) death need not occur or because death need not entail our permanent non-existence. Symbolic conceptions, on the other hand, view immortality not in terms of the literal metaphysical survival of human individuals but in terms of the continued existence of symbols or symbolically infused beliefs, practices, etc., to which deceased individuals bear some causal or contributory relation. Symbolic conceptions provide us with immortality not in the sense that they postulate that human beings never die or need never become non-existent. Rather, they conceptualize immortality in terms of whether a deceased individual is remembered, whether her beliefs and achievements live on, whether her life continues to have an impact beyond her lifespan, etc. Here immortality is cashed out not in terms of one surviving but in terms of the survival of what one cared about or was committed to while alive.

##### a. *Literal conceptions*

Perhaps the most obvious way to attain immortality is via what Cave (2015) has called “staying alive”. On this picture, immortality is not achieved posthumously; people do not die and then transition to a different condition, one in which they are then immortal. Rather, immortality is the result of applying technologies that indefinitely stave off death. Immortality thus continues the embodied biological existence with which we are familiar. This physiological or ‘medical’ immortality could, in principle, be achieved through different sorts of technologies. Genetic technologies could be developed that halt or counteract the aging processes that appear to be responsible for our mortality. Alternatively, the “maintenance” approach advocated by Aubrey de Grey (2012) proposes that death could be delayed by anticipating and fixing the damaging effects of aging across the lifespan; we might, for instance, use transplantation or stem cell technologies to replace damaged tissues, much in the way that a vehicle is maintained in operable condition by replacing worn or broken components. Were we able to develop technologies to provide such a proverbial “fountain of youth,” we would attain a form of immortality that strongly resembles the mortal life with which we are already familiar. As Cave notes, such an achievement would be the peak achievement of human civilization. Having developed “agriculture to ensure food in steady supply, clothing to stave off cold, architecture to

provide shelter and safety, better weapons for hunting and defense, and medicine to combat injury and disease,” life-extension technologies would represent the culmination of our efforts at collective and individual self-preservation.

Other literal conceptions instead view immortality as a state we attain *posthumously*. On these conceptions, death is real and unavoidable. But death merely marks a transition between an earth-bound embodied state and posthumous immortality.

Two rough versions of posthumous immortality are common within the world’s monotheistic traditions. The first asserts that posthumous immortality occurs via the resurrection of the body. The orthodox position of most Christian denominations, this conception holds that death does in fact mark a genuine interruption in a person’s biography: For whatever duration exists between a person’s death and her resurrection, she ceases to exist. A person exists again only upon her body being reassembled, reanimated, etc.

Another version of posthumous immortality appeals to a dualistic picture of human nature: We are composites of material bodies and immaterial souls, but death merely marks the failure or decay of the former. The soul thus survives the process of bodily death. So unlike the resurrection conception of immortality, this dualistic conception maintains that individuals never cease to exist. For the soul persists through, and is ‘liberated’ by, the death of the body. In most Western versions of the soul-based conception of immortality, the soul exists eternally in another immaterial realm. However, in versions of this conception that involve reincarnation, the soul continues to exist by being reborn in new bodies or creatures. In Hindu belief, this cycle of reincarnation can end only when the soul (*atman*) has attained sufficient *karma* to be perfected.

More recently, some futurists and technologists have hypothesized that another form of posthumous immortality may be possible, namely, ‘digital’ immortality. This conception of immortality holds that it may be possible to reconstruct the personality and other psychological attributes of a deceased person and realize these in some electronic medium. For instance, someday we may be able to scan brains with sufficient accuracy to construct their non-organic duplicates. A person’s psychology, a kind of ‘software,’ could then be ‘uploaded’ into a form of digital hardware and could continue to exist even after bodily death. Moreover, were these psychologies augmented by artificial intelligence with the capacity to causally interact with their environments, these digital persons would have most all of what seems essential to human consciousness and personality. On the assumption that we are identical to our personalities or our consciousnesses, then digital immortality would amount to an inorganic continuation of our lives, in theory indefinitely. (Steinhart 2014) That disputes have broken out over who has authority over individuals’ digital remains (their social media accounts, online identities, video game characters, etc.) suggests that many view digital activities and artifacts as extensions of a person’s personality or consciousness. (Stokes 2012, Stokes 2015, Cahn 2017)

All of the literal conceptions of immortality discussed so far, whether physiological or posthumous, operate with what we might term a *personal* conception of immortality. They implicitly require that immortality only occurs if something exists that evades or survives death that is metaphysically (or ‘numerically’) identical to us as persons. Clearly, something survives our deaths, namely, our corpses or remains. But few would assert that our corpses or remains *are* us. What these personal conceptions of immortality claim is that in order for us to be immortal, we (or whatever it is that makes us up as individual persons) must evade or survive death. This claim should not be exaggerated. These conceptions of immortality are compatible with some differences between premortem and posthumous persons. On the dualistic conception, for example, the premortem and posthumous person will differ in a crucial way, namely, that the

latter will be a disembodied soul. But these personal conceptions predicate immortality on the continued existence of whatever is *essential* to us as persons, so that immortality is possible only if whatever is essential to us as persons cannot be destroyed or annihilated by death.

As the next two sections will make clear, what is essential to us as persons — what makes for *personal identity* over time — is a vexatious philosophical question. However, some conceptions of immortality have not supposed that immortality involves personal survival.<sup>1</sup> *Annata* Buddhism maintains that there is no self or person who persists through time. Nevertheless, human individuals persist through lifetimes and are ‘reborn’ into a cycle of ignorance and suffering that can only be broken through reaching *nirvana*, in which a desire-free selflessness is attained. Mark Johnston (2010) has argued for a version of immortality inspired by Socrates’ claim that immortality awaits those who are morally good. Skeptical that we have persisting identities over time, Johnston argues that this fact not only does not preclude immortality, it enables it. For on Johnston’s picture, moral goodness consists in a “a disposition to absorb the legitimate interests of *any* present or future individual personality into one’s present practical outlook, so that those interests count as much as one’s own.” For the morally good then, death does not deprive them of a form of personhood that none of us possess anyway. Rather, inasmuch as the good expand themselves into others and their perspectives, they ‘survive’ death in the “onward rush of humankind.” (Derek Parfit (1984) offers a similar thesis, arguing that what matters to us in survival, and hence what might seem attractive about immortality, is not that our posthumous selves are identical to our pre-mortem selves but that they have a sufficiently high level of psychological “continuity and connectedness” with those pre-mortem selves.

#### b. *Symbolic conceptions*

Symbolic conceptions of immortality generally hold that though we have persisting selves, those selves cannot survive death — a literal afterlife or metaphysical immortality is not in the offing. But on these conceptions, the significance of immortality is primarily ethical rather than metaphysical. Immortality attracts us because it holds out the possibility that the cares, concerns, and practices to which we are attached may survive, even if we do not. If those cares, concerns, and practices survive, we have attained symbolic immortality, the kind that ostensibly matters most to us.

Becker and terror management theory propose that the desire for such symbolic immortality is in fact what lies behind the wide acceptance of belief in the afterlife, that is, that the desire for personal survival is rooted in a deep-seated psychological yearning for the survival of the cultural worldviews with which we identify. If our cares, concerns, and practices survive, then the larger world from which we derive meaning and self-esteem survive, and so in a symbolic sense do we survive.

But the thought that what matters to us about immortality is not personal survival but the symbolic survival of our cares, concerns, and practices has been most thoroughly developed by Samuel Scheffler (2013) (though for a similar position see Lenman (2002)). Inspired by P.D. James’ dystopian novel *The Children of Men*, Scheffler argues that we would feel profound dismay if we learned of a ‘doomsday scenario’ in which, thirty days after our own deaths, all other human beings would die as well. Many of our projects (completing a novel or developing a new medical treatment, for instance) would, according to Scheffler, seem pointless or trivial

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<sup>1</sup> Fischer (2012) captures the contrast we describe here in terms of “atomistic” understandings of immortality versus “non-atomistic” understandings, where the latter is distinctive in positing “the fusion of the individual with another individual or individuals.”



under the doomsday scenario. He takes this to illustrate that many of our values are tacitly predicated on the assumption of a “collective afterlife,” that is, the existence of generations of humans who exist subsequent to our deaths. Scheffler (who denies the possibility of a personal afterlife) concludes that our reactions to the doomsday scenario show that our attitudes toward what we value are simultaneously “conservative” and “future-oriented” in that we want valuable projects, activities, etc., to be preserved and sustained into the future. When they are preserved, we attain the “personalized relationship” with the future essential to the values we have while alive, and (according to Scheffler) the only sort of immortality that is possible and desirable to attain. Cave, in discussing “legacy” as a form of immortality, observes that the realm of cultural symbols is no less real or enduring than the realm of physical objects. Achieving a kind of symbolic immortality may not only be the best we can hope for; it offers us the opportunity to transcend or break free from the natural cycles of creation and decay. (Cave 2015)

## 2. Question One: Possibility

The preceding section illustrates that scholarly debates about immortality can run aground if participants are talking at cross purposes, referring to different conceptions of immortality. Here are the various conceptions summarized:

<b>Conception</b>	<b>Literal (personal), literal (impersonal), symbolic?</b>	<b>How immortality conceptualized</b>
Physiological (‘medical’), “staying alive”	Literal, personal	Dying perpetually postponed due to medical interventions
Bodily resurrection	Literal, personal	Individuals die but survive due to body being brought back to life
Dualistic (immaterial soul)	Literal, personal	Immaterial soul survives the death of the body
Digital/virtual	Literal, personal	Personality or other essential psychological attributes are perpetually preserved in an electronic medium
Buddhism/Johnson: ‘no self’	Literal, impersonal	There is no self to survive death; death can involve merging of selves or attainment of a ‘selfless’ or universal point of view
Scheffler’s ‘collective afterlife’	Symbolic	Individuals do not survive death, but their legacies, practices, concerns can survive and confer immortality

With respect to any of these conceptions, two crucial questions should be raised. The first is whether immortality, as envisioned in that conception, is *possible*.

It seems plausible that the extent to which immortality is possible varies among these conceptions, that is, that immortality is not equally possible across these conceptions. Symbolic

immortality is arguably the version of immortality most readily available to us. Cave (2015) points out that few human beings leave legacies lasting hundreds of years, as did (say) Alexander the Great, much the less legacies that survive the whole subsequent history of the human species. But symbolic immortality is presumably more attainable if we set the bar lower. If, for example, symbolic immortality is achieved if we are remembered, our concerns and practices are sustained, etc., for a few generations, then many currently living human beings will likely achieve this form of immortality thanks to electronic and other technologies that enable people's lives to be documented and their legacies sustained.

Whether immortality is possible on some other conceptions — 'staying alive' and the digital afterlife — turns on how our technology develops. Time will tell whether our electronic and medical technologies become capable of scanning and 'downloading' the contents of our minds, of halting or reversing aging, or of preventing or remedying the invariable breakdowns in human bodies.

Other conceptions of immortality face more perennial philosophical questions about whether they posit possible forms of immortal life, questions largely stemming from their assumption that immortality involves personal survival. Consider resurrection: This conception assumes that we survive death because our bodies do; hence, we are our bodies. But skeptics have long wondered how resurrection that preserves bodily identity is possible. (Cave 2015) If, for instance, having the same pre-mortem and posthumous body amounts to having a body made of the same material stuff, how does the resurrection conception account for the fact that one and the same parcel of stuff — a carbon atom, say — may have been part of one human body at one time but part of another human body at a later time? Evidently, one or the other, but not both, of these individuals could undergo bodily resurrection. Likewise, it would seem that the posthumous body must be made of a fundamentally kind of material stuff in order to be immortal. For were it made of the same kind of material stuff as the mortal, pre-mortem body, it would presumably be subject to the same decay and breakdown that made the pre-mortem body vulnerable to death in the first place. In that case though, the pre-mortem and posthumous persons would not be identical; death would not have been survived, and this would not be a genuine instance of immortality.

The dualistic or soul-based conception confronts similar metaphysical challenges. Some will dismiss the dualistic conception as antithetical to a properly materialist scientific worldview. Others will raise now familiar doubts about how the presumptively immaterial and immortal soul relates to, and is able to causally interact with, the body and other parts of the material world. But like the resurrection conception, the dualistic conception faces puzzles concerning survival and personal identity. For example, it is seemingly compatible with this conception that the posthumous soul and pre-mortem soul be utterly different psychologically — that one's pre-mortem self has a lively, extroverted personality while one's posthumous self has a brooding, introverted personality. So long as these are realized in one and the same soul, these are (according to this conception) the very same person. But some have taken the coherence of this possibility to show that having the same soul over time is insufficient for personal identity and thus insufficient to make sense of personally surviving death via the survival of one's soul. (Kagan 2012)

That the resurrection and dualistic conceptions are often embedded within theistic outlooks may make these challenges regarding the possibility of immortality more tractable. Alternatively, the force of the challenges may itself cast doubt on the tenability of those theistic outlooks.

### 3. Question Two: Desirability

The human preoccupation with immortality appears to flow from our unease with mortality. Many people believe death to be a particularly bad thing and thereby fear death. Immortality, then, may seem to be the solution to the problems that death and mortality pose for human beings.

As one might expect though, whether immortality ‘solves’ the problem(s) posed by death and mortality turns on exactly what immortality consists in. What do we desire out of immortality — and can any conception of immortality deliver it? Project director John Martin Fischer (2012) helpfully describes three criteria a conception of immortality must apparently meet in order for us to judge immortality desirable.

The first is *identification*. This criterion holds that in order for immortality to prove desirable, there must be a strong enough identity relationship across time such that we could say of some future person existing (say) one thousand, one million, or one billion years from now, that that person is *us*. Immortality, after all, is the survival of someone forever into the future (or at least for as long as the world itself continues to exist). And if an immortal individual were to undergo such extensive change — change in their physiology, belief system, preferences, etc. — that the passage of sufficient time would result in their ‘evolving’ into a numerically distinct person, it might not be desirable for that earlier individual to become that later person. It must be the case, in other words, that the immortal individual I will become is *me* (or enough like me) in order to find the prospect of immortality desirable.

Fischer’s second criterion is *attractiveness*: A desirable immortal existence must be one that we find attractive, that is, that has whatever attributes make our lives worthwhile. Merely living forever does not entail living *well* forever, and it could be that immortality would invariably culminate in unattractive lives. One apparent example of this comes from the Greek myth of Tithonus. In the myth, Eos, the goddess of the dawn, falls in love with the Trojan prince Tithonus and so asks the king of the gods, Zeus, to render Tithonus immortal so that the lovers could spend eternity together. However, Eos neglects to ask Zeus that Tithonus be granted eternal youth in addition to eternal life, and as a result, the immortal Tithonus suffers from the painful decay and degradation of his body over time. Tithonus thus received a form of immortality that few would find attractive.

The third criterion Fischer dubs *recognizability*. As noted in connection with identification, immortality could result in extensive changes to a person. These changes could result in conditions or lives that are not identifiable as human lives. Suppose, for example, that as time passes, the portion of the past that an individual could encompass in memory shrinks, so that (for example) a ten-million year old immortal person could only remember events from the past thousand years. Some might charge that such a life would lack the psychological unity characteristic of human lives as we know them. Such an existence might appear to be so many overlapping psychological stages, a series of millennium-long ‘persons,’ rather than a coherent human life lived and conceptualized from beginning to end. A desirable immortal life, in contrast, must be one that resembles a human life in its central features.

Taken together, Fischer’s criteria imply that immortality is only desirable for us if we could survive forever (or, again, as long as the world itself continues to exist) to enjoy attractive and recognizably human lives. When applied to the conceptions of immortality enumerated earlier, these criteria seem to cast doubt on the desirability of some conceptions of immortality.

On its face, immortality without identification would not seem desirable. This worry may invoke skepticism about those conceptions of immortality that do not posit that we can

personally survive death, such as the impersonal conceptions or Scheffler's symbolic conception. After all, what good is immortality if it is not the survival of us? To speak of leaving a legacy as a kind of immortality is apparently to speak merely in metaphor. (Cave 2015) And as we have already seen, both the resurrection and dualistic (or soul-based) conceptions face challenges in understanding how individuals can survive death while still retaining what is essential to their identity (their specific bodies or souls). Thus, if individual survival is not possible according to these conceptions, and if identification is necessary in order for immortality to be desirable, then neither resurrection nor the survival of the soul offer desirable conceptions of immortality. The digital or virtual conception of immortality might not appear to satisfy the identification criterion given how fundamental our having a body is to day-to-day human existence. Would a 'person' realized in software, one who could not get hungry or tired or angry, really be us?

The attractiveness criterion bedevils other conceptions of immortality. As noted earlier, some conceptions of immortality, in particular bodily resurrection and the soul-based conception, are associated with religious worldviews in which the quality of one's posthumous life depends on one's character, piety, or devotion. Those who fare well on this score enjoy eternal bliss; those who fare badly suffer eternal torment. Obviously, these conceptions hold out the potential that immortality will be extremely unattractive for those whose early lives do not measure up to moral or spiritual standards. The soul-based or dualistic conception of immortality faces a further challenge related to attractiveness: This conception envisions our immortality as a disembodied existence, in which we survive death because the immaterial and non-physical soul sheds or jettisons the body. But do we have reasons to be attracted to an eternal disembodied life? As with digital immortality, questions arise as to whether an eternal life absent one's body, without the attendant bodily pleasures associated with food, warmth, sex, touch, and the like, would be satisfying. And as Cave (2015) points out, some religious traditions underdescribe heaven, in part because the posthumous goods available to disembodied souls (communing eternally with God, for instance) may not strike some as especially attractive.

Lastly, the very fact that immortal life would represent a massive deviation from mortal life as we know it raises doubts about whether immortal life, no matter the specific form it might take, would be a recognizably human life. Some have worried that the infinite duration of an immortal life precludes it having the shape or contour of human life. Todd May (2009) proposes that an immortal would "drag on endlessly," degenerating into a "string of events lacking all form" with no meaningful differentiation between climaxes or turning points and more mundane day-to-day existence. In a similar vein, some have argued that because an immortal life might well have no end point, it could not be fit into the kinds of narratives that human beings characteristically use to describe and evaluate their lives. Familiar human lives begin with birth and childhood, proceed through adolescence, early adulthood, maturity and middle age, the 'golden years,' etc. How does one 'tell a story' or an equivalent narrative about a life that begins with birth and childhood but presumably would not have the later stages that are defined by or indexed to death? Others have argued that human experience is so extensively structured by our awareness of our finitude that an immortal life would lack many of its essential ethical or practical characteristics. May (2009) argues that the finitude of our existence is what lends life its beauty or preciousness and makes our choices urgent or monumental. Being mortal, he proposes, places limits on the possibilities for individual human lives, limits without which neither success or progress on the one hand nor failure or regret on the other have any traction in our experience. Immortality would therefore deprive us of limits that render human choice and action intelligible. Others have emphasized how immortality would render us less vulnerable and perhaps threaten

important human goods. There might seem to be less at stake for immortals in their personal relationships, inasmuch as immortality would reduce our interdependence on one another and thereby dilute the significance of our personal relationships. Martha Nussbaum (1994) has maintained that certain human virtues, such as courage, only have application to beings with limited lifespans and the vulnerability that mortal life brings in tow. Still others have doubted that we can even grasp what an immortal life would amount to. To judge whether an infinitely long life is valuable demands that we be able to hold in our consciousness or intellects an infinite series, which (some critics maintain) we cannot do. An immortal life is, on this picture, ineffable and unfathomable, no more comprehensible to us than an infinitely powerful or wise deity. These skeptics about immortality's desirability thus draw attention to how immortality might alter how we value and reason to such an extent that immortal lives may not be recognizable as human lives.

It may therefore be harder, even if immortality is possible, for immortality to also be desirable. For as these discussions illustrate, both immortality in general and specific conceptions of immortality may struggle to satisfy the criteria Fischer identifies for immortality's desirability. Of course, one possible rejoinder here is that one or more of these criteria should be rejected. This is the tack seemingly taken by symbolic and 'no self' conceptions of immortality, the former of which offers a conception of immortality that self-consciously does *not* satisfy the identification criterion, the latter of which offers a conception of immortality willing to sacrifice recognizability for attractiveness.

Indeed, it may be that no conception of immortality could jointly satisfy these criteria. This is the thesis of a famous and much discussed article by the late Bernard Williams. Using the example of 'E.M.' from a Janacek opera, Williams (1973) argues that so long as an immortal life continues, an individual will retain "conditional desires," desires that give us reason for our lives to go certain ways but do not give us reason as such for wanting our lives to continue (an immortal person will presumably desire adequate food and shelter but she will presumably not desire to live further *so that* she can have adequate food or shelter). Williams maintains, however, that immortal invariably exhaust the "categorical desires" that make life worth living — the projects and aspirations that provide us a reason for wanting our lives to continue so that we see these continue or reach fruition. The result, Williams concludes, is that immortality portends boredom or tedium, as we exhaust the categorical desires that give life its forward momentum or appeal. Williams proposes that this tedium or boredom could be alleviated if an individual underwent large scale changes in her personality, swapping out her extant categorical desires for a new set. But, Williams counters, this entails that we will no longer identify with (or perhaps recognize) those distant iterations of ourselves who, after thousands or millions of years, etc., come to have utterly differently personalities and desires from us. Thus, we have no personal reason to desire that such individuals exist or that we become immortal. Either immortality must be tedious, according to Williams, or the tedium is addressed at the cost of making immortal life not clearly superior to mortal life.

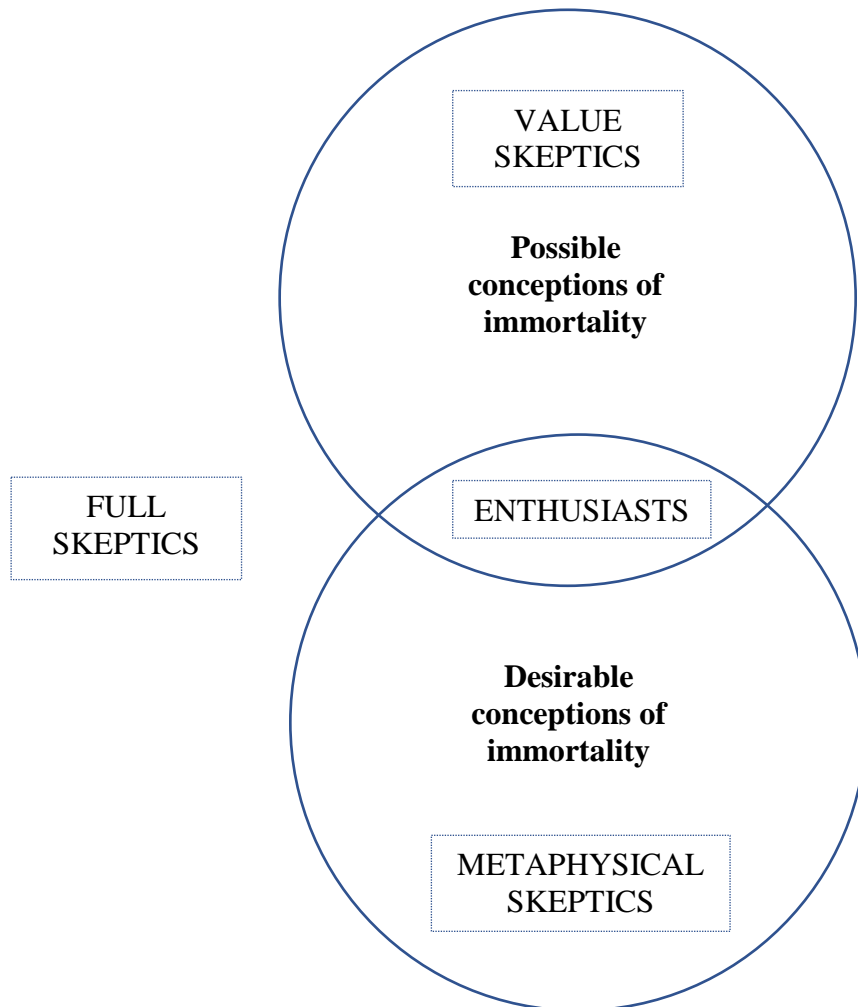
Williams' argument highlights the possibility that, even under the best scenario, we may not be able to enjoy the species of immortality we earnestly hope for. Another argument for that conclusion points out that the relevant question regarding immortality's desirability is not whether there might be *some* conception of immortality that amounts to a worthwhile existence. Rather, the relevant question is a *comparative* one: Would immortality be better than mortal life, such that we have reason to prefer immortality to mortality? Here we seem to face a dilemma: While immortality could be viewed as beneficial just insofar as it would 'save' us from death,

that does not seem to make immortal life better than mortal life. In order for immortality to be preferable to mortality, it must be better than mortality in demonstrable ways, but it must at the same time, in order to be appealing to us or to offer us a recognizably human existence, resemble mortal human existence in many essential respects. Furthermore, we must consider not only, as Williams does, whether the goods of human life would be exhausted in a very long or immortal life, but whether such lives would retain, or even exacerbate, the bads of human existence. (Cholbi 2015) For presumably, the comparative question demands thinking about mortal life as a whole and immortal life as a whole, taking into account both the goodmaking and badmaking features of such lives. At issue, then, is perhaps not whether immortality could satisfy Fischer's three criteria, but whether it satisfies those criteria more unambiguously or emphatically than mortality does.

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This snapshot of the worries about the desirability of immortality has only conveyed some of the main threads of those debates. But combined with subsection 2's discussion of the possibility of immortality, we arrive at the following taxonomy of positions regarding immortality:

- Immortality *Enthusiasts* hold that there is at least one conception of immortality that is both possible and desirable.
- Immortality *Skeptics* hold that there is no conception of immortality that is both possible and desirable. Skeptics can arrive at this position in several different ways. *Value Skeptics* hold that there are conceptions under which immortality is possible, but none of these are desirable. *Metaphysical Skeptics* hold that there are conceptions under which immortality is desirable, but none of these are possible. *Full Skeptics* hold that all conceptions of immortality are both impossible and desirable.



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The purpose of section III has not been to advocate for or against any specific conception of immortality, to exhaust the considerations that speak for or against any particular conception of immortality, or to promote skepticism about either the possibility or desirability of immortality. Indeed, for each of the arguments we have raised against immortality (or particular conceptions of immortality) being either impossible or undesirable, their adherents have articulated (or could articulate) responses. Rather, cataloging both the variety of conceptions of immortality and how questions about how possible and desirable immortality would be under those conceptions provides indispensable context for understanding most all of the research generated by Templeton's Immortality Project.

Furthermore, this section has illustrated why the study of immortality should not be confined to any single discipline or pursued solely through a single methodology. In supporting immortality research from the sciences, from philosophy, and from theology, the Immortality Project validates the importance of an interdisciplinary approach to this subject.

The natural sciences have an important role in the study of immortality that is easily overlooked. One role is to provide evidence relevant to the possibility of surviving death, that is, to whether death necessarily represents the permanent end of our existence as individuals. How, if at all, could bodies be preserved, revived, etc., so as to achieve resurrection and eternal immortality? Science may also be helpful in assessing the plausibility of human beings having immaterial and immortal souls, as well as in analyzing events that might bear on whether immortality is possible. The social sciences can further contribute to our understanding of immortality by investigating how our beliefs about death and immortality are acquired and how these beliefs are embedded within larger systems of cultural practices and attitudes.

Philosophy has a particularly crucial role in the scholarly investigation of immortality. Many of the questions investigated by Project researchers falls squarely within metaphysics, the branch of philosophy concerning with what exists and the nature of reality. Other questions prominent in Project-supported research are fundamentally axiological or ethical: about whether we should desire immortality, what we should hope immortality would be, and why. The intersection of metaphysics and ethics (for example, in research addressing whether immortality's desirability depends on us personally surviving death) is an especially fruitful area of research. Philosophy is also well suited to contribute to our understanding of immortality indirectly, by considering how our beliefs and attitudes surrounding immortality relate to or reflect our beliefs and attitudes concerning death and mortality.

Finally, immortality and religious belief can be severed. Some of the conceptions of immortality considered earlier — the biological, digital, and collective afterlife conceptions in particular — do not tend to rest on religious premises or posit a supernatural or divine power. Nevertheless, the vast majority of those who have believed in immortality have also accepted a theological worldview. This is unsurprising, since a central function served by religion and spirituality is to offer believers guidance regarding their mortality. Indeed, there is hardly a religious belief system that does not advance an account of the nature or significance of death and of what (if anything) the afterlife is like. Theology thus has a distinctive place in inquiry into immortality. Project researchers discuss a wide range of religious conceptions and draw attention to controversies regarding these questions within different religious traditions.



#### IV. NOTEWORTHY PROJECT-SUPPORTED RESEARCH

The 34 subgrants funded through the Immortality Project generated a large body of research. Of this research, this report's authors judged the following nine items (or sets of items) as the most noteworthy. In addition to being of high scholarly quality, these items are likely to be both accessible and interesting to the general public.

##### *Nature of immortality*

Several of the most noteworthy Project research products investigate how immortality can be understood, especially within religions that have traditionally posited an afterlife.

##### **Burley, “Eternal Life as a Present Possession”**

Many religions, and Christianity in particular, hold that believers will come to enjoy ‘eternal life.’ This is usually understood in terms of living on forever after death. However, Mikel Burley (2015a, 2015b, 2016a, 2016b) argues that the eternal life promised to Christians need not occur in the hereafter. Instead, eternal life may be realized during a believer's lifetime on earth. Burley proposes that eternal life may be enjoyed as a “present possession.” Here Burley appeals to four-dimensionalist metaphysics, which understands time as a fourth dimension akin to the three spatial dimensions. According to four-dimensionalism, ‘parts’ of time are as real as ‘parts’ of space, so that all times — past, present, and future — are equally real and exist eternally, just as all locations defined by the three spatial dimensions (height, width, and depth) are equally real and exist eternally. On this picture, the slices of time in which a person is a five-year old eating cereal, a college student studying for an exam, and an elderly person walking the dog all exist eternally. For Burley, because our lives occur within such time slices, our entire lives exist eternally, rather than only the present period of our lives existing now. More orthodox views of immortal, eternal life, wherein we exist forever in an unfolding present, are subject to the objections that they are incompatible with scientific naturalism, encourage moral complacency with respect to believers' improving themselves morally, and invite believers to pursue eternal life from self-interested rather than benevolent reasons, according to Burley. To partake of eternal life, on Burley's model, requires more than us simply existing eternally within time slices; it requires that believers undergo a moral transformation wherein they come to participate in the life of God. Burley's view thus encourages moral development during our earthly lives and enables us to appreciate that our lives on earth can either be an eternal expression of God's love or represent our eternal rejection of God.

##### **Roazzi, “Vital energy and afterlife”**

Some conceptions of immortality would seem to require phenomena that exist outside the realm of naturalistic explanation. If bodies can be resurrected in violation of apparent natural law, or if immaterial souls can survive the death of the body, then immortality would seem to require events that defy naturalism. Roazzi et al., “Vital Energy and the Afterlife,: Implications for Cognitive Science of Religion” (2015) explores how we form cognitions of supernatural phenomena. They found evidence of a widespread intuition that supernatural entities are invested with “vital energy.” Vital energy is a concept that extends to many religions and cultures. Some call it *Ch'i*, *prana*, or *axé*. Vital energy is a form of “spiritual thinking” ascribed to supernatural beings. Roazzi et al. cataloged the reactions of young children and adults after watching a play

about an alligator eating a mouse. Children between the ages 4-6 indicated that they felt the mouse still had bodily and mental functions after dying. Children between ages 6-8 and adults believed that bodily functions discontinued but that “epistemic, emotional, and desire-based” mental states continued on. Roazzi et al. infer that there is a type of intuition that resides in the mind that enables us to believe in the continued existence of disembodied supernatural beings after death.. Their work thus sheds crucial light on the origins of the beliefs necessary to conceptualize and comprehend supernatural forms of immortality.

### *Possibility of immortality*

Project researchers also helped advance our understanding of whether immortality is possible, and if so, under what conditions or scenarios.

### **Cohen, “Death defying experiments”**

The possibility of extending biological lifespans has been the subject of many recent experiments in non-human species. In “Death-defying experiments,” (2015), Jon Cohen writes about a variety of cases where mice and insects have achieved long-lasting ages. One tried and true method for extending lifespan is to limit animals’ food intake. One particular mouse, GHR-KO 11C, lived nearly five years (about twice the normal mouse lifespan) thanks to the removal of a gene for growth hormone receptor. Other insects and worms, such as the *Caenorhabditis elegans*, can have extended lives because of gene mutations. Yet despite these achievements in prolonged aging, *Hydra vulgaris* is the only species that shows no sign of aging. Unlike the other cases, Hydra has a unique ability to regenerate its stem cells through a gene called FoxO and after 10 years of observation there is no sign of decay or aging. Such studies suggest how anti-aging technologies might be developed for humans, technologies that could increase our lifespan many times over and perhaps even confer upon us a form of medical immortality.

### **Davis, “Four ways life extension will change our relationship with death”**

Although genuine immortality — a condition in which it is actually impossible for us to die from any cause — seems farfetched, a time may come in the not too distant future when advances in biology and medicine allow us to extend our lives far beyond our current life expectancy by either slowing or halting our aging process. That means “we will remain youthful longer”. John Davis, in “Four Ways Life Extension Will Change Our Relationship With Death” (2016), articulates the ways that such ‘radical’ life extension will change our relationship with death. According to Davis, life extension will most likely be made possible by pharmacological interventions that affect our “cellular and molecular-level processes.” Moreover, such interventions will not be a one-time occurrence but will require regular intake of drugs; that is, once we go off our anti-aging medications, our aging process would resume.

Davis considers the implications of radical life extension for four different populations. The first, group one, are those who have undergone life extension. According to Davis, group one’s condition would have the surprising consequences:

- (1) Aging and death would be elective.
- (2) They could forego medications if they want to resume aging.
- (3) Their deaths “will be unscheduled.”
- (4) Their “life expectancy will always be the same”

(5) Death would deprive them of more life than it would those who we had the former, shorter lifespans.

In group two are those whose deaths might be made worse by the fact that they cannot get life extension. And death is worse for them because in a world in which life extension exists, they would be missing out on a great many years of life. Davis calls this the ‘death burden’ argument.

In the third group are those who “can get life extension but turn it down”. Their death benefits of “aging normally and dying on a normal biological schedule will be reduced somewhat even if, by turning down life extension, they age and die normally.” One benefit that aging affords us is allowing us to come to terms with our death. Life extension, however, takes that away from us since we would not age. Or in the case of group three, the mere fact that they could change their mind and get life extension means that they might not take their mortality as seriously as when life extension was not available.

The fourth group consists of those “who can get life extension but prefer not to have it”. The members of the fourth group see themselves in a dilemma between choosing an unwanted life extension and what “they consider an immoral kind of suicide.”

Davis’ research illustrates how even significant increases in lifespan that fall well short of immortality as it has traditionally been conceived would nevertheless greatly alter our relationship with our inevitable mortality and the significance of death itself.

### **Parnia and Young, “Erasing death”**

In “Erasing Death” (2013), Sam Parnia outlines an amazing story about Joe Tiralosi and his experience with death after suffering cardiopulmonary arrest. A specialized medical team provided Tiralosi with chest compressions, and after several minutes, doctors “hit Tiralosi’s body with an electric shock” which continued for ten minutes. However, after ten minutes without a heartbeat, damage to the brain from a lack of oxygen starts to become permanent, and “without a properly functioning brain, Joe Tiralosi would no longer be Joe Tiralosi at all.” Nevertheless, doctors persisted in attempting to resuscitate Tiralosi. Remarkably, the resuscitation continued for forty minutes, at which point the doctors and nurses unexpectedly detected Tiralosi’s pulse. Doctors discovered that Tiralosi had “a number of blockages in the vessels to his heart” after his second death, which lasted for fifteen minutes, and treated him with a common balloon procedure. Joe Tiralosi recovered well and returned home to his family and continued to live a normal, happy life. Parnia’s research concerned “optimal cardiac arrest care – the kind of medical science that saved Tiralosi – and into the experiences of consciousness people report bringing back from the other side of death after their hearts have been restarted.” While his heart had stopped, Tiralosi underwent what could be classified as a near death or out of body experience. Tiralosi reported seeing a luminous being that made him feel fearless about death. For Parnia, Tiralosi’s case highlights the advancements that resuscitation science has made and raises philosophical questions and personal about our deaths. Parnia believes that resuscitation science could be the answer to reversing death.

### **Fischer and Mitchell-Yellin, *Near Death Experiences: Understanding Visions of the Afterlife* (plus M. Cholbi review, *Los Angeles Review of Books*)**

From the standpoint of debates about immortality, near death experiences are significant because many take them to be decisive evidence in favor of both dualism (that human beings have immaterial souls as well as bodies) and a supernatural realm for which human beings are

destined after death. Near death experiences are thus a central point of contention between physicalist and supernaturalist conceptions of human nature and of the universe. John Martin Fischer and Benjamin Mitchell-Yellin (2016) carefully consider how supernaturalists have used near death experiences to bolster their case and come to the conclusion that such experiences do not provide particularly strong evidence for supernaturalism or for an immaterial soul that can survive death and become immortal. Fischer and Mitchell-Yellin argue that most all the common features of near-death experiences (a sensation of floating away, encounters with God and with deceased loved ones, recollections of events while the individuals were unconscious, etc.) either do or could have naturalistic explanations, and the testimony of near death experiences is also subject to significant confirmation bias. Cholbi's review of Fischer and Mitchell-Yellin (2017) argues that the cultural congruence of the details of near death experiences (bright lights, etc.), along with the absence of negative or frightening near-death experiences, suggest that the testimony of near death experiencers, while sincere, is likely to be unreliable and highly influenced by culturally specific trope and expectations. Cholbi also notes that some of the most high profile near death narratives tales were later recanted or cast into doubt thanks to credibility issues on the part of the narrators. In the end, Fischer and Mitchell-Yellin deny that near death experience is metaphysically significant, but they affirm that it is ethically significant, inasmuch as such experiences are often life transforming and offer inspiring utopian visions of social harmony and peace.

Together, *Near Death Experiences* and Cholbi's review offer an evenhanded investigation of a set of experiences that have been the subject of intense popular interest. They invite readers to be skeptical both of the more extravagant or unexamined claims put forth by near death experience enthusiasts while approaching the phenomenon with a seriousness that those with a dismissive attitude toward near death experiences often do not display. In this respect, this research exemplifies the critical scrutiny of immortality that the Project was meant to encourage.

### **Schwitzgebel, “Reinstalling Eden: Happiness on a Hard Drive” and “Out of the Jar”**

Given that mortality is a central feature of the human condition, it is hardly surprising that immortality, its conditions, and its consequences have been an enduring theme in imaginative literature. In his short stories “Reinstalling Eden: Happiness on a Hard Drive” and “Out of the Jar”, Eric Schwitzgebel considers the prospect that we humans live in an elaborate simulation. “Out of the Jar” imagines the interactions between a suburban professor who is part of a video game-like computer simulation run by an angry God-like teenager. The professor appears in various scenes as a psychopathic killer, a policeman, and a dinosaur. “Out of the Jar” seems to envision a kind of digitized immortality in which a bored, irritable deity treats humanity as its playthings. Likewise, in “Reinstalling Eden,” Schwitzgebel describes a scientist creating conscious versions of Adam and Eve in a computer. Schwitzgebel believes that fiction and novels can have greater impact on popular thinking about subjects such as immortality than more conventional academic scholarship. His own stories, which investigate artificial intelligence, identity, and other metaphysical questions related to survival and immortality, offer an alternative, and perhaps more accessible, path into these questions.

#### *Value of immortality*

Would immortality be worth having, and if immortality is not available to us, why if at all should we fear death? Project researchers engaged these questions from a variety of angles.

### **Bradley, “Existential Terror”**

Bradley’s “Existential Terror” (2015b) addresses the possibility that a fear-like state may be appropriate vis-à-vis death even if death is not bad for us either in its own right or because it deprives us of a better life we might have had. We experience this state of “existential terror” both when contemplating our own non-existence as well as when “contemplating the future nonexistence of all of humanity.” Many of us feel an uncanny sense of unease or horror at the prospect of a world without us, even if our not existing would not be bad for us. So in what sense could existential terror be a fitting or rational response to our eventual non-existence, Bradley asks? Standard accounts of why death might merit fear do not seem to help justify existential terror. Non-existence cannot be worthy of fear on the grounds that it deprives us of well-being during our lives. That death can deprive us of better, longer lives we might have had suffices “to explain the rationality of negative attitudes towards premature death, but not our mortality.” Nor does the mere fact that we may wish to continue to exist explain our anxiety surrounding our non-existence. Not existing does not seem like a state worth fearing. Indeed, existential terror is puzzling in large measure because it is directed at nonexistence: “Terror is a kind of fear. But fear can only be appropriately directed at something dangerous. Nonexistence is not dangerous. Therefore, existential terror is inappropriate.”

Bradley argues the best candidate for making sense of existential terror is the belief that death drains our life of its meaningfulness, showing that our lives simply do not, or never did, matter. Our projects, achievements, goals, and aspirations seem futile if humanity will cease to exist in the end. The question then arises, what is the point of living if we are all going to die anyways? “The fact that the universe will kill us in the end, no matter what we do, shows that the universe does not respect our dignity as agents,” and thus, existential terror ensues. But Bradley ultimately rejects this explanation as well: For even if death shows that our lives do not always matter or do not matter well into the future, this does not entail that our lives are absent of meaning altogether. A life that is meaningful for a small period of time is nevertheless meaningful to some degree. Existential terror is therefore irrational. Following Lucretius, Bradley proposes that we should no more fear the nonexistence we will confront in the future than we fear the nonexistence that preceded our lives.

### **Fischer and Mitchell-Yellin, “Immortality and Boredom”**

One classic objection to the desirability of immortality (due to Bernard Williams) is that immortality would eventually become boring or tedious. In Fischer and Mitchell-Yellin’s “Immortality and Boredom” (2014), the authors argue that this objection is not well founded. If people were to achieve immortality, then there is a possibility that we would become bored with living forever. After all, we will have lived for a countless amount of years and seemingly experienced all that we can. What we are left with is a life that is unfulfilling and repetitive with no new “fresh” experiences. Fischer and Mitchell-Yellin argue otherwise. As they see it, experiences are always fresh and there are countless experiences one could have in an immortal life. Using the analogy of a library, one could read every book in the library and still be enticed by new novels that are being written. Immortals would not get bored if they still enjoy familiar experiences that they engaged in even after years of repeated use. These examples are sex, friendship, listening to music, food, etc. Fischer and Mitchell-Yellin think that people will still have the same pleasure and excitement life has to offer and that the value of an immortal life would not mean boredom for the individual. This essay helps non-expert readers understand one

of the longstanding disputes concerning the desirability of immortality and offers straightforward analogies in making its case that immortality could be appealing to us without devolving into boredom.

### **Garfield et al, “Ego, egoism, and the impact of religion on ethical experience”**

As noted earlier, Buddhism tends to deny the existence of a persisting self. For Buddhists, this denial is a source of wisdom, a path to liberation from the suffering that flows from the erroneous belief in, and consequent preoccupation with, our selves. This denial also has implications concerning our attitudes toward immortality and death’s purported badness: Since the self is an illusion, immortality should not be conceptualized in terms of a self that somehow manages to ‘survive’ death. Rather, the interdependent and interwoven reality of which each individual human life is a part continues after an individual dies, but that individual does not — for that individual, that self, never existed as a discrete metaphysical entity in the first place. It is often assumed, therefore, that because Buddhist belief understands death in this impersonal manner, Buddhists should naturally be less afraid of death than others are and less prone to yearn for personal immortality. After all, for Buddhists, death does not represent the cessation of a discrete self in whose existence we are emotionally or morally invested. Why then should death be feared or lamented?

Garfield et al (2015) conducted psychological research to determine whether acceptance of this Buddhist ‘no self’ metaphysics in fact leads to less anxiety surrounding death. Garfield’s team compared those raised in Buddhist traditions, including monastic Tibetans with a high level of knowledge of Buddhist teachings, to those with Hindu or Abrahamic (i.e., Jewish, Christian, or Muslim) backgrounds with respect to their metaphysical and ethical beliefs, as well as their attitudes toward death. They found that Buddhists do generally espouse a belief in ‘no self’ and that this “impermanence of self” serves as a “source of consolation to them as they contemplate death.” Surprisingly though, while Hindus, Abrahamics, and Buddhists differed little in their fear of some consequences of death (for example, death’s consequences for one’s family or for the attainment of self-fulfillment), Buddhists showed the greatest level of fear concerning self-annihilation, with monastic Tibetans showing still higher levels of fear concerning self-annihilation. This, as Garfield et al note, is a paradoxical result, since belief in the impermanence of the self ought logically generate reduced anxiety surrounding the eventual non-existence of the self. Nor do Buddhist beliefs in the interconnectedness of individuals appear to engender greater levels of altruism, as Buddhists indicated a lesser willingness than other groups to sacrifice shorter lifespans for themselves in exchange for longer lifespans for similarly situated others. This finding is consistent with Buddhists having a greater attachment to self than other groups.

The results of Garfield’s might be taken as evidence that the fear of death is deep seated, even intractable, as Freud and more recent terror management theorists have it. Garfield et al take their findings to instead show that philosophical acceptance of metaphysical beliefs that should assuage the fear of death often fall short. Such a transformation in attitudes toward death, the researchers conclude, also requires concrete changes in individual practice (e.g., meditation). This body of research raises compelling questions regarding how susceptible to rational persuasion our attitudes toward death and immortality ultimately are.

## V. DIRECTIONS FOR FUTURE RESEARCH

In addressing the fundamental questions regarding immortality's nature, possibility, or value of immortality, Templeton's Immortality Project catalyzed a significant advance in our scientific and philosophical understanding. Nevertheless, a successful research project, particularly in the humanities, can be judged as much by the questions it generates by the questions it answers. Here are a number of paths for future research suggested by the Project research:

- [1] *From hydra to humans?*: As noted in section IV, much of the research related to biological immortality, aging, and longevity has been conducted on species very different from human beings. This raises the question of how readily conclusions drawn from this research extrapolate to human beings, and more practically, whether technologies, etc., developed on the basis of knowledge of aging and longevity in other species would prove effective (or even dangerous) if applied to humans. More generally, questions persist about the nature of the changes to human lifestyle or physiology (including our genome) might be necessary in order to increase our longevity and/or attain immortality.
- [2] *The epistemology of immortality*: Many arguments concerning the possibility or desirability of immortality appeal to thought experiments or imagined scenarios. Are such methods reliable ways to attain knowledge about immortality? Might fiction be more effective in this regard than abstract philosophizing, as Schwitzgebel suggests? What role do non-physical sciences such as psychology, sociology, anthropology, economics, or history have in helping us understand immortality? (For a useful example of how, for example, psychology could play a role in these debates, see Bortolotti and Nagasawa (2009), utilizing psychological research to argue against Williams' claim that immortality would necessarily become boring.)
- [3] *Sociopolitical significance of immortality*: While a large body of Project research addresses what might be called the ethics of immortality — whether immortality would be desirable, etc. — relatively little of it addresses the role of immortality (or the belief therein) in a social or political context. Ample evidence suggests that attitudes toward death, particular fear of death, influence both individual political convictions and social policy. (See Jost et al 2003, Robin 2004, Nussbaum 2018) It would not be surprising if beliefs regarding immortality and the afterlife had a similar influence. Likewise, practices surrounding death and dying (for example, end of life medical care, handling of corpses, and practices of grief and mourning) may well illuminate our attitudes toward mortality and immortality.
- [4] *Life extension*: Davis (2018) make a compelling case for optimism regarding the technological prospects of radical life extension, the slowing or halting of aging so as to enable a manifold increase in human longevity, perhaps resulting in normal lifespans of several millennia. We concur with Davis that, whatever hold immortality as such has on our imaginations, it would behoove us to think through the ethics and politics of radical life extension now, before the relevant technologies are actually available. In some respects, life extension raises problems familiar from the philosophical literature on immortality: whether a very long life must invariably become tedious, whether such a life would have the unity or coherence to be recognizably human, and so forth. But Davis points out that radical life extension also puts other urgent ethical or political issues on the table. A central question would be *distributive justice*, that is, who would receive life extension technologies.

Everyone, in effect treating life extension technologies as a basic form of health care? Those with sufficient financial resources, with the technologies distributed through market transactions? Such questions raise fundamental moral issues about fairness. Davis also highlights how radical life extension might compel a rethinking of personal relationships, end-of-life care, and suicide. Further research and discussion of radical life extension might make headway on establishing whether it is in fact superior to genuine immortality or merely second best, a consolation prize to be pursued only because truly desirable immortality is unavailable to us.

- [5] *Scientific and scholarly communication*: The Immortality Project adopted a powerful interdisciplinary perspective on its subject. As such, it may serve as a case study in scientific and scholarly communication. While public interest in scholarly and scientific research remains high, scientific illiteracy, as well as mistrust of media, are on the rise. (On the former, [ScientificLiteracyMatters.com](http://ScientificLiteracyMatters.com) is an excellent resource.) With a topic as emotionally and ethically vexatious as immortality, the chances of the Project-supported research being misunderstood or misappropriated seems high. How can scholars and scholarly communities better communicate their conclusions, as well the significance of those conclusions, to an eager but sometimes ill-equipped public? For example, how can scientific research on immortality and related subjects (aging, etc.) be conveyed to the public in a user-friendly, accurate, and non-sensationalistic way?



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## APPENDIX: Summary of Supported Research by Discipline

The Immortality Project generated an impressive body of scientific, philosophical, and theological research on immortality. This report's authors believe that the significance of this research is best appreciated not by analyzing each particular research item but by placing each item in the context of other research contributions. The subsections below discuss the significance of Project-supported research in various areas related to immortality.

### Science

The Project-funded scientific research largely investigated non-human species that have atypical lifespans or aging. This research is directly relevant to the physiological or 'staying alive' conception of immortality. Much of this experimental research concerns freshwater hydra, some species of which are anti-senescent and do not age. If such physiology could be replicated in human beings, this would seem to make extreme human longevity, perhaps even immortality, possible. Daniel Martinez and Diane Bridge's study "Hydra, the everlasting embryo, confronts aging" (2012) investigated aging processes in different hydra species. They found that *Hydra vulgaris* does not undergo senescence but *Hydra oligactis* does. The species differs in that *Hydra vulgaris* is able to reproduce both sexually and asexually but is not senescent; *Hydra oligactis* on the contrary shows decay and aging following sexual reproduction. After four years, the experiment was stopped and there was no indication that *Hydra vulgaris* had aged. One potential theory on why *Hydra vulgaris* does not undergo senescence is the difference in heat shock responses. When experimenting with different temperature levels, Martinez and Bridge noticed that when temperatures were lowered, *Hydra oligactis* would die at 33° C but *Hydra vulgaris* would regenerate immediately after the temperature was returned to normal. Heat shock responses play a large role in maintaining protein quality and longevity of cell life. The larger the quantity of heat shock responses, the better chances of survival.

In "Hydra as a tractable, long-lived model system for senescence" (2015), Bellantuono et al identify the importance of FoxO proteins in hydra and the role they have in preventing aging. FoxO proteins are a buffer between cellular stress and organismal longevity in hydra. In the studies conducted by Martinez et al (2012), Schaible et al (2015), and Bellantuono et al, all concluded that the immortality gene in hydra resides with FoxO proteins. Although hydra lacks an adaptive immune system, it possesses an innate immune system. Coupled with FoxO proteins, hydra is able to rejuvenate its immune system. These rejuvenate properties allow hydra to achieve extraordinary things, such as repairing itself immediately if it is dismembered. FoxO proteins allow cells in hydra to stay healthy and prevent it from decaying and therefore aging.

Schaible et al (2015) observed hydra over a longer timeframe, eight years. Their finding corroborated Martinez et al (2015). However, Schaible et al argue that there are possibly other species that have similar systems of longevity found in hydra. These other species include "sponges, corals, ascidians, and some plants."

Another role for science in the exploration of immortality is to investigate the nature and sources of beliefs in immortality. When individuals hope for the afterlife, which of these forms of immortality are they longing for, and what are the psychological mechanisms that influence our attitudes toward immortality? In "It's the End of the World and I Feel Fine: Soul Belief and Perceptions of End-of-the-World Scenarios" (2016), Lifshin, Greenberg, Weise, and Soenke

describe studies they conducted aimed at investigating how different conceptions of immortality influence our reactions to “end of the world threats.” Lifshin et al. investigated how experimental subjects respond differently to the prospects of humanity’s demise depending on the kind of immortality they endorse. Those who believed in literal immortality of the sort associated with religious belief, wherein individuals would personally survive the “end of the world” due to having immortal souls, seemed better psychologically equipped for this possibility than those who endorsed symbolic immortality, achieved through one’s biological descendants or through gestures such as having a star named after them. That one would survive the end of the world afforded believers in literal immortality a kind of psychological protection against it, but those believers may also be less motivated to act to avoid humanity’s demise from causes such as global climate change.

## **Philosophy**

### *Immortality and Death’s Badness*

Death can elicit many attitudes, both negative (fear, worry, horror, aversion) and occasionally positive (indifference, acceptance, even joy). Immortality would presumably be welcome if the former set of attitudes is ever justified; if death merits fear, worry, and so on, then immortality would benefit us inasmuch as it would eliminate our reasons to feel fear, worry, etc., at the prospect of death.

Contemporary philosophical discussions of the value or harm of death, as well as the attitudes we should take toward death, have been greatly influenced by ancient Epicureanism. The Epicureans rejected the possibility of the afterlife and argued that, given that death is a state of non-existence or non-consciousness, death cannot be bad for us, inasmuch as being dead is never a state we experience or undergo. The Epicureans thus counseled indifference toward death. Many contemporary philosophers reject Epicureanism in favor of the deprivation account of death’s value. (Nagel 1970) On this account, the badness (or goodness) of death does not rest on whether death will be a bad (or good) state to be in. Indeed, most deprivationists share the Epicurean skepticism about the prospects for immortality. Rather, deprivationists hold that death is bad because and to the extent that a person, by dying a given time, ends up with a life that is less good for her overall than the life she would have had by living longer. On the deprivationist account, if a person dies at (say) age 75, but would have lived another year and would have thereby had a happier or better life overall, then that person was harmed by death in the sense that her dying deprived her of a better life overall, despite its being true that she does not exist after death. When bad, death is not, according to the deprivation account, a bad condition to be in. Rather, death can make our lives worse in comparison to the lives we might have had if death had occurred later.

The deprivation account sets the context for much of the Project-supported philosophical research on our attitudes toward death and immortality. Many articles regarding the attitude towards death on produced by Project researchers argued that there is no harm in death, so the concern for our nonexistence and our consequent hope for immortality, should be miniscule.

Travis Timmerman (2016) argues that the deprivation account, while plausible as an account of how death can be bad for us, does not succeed in explaining why we should *lament* death. Regardless of whether our death is bad for us by depriving ourselves of a better life, our reasons for lamenting death are not rooted in this deprivation but in our justified beliefs about how much good it was metaphysically possible for a person to have obtained had she not died

when she did. Timmerman concludes that “each person should have two distinct attitudes towards death,” one “determined by the agent’s reasonable expectations about when she will die” and the other, determined by the goods that death precludes a person from having.

One central challenge to the deprivation account arises from the Lucretian ‘symmetry problem.’ An Epicurean philosopher, Lucretius pointed out that (again, assuming there is no afterlife) just as death represents a period of posthumous non-existence, so too does the ‘pre-vital’ period before a person is brought into existence represent a period of personal non-existence. But hardly anyone believes that the period of pre-vital non-existence is bad or harmful, and it would seem odd to fear or lament one’s pre-vital non-existence. So, Lucretius concludes, we should hold the same attitudes — symmetrical attitudes — toward pre-vital and posthumous non-existence: Just as the former is harmless and not to be feared, so too is the latter harmless and not to be feared. In “The Mirror-Image Argument: An Additional Reply to Johansson” (2014), Fischer and Anthony Brueckner defend their view (against criticisms made by Jens Johansson (2014b)) that asymmetrical attitudes toward pre-vital and posthumous non-existence are justified in light of an asymmetry in our attitudes toward past and future events. Within our specific temporal perspectives, we have reason to prefer that pleasurable experiences be in the future rather than the past and painful experiences be in the past rather than the future, according to Fischer and Brueckner. This temporal asymmetry in attitudes in turn explains why we should view death as bad or a possible deprivation but not view pre-vital non-existence in the same light. They argue that Johansson’s criticisms confuse when this asymmetrical set of attitudes emerges and when death is itself bad. (For other discussions of the Lucretian symmetry and the Fischer-Brueckner resolution of it, see Yi (2012), Johansson (2013), Cyr (2014), Johansson (2014a), Purves (2015), Cyr (2016), and Johansson (2017)).

Belshaw (2015a) offers an account of death’s badness wherein death’s badness consists in thwarting someone’s desire to live. Death’s being bad for someone or something depends on their having beliefs and desire about times other than present. Beings with such beliefs and desires can want to live into the future, and death is bad only for someone who “can hope that they themselves will survive into the future”. Persons, and perhaps human beings specifically, are distinctive in having such beliefs and desires, and so are distinctive in that death can be bad for them. But, Belshaw surprisingly concludes, death cannot be bad for creatures without such psychologies, including nonhuman animals, human zygotes, neonates, and those in persistent vegetative or severely demented states.

### *Near-death/Out-of-body experiences*

Kinsella (2017) corroborates the interest that the public has in near death experiences. His journey partaking in a near death special interest group in Santa Barbara, California, demonstrates the public is spiritually, but not religiously, fascinated with near death experience, that is, there is greater interest in how near death experience suggests the possibility of paranormal activity than in what it might imply about religious doctrine.

Other Project-funded researchers investigated near death and out-of-body experiences and their implications for posthumous immortality. There exists overwhelming evidence that people who undergo such experiences as a result of life threatening circumstances, such as cardiac arrest and legal death, often experience positive emotions. Katz (2017) and Parnia et al (2014) used questionnaires to gather data and concluded that near death emotions generally include joy, pleasantness, and peace. These studies found that the details of these experiences varied though. In Parina et al (2014), individuals reported differences in speed of time when



contemplating their life. Some reported a slowing down of time and others reported a rush. In Bourdin et al (2017), an experiment was conducted on individuals using virtual bodies to simulate out-of-body experiences. Test subjects saw a virtual version of themselves and were asked to report feelings towards their own deaths. The study concluded that people were less fearful of death when presented with a virtual version of themselves. However, there exist problems in that the virtual bodies are a crude reenactment of actual near death experiences. Judging by the images of the study, the virtual bodies are akin to a video game rather than an actual body. Nonetheless, the consensus from all studies indicates positive experiences when concerning near death or out-of-body experiences.

Still, the scientific evidence for why near death experiences occur are unknown. Sam Parnia (2014) explains that the brain experiences an array of different functions when an individual undergoes death. Yet there only exist theories to why out-of-body experiences occur, hallucinations, rapid eye-movement intrusions, serotonin, and endorphin theories etc. are all possible reasons. What is known is that people who experience near death scenarios report common emotions of peace and joy.

### *'Civi' immortality and the development of democracy*

As noted earlier, one conception of immortality is that immortality is symbolic — that we can achieve a kind of immortality if our legacies are maintained, our traditions and practices continued, etc. Project researchers Ajume Wingo and Dan Demetriou explored the role that political leaders have in establishing legacies of democratic values, which they call “civic immortality.” They contend that societies should elect citizens who have accomplished significant achievements in a civic space and are revered by society. This is the best method in order to bring democratic values to countries that are not familiar or comfortable with a western approach to politics.

In “The Immortals in Our Midst: Why Democracies in Africa Need Them”, Wingo discusses unsuccessful attempts to bring democracy to Africa. Instead of a successful thriving democratic Africa, the continent and its elections have been manipulated and corrupted by the ruling elite. What is left is just a formal process of electing officials with no real opposition and undeterred government exploitation. Wingo argues that instead of having a western process of electing officials through nominations, citizens should elect individuals who have impacted the country significantly for the betterment of society. A few examples he presents are Nelson Mandela, Sunjata Keita, and Princess Ngonso. Similarly to Thomas Jefferson and George Washington, each person is in some way immortalized in the minds of African citizens. Wingo argues that by electing officials like Mandela and Keita, a gap can be bridged between western liberalism and African politics. It is Wingo’s opinion that civic immortals help motivate the country to overcome the ruling elite.

Building on Wingo’s argument, Demetriou (2015) criticizes the importance western and African countries put on honor cultures. Using past examples of the civil war, Demetriou thinks that powerful people will elevate their own personal honor above an institution. An example of this is Colonel Robert Lee, who turned down Lincoln’s request to lead the union into war. Lee chose to stick with his home state of Virginia and jeopardized the country for his own personal civic honor rather than his civic duty. This is bad for institutions because honor can lead to dissolution of a state if the person in power is not fulfilling the role he was elected for. Instead, societies should seek to elect officials that are conscious about their civic immortality. Doing so motivates famous politicians to leave office peacefully because it preserves their image as a

righteous immortal. Demetriou also notes that civic immortality would be the best method for a liberal society because Africa has a long tradition of honoring its civic leaders. Unlike US citizens who are honored through parties and awards, African civic immortals are praised far beyond awards and formalities and are given powerful roles. It is Demetriou's opinion that this may be the best fit to choose leaders, by honoring them through elections.

### *Exploring Immortality Through Fiction*

Eric Schwitzgebel received funding to complete several works of fiction related to immortality (see Schwitzgebel 2015a, 2015b, 2015c, 2015d, 2016a, 2016b, 2016c). The works produced engage with immortality, as well as with other schools or questions within philosophy (Buddhism, artificial intelligence, epistemology, etc.) Schwitzgebel believes that science fiction incorporating philosophical elements can serve as a more accessible form of philosophy for people unaccustomed to philosophy.

One of Schwitzgebel's best works deals with the issue of identity in immortality. In *The Dauphin's Metaphysics*, a young prince attempts to achieve immortality by transferring all his known memories and characteristics into another human body before he succumbs to a fatal disease. With the help of his professor, he attempts to achieve this transfer of identity by transferring precise memories of his life from his brain to another brain. The experiment actually works and the prince is able to transfer his memories and 'identity' to another individual. However, the prince acknowledges that his real identity will die with his original body and the new prince in the new body is just an imitation of who he was. Schwitzgebel's fictional story in effect argues for a substantive and controversial metaphysical claim: that immortality cannot be achieved if death destroys our bodies, since we are identical to our bodies rather than to our memories or to the contents of our psychologies.

Schwitzgebel explores the relationship between identity and immortality through the lens of artificial intelligence (AI) in *Fish Dance*. Unlike *The Dauphin's Metaphysics*, *Fish Dance* relies heavily on sci-fi plot elements. The story revolves around an accident where a man becomes a robot. Although he is able to save himself from the accident, he loses touch with reality after the robotic elements take over his personality, and he turns his wife in after she attempts to escape with him from the dystopian city in which they reside. Here Schwitzgebel contemplates the costs of immortality. The newly robotic husband is able to live for eternity but loses his humanity in the process. *Fish Dance* therefore questions whether AI could extend our lives in desirable and recognizably human ways.

*Momentary Sage* deals with the theme of immortality within Buddhism. Rewriting the ending to Shakespeare's *A Midsummer Night's Dream*, Schwitzgebel tells the story of Hermia having a baby with Lysander. The baby turns out to be a 'philosophical baby' who has a tusk for an arm and attempts to stab himself every time he suffers because to him life is suffering. This echoes Buddhist teaching about life as suffering.

*Momentary Sage* and *The Tyrant's Headache* are more experimental attempts to meld science fiction with more overtly philosophical investigation. *The Tyrant's Headache* is a critique of David Lewis's essay "Mad Pain and Martian Pain" (1980).

### **Theology**

Within theistic religions, immortality (more precisely, salvation) typically involves a measure of transcendence or overcoming of finite, and perhaps sinful, human nature. To become immortal thus entails becoming more proximate to, and perhaps even more akin to, God. Within

Christianity, various scriptural texts have sometimes been interpreted to imply that salvation amounts to human beings being ‘deified.’ This doctrine has remained theologically controversial, as has its history within Christian thought and practice. One conventional interpretation has held that deification is a central cleavage between ‘Western’ Catholic and ‘Eastern’ Orthodox churches. Carl Mosser (2014, 2015) argues against this conventional interpretation. In the early period of Christian history, the doctrine of the deification of believers was once an ecumenical concept; that is, it was accepted both in Western theological tradition and the Christian East. That doctrine persisted in the west even until the early Reformation. According to Mosser, nineteenth century scholars wrongly dismissed the doctrine as only belonging to Eastern Orthodoxy. Not surprisingly, then, modern scholars also have a tendency of conflating a Byzantine version of deification with the early patristic version (2015). Nevertheless, Mosser contends that a non-Byzantine, patristic doctrine of deification was espoused by Western patristic, medieval and early-modern reformers; Mosser construes deification not as a doctrine that defends an “undifferentiated mystical union with God or some kind of polytheism” (2015). By and large, that is not what Western theologians had in mind. Following Saint Paul’s description of the resurrected body of believers, Mosser states the doctrine of deification as “anything deemed immortal, incorruptible, glorious or sublimely beautiful could be described as being *theos*” (2015). Believers do not become gods. They instead “share in the immortality, incorruption and glory” (2015) that belongs to God.

Mosser (2014) argues that Calvin affirmed the patristic doctrine of deification of believers and that scholars are wrong about Calvin embracing an eastern version of the doctrine. Mosser proposes that scholars conclude that Calvin did not embrace the doctrine of deification only by drawing unwarranted inferences from some of Calvin’s polemics against the Lutheran doctrine of the Ubiquity, Osiander, and Servetus. Though Calvin did argue against heterodox doctrines of deification, Calvin still held to the patristic version, according to Mosser.

Several religious traditions assert that in addition to heaven and hell, there exist other intermediary realms between heaven and hell. In Catholic theology, resurrection in a state of *limbo* was reserved for church patriarchs who died prior to Jesus’ birth or for infants who died prior to baptism. Such beings lacked an opportunity to atone for original sin. Limbo thus served as their condition prior to judgment and prospective entry into heaven. Immortality Project researchers generated two articles addressing these intermediary states between terrestrial existence and the eternal afterlife. Kevin Timpe’s “An Argument for Limbo” (2015) provides an argument for the plausibility and possibility of limbo. For Timpe, limbo functions as a realm in which those individuals never given sufficient opportunity to accept God’s offer of redemption during their terrestrial life, including the cognitively disabled lacking the intellectual capacities to be reconciled to God, will be given a chance to do so in limbo. Limbo thus serves, for Timpe, as an opportunity for such individuals to heal and grow so that they may then choose redemption for themselves.

Historically prominent versions of Christianity have hypothesized the existence of an intermediate realm between our earthly existence and the afterlife, namely purgatory. Joshua Thurow (“An Argument for Purgatory,” 2017) defends the existence of purgatory on moral grounds. Christian belief holds that heaven is only available those who are free of sin or moral debts. Thurow argues that this belief entails that individuals must have an opportunity to atone for their sins in a state of purgatory. Even if (as Christians maintain) Christ atoned for humanity’s sins against God, believers must also atone to other humans for the wrongs done to them. But what happens if a true believer fails to atone for their sins against other humans before

he or she dies? Since true believers are promised a place in heaven, they will be neither damned to hell nor rewarded with salvation in heaven, at least not yet; instead, a period in purgatory will give them the opportunity, according to Thurow, to discharge their moral debts and thereby atone for their sins against other humans. But why would God create such a place? Thurow claims that an omnibenevolent being such as God would want to bring about the most good and thus save the most amount of people; so giving people a chance in purgatory to right their wrongs so that they could enter heaven is in keeping with that goal. Thurow's research will be of interest to Christians and others whose conceptions of immortality are meritocratic, predicated on the belief that one's condition in the afterlife reflects the mortal state of one's soul.