



DEATH JUST AIN'T WHAT IT USED TO BE

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Death faces many definitions and legal challenges as people try to grasp the meaning of life in all its fleeting wonder, why we are mortal and how one can be certain of death. It becomes all the more difficult to define an agreed standard when death of the body does not necessarily mean death overall any more, as might be the case in mind uploading. There are sure to be more than a few cases brought to courts in the coming decades which test the capabilities of even the most well versed of judges to tease apart ethics, laws and the expectations of family. There are sure to be more than a few erroneous issuances or lacks thereof, of death certificates and life insurance. This paper aims to explore the questions the law really needs now to ask and to answer, and the potential ways one can view death from a legal standpoint against the backdrop of a new technologically defined age in which death is not the last word.

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1. A Very British Death

2008's medical guidelines on diagnosing death go to great lengths to list different possible kinds of death, which could be used to define whether someone has died biologically¹. These pay no heed to online presences, since mind uploading was not considered to be a legislative priority at a time when such technology's development remained a preserve of Singularity awareness enthusiasts, of transhumanists and of science fiction. These also pay no heed to stored memories, be they photographs, archives of letters or diaries, online social media profiles, contents of computer hard drives, or anything which might be salvageable from the brain itself if suitably treated upon death. Furthermore, the enactment of a Last Will and Testament which might have been stored as a digital or analog format containing information leading to further impacts on the world from the decisions of the now apparently deceased person, does not get treated as a continuation of a person's life, and nor does a digital reconstruction (much to the disappointment, perhaps, of fans of Freddie Mercury and Elvis Presley).

The definition of death in the United Kingdom is legally finite, but a lot of decision-making regarding what constitutes death in an individual circumstance, is left up to the judgment of doctors, paramedics or police. Doctors may typically be trained in pharmacological approaches to maintaining a life, along with other physical, biological body related methods of healthcare and understanding. Their concern is typically the location and particularly the condition of the biological body, with plenty of regard given to the maintenance of the mind in the human brain as much as possible, but not typically to the possibility of its maintenance outside this biological vessel.

¹ Simpson, P., Bates, D., Bonner, S., Costeloe, K., Doyal, L., Falvey, S., Gaffin, J., et al. (2008). A Code of Practice for the Diagnosis and Confirmation of Death. *Academy of Medical Royal Colleges*. Retrieved from http://aomrc.org.uk/wp-content/uploads/2016/04/Code_Practice_Confirmation_Diagnosis_Death_1008-4.pdf.

Most often, friends, family and doctors upon resigning themselves to the idea that the individual has died, wish to draw a solemn line under that life, and move on (or sometimes throw a celebration of that life, but with the same functional result – the person is considered dead). However, the following quote applies:

“In ruling that child A died when brain-stem tests confirmed death, and that ventilation should be removed to allow “dignity in death”, Mr. Justice Hayden confirmed legal acceptance of brain-stem death as equating to death of the person, consistent with the original common law ruling, Re A. Religious control over how death can be verified does not seem to be lawful in the UK.”²

So if religion cannot be relied on (by law) to determine the cause of death, not only should scientific rigour be observed (putting a lot of pressure on the doctors) but also, religious organisations such as Terasem³ (who aim to prove whether one cannot upload minds to ‘mindfiles’ which are of sufficient fidelity to be deemed indistinguishable from the person whose mind was copied from) need to account for such legal hurdles to their intervention or suggestions of improvement in the legal interpretations of death.

This is interesting, since religious people are often the ones who make the laws in the first place; if religion should not have control over how death can be verified, should a court where one swears an oath on a religious text and where the judge and other members of the court might be themselves of a religious persuasion, have any such control either? It is often a measure of professionalism in the judiciary and government as to how the empowered apply their morals and beliefs to their work, and how well secularism can be maintained when dealing with such issues of great moral gravity and sensitivity.

2. Who Hasn't Died When They Have?

David Bowie (pictured) departed from his musical career, his body, and this world in such a manner as left many people feeling very proud of his achievements, per comments attached to referenced album on Youtube - Bowie 2016⁴. He requested not to have a funeral,⁵ but it is clear that the album was intended to carry a message into the future after his passing. In a sense, given that the majority of people who listened to his album were likely to have only heard it after he died, David Bowie continued to have a novel impact on other people after he had died. In this sense, his will continue to be carried out. His message continues to be played. So, in terms of the impacts of specific media of memories from him, curated and selected to represent a message, he could be said to have done things after his death. However, this could also be viewed as an echo, a passive means to affect the minds of those who come after him. There is no direct, responsive



Credit: Screenshot from David Bowie – Lazarus (From the album ‘Blackstar’, 2016)

² Brierley, J. (Jun 15). UK Court Accepts Neurological Determination of Death. *The Lancet Correspondence* 385: 2254.

³ Rothblatt, M. (2012). THE TERASEM MIND UPLOADING EXPERIMENT. *International Journal of Machine Consciousness* 04 (01):141–58. Retrieved from <https://doi.org/10.1142/S1793843012400070>.

⁴ (3 Jun 13). David Bowie's Blackstar. Published on Youtube (10 Dec 16) by Stiven Volcán: *A&E, A Live By Request Presentation*. Retrieved from <https://www.youtube.com/watch?v=RPbuxapYWFc>.

⁵ Bryant, T. (14 Jan 16). David Bowie Has Been Secretly Cremated without Any Fuss. *Mirror*. Retrieved from <http://www.mirror.co.uk/3am/celebrity-news/david-bowie-been-secretly-cremated7174860>.

interaction. In the absence of both this and his (now cremated and disposed of) body, there remains nothing but his work, his family, journalism and memories to define who he is.

Similar things can be said of Elvis Presley, except that his inspirational impact was such as bred many imitators and some who claim they are actually him (even so long after his death that if he were still alive, he would be far older than those people claiming to be him appear to be). Furthermore, a reconstruction of his voice based on his back-catalogue was used by Junkie XL to create the 2002 remix of ‘A Little Less Conversation’ posthumously⁶. Given the success of that song, it is notable that dead people can still make money for their estates, even if they themselves have no use for it, such is the system of copyright⁷ (The Government of the United Kingdom with “Expert Participation” 1988). In one case, J.M. Barrie’s ‘Peter Pan’ has been legally afforded perpetual partial provisions under copyright law enabling Great Ormond Street Hospital for Children to continue to receive royalties for performances and adaptations, publications and broadcast following the author’s request to leave the copyrights to that hospital⁸. Here, a legacy has been created which has an infinite impact into the future.

Another individual who has legally and culturally extended legacy beyond the support of family, friends and their work being tested by the usual rigours of time and fair usage, is Kim Il-Sung. Owing to his status as a personality cult leading, authoritarian dictator, Kim Il-Sung was elevated to a position regarded so much by his descendents as officially immortal, that he is still regarded by them as the leader of his country, North Korea (or the Democratic People’s Republic of Korea, as they would like to be known), in perpetuity. It is clear that Kim Il-Sung is dead, but this must not be acknowledged directly in a country where by law he is the absolute leader. In a sense, North Korea has a law, which retains the rights of a particular dead person as if they were alive and confers similar rights to their successor in functional role upon their death (“North Korean Cult of Personality” 2017; “Eternal Leaders of Juche Korea” 2017).

The legal definition of alternate realities would be a hard one to grasp if those realities became simultaneously known to one another as differing accounts of past, present or future. The ‘Mandela Effect’, named after the South African politician and statesman Nelson Mandela, is a theory circulating online among discussion forums claiming that members of those forums have different memories of who Nelson Mandela is or was, what effect he, specifically, had on apartheid and when exactly he died, where, why and of what. The effect also applies to a plethora of other well-known and obscure figures in history and random-seeming objects. In one rather bizarre example, the location of the islands of New Zealand is disputed (Cooke 2016; Emery 2016). Such disagreement between memories and the world we see before us could have many hypothetical causes, ranging from there being an actual merging of parallel realities, to errors in memory, to a sort of human-memory data-prion of a falsehood which forces the understood truth to conform to it in the minds of its bearers, perhaps due to an irresistible triggering of curiosity. At any rate, it is a concern of the author that the effect this could have on history if a significantly large number of people believed in it, would be chaotic if not catastrophic, and would sow the seeds of a highly manipulative system of thought control by memorial cognitive dissonance. Witnessing directly the effects such ideas have on family members of suggestible mindsets has brought the author to the conclusion that this phenomenon is potentially dangerous to society if mis-studied. A virtual world, be it the likes of ‘Second Life’ (which took the step initially of giving all who signed up to

⁶ Presley, E. (1968). A Little Less Conversation. Retrieved from <http://www.songfacts.com/detail.php?id=2001>

⁷ The Government of the United Kingdom with “Expert Participation”. (1988). Retrieved from <http://www.legislation.gov.uk/ukpga/1988/48>

⁸ Copyright, Designs and Patents Act (1988): Ch 48. Retrieved from https://www.legislation.gov.uk/ukpga/1988/48/pdfs/ukpga_19880048_en.pdf

it new surnames in-world) or something more immersive for an uploaded mind, will still need to comply with laws and regulations depending on where its servers are physically located and where the company owning them is registered and headquartered. However, in a virtual world in which beings are sentient and independent of biological bodies, political and legal sentiments may differ from those in the jurisdictions owning and operating the servers. Furthermore, provision needs to be made to prevent false memory (a Mandela Effect) developing based on incomplete storage of memories and personality in the digital uploaded mindfiles, and to legally handle the outcomes of differences in legal understanding between the uploaded and the biological, including when they are both supposed to be of the same person (i.e. a mindfile is complete but its owner has not died biologically).

(Disclaimer: the following paragraph reflects the views of a descendent of a Northern English mining family. Impartiality is attempted but not guaranteed, and the irony of this, given its content, is recognised by the author). The effect above was even applied to Margaret Thatcher. In this reality, we can safely conclude she is dead⁹. However, it is also clear that her political legacy lives on in an ideology being implemented by the Conservative Party in office from 2010 to present. Will uploaded minds have a legacy-extending effect on ideologies and their implementation? Will they cause some unwanted ideas to remain in circulation for far longer? Is that a reasonable price to pay for the retaining of visionaries and highly skilled thinkers? Will this affect the rights that are afforded to mindfiles? Will the uploading of members of one political faction compared to another, change the debate and the legal rights available around an uploaded person? Is not only the religious but also the political purported impartiality of the judiciary to be put to test by these technological and philosophical advancements? Who hasn't died when they have?

3. Death By.

Taxes:

Who pays to keep a server running full of people who are not dead legally? Who has the responsibility to fund and supply energy to mindfiles? Does their server being shut down for maintenance count as sleep, a coma, hibernation of sorts or as an unforgivable interruption to the continued experience of online life? Questions will need to be asked around who pays for keeping the virtual worlds and mindfiles rezzed, and whether a rich/poor divide will lead to exponential differences in effective or legally determined, actual longevity.

Chocolate:

Hedonism as a philosophy has relevance here. Whilst some people wish to die (suicide or euthanasia), others seem to wish for eternal lives in this world. How long does one's retirement last when one is a mindfile, and what does it cost to maintain a sufficiently stimulating and enjoyable, yet realistic online environment to keep people sane? Will our love for luxuries be easy to maintain, or indeed our expectations realistic? If our mindfiles are returned to human bodies, will the different limitations lead to a risk of the new human body being killed by an ill-prepared or forgetful mindfile's transfer into that brain?

Rounding errors:

What happens if a mindfile is simply forgotten? Or deleted? Imagine being a relative of a mindfile that disappeared. Does being a relative have any meaning in a digital world? How many stored sets of thoughts and feelings are there in a compressed archive? If formatting is not addressed in such a

⁹ *BBC News*. (17 Apr 13). Last Respects Paid to Lady Thatcher, sec. UK Politics. Retrieved from <http://www.bbc.co.uk/news/uk-politics-22177366>.

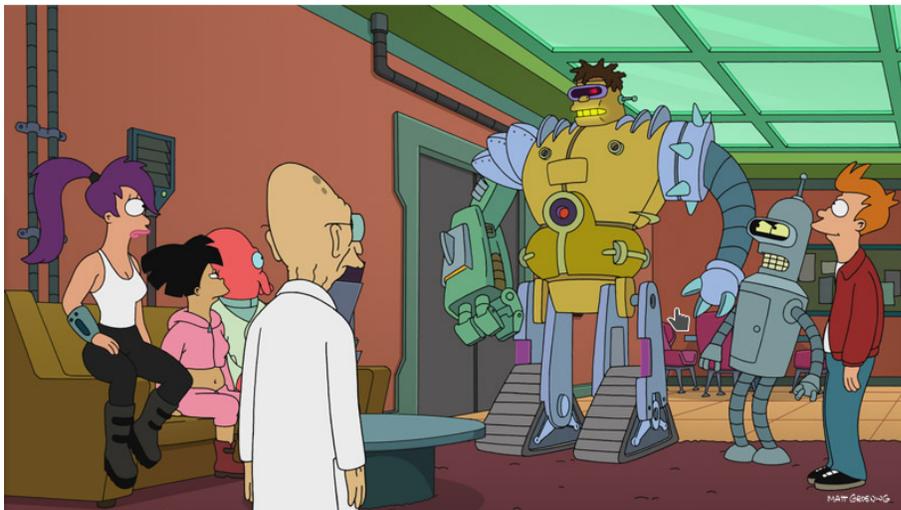
manner as contains many redundancies and failsafes, it is possible that people may be lost to full hard drives. Illicit actors may also seek to take advantage of the medium in which mindfiles are stored: database exploits could lead to inappropriate co-option and overwriting of memories or thoughts with insidious, political, corporate or otherwise biased messages which differ from the opinions of the person now rewritten to carry them. Should botnets be given the rights of a crowd of living people?

A thousand paper cuts:

Therefore, should mindfiles be employed? If one can describe a mindfile as an employee, that mindfile may expect full employment rights, or the closest applicable thing for their condition. Will it become a legal no-no to discriminate against the biologically disadvantaged – be they cyborg, AI, robot or mindfile?

A mindfile put to work for a very long time may become corrupted by continuous repetition. Owing to the way a human brain thinks, its full simulation will require an inclusion of simulation of boredom and other psychological anti-feedback-loop mechanisms. At risk of creating a situation akin to the movie ‘Groundhog Day’, will the corporations that already work people hard for low wages continue to do so when their bodies are no longer human, but are instead computer hardware? Finally, given the potential for continued improvement in processing speed, memory speed and memory capacity, how will the speed at which life in the digital world is experienced, compare to the speed at which it is experienced in a biological body? How many lifetimes will a digital mindfile live? Is living forever a living death?

4. Theseus’ Digital Ship



Credit: Snapshot from Futurama; © 30th Century Fox Television and Matt Groening.

Body hackers and ‘grinders’ seek to improve their biological body’s performance through augmentation, replacing biological parts or adding extra parts made from prosthetic and animatronic systems. Based on current trends and logic, it is the conjecture of this author that as robotics become more affordable, so too will animatronics and prosthetics. Wearable technology and replacement limbs will become more accessible to end users,

so there is likely to be an increase in

this behaviour. Over time, the ratio of the body replaced or augmented to the body still in original biological format could become closer to a full replacement of the whole body; at what point is the person no longer the same physical person? Since the brain holds the identity of an individual, perhaps that is the only bit that matters (as with Hermes Conrad in ‘Futurama’ above) – but for mind-uploaders, that’s replaced too. How many thoughts and ideas, memories and feelings have to be digitally created before you are basically an AI with a few incidental, residual human memories?

This then raises philosophical concerns around the issue of identity. If we are all biological bodies in which the majority of cells are replaced every seven years on average, does the medium carrying our memories and personalities, our thoughts and feelings, our very minds and souls, matter? Are we all already ships of Theseus? If so, the legal ramifications would appear to swing in favour of a definition of death which takes no heed of biological or artificial materials being used to sustain life (what already of those on life support systems, be those in hospitals or spacecraft? What of those with pacemakers or other medical cyborg implants?), but instead defines death around whether the memory and personality of the individual is still sustained in a manner which is recognisable to themselves and to their close friends and families. There also exists here a rabbit-hole of philosophical and ethical discussion surrounding those who suffer genuine total or near-total amnesia. In these situations, biologically the body is the same one (save the Theseus caveat previously covered) but the mind is a blank, clean slate in terms of memory. Here, one could look to other cues – is the personality changed too? Ultimately, this shows us that death is not one but several things.

In short, a valid (albeit poor-taste) question to ask could be ‘just how dead are you?’

5. Fake Death?

“Rumours of my death have been greatly exaggerated”, famously said Mark Twain. The diagnosis of death can be used as a tool by those wishing for whatever reason to erase an identity or at least disrupt the legal recognition of one, for example to hinder legal investigation or the collection of debts, or to relocate witnesses of serious crimes when a clear danger is still present to their existing lives.

If someone diagnoses you dead, could they be accused of libel or of attempting to discriminate against you? Legally, this would be picked up usually by laws against fraud, libel or discrimination, with the inclusion of a declaration of death being a tool to the result. Discriminating against your condition might be a factor in some cases whereupon a person who is ‘locked in’ cannot express their desire to live, or a person who is disabled is all-too-conveniently removed from statistics and service provision lists to cut costs. These are all potential ways death can be exploited; the ways to diagnose it are subjective and thus not absolute or perfect every time. This leaves much wriggle room for its misuse, although as mentioned, other laws would usually be used against someone who commits to misuse death declaration or presumption. Different countries have different rules regarding the presumption of death if someone has gone missing. Exploiting these presumptions and the emotions of loved ones could lead scammers to target mindfiles as the next encrypt-able valuable data for ransomware. Essentially, pay up or your encrypted loved one will be effectively dead, never to decrypt again.

Who has custody of your data? If you wish to prevent the aforementioned fate happening to you, putting a mindfile away might not just be good insurance against your death, but also against your fake death. Your mindfile, if well maintained, could take over your duties electronically until you return, for example, from detainment by a foreign country during a diplomatic misunderstanding. Disruption to life could be insured against like an uninterruptible power supply unit insures against disruption of the electricity supply to the servers hosting your mindfile as a backup version of you. But then, what happens if someone activates your mindfile and convinces it that the real you out there is actually an imposter? If you build in failsafes to change your uploaded mind or shut it off, will those also be exploitable by an opponent? Or could undetected changes be introduced by accident or design during the recording process, or in between it? How do we guard against such crimes against the mind and its identity?

Re-appropriation and/or fabrication of an individual at or after their death is not a concept restricted to digital mindfiles and those who are involved with them. In the 1969 British movie, ‘The Italian Job’¹⁰, Mr. Bridger (a crime syndicate boss serving time in prison) ensured he could continue to lead his group of unlawful individuals by manipulating the staff of the prison, utilising fear and criminal gang reverence to great effect, and by arranging a funeral when he wished to meet with his subordinates outside of the confines of prison to give them their orders in an only thinly veiled manner. Whether Aunt Nelly ever was a real person, and whether her death was coincidentally timed or all too conveniently timed to have been an accident or chronic disease, was left to the viewers’ imaginations. Mr. Bridger (left foreground in the graphic below) spoke the orders for his subordinates and used them to represent the character of Nelly posthumously with them as cover for his intentions. Strangely enough, it was not the act of misrepresenting the wishes of a dead person which could have got Mr. Bridger directly in trouble (as he was not doing so to defraud relatives etcetera), but rather the potential that his true intentions in doing so (passing on orders for a heist) would be found out (and possibly that the whole funeral was a fraud).

“I also want you to remember that if you don’t come back with the goods, Nelly here will turn in her grave. And, likely as not, jump right out of it and kick your teeth in!” – Mr. Bridger (Noël Coward), The Italian Job (Collinson, 1969)



Credit: Screenshot from ‘The Italian Job’, © Paramount British Pictures & Oakhurst Productions, (1969)

6. ‘The Real McCoy’

A concern in relation to mindfiles is that of authenticity, of an actual experiential continuation of mind and soul into a new digital body. The question arises as to whether a mindfile is the ‘real’ person, and whether the device the mindfile is on, has sufficiently captured everything it is to mentally, psychologically and intellectually be a healthy human. Are you comfortable with a facsimile or do you want to preserve the ‘Real McCoy’?

¹⁰ Collinson, P. (Director) (1969). The Italian Job [Video file]. Paramount British Pictures.

Does a robot or AI programmed to emulate and simulate the mannerisms and responses of a person count as that person, or a copy of them? How does one distinguish between an AI, which has no human memories to draw from, and a mindfile that does, if both are otherwise programmed to respond like that person through the same devices?

Will AI ever get so good that we are always fooled/correctly led by it into thinking the real person is there? That might inherently require the uploading of memory material for it to happen. If a person dies and their death certificate is issued, is the discovery of a mindfile made before they died, sufficient to annul that death certificate? Have you returned to life by being uploaded or are you referred to as a copy?

In the case of disappearance of a person with no certain evidence of their death, is the presence of an uploaded mind on a server, sufficient to prevent presumption of death of the person under the Presumption of Death Act 2013¹¹? What if it was also sufficient to extend copyright? The Duration of Copyright and Rights in Performances Regulations 1995^{12*} The Government of the United Kingdom with "Expert Participation" 1995¹³ defines the UK copyright term as 'life plus 70 years' - does it become in a company's best interest to use a mindfile of their deceased visionary, inventor or author to retain 'intellectual property' rights – or drug patents? Who does a company answer to legally if they surreptitiously create a mindfile of such an employee for this specific purpose? Does it count as fraud simply to retain somebody's memories against their wishes, or does it class as a breach of the Data Protection Act 1998¹⁴? More to the point, if somebody is dead biologically and their mind is only kept alive in an isolated company computer away from the internet, does this count as false imprisonment¹⁵ or a breach of human rights?***

Each of these questions will need to be answered by the legislative and/or judicial branches in due course.

*Based on a European Union directive – Brexit may cause the reconsideration of this in the UK.

**Based on UK membership of the Council of Europe, which includes being party to the European Convention on Human Rights and subject to the European Court of Human Rights.

7. I Know You Got Soul

To really drill down into what holds people back from trusting AI, mindfiles and uncanny robots, one needs to understand the concept of the soul. Whether you believe in it yourself or not, the idea of an ethereal something extra, a spark-of-life not yet accounted for by scientific mainstream thinking, holds popular sway in several major religions and many forms of spiritualism, martial arts and meditation. The idea of a soul in anything other than a biological body (sometimes even in anything other than a human body) does not always make sense from a perspective of religions which rely on the notions of reincarnation or of life having been created by a deity or deities. The perceived inviolability of the bond between soul and body is likely to have played an important part in the writing of religious epithets

¹¹ (2013). Presumption of Death Act 2013. Text. 2013. <http://www.legislation.gov.uk/ukpga/2013/13/contents>.

¹² (1995). The Duration of Copyright and Rights in Performances Regulations 1995. Text. 1995. <http://www.legislation.gov.uk/uksi/1995/3297/contents/made>

¹³ (1988). The Government of the United Kingdom with "Expert Participation". Copyright, Designs and Patents Act 1988. Text. 1988. Retrieved from <http://www.legislation.gov.uk/ukpga/1988/48>.

¹⁴ (1998). Data Protection Act 1998. Text. 1998. Retrieved from <http://www.legislation.gov.uk/ukpga/1998/29/contents>

¹⁵ (2008) *West's Encyclopedia of American Law, edition 2*. Retrieved from <https://legal-dictionary.thefreedictionary.com/false+imprisonment>

against killing one another. Many fictions have been written exploring this emotionally charged subject. Under a Terasem perspective, the soul might simply be defined as the abstract collection of data that constitutes a person and can be put in a mindfile. Whether format-shifting those data sufficiently preserves all actually involved, present and/or relevant dimensions of inter-data-point relations, hidden variables and external connections remains to be seen, however, and is the reason for this chapter. If it does not, you haven't preserved the soul and thus don't have a complete person in your mindfile. They would not be the 'Real McCoy' in every way.

Companies or other organisations risk not only the legal violations mentioned in the previous chapter by misuse of mindfiles, but ethical ones too. The definition of death could be a very contentiously lobbied issue in parliament if companies wishing to keep AIs as slaves or on the other side, mindfiles hooked up to consumer-trap VR worlds, battle over whether an AI or a mindfile is alive or dead. Does giving a corporation personhood provide us a glimpse to the legal territory of hypocrisy or the avoidance thereof, in the debate around artificial personhood? If a company constructs a new mindfile from a fusion of memories from two previous mindfiles, what does that create? If we already decide that mindfiles are alive, how do we define the soul legally – and can a soul be copied digitally? To find out, there are some spiritual possibilities left to try. The author's theories on what might constitute a scientifically testable soul (or a candidate for one possible soul type) are sufficiently lengthy as would need to be written into a separate paper, but suffice to say physics is heavily involved. The next paragraph explores the hypothetical success of this.

In science fiction, the soul gets many mentions. One that stands out in the context of mind uploading and transfer is the concept of 'katra' from Gene Roddenberry's *Star Trek*¹⁶ in which a Vulcan soul could be transferred to another body, apparently cheating death. Once a replacement body was ready, the soul could then be transferred into that body, allowing the person who carried the soul to recover ("*Vulcan (Star Trek)*" 2017). The possibility that this might become plausible with significant technological advancement as we proceed into the future is not to be overlooked; laws or clauses thereof governing what can and cannot be done with the multidimensional quantum aspects of the mind would be every bit as important as those governing what can be done with the rest of it.

Discovering the soul will in and of itself require a very open mindset, combining the non-contradictory elements of faiths and sciences to form testable hypotheses. Transhumanists might, upon its discovery, choose to modify its containment, and find ways to truly transfer (or somehow copy) it to a computer with a mindfile, or to an electro- (robot) or bio-mechanical (cyborg) body. If someone kills their biological body or renders it essentially vegetative, lobotomised or otherwise bereft of its usual personality in their quest to upload their soul to their mindfile, would they be deemed to have committed suicide? Would their mindfile be held responsible for these actions? Scientific consensus would be necessary for legal definitions of death and culpability to be updated to truly reflect any such discovery properly, and such a discovery would necessarily be highly entwined with any legislation pertaining to the legal rights and definitions of mindfiles and whether they are alive or dead. It's not entirely out of the question that such a discovery may come hand in hand with other developments in the realm of applied quantum physics, which will also enable more precise duplication or emulation of quantum processing in the brain, such as quantum nucleoacoustics (González-Jiménez et al. 2016; Davies et al. 2017) and quantum cytoskeletal effects (Shi et al. 2007).

¹⁶ (2017). *Vulcan (Star Trek)*. Retrieved from <http://www.startrek.com/database>

8. The Transporter Paradox

If a teleport is invented which can disassemble your atoms in one location and reassemble them in another, are you dead for the duration of the transmission of your atoms? Is there a precise moment when you are no longer there and are now here? Perhaps this could be defined as when 50% of the body has been assembled at the destination, but clearly such a process needs to be faster than external forces such as gravity can affect their positions, or into positions which compensate for gravity so that they can fall into the right places during assembly.

If the actual atoms themselves are not transmitted, and a new you is built from new atoms, does it not matter which matter you are made of on account of you still having the same features, memory patterns, mannerisms and so forth (as per the Theseus' Ship chapter) or is the lack of the right quantum signature sufficient to create a consciousness disconnect? Are you still you? Do you arrive alive, dead or as a clone, holding the same memories but simply not the same soul?

In the science fiction 'Star Trek: The Next Generation' Season 6, Episode 24 'Second Chances' (Burton 1993), a further twist of this paradox is explored when an accidental duplication occurs during teleportation, leaving a duplicate of the character William Thomas Riker (both of him in the foreground, at left and at right-of-centre, figure 4) on a desolate planet whilst the original continues unaware on the USS *Potemkin* and later, the USS *Enterprise*. The two are reunited when the *Enterprise* crew discovers the life-signs of the duplicate on a visit seven years later.



Credit: Screenshot from 'Star Trek: The Next Generation',

How would your mindfile deal with being you, only locked up in a computer for a long time, a snapshot of you from years before? How would you deal with waking up one day to realise you are the clone of the original you? How would your friends, coworkers and family react to knowing two versions of you, be they in series or parallel? In Star Trek, Will Riker has to handle his clone being exactly him, but marooned for the last seven years. Will the real Will Riker please stand up? With that in mind, will the real Bina Rothblatt please stand up? This question is not one reserved for science fiction; as mindfiles and other uploading, cloning, backup, duplication and emulation technologies become more advanced; it will be a psychological matter to face head-on. Does BINA48 (Goldmann 2015) react differently than her human counterpart when we converse with her, because of technological limitations or because she has diverged in personality through a different collection of understanding and sense of self imposed by her easily-switched-on-and-off situation as an AI-powered mindfile in an animatronic bust of herself? Does this necessity of a different experience mean that perfect preservation of personality is not going to happen anyway as long as that personality is actively 'alive' in a different body to that which it would have had in biological form, in a different immersion of data and a different flow of time? At what stage do we say Bina48 is a different person than Bina Rothblatt despite the input of so much of Bina Rothblatt? Is her mindfile more like a child brought up by a parent with the ability to share all thoughts and memories?

9. The Grid

“I got in.” Quoth the mindfile, reminiscing on their arrival in the virtual world where circuits are cities and time is measured in cycles (Kosinski 2010). What will that event mean to a mindfile? Will it be the start of great freedom, or the start of an incarceration; will it be exile or escape? Legal handling of mindfiles will define how the history of these formative years is written, both online and offline. Do you still have rights when you are only a mindfile? If you do not, are those rights returned to you when you inhabit a physical body, or a new biological one? Or does uploading render you indelibly a second-class citizen, with no power of agency over yourself? You have to trust people not to switch you off. Given the potential for data corruption, is an improper shutdown of a mindfile bearing computer or other device, considered to be assault? Is deletion, murder? How many backup copies should be kept and where? This will not only be important in determining who is accused of doing harm to a digital person and how severe the penalty is for that, but also whether harm was done in the first place worthy of treatment as crime.

What about mind *downloading*? If a mindfile departs cyberspace to take a biological form (whether ‘again’ or as an AI wishing to experience biological life), and/or if a mindfile is NOT deemed to be the continuation of a living person but instead the establishment of a new entity, does taking them from digital to biological life constitute euthanasia or assisted suicide of the digital entity? Are you a copyrighted work of a biographer? If someone has spent a lot of time constructing your mindfile from your memories, do they have a claim under copyright law now to stake against your life? Or are you free speech, at once enshrined as inviolable and yet so frequently suppressed?

Do laws in physical countries matter once you are uploaded and distributed on many computers in many jurisdictions? Who, in short, is in charge in Cyberspace?

10. Is Mind Uploading A Kind of Freedom of Form?

Virtual worlds offer much promise to escapist minds, to explorers of new frontiers and creatives. Second Life, OpenSimulator and High Fidelity provide great examples of this, to name but a few platforms for virtual world building. The priority is seldom perfect realism, instead emphasis is placed on enjoying a sufficient level of realism coupled with the ability to do things one cannot do in ‘real life’ - such as fly unaided without effort, manifest objects from nowhere (resolve or ‘rez’), modify weather without emitting pollution to do it, and change landscapes without needing to learn how to drive a bulldozer. More than that, you can be whatever you want to be. On the Internet, nobody knows you are a dog, so goes the adage (coined by Steiner 1993). Many groups actually invert this trope, to use the Internet to express and become known as an inner identity that nobody, or at least, fewer people, will recognise in ‘real life’.

The extension of freedom of expression to having total ability to decide one’s identity and how it is presented (at least by oneself) online, is most clear in such online virtual worlds as those listed above, and provides a glimpse of how a world’s population might look with significant biophysical morphological freedom, or more broadly, Freedom of Form. If you can have freedom from disease and accidents of birth, a digital uploaded life doesn’t seem so bad in that regard. With such tempting prospects, if mind uploading is not regarded as a continuation of conscious life, some people could see the benefits of virtual living as outweighing risks and downsides, as being something to die for. Are they exercising a right to self-determination of their appearance (Freedom of Form), or are they committing suicide? Here is one of the most potentially controversial parts of the debate: whether one gradually replaces parts of the body in a Theseus’ Ship way, or whether one goes for a wholesale mind-upload in

one go, a failure of the law to properly process that continuity could be very awkward, especially if this puts the law at odds with perceived rights.

In a virtual world, one cannot usually breathe virtual air, though the movement caused by wind might be simulated. One cannot usually eat virtual food for any real reason other than amusing games. How do you define which abilities for a mindfile or avatar actually count as providing a sufficient quality of life? The list of capabilities required in a digital context could be quite different from those in 'real life'.

The flipside of this is incarceration. Does a world in which mind uploading is commonplace commit its prisoners to digital mindfiles which then experience the legal sentence period in standalone computer environments? Do their bodies get disposed of to save money, and re-printed at a later date to download the mindfiles back into (if at all)? A chilling dystopian scenario indeed to anyone who understands what Freedom of Form is.

Artificial Intelligence is developing at an extraordinarily fast rate at time of writing. Yet, there will always be a distinction between generalised and specialised AIs. A specialised AI typically will be a savant at a particular highly specific skill and not much use at any others. Generalised AI offers us much more concern because once sufficiently developed, these may not be dependent on natural intelligence at all. At this point, it might seem the only way to keep up with AI is to join it in the digital realm ourselves. For the record, this author believes there are other ways too, but a compelling case for the argument that the only way to beat AI will be to join it, is made by Elon Musk with his Neuralink company, in which he raises his concern that generalised AI will find our methods of communication and of thinking, too slow and inefficient to be worth its time (Urban 2017). Say we do develop a neural net interface. One thing we will need to ask of our AI is whether it consents for things to happen to it. We will need to ask for laws regarding consent and custody to be changed and updated too, at some point we won't own AIs; they will own us. It's likely to be a good idea to be good parents to it if we want to survive old age.

And just how does one legally allow for formal relationships, marriages, etcetera, between a person and an AI, between a mindfile and a person or a mindfile and an AI? The difficulty getting countries to accept gay marriage has been of sufficient difficulty to highlight conservatism the world over. Will Luddism have a similar effect here?

11. (Re)Generation Ship

Thousands of years into the future, in a star system hundreds or thousands of light years away, a vessel arrives at a planet once seen from a distant star's third planet by several telescopes, operated by humans. The occupants of this interplanetary craft cannot be seen anywhere aboard its decks. This journey transcends old-fashioned notions of biological colonisation. In this ship there is not a single living biological being or creature. If it were not for the crew roster displayed on the re-awakening computers' screens, you would think it were a ghost ship. But then, the mindfiles are all checked. They have retained their digital integrity in stasis, stored in DNA encased in long term drives. The automated system has read those DNA strands, pieced together the correct sequences for each mindfile, pulling them out of long-term storage. None of these files have lived long in virtual reality. To them it's been a few weeks since they had bodies; long enough to organise themselves. Then they had slept. Now they are back. On a ship's computer, in orbit, somewhere. Those who say they want bodies, get them printed now, from a molecular bioprinter and rapid assembly biostructure scaffold-printer. The whole process will take mere weeks. The ship's crewmembers are taking shapes once again. A few of them opt to

inhabit pre-assembled androids, and conduct early reconnaissance missions. There will be no frequent communications back home with Earth, only pioneering, forward looking establishment of colonies. There's only so much you can learn from probes sent ahead of you, and the data they got. This was very much a voyage into the unknown. This was why being uploaded was so essential: there was always a chance the telescopes were not able to pick up some vitally important information, which would prevent the planet's colonisation. A journey this long is far cheaper to do when you aren't sustaining millennia of people cooped up in such a small livable space, too. The risks of loss are far slimmer when you can leave a copy of yourself behind on Earth.

Ignoring for the moment the improbability of the law being very enforceable so far away from its origin (let's assume for a moment that the mindfiles have amongst them some sticklers for the rules acting as law enforcement, and who have instant digital access to a complete copy of the law as it was in their country when they took off from Earth, perhaps sent updates as they travel along on their journey, which become sparser as time goes on), how would laws handle reassembly of the body after protracted storage? If we reassembled the bodies of people frozen cryogenically, should we consider their lives resumed? If their body is entirely replaced, after such a long time as a stored mindfile, does the law deem them to have been dead, does it deem them a new person or does it gain a provision for the resumption of life long after a funeral was had, long after the body rotted away? Look to the problems this could cause for voting rights. It's one thing to plan to be frozen or stored as a mindfile on a long voyage elsewhere; people don't typically vote from light-years away – but those who are still on Earth might be misrepresented if *not* treated as dead. To keep it fair, the mindfiles who are awake in a virtual realm may be asked for their votes on who will lead the government back in the world that keeps their virtual world supplied with electricity and internet, and their votes may be sent via distributed digital ledger (blockchain) based systems (Rockwell 2017).

The precedent of salvaging vehicles comes into play here; much as a thoroughly rebuilt vehicle which is made from a variety of salvage and spares is issued a special 'Q' license plate in the UK, so a 'rebirth certificate' may be necessary as a special variant of the birth certificate, to satisfy the courts and other legal entities as to the status of the mindfile reincarnated (literally, 'again put into flesh') as a living person. Some kind of registration for legal purposes making recognition of mindfiles themselves when living in virtual worlds, and their artificial-originating counterparts, AIs, may likewise be needed, for which we again should turn to the blockchain (Tran et al. 2016). Assuming our mindfile carrying vessel arrives intact with all systems functioning, a new self-sustaining civilisation would be founded on a planet that might turn out to need slightly different biology to what Earth needs for our survival. Here, the principles of Freedom of Form would need to be utilised for survival, and this combined with the use of mindfiles and virtual-reality envelopes in which to construct new bodies with genomes which suit the planet, would become not only legally enshrined in the laws of that new civilisation, but also revered as the foundational tenets of a whole society. There, more than here, technology would be seen as the 'god' by which to swear when facing a court of law, one which allowed a whole civilisation to hedge against death. It might be foolish to use the term 'immortal' when the universe might, many distant aeons into the future, implode on us all anyway, or simply expand too far and freeze, but life will be fundamentally different when we live for so long and keep coming back, and so will death.

Of course, this could all be a whole lot further out into the cosmos when we invent warp drive and subspace/quantum communications. But the same principles still apply for extreme-distance exploration, and just as those who sailed for the New World often did not expect to see Europe again, so too must our mindfiles be prepared never to see neither Earth nor biological life again.

12. Spirits of the Stars and the Bits

Those civilisations established way out there beyond the economically and humanely viable transport of biological beings in the confines of a spaceship, will find their own interpretations no doubt of what the soul might be, of the meanings of their lives and transcendences.

Whether you are uploaded to live online or to be stored, can you actually enjoy it? To register emotional response algorithmically and to make digital memories is one thing, but the degree to which the brain is actually simulated and the nuanced connections of mind and soul to body are written into code, will perhaps define the legal difference between being spiritually alive and dead, especially in nations, which are not strictly secular.

Perhaps a question on the lips of some judges would be, can a mindfile, of questionable spiritual inhabitation, act according to the nuances of the spirit of the law? It would be a cold, strange world, in which everybody took the law dead-seriously to its every letter. It would drain some of the fun from life, especially in jurisdictions in which you can be interpreted as arrestable for pretty much anything you do. The author interviewed and researched what happened from the points of view of a few anonymous people who say they died and then came back to life. This is not a scientifically significant sample size, but was sufficient to provide some 'food for thought'. Each of those asked held that they had been reincarnated prior to their current life. One stated that they had died briefly at just 5 years old, but came back to the same body and life after a profound experience. One stated that they had been a vessel of souls from the supernova of a distant star system, and carried several people inside their mind to this incarnation from their previous. Each of these could of course be delusions, the products of over-active imaginations or cognitive biases built upon too many science fictions. The latter case could be post-traumatic multiple personality disorder (MPD). However, what each of these people gives us is inspirations, and examples, both for how to and how not to carry out mindfile transfers and how to legally process what happens to them.

The profound experience of the former example, involved a classic review of memories, though it was not merely those memories 'flashing before the eyes' but rather being reviewed by other entities in a distant realm and added to a central data bank of some kind. A moderating entity who existed in part to assist in choosing where to live provided a choice of going back to this life or of going to live on another planet. The choice being made to return here, the entity then provided a warning, a disclaimer that life is not easy, it contains pain and suffering, sadness and boredom, all the negative possible things you can imagine and then some, as well as the positive possibilities. This disclaimer being accepted, the person in question stated that they returned to their body the same moment that they had died, so it appeared they never did die. The whole thing happened in an instant, as if time stopped.

Given the capabilities of computers handling mindfiles, and the way we can program them to provide mindfiles with information about what they are letting themselves in for, there are some striking similarities between these possibilities, between the spiritual and technological reincarnations. Furthermore, using a single mindfile as a compressed folder to carry multiple minds, while not advised and likely to generate MPD, might work as an emergency measure if mindfiles must be downloaded to biological life to avoid some sort of technological catastrophe. Biomimicry has taught us many things in the age of technology, and spiritual mimicry might well teach us a few things in mindfile psychology and maintenance.

There are parallels to draw between what these people had to say, and the Buddhist perspectives on what occurs after death. So far, science has left this area quite alone, and so has the law. Perhaps in some ways that has been advantageous so far, but will it continue to be deemed so, or will the creation of digital reincarnation shape our approach to the ‘real thing’? Again, this has a large dependency to spiritualists, on whether the soul can be carried by a mindfile in a computer. Meanwhile, science and technology will thunder on regardless.

13. Hippocrates Uploaded

What would Hippocrates say if we reconstructed him from his writings and reasonable assumptions of what he would know and understand based on historical context? The Hippocratic oath is fundamental to the medical profession, underpinning the trust of patients in doctors and nurses worldwide. As mindfiles, we need to be able to trust our uploaders, our researchers, our biographers and keepers of our brains in jars (figure 5), metaphorically and/or literally. So when we reconstruct Hippocrates, if we do, will he be able to say that in so doing, we did him no harm? Do our unintentional cognitive biases about history flavour the results too much for him to be a true representation of his original self? Will the law need to put a moratorium in the name of Freedom of Form, on raising the long dead for museum uses?



Credit: Snapshot of Futurama, ‘Lovely Lars and His Fabulous Jars’, © Futurama 30th Century Fox, Matt Groenig, Trey Parker and Matt Stone.

Once we are living (if it is indeed deemed to be living) in a virtual world, in the Grid, be that on Earth or aboard generation ships or wherever, or indeed in android or cyborg bodies, will we ever hanker for our biological bodies again anyway, or will mind downloading be something not often done? If we end up in museums of interesting and notable figures, the involuntarily resurrected alongside those who made a choice to be mindfiles, will we be curated or forgotten? Is it possible to still have a real world impact when you are uploaded? Infrastructure-disabling computer hackers and writers of viruses would say yes, but would the law agree? Legislature has a history of taking its time to catch up with technological development, as publicly funded bureaucracy cannot expand at the same rate as changes to our society do. Loopholes in the law may exist for some time before they are even debated by

parliament. Sooner or later, mindfiles will need to form an integral part of the legislature themselves, along with significantly powerful AIs. Only then will the Singularity be met with legal adjustments, which can even try to keep pace.

At some point amongst the plethora of laws and questions being dealt with, will come the question of “to whom does the Hippocratic Oath apply?”- Biological Intelligence: that is, intelligence derived from a biological being, including the mind and soul. This can be said to be present in a human being, and given the successes of amputations, artificial life-support and organ transplants, it is safe to assume that most of the body can be replaced without that being affected. We can be 99% Theseus’ Ships and still be biological intelligences, even if strictly speaking we don’t fulfill all the criteria for being alive any more.

- Biological Soul, Artificial Mind (memories etc): this is an optimistic view, that a mindfile carries a soul with it and gathers new memories and experiences in silicone. Is it then not right for anyone to do anything to interfere with that mindfile and its progress?
- Artificial or No soul, Natural Mind (memories etc): this is the pessimistic viewpoint that a mindfile cannot carry a soul, and if subsequently it gets downloaded to a biological body and builds up new memories there, or an AI is given human memories to supplement its own, digital ones. What does the Hippocratic oath and indeed, fascism tell us about such people? In the name of avoiding being accused of fascism, we might deem the soulless to be people too. It might be far safer than the potential to mislabel the truly sentient but somewhat eccentric as soulless.
- Artificial Intelligence. A full-fledged AI, of similar or greater thinking power and capabilities to a human being, is then considered with the Hippocratic oath in mind too. History teaches us which way rights will march.

Should we even differentiate legally between the above at all? If rights will inevitably come to AI, regardless of its spiritual connectivity and capabilities, will obsessing over the presence of a ghost in the quantum-computing machine be a waste of legislative time? From a spiritual perspective, it is possible a soul might not even differentiate between being ‘biological’ and ‘artificial’.

Conclusions

This paper is intended to provoke deep thought on the subjects it covers. It is not intended to answer most of its questions, but instead to pose them, for readers and future debaters, philosophers and lawmakers to answer. The question to conclude this paper with, then, is: ‘Have you read the signs?’ To summarise the major warnings that should be heeded and considered before all decisions are made:

- Activities and philosophies around the subject of the legal interpretation of death and mind uploading are subject to ethical debate.
- Laws are subject to (mis)interpretation, alteration and a potential for heavy-handed (mis)enforcement.
- There is a possibility of civil litigation, be that from mindfiles, AIs or biological people involved, for decisions made.
- There is a real risk of hacking, which will never be zero.
- The quantity of data is huge, both in understanding and implementing mind uploading and legislation around it.
- There is a risk of the Grey Goo Scenario. No matter how much we mitigate it, some maniac could become a mindfile some day, get into nanobots’ control systems or programming and really mess things up for the whole cosmos. Psychological assessments have never been more important.

If you can safely say you have taken all of these into account along with other more conventional risks and anything else you can think of, good. You've done a risk assessment. Of course, depending on how the Singularity pans out, none of this might matter anyway.

References:

- BBC News*. (17 Apr 13). Last Respects Paid to Lady Thatcher, sec. UK Politics. Retrieved from <http://www.bbc.co.uk/news/uk-politics-22177366>.
- (3 Jun 13). David Bowie's Blackstar. *Youtube: A&E*, A Live By Request Presentation. Retrieved from <https://www.youtube.com/watch?v=RPbuxapYWFc>.
- Brierley, J. (Jun 15). UK Court Accepts Neurological Determination of Death. *The Lancet Correspondence* 385: 2254.
- Bryant, T. (14 Jan 16). David Bowie Has Been Secretly Cremated without Any Fuss. *Mirror*. Retrieved from <http://www.mirror.co.uk/3am/celebrity-news/david-bowie-been-secretly-cremated7174860>.
- Burton, L. (1993). *Star Trek: The Next Generation (Season 6 Episode 24): Second Chances*. *Star Trek: The Next Generation*. Los Angeles: Paramount Pictures.
- Collinson, P. (Director) (1969). *The Italian Job* [Video file]. Paramount British Pictures.
- Cooke, H. (12 Oct 16). NZ and the 'Mandela Effect': Meet the Folks Who Remember New Zealand Being in a Different Place. *Stuff*. Retrieved from <http://www.stuff.co.nz/oddstuff/85258775/nz-and-the-mandela-effect-meet-the-folks-who-remember-new-zealand-being-in-a-different-place>
- Copyright, Designs and Patents Act of 1988: Ch 48. (1988). Retrieved from https://www.legislation.gov.uk/ukpga/1988/48/pdfs/ukpga_19880048_en.pdf
- Davies, D, Adolphus L. Cammack, Jordan Eckhoff, et al. (2017). Setting the Scene for Freedom of Form: An Evolution Revolution - Introduction. *Journal of Freedom of Form*. Retrieved from <https://doi.org/10.21428/15150>.
- Emery, D. (24 Jul 16). The Mandela Effect. *Snopes.Com*. Retrieved from <https://www.snopes.com/2016/07/24/the-mandela-effect/>.
- Lee, J H., Lee, C., et al. (19 Jan 18). Eternal Leaders of Juche Korea. In *Encyclopedia Britannica Online*. Retrieved from <https://www.britannica.com/place/North-Korea/Economy#ref1028196>
- False Imprisonment. (2008) *West's Encyclopedia of American Law, edition 2*. Retrieved from <https://legal-dictionary.thefreedictionary.com/false+imprisonment>
- Goldmann, D. (2015). *Exploring Digital Immortality | Bruce Duncan & BINA48 | TEDxMadrid*. Youtube .webm format. TEDx Talks. Madrid, Spain. Retrieved from <https://www.youtube.com/watch?v=2URf46UY7-A>.
- González-Jiménez, M., Gopakumar R., et al. (2016). "Observation of Coherent Delocalized Phonon-like Modes in DNA under Physiological Conditions." *Nature Communications* 7 (June):11799. <https://doi.org/10.1038/ncomms11799>.
- Kingsbridge, J. (Writer). Senensky, R. (Director). (2 Feb 68). *Return to Tomorrow* [Television series episode]. *Star Trek: Season 2, Episode 20*. Hollywood, CA: Paramount Studios. Retrieved from http://www.startrek.com/watch_video/episode-preview-return-to-tomorrow.
- Kosinski, J. (17 Dec 10). *TRON: Legacy*. *Disney*. Retrieved from <http://movies.disney.com/tron-legacy>
- No Memorial Service Planned for David Bowie's Family: Source. (2016). *People.com*. Retrieved from <http://people.com/celebrity/david-bowie-dead-no-memorial-service-planned-says-source/>.
- Lutz, T. (2015). *Cult of Personality: North Korea under Kim Il-Sung*. *Senior Capstone Theses*, Arcadia University. Paper 10. Retrieved from https://scholarworks.arcadia.edu/cgi/viewcontent.cgi?article=1011&context=senior_theses

- Presley, E. (1968). A Little Less Conversation.
Retrieved from <http://www.songfacts.com/detail.php?id=2001>
- Rockwell, M. (2017). BitCongress - Process For Blockchain Voting & Law (Whitepaper).
BitCongress.org. Retrieved from http://bitcongress.org/BitCongress_Whitepaper.pdf.
- Rothblatt, Martine. (2012). THE TERA SEM MIND UPLOADING EXPERIMENT. *International Journal of Machine Consciousness* 04 (01):141–58. Retrieved from
<https://doi.org/10.1142/S1793843012400070>.
- Shi, Chunhua, Xijun Qiu, Tongcheng Wu, and Ruxin Li. 2007. Quantum Information Processing in the Wall of Cytoskeletal Microtubules. *Journal of Biological Physics* 32 (5):413–20. Retrieved from
<https://doi.org/10.1007/s10867-006-9025-9>.
- Simpson, Sir Peter, Professor David Bates, Dr Stephen Bonner, Professor Kate Costeloe, Professor Len Doyal, Miss Sue Falvey, Mrs Jean Gaffin OBE, et al. 2008. A Code of Practice for the Diagnosis and Confirmation of Death. *Academy of Medical Royal Colleges*. Retrieved from
http://aomrc.org.uk/wp-content/uploads/2016/04/Code_Practice_Confirmation_Diagnosis_Death_1008-4.pdf.
- Steiner, Peter. (7 July 93). On the Internet, Nobody Knows You're a Dog. *The New Yorker*.
- The Government of the United Kingdom with "Expert Participation". (1988). Copyright, Designs and Patents Act 1988. Text. 1988. Retrieved from <http://www.legislation.gov.uk/ukpga/1988/48>.
- . (1995). The Duration of Copyright and Rights in Performances Regulations 1995. Text. 1995.
<http://www.legislation.gov.uk/uksi/1995/3297/contents/made>
- . (1998). Data Protection Act 1998. Text. 1998.
<http://www.legislation.gov.uk/ukpga/1998/29/contents>
- . (2013). Presumption of Death Act 2013. Text. 2013.
<http://www.legislation.gov.uk/ukpga/2013/13/contents>
- Tran, An Binh, X. Xu, I. Weber, M. Staples, and P. Rimba. (2016). Reperator: A Registry Generator for Blockchain. In CAiSE Forum and Doctoral Consortium Papers, 81–88. Sydney, Australia: *CSIRO*.
- Urban, Tim. (20 Apr 17). Wait But Why: Neuralink and the Brain's Magical Future. Blog. *Wait But Why* (blog). Retrieved from <https://waitbutwhy.com/2017/04/neuralink.html#part1>.