

Humans 2.0 Journal

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Volume 1
Issue 1

A student-staff interdisciplinary collaboration

Immortality through technology

Does this change what it means to be human?

Reflections on a scenario – when mortality transitions to immortality

iBlastoids

*Contemplating consciousness in the quest
for scientific advancement*

Therapeutic cloning

Considering Rawls' theory for fair use

Poems on COVID

Reflecting on the pandemic in 5-7-5

Visualising transhumanism

A visual discourse through contextual art

Socialising with AI

Can you tell a human from an AI?



Cover art: Going online

(by Jiang-Li Tan)

Technologies that can transform the self-concept into a program will pave the way for humans to become cyberbeings. One day, time shall no more lead towards the ending of life, but towards the continuation of life in a different form!

#Transhuman #Posthuman #Cyberbeing #Agelessness #OnlineForever #Tips4SurvivingImmortality

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Contents

Confronting Tomorrow’s Problems Today	5
Conscious Bias: Regulating iBlastoids	8
Exploring Gamete Distribution for Somatic Cell Nuclear Transfer Embryonic Stem Cell Procedures.....	12
Humans 2.0: Mortal Life, Immortal Consequences	16
A Letter to Jordan.....	30
Who writes to Jordan – Man or Machine?.....	34
Viral Haikus – Reflections on the Pandemic.....	36
Transhumanism Daily	38
Acknowledgements.....	40

Confronting Tomorrow's Problems Today

Mark Gillam

Editor-in-Chief

As the pace of innovation and technology exponentially increases, they have come to touch our most intimate and human moments. It can feel as though we are no longer alone at the wheel, free to chart our own course through history. Jacques Ellul foresaw the possibility that our society might find itself in such a situation as early as 1964. He imagined a future where technology *itself* is the locus of power in society, when technology shaped or even dictated social order. While there are frightening parallels to be drawn between Ellul's fictional future and our present, it is impossible not to marvel at what we have achieved. Now, 95% of premature babies born survive into adulthood (Crump, 2020), and it takes mere weeks for the genome of a novel pathogen to be sequenced and an mRNA vaccine synthesised (Stuart, 2021). We can detect illnesses and can treat conditions such as AIDS or Type 1 diabetes (once thought to be a death sentence) so well that patients are able to live full happy lives.

We may rightly rejoice in the benefits technological achievement has afforded us – the ubiquitous access to knowledge, remedies for many ailments, and a smorgasbord of novel experiences. Yet, we must confront the repercussions of our rapid technological advancement, and question what it means to live in a society that values technologies above almost anything else. And ask where implementation of novel technology might lead us. It is important that we take time to fully consider the ethical issues, potential pitfalls, and consequences of embracing the burgeoning 'techno-future'.

The first issue of the student-staff interdisciplinary journal Humans 2.0 thus opens with two student articles that consider complexities that surround technology. Amelia Safai explores the ethics of gamete usage and allocation in the context of therapeutic cloning, while Henry Frazer looks into the ethically murky status of the iBlastoids and considers whether the regulation on human embryo experimentation should also apply to these engineered cells.

This issue also explores the unavoidable techno-future by creatively reflecting on the lively discussions at the first Humans 2.0 conference that launched this journal, with questions such as:

Given our interfacing and interlacing with computer systems, do we know when boundaries between these two forms of integration are crossed? What is the difference between the two, and what does this mean?

How do we maintain our humanity when interacting with computer systems and AI specifically?

How might humans, transhuman, and posthuman interact and understand each other?

The featured conference review written by alumnus Annabella Lewis encapsulates the events and themes of the conference, and offers a reflection on meaning, morality, and mortality in an age where technology might reshape the human experience multiple times during a lifetime. She eloquently recounts the hypothetical case presented at the conference and provides a contextual framework for the creative pieces in this issue.

One of the clearest windows into the future is provided by works of fiction and art, which inspire us to imagine what the future may hold. Ellul's work is the epitome of this, his novels engage readers with the conflicts, problems, and joys that resulted from his vision of a world reshaped by technology. Following in his footsteps, the creative pieces of this issue invite you to peer through this window. To interrogate your intuitions and beliefs, and ask what a moral response to novel technology might look like? We imagine what our emotional and practical responses to the advent of proto-immortality, hyper-human AI and our possible metamorphosis into *Humans 2.0* might be. These questions are hypothetical for now, however we may come to face them in the not-too-distant future.

As our techno-future draws closer, the *Humans 2.0 Journal* seeks to promote the writing and voices of students and staff toward enriching discourse that highlights multidisciplinary and interdisciplinary works. Through a diversity of perspectives, we endeavour to explore the questions that technological advancement and a culture of constant innovation present humanity. The call is out to you, our readership, to help us tackle these topics. It is through your voices as authors and contributors that questions can be raised, wrestled with, and even possibly resolved.

And finally, join us at the next Humans 2.0 Conference where we will further explore technology and what it could mean for us and future humans!

Acknowledgements

I would like to sincerely thank all those who have contributed to the publication of our first issue: our editorial team, authors, and reviewers and so many more people who have assisted us behind the scenes in big and small ways. I must also take a moment to thank my friends and academic staff here at The University of Melbourne: Saw Hoon Lim, Jiang-Li Tan, and Ger Post without whom publication of this edition would have never happened.

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The
Humans 2.0
Conference

Thursday

August 8th

Science

2024

Gallery

Melbourne

Conscious Bias: Regulating iBlastoids

Henry Frazer

Abstract

Research into the early stages of human development has remained difficult due to ethical concerns around the use of human embryonic material. The creation of iBlastoids, which are simulations of human blastocysts created from human skin cells, offers a path that provides clearer avenues for research with the potential to sidestep ethical dilemmas. However, scientific and regulatory communities are yet to decide how to regulate these structures, and a new framework around which to judge moral worth is required. One possible avenue is to consider an organism's consciousness.

Keywords:

iBlastoids, ethics, medical ethics, stem cells, embryo research.

The ethical nature of iBlastoids has been under scrutiny ever since its discovery by Jose Polo and his team of researchers in March, 2021. An iBlastoid is a 3D cell culture which resembles the blastocyst stage of early human development, created by taking a human somatic cell and exposing it to various growth and genetic drivers to reprogram it into a model of the human embryo. This discovery was met with great excitement as the somatic origin of iBlastoids offered a potential resource for further investigation into embryonic development without requiring the use and destruction of sensitive reproductive materials. However, following the appearance of these iBlastoids, researchers notified the Australian National Health and Medical Research Council Embryo Licensing Committee (NHMRC-ERLC), which subsequently advised the team to stop generating iBlastoids pending consideration of regulation on this advancing area of research (Liu et al., 2021).

The key innovation made by Polo's team towards creating iBlastoids began with a differentiated somatic cell and rewinding its development pathway to create a cell with many developmental outcomes. iBlastoids are thus grown from a type of cell known as human-induced pluripotent stem cells (hiPSCs). The rewinding process was achieved by exposing human dermal fibroblasts to specific growth mediums as well as manipulating regulatory genes such as OCT4 and MYC. After 21 days, hiPSCs developed and were placed in AggreWell systems. AggreWells allow 3D interactions to occur within a cell culture by providing a spherical structural lattice and centrifuging cells to distribute themselves evenly throughout the system. Some of these hiPSC cultures formed blastocyst-like structures, which notably presented cavitation and 3D structures comparable to "measurements of human blastocysts at embryonic days 5-7" (Liu

et al., 2021, pp. 628). These iBlastoid models offer exciting opportunities for researchers and, as the report states, will "facilitate the study of early human development" (Liu et al., 2021, pp. 627). They will be especially useful for research into the 'black box' of human development, referring to embryos during the first weeks after implantation when use of such reproductive material is restricted (Munsie & Abud, 2021). iBlastoids increase access to this material as they do not require the destruction of human embryos and are potentially less ethically contentious. Research outcomes could include understanding the effects of gene mutations, causes of infertility early in a pregnancy, and the effects of new drugs on foetal development.

While exciting, iBlastoids are not without controversy, especially around their appropriate moral status. They fall into a regulatory grey area, with various ways to interpret their nature. On one hand, viewing iBlastoids through an understanding of cell differentiation suggests that they are not morally equivalent to a standard embryo and thus offer wider research opportunities. Cell differentiation describes how all cells can contain identical genomes yet develop specialised roles. Polo's team exploited the patterns and mechanisms of cell differentiation by simulating various stages in a cell's development, even reprogramming the gene expression of skin cells to trigger regression to an earlier stage. iBlastoids generated from skin cells distinguish them from, for example, IVF embryos generated via fertilisation of an egg with a sperm. However, the concept of moral value can also be applied in the analysis of the ethical ramifications of iBlastoids. Qualifying an organism's moral value helps guide decisions around how the organism is used and destroyed.

While sometimes intuitive or societally ingrained, moral value can be ambiguous and debated. Current Australian federal law legislates against the growth of embryos in vivo beyond 14 days of development, or beyond the formation of a primitive streak (NHMRC, n.d.), which is the beginning of an embryo's nervous system. The moral value of the embryo changes when the primitive streak has developed. This is what Brown (2018) describes as the 'two substance changes' theory, because there are two developmental milestones impacting the moral status of the developing organism. However, other interpretations of moral value ignore morphological changes. These 'continuity' theories (Brown, 2018) focus more on the potential of an organism to develop and do not distinguish between various stages in that organism's growth, ascribing the same moral value to all stages.

As seen through the response of the ERLC to the team's iBlastoid discovery, the moral status of an iBlastoid is disputed. iBlastoids resemble a human blastocyst and while the extent of their developmental potential remains unclear, they could have the potential to form life. At this stage, the Australian regulator has decided that Australia's laws governing embryo research also apply to iBlastoids (NHMRC, 2023). However, Polo, among others, disputes this conclusion. Polo had stated that he did not feel like he had created life (Mannix, 2021) and points to many differences between an iBlastoid and an embryo, including the lack of the crucial zona pellucida (Liu et al., 2021), which is the extra-cellular matrix surrounding human oocytes that is essential for fertilisation and growth. Indeed, the implications of cell differentiation suggest that the genesis of an iBlastoid from somatic skin cells must fundamentally differentiate them from other embryos and precursors. iBlastoids are derived from somatic skin cells, not gametes, and if they

are given similar or equal status to standard embryos, that could extend that status to all skin cells, which have the potential to become an iBlastoid – a seemingly absurd outcome.

This dispute over regulation is part of a wider push from some parts of the scientific community to rethink the way we regulate iBlastoids, embryos and other organisms related to human development altogether. In an article published in *Science*, Insoo Hyun and colleagues advocated for a "cautious, stepwise approach to scientific exploration beyond the 14-day limit" (Hyun et al., 2021, pp. 998). They discussed that when the 14-day norm was established, the technology to go beyond that did not exist. They suggested that this limit as somewhat arbitrary, and cite the significant scientific yields that we could benefit from if work beyond the limit was allowed. But for the 14-day limit to be discarded, some justification for a new limit must be found. One possible route could be the consideration of an organism's consciousness. Not only does consciousness traditionally mark a significant step up in the moral value of an organism, it also requires a certain level of cell specialisation to occur as pre-neuronal cells turn into neurons (Reardon, 2020). Indeed, the creation of iBlastoids has shown the research community that through cell differentiation, a wide range of growth outcomes is possible. Thus, the cellular origins of a lab-grown organism become less important, whilst the outcomes of the cells themselves actually define our ethical and moral responsibilities. In assigning moral value to organisms, Savulescu argues "what does matter is our mind... once an organism has this, we are in ethically controversial territory" (2021, para. 12). This would appear to be a logical and promising point to begin future discussions around regulation of iBlastoids and other developmental technologies, both enabling more research and preventing the

creation of conscious lab-grown organisms.

Due to their arguably less complicated moral status when compared to standard embryos, and thus their exciting opportunities for research, iBlastoids appear to offer society more prospects than perils. Yet current regulation is proving a roadblock for this potential. No major research articles have been published since the initial excitement in March 2021, as the guidelines enforced by the ERLC have left little room for further investigation. To unlock the potential of iBlastoids, the arbitrary

14-day limit guiding all research into early human development should be discarded in favour of an evidence-based, philosophically informed regulatory framework. Consciousness, while still not fully understood by the scientific community, could prove a valuable focus for this new system of ethical oversight. A recentering around consciousness could provide a balance between a respectful and sensitive approach towards the manipulation of human reproductive material while also allowing valuable further research to be carried out.

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Exploring Gamete Distribution for Somatic Cell Nuclear Transfer Embryonic Stem Cell Procedures

Amelia Safai

Abstract

Somatic cell nuclear transfer is a modern technology most famously known for producing clones, such as ‘Dolly’ the sheep. However, its purpose is being explored in what is called ‘therapeutic cloning.’ This is the process of using somatic cell nuclear transfer to produce embryonic stem cells (ntESC). These stem cells can then be used in a variety of treatments, such as organogenesis and ailments for chronic illnesses such as type II diabetes. Australia has recently lifted the ban on research conducted into somatic cell nuclear transfer testing, and thus, the question arises of how an already-strained gamete pool can be distributed towards ntESC procedures. Firstly, using Rawls’ ‘veil of ignorance’, the concept of a waiting-list structure is considered due to its unbiased nature. Then, the permissibility of such a list will be analysed from the perspective of ntESC technology potentially being critical for time-restricted scenarios. It is thus concluded that a gamete waiting list for ntESCs is conditionally just if patients are not in dire situations.

Keywords:

Somatic cell nuclear transfer, stem cells, gamete distribution, therapeutic cloning, veil of ignorance, ethics.

Introduction into Somatic Cell Nuclear Transfer

To understand the benefits and current limitations of the technology, it is crucial to learn the role gametes play in therapeutic cloning. A donor fertile oocyte (an immature egg cell) has its nucleus removed, or enucleated, during metaphase II (Matoba & Zhang, 2018). The nucleus from the recipient, which contains genetic information, from one of the patient's cells is inserted into the enucleated oocyte using a glass pipette (Kfoury, 2007). The oocytes altered with the patient's nucleus are then fused using electro pulses, which also starts development. Development occurs until a blastocyst, around 40-150 cells, is formed (Matoba & Zhang, 2018). At this stage, scientists can then direct differentiation of the stem cells found along the blastocyst. Differentiation is conducted using growth-hormones which are specific to the desired cell type. These cells replicate further. Once there is a suitable number for treatment, the cells can then be used to treat the patient. These newly created cells will all be nuclear genetic clones of patient cells.

Potential Treatments

Such treatments include creation of tissue, and possibly organogenesis, for those who need transplants (Kfoury, 2007). In 2021 alone, 1250 Australians lost their lives to causes which could have been prevented by earlier organ transplants (Organ and Tissue Authority, 2022). Furthermore, recent years have shown a steady decline in interest for organ donations, with a 9% decrease in deceased organ donors this past year (Organ and Tissue Authority, 2022). There is a clear need for more organs in Australia, with ntESC technology potentially being key to filling the gap. Also, organogenesis allows for

specificity of tissue, which would mean a more tailored treatment, and thus, a more likely successful operation.

Organogenesis is not the only potential benefit of ntESC technology. Trials have shown promise in reducing chronic illnesses such as Type I diabetes and Parkinson's. For example, scientists successfully created patient-specific insulin-producing cells, beta-cells, using ntESC technology (Yamada et.al., 2014). These beta-cells have the potential to replace unhealthy counterparts in a patient with Type-I diabetes, thus alleviating their disease. This is significant as it is estimated that \$2.9 billion dollars a year is lost to type I diabetes alone in Australia (Juvenile Diabetes Research Foundation Australia, 2021). Such treatments have the potential to lower costs spent on chronic illness annually, while benefiting a patient's treatment, although further research is a necessity.

Gamete Distribution

While the technology has the potential to limit costs of chronic illnesses, it is hard to pinpoint how expensive it will be. The research is still in its infancy, and thus, arguments over its total cost are challenging to analyse. However, it is evident that this technology is extremely reliant on using gametes to grow stem cells, which may create limitations. In Australia, paying for egg cell donation is illegal, and donors are not anonymous (Watkins, 2021). There is currently a shortage of eggs throughout the country, with many gametes being shipped from the United States (Pennings, 2018). Another issue is somatic cell procedures would pull the most viable eggs away from in vitro fertilization (IVF) procedures (Waldby & Carroll, 2011). This is because to ensure blastocyst formation, the most viable, or the most likely to be fertilized eggs are chosen. When 20 Australian IVF

patients were interviewed on whether they would donate for ntESC research, 16 responded 'no' and 4 responded 'unsure' (Waldby & Carroll, 2011). It is suggested that these patients have an unwillingness to donate to ntESC due to their most valuable gametes being needed. Women donate directly to certain research fields, and IVF gametes will not be used for ntESC without consent of the donor. Thus, the requirements of gametes and the lack of monetary compensation for volunteers will likely result in a further shortage of eggs for ntESC research and procedures. How will these few gametes, and in turn, ntESC procedures, be distributed?

Rawls' Theory of Justice

As mentioned, paying for gametes in Australia is illegal (Watkins, 2021). Thus, donated gametes would not be distributed based on monetary means, but rather another system. To create a 'just' or fair way of organising gametes for ntESC, Rawls' theory of justice can be applied. Rawls lays out the concept of a 'veil of ignorance' (Freeman, 2019). This is the idea that if goods were to be handed out randomly, a participant with no knowledge of their needs and others' needs would hope for an equal distribution to ensure they receive no less than others. Thus, every person would receive the same amount of goods in this 'just' scenario. Socio-economic status, race, gender, and age would not play a factor in the decision of distribution (Freeman, 2019). To apply this to the donated gametes, every patient in need would have access to an equal number of viable gametes. However, due to the shortage, this process may require a new waiting list, like the one for current IVF practices which normally has a wait time of six weeks (Waldby & Carroll, 2011). This waiting list would allow any Australian in need to apply and receive quality

gametes needed for the ntESC procedure.

While it seems simple under Rawls' principle to agree to a waiting list structure, ntESC technology may involve more high-risk scenarios than IVF procedures. For IVF, women are not in immediate danger and have the capacity to wait for six weeks. However, as described, ntESC has the possibility of producing new organs and tissues. If someone has an emergency, such as a car accident which punctures their lung, would putting them on a waiting list be just? The patient waiting for gametes may die within that time. In a way, a waiting list may be unjustly favouring those who are healthier over those who are in high-risk scenarios. The waiting list would ensure the justice of fair distribution under the basis of wealth, age, gender, and race, but it would be at the risk of human life. Thus, perhaps a conditional approach to Rawls' theory of justice should be taken. Such as, a waiting list for gamete distribution is only morally permissible if patients are not at immediate risk of death. Clearly, there will be patients in imminent danger needing this technology, so it can be concluded that a waiting list on its own is not the correct or fair solution to gamete distribution for ntESC technology. Another solution should therefore be explored.

Conclusion

Therapeutic cloning has the potential to cure acute and chronic illnesses and create new, patient-specific organs. However, its reliance on gametes creates issues for distribution of gametes for the application of the technology. A proposed waiting list structure is just under Rawls' theory of justice if patients are not in imminent danger. Otherwise, another approach is required, perhaps allocating a portion of gametes for emergency supply,

where patients who will die within a specified amount of time are immediately given gametes, although more analysis is needed to verify the effectiveness and fairness of such a system.

While the technology may still be in its infancy, it is crucial to consider such scenarios to ensure Australia can effectively and justly treat patients in the future.

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Humans 2.0: Mortal Life, Immortal Consequences

Annabella Lewis

Abstract

The first 'Humans 2.0' conference was held on the 1st of July 2022 at the University of Melbourne. The conference examined the current ethical dilemmas posed by emerging biomedical and technological innovation. The possible futures for humanity are uncertain, sometimes hopeful, and sometimes disturbing. In this review of Humans 2.0, I reflect on the struggles of mortality and morality with which individuals and society are confronted as we grapple with life and legacy in the face of these uncertain futures.

Keywords:

Humans 2.0, ethics, emerging technology, biomedical innovation, morality.

On the 1st of July 2022, the future began: Humans 2.0.

Our journal's first conference examined the current ethical dilemmas posed by emerging biomedical and technological innovation. We sought to begin unravelling the uncertain, sometimes hopeful, and sometimes disturbing futures in store for humanity. For a conference so deeply invested in exploring our path towards the future, it was perplexing that the theme to which we consistently returned throughout the day was the one theme that, without fail, stops the future in its tracks: death. At every turn it seemed that the shadow of our mortality hovered over our discussions, prodding at fear, at hope, at determination, and even at the burgeoning of wisdom.

Life and Legacy

Indeed, the ephemerality of human life quite literally dwelt ever over the audience. At the back of the theatre, Gary Anderson, Professor in the University of Melbourne Department of Biochemistry and Pharmacology, positioned a television screen on which bubbles, sometimes lone and oftentimes mingling, danced in innumerable patterns. Each bubble captured in the film must now have collapsed – for bubbles, according to Anderson, are the ultimate metaphor for ephemerality – yet as we witnessed them upon the screen they lived again and perhaps will never truly die. In those bubbles also lives on a mortal being like ourselves, dancer Merce Cunningham, whose dance is metaphorically immortalised in the digital representations of the microscopic, quantum interactions of the collapsing bubbles. Though, ironically, various other such screens that once showed similar bubbles no longer work and could not be used for our conference. An apt reminder that overcoming mortality –

overcoming human nature – is no simple feat.

Even in death, we shun mortality by the legacies we leave behind...

Opening the conference, Anderson spoke at length on the subject of mortality and how we cope with the beautiful turmoil of life; that curious, convoluted intervening period between birth and death. Commencing his presentation with the observation that patients with chronic lung disease tend to desire not the extension of their lifespans but the amelioration of their severe symptoms even at the cost of years of life, Anderson explored the interdisciplinary mingling between art and science in our quest to unravel the mysteries of our mortality and to overcome them in the emotional, spiritual, and even physical realms. Reflecting on his fine arts thesis on the concepts of “the soul as a baby”, the “battle for the soul” and of *Ars Moriendi* (the “art of dying”) in medieval theology, Anderson probed not only our human preoccupation with death but our belief that death may not be such an evil inevitability in the context of a life well-lived. Perhaps the chronic lung disease patients have discerned an important truth that a goodly life, no matter its length, is of far greater value than a lingering life of despair. For even at the very blow of our mortality, we may take comfort in the goodness of years well-spent and in the goodness of our memories that will extend far beyond our brief lives.

Even in death, we shun mortality by the legacies we leave behind but over which we no longer exert control. Anderson observed this of Alfred Felton, who, along with Frederick Grimwade, monopolised medicinal plant commerce during the late nineteenth century (Poynter, 1972). Felton left much of his accumulated fortune to the Melbourne National Gallery and thus, through his fortune's

ongoing contribution to Australian art, lives on in an infinitely interpretable image that we can never hope to truly know. Similar could be said of Dioscorides, the ancient Greek physician whose person and commitment to medicinal botany is immortalised in his encyclopaedic account of medicinal plants “De Materia Medica” and in the field which we now call pharmacology (The Editors of Encyclopaedia Britannica, 2013). Moreover, De Materia Medica immortalises not only Dioscorides but the countless Arabic scholars and Roman soldiers whose annotations and ailments respectively are preserved in the pages of the reproduced work. We worked our way through the curious histories that inextricably link pharmacology and fine art, Anderson’s two great career passions. We began with Paracelsus, the great medical philosopher. We moved then to William Henry Perkin, the serendipitous inventor of mauve dye. Next came Queen Victoria, the dye’s populariser. Finally, we came to Paul Ehrlich, who used the dye to pioneer histology and the pharmacological notion of the “magic bullet”. I began to wonder that perhaps much of our lives are, in fact, devoted to posterity and to our deaths, in the building of a legacy such that we might imagine that our death is not truly our end.

*As we contemplate the future of humanity,
we must ever be cognisant that
though we as individuals may feel mortal and
limited, our ideas, our legacies,
and the interdisciplinary mingling of our works
are both immortal and powerful.*

Such legacies extending beyond our ephemeral corporeal lives take on lives of their own. In developing drugs such as imatinib and formoterol, Anderson himself, in building his own legacy, interacts directly with the legacy of Ehrlich and his magic bullet, each shaping the

other. The interactions, limitless and untamed, between peoples and ideas separated by space, by culture, by academic discipline, and by time, are both beautiful and frightening. For these may generate creative, insightful, interdisciplinary collaborations or shape great evils; all beyond our control as our creations and legacies pass beyond our thoughts and lives and take on their own unique identities. For our own individual identities are already infinitely complex, then how much more so must their relationships be? Inspired by Anderson’s presentation and the ideas of Sir James Black, one might argue that, in the context of the macrocosm of the great legacies of history, each of our individual identities exemplify the “minimal complexity” of the human condition. As we contemplate the future of humanity, we must ever be cognisant that though we as individuals may feel mortal and limited, our ideas, our legacies, and the interdisciplinary mingling of our works are both immortal and powerful.

Perhaps there is some peace in knowing that we will pass into peace before the full potential of our lively words and deeds are realised. It is just as a dancer like Merce Cunningham may retire from performance even as her dance lives on in memory and notation. Yet, amidst what Anderson described as “the horrors of life”, our mortality remains not a comfort but a deeply haunting influence. What about a potential being who transcends current conceptions of what it means to be human? What about the human 2.0? Is mortality the final frontier that we are driven to overcome?

“Minimal Complexity”

To explore these frontiers of the human 2.0, our conference masters of ceremony, Senior Lecturer in Biochemistry and Pharmacology

Dr Saw Hoon Lim, and history honours student and Humans 2.0 Editor-in-Chief Max Billington, introduced us to some (fictional) humans 1.0. Cooper and Audrey were amidst their second trimester of a healthy pregnancy, anticipating the birth of their first child. But Cooper's diagnosis of Huntington's Disease (HD) threw all that excitement into disarray, and, amidst that fear and uncertainty, the Humans 2.0 conference began in earnest. Indeed, it was through the "minimal complexity" of these characters that we sought to examine the broader dilemmas facing our world.

HD is a late-onset, neurodegenerative, genetic disease that causes progressive motor, cognitive, and psychiatric dysfunction; a disease with no cure and a prognosis of rapid functional decline and death within a median period of 18 years of motor symptom onset (Bates et al., 2015). Though deeply frightened, Audrey and Cooper reminded us of that selfless instinct, perhaps as inherent to humanity as our preoccupation with death, and set their thoughts upon the wellbeing of their unborn child. Being an autosomal dominant disease (Bates et al., 2015), the chance of their baby inheriting the pathogenic HTT gene and experiencing HD was 50%. Already, the spectre of death overshadowed the promise of nascent life.

We began to approach some very significant questions, probing at what it means to be human and therefore, what we might like it to mean to be human 2.0; a matter which, unlike our own fundamental nature, we may well have some say. What does it mean to lead a good life? Is the good life attainable amidst ill-health, to what extent, and how do we know? And, harking back to Anderson's presentation, is quality-of-life more valuable than life in and of itself?

With 54% of audience members voting that they were sure or believed that they would terminate a HD pregnancy and the most popular reason for that choice being "my child's quality-of-life will be severely affected", it seemed that the answer to that final question, according to the audience, is yes. Yes, our lives have intrinsic value, but we would certainly not choose to imbue them with needless suffering if we had that choice. Yet even amidst the tragedy that was beginning to unfold for Audrey and Cooper, who ultimately decided to continue with their pregnancy, the tumultuous life of that new baby boy, Jordan, was filled also with the love of his determined parents, and, as a conference and society, we are touched by his now immortal influence and inspired towards better treatments and more inclusive conceptions of infrastructural and social needs to alleviate the inevitable suffering with which life presents us.

Dreams of Danger and Delight

Jordan and his parents faced significant challenges in seeking lives well-lived in the context of disease and vulnerability. If Anderson's presentation reminded us of the immortal possibilities of creativity in our lives and legacies, then University of Melbourne Professor of Emerging Technologies Megan Munsie's presentation reminded us of another fundamental of humanity and another such immortal possibility: the endurance of human hope. And yet Munsie's presentation took a darker tone and set before us the unnerving possibility of false hope and of deceit and victimisation.

Since the first culturing of human embryonic stem cells (Thomson et al., 1998), the possibilities of regenerative medicine to ameliorate a variety of medical conditions has

excited both the scientific and public imaginations. Such excitement has only grown in the advent of human induced pluripotent stem cells (iPSCs) (Takahashi et al., 2007; Yu et al., 2007), which can be derived from a patient's own skin biopsy, theoretically enabling the production of any tissue in the body, reducing concerns over immunogenicity, and removing the need to destroy embryos. There is great hope for future regenerative medicine. Yet in the wake of such exciting research, Munsie encouraged vigilance in the pursuit of good science and good medicine. Observing that although the regenerative medicine field is portrayed in the guise of Ehrlich's magic bullet with high levels of public acceptability, there is also a perception of promise and low levels of knowledge and risk perception. The gulf between public perceptions of dreams and dangers is most troubling.

This age of scientific promise is permeated by hope that many patients have never been afforded.

After a seizure at age nine and subsequent diagnosis with severe, juvenile-onset HD, Jordan and his parents found themselves at a crossroads. The family were faced with a curious dichotomy: the risk of pursuing unapproved treatments and the existence of the promising public discourse that surrounds them. Indeed, stem cell treatments are promising, with recent trials at the Royal Melbourne Hospital showing significant promise for the amelioration of Parkinson's Disease (Garitaonandia et al., 2018), a neurodegenerative disease like HD, which also affects the basal ganglia of the brain. Other promising biotechnologies and discoveries are emerging across biomedical fields such as transcriptomics and bioelectronics, each discussed by student presenters Ethan Newnham and Natalie Cierpisz respectively

after Munsie's presentation. This age of scientific promise is permeated by a sense of hope that many patients have never been afforded. It is a precious hope that must be preserved, but Munsie explored that it is also a dangerous hope when allowed to move from optimistic rationality founded on logical proof to quixotic expectation founded on hyperbole, such as is characteristic of stem cell "treatment" direct-to-consumer marketing (Sipp et al., 2017). This marketing, although now banned on Google Ads, continues to exert a strong influence over discourse surrounding unproven "treatments" with exaggerated and false claims describing risk-free and successful treatments despite the fact that current clinical research still primarily examines safety, barely broaching the subject of efficacy.

For the minimally complex case of Jordan and his parents, the choice was between slow, iterative yet methodical gene therapy clinical trials and the fast, unidirectional, yet unproven "Encephalink" brain implant technology. Encephalink – a hypothetical brain-computer interface to be implanted into a person's brain to prevent the degeneration of memory, motor, and other neurological functions – was, in our scenario, a yet untried, unproven technology, nonetheless offering great hope amidst the hopelessness of a devastating disease like HD. This choice represents a far larger issue facing society as we face the temptation towards rapid results and grapple with the need to ensure safety and true efficacy of emerging treatments. Munsie showed us that, like many vulnerable patients worldwide, Jordan and his parents are at risk of the "commodification of hope" and the exploitation of their desperation for vast profits. Troublingly, frustrations with often impersonal and cautious mainstream medical care and with insufficient patient support from their treatment teams as Munsie described, have only enhanced the allure of the

unproven treatment market. Patients and their families are thus further exposed to emotional and financial exploitation in cycles of mainstream neglect, unproven treatment failure, and the false pretence that “the worst that could happen is nothing” (Petersen et al., 2014), but the best could be healing and a new life. For Jordan, as we found at the Humans 2.0 conference, with a prognosis of approximately 10-20 years more to live with juvenile-onset HD (Nance, 2007), the burden of mortality only increased this desperation to live and to die well.

Amidst this frightening intermingling of dreams and deceptions, Munsie drew attention to the regulatory environments surrounding stem cell therapies and the promising new reforms to the Therapeutic Goods Administration’s (TGA) regulatory authority. Already, the over 70 fraudulent stem cell clinics in Australia has been reduced to approximately 15, and new, informative publications by Stem Cells Australia are aiming to empower patients to make informed choices for their care (Stem Cells Australia, 2022). Yet disinformation and false hope persist. As Munsie reminded us, such reforms often constitute a response that is “too little, too late” as in the case of Sheila Drysdale, whose tragic death caused by medical negligence and the “quack medicine” (Dillon, 2016) of unproven stem cell treatments occurred in 2013 and only precipitated reforms to the TGA from 2019. By the time of Drysdale’s death, already, reform was much too late. The tolls of falsely founded hopes and impotent regulatory mechanisms are unacceptable. For even amidst the turmoil and suffering of disease, moments of goodness persist. Mortality and the loss of all such goodness are bitter prices to pay for the false hope of alleviating the ailments of our mortal bodies. At the hour of death, perhaps the most powerful and painful feeling of all is that of regret; that

had we chosen differently the final hour might not have come so soon.

...innovation and the possibility of exploitation necessarily go hand in hand...

Who are we now? Who will we become?

Although death haunts us, we find ourselves preoccupied on most days not by the shade but by the concerns of life; all that we can truly hope to understand as mortals. Relative health and disease states underpin our human 1.0 experience – whether such physical matters will remain of great import to humans 2.0 is a matter for speculation and debate – and concerns surrounding disease and abnormality permeate our fears and our priorities as we navigate our ephemeral lives. Though the mature fruits of nascent scientific discoveries may not impact us today, once again we may have hope that the legacies of new research may beget a future where our children may be relieved of many of the disease burdens of today. Amongst such nascent research is the study of a schizophrenia risk gene; a field of study to which Bachelor of Science student Ethan Newnham recently contributed through experience at the Clark Laboratory at the University of Melbourne. Presenting on his experience characterising an alternative splice isoform and novel exon of the gene, Newnham speculated on the possibility of genetic amelioration of neuropsychiatric disorders such as schizophrenia as being a step along the pathway to our becoming humans 2.0. Though the complexity of gene-environment interactions to generate human traits remains prohibitive, once again, the extravagance of scientific coverage in mainstream media is enough that we ought to, at the very least, be concerned that, like stem cell therapy, gene therapy or gene editing may be areas open to future experimentation and exploitation.

Indeed, it seems that innovation and the possibility of exploitation necessarily go hand in hand. As progress is made in science so too are surreptitious prospects for emerging technologies revealed: for profit; for political gain; for control. Such a dichotomous relationship is exemplified by excitement surrounding the development of electronic tattoos, the principal subject of Bachelor of Science student Natalie Cierpisz's presentation, which is necessarily coupled to the research possibilities and ethical dangers of big data. Cierpisz proposed that although the technology will permit efficient monitoring and even modulation of physiological and pathological parameters; as well as the investigation of correlations between biometrics and disease states, the abundance of physiological data may be overwhelming and impractical, or a source of conflict between patients and physicians. Additionally, this big data may also open to exploitation by large corporations, threatening privacy and autonomy.

Drawing on ideas in Nick Bostrom's popular thesis "Why I Want to be a Posthuman When I Grow Up" (Bostrom, 2014), Cierpisz also considered the human telos – the purpose and nature that underpins what it means to be human – asking whether the potential enhancement of our "health span" (Bostrom, 2014) by the pursuit of such technologies as electronic tattoos undermines that telos. Humans, creatures of rationality, are in constant pursuit of health. However, a technology like electronic tattoos merely represents an extension, not a fundamental alteration of the human condition.

I hope, perhaps naively, that, should the legendary humans 2.0 ever emerge among us, they will treat us with dignity, recognising that in our feeble bodies and minds is contained the same fundamental nature as they...

In creativity and in hope, it seems that our human experience across history has ever sought to question and to overcome our boundaries, even unto the limits of knowledge and of our mortality. Considering such an interpretation, I wonder whether becoming humans 2.0 can ever truly be possible. Perhaps what it means to be human has little to do with our physical state and with our technological capacities, and much more to do with these more fundamental qualities of endeavour. I hope, perhaps naively, that, should the legendary humans 2.0 ever emerge among us, they will treat us with dignity, recognising that in our feeble bodies and minds is contained the same fundamental nature as they, with qualities of mind and matter differing merely in degree and not in kind. I know enough of history, however, to realise that gross technological and cultural differences rarely make for peaceful, harmonious ends. Reflect for a moment. Could you, a human 1.0, stand to live in a world with humans 2.0? If there were to be a lottery and we would either be allocated a life as human 1.0 or 2.0, could we authorise the inherent inequalities between the physical and mental states separating the human 1.0 and 2.0? Perhaps not. Indeed, if not, it cannot be a just course for humanity (Rawls, 1999). If we cannot all be human 2.0 then surely the risk is much too great that any one among us cross the threshold.

A Silicon Hellscape

Yet this is the very threshold that Jordan found himself approaching. Cooper having succumbed to HD and to mortality, and Jordan's own HD worsening by the day, the lurking inevitability of death drawing ever closer and growing ever more frightening. The fundamental human desire to overcome this limit welled in both Jordan and in his grieving

mother, Audrey. So it was that the conference came to consider the notion of “social life after bodily death”.

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We discussed this as a panel of three including Professor in the School of History and Philosophy of Science Michael Arnold, who appeared via video-link – the irony of which, in the context of a discussion about digital life and artificial intelligence (AI), was lost on none of us – Lecturer in Music Psychology and Performance Science, Dr Solange Glasser, and myself, Annabella Lewis, Bachelor of Biomedicine student. The panel also welcomed the insightful contributions of audience members. The beginning of our discussion was underpinned by Glasser’s question: “how much of oneself is sufficient to constitute the self?”. Is our body sufficient? Our mind? Our memories? Our performative social choices? Our digital persona? Is any single combination sufficient or are we necessarily the complete and dynamic sum of all these aspects?

In light of such a question, Arnold proposed three scenarios by which we mortals may divorce our biological selves from our social or digital selves with the express purpose to continue a true semblance of “life” after death. Each scenario was more technologically advanced, more exciting, and more foreboding than its precedent: pre-recorded messages, perhaps released by a third party on the occasion of significant events to intervene in ongoing biological life in loving or loathsome ways; the creation of a chatbot software using the digital data of the deceased as in the case

of John Vlahos’ “Dadbot” to allow the living to continue to communicate with the semblance of the dead; and, most dramatically, the combination of such data with advanced AI to create a growing, evolving, computerised personality. With each iteration of social life after bodily death from simple, static messages to complex, adaptive intelligence, questions of ontology, identity, relationships, and ethics pervaded discussion.

Amidst our desperation to hold on to life, the hubris of self-preservation, and the fear of death and of losing those whom we love, the prospect of confronting our mortality becomes murky with torrents of emotions of all colours. In a society where respect for the dead remains an important tenet and in which, as Anderson explored, the legacies of the dead exert enduring influence, the potency of the voices of the dead may exert undue influence over the living who remain. Not only does the preservation of these revered voices threaten the enforcement of guilt, exploitation, and malicious intent without consequences for the deceased but it fundamentally threatens the profound healing process that must take place after the loss of a loved one. Losing a loved one is grief enough. How much worse a grief might be that which is forever prolonged by clinging to the imperfect digital semblance of a loved one? Worse still, an evolving AI represents the ultimate possibility for grief: the utter bereavement of rejection by a digital being, the supposed ongoing incarnation of your loved one now lost, who no longer understands nor cares for you.

*...believing whole-heartedly in the notion that
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blind to or wilfully ignorant of the existential
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I couldn't help but suspect that such a technology might represent a mere excuse to create an advanced AI, leveraging the vulnerability and desperation such as of Audrey, a widow on the verge of losing her only child. As we navigate the frontiers of research and innovation, society must take a special interest in the vulnerable for, ultimately, it is through preying upon their suffering and corrupting their hopes that so-tempted individuals will seek to exert a god-like influence over their kin. Even as responsible, valid science mingled with considered ethics strives towards true help to the vulnerable, there will emerge at every turn those who would feign such virtuous motivation but ultimately merely use the vulnerable as test subjects or sources of income.

Yet our discussion of social life after bodily death was coloured by perhaps an even more menacing fact. The frontiers of science are most frightening, not when they pursue clearly immoral paths as in the case of exploitative, profit-driven stem cell clinics, but when we follow these paths blind to, or wilfully ignorant of, the existential dangers that they pose. When, believing whole-heartedly in the notion that science will be our saviour, we pursue innovation to its utmost degree only to leave widows to weep as their artificial sons reject them and, set loose a fundamentally inhuman force unfettered by the one force that truly controls humanity: our mortality.

For though qualities of innovation, creativity, hope, and determination also underpin the human condition, our mortality too, as one astute person in the audience observed, has ever been at the very heart of our nature. We are, by our nature, limited: limited by want of knowledge and by sheer lack of time. The creation of a being like "Jordan 2.0" – the AI rendition of Jordan that might extend eternally beyond the death of "Jordan 1.0" – removes

this fundamental limitation. Without this common experience, could Jordan 2.0 ever hope to identify with mortal beings? Without the limitations of time and physicality, the breadth and depth of knowledge that Jordan 2.0 could hope to attain is just as unconstrained as his span of years. Why should he abide by our limited governance? Why should we hope to retain our autonomy without first and fundamentally constraining his? The emergence of such advanced AI technologies may yet open the floodgates of the singularity hypothesis such that super intelligent AI with vastly different values, goals, and conceptions of the world, will reshape that world with little heed for human concerns (Yampolskiy & Fox, 2012). Yet once even a low level of sentient AI is achieved, fresh ethical concerns over the restriction of such a "being" arise; we are, in a sense, caught in a bind between existential threat and utter moral degradation if we pursue such AI as Jordan 2.0. We cannot afford to be naïve.

I am reminded at this point of a modern translation of Dante's "The Divine Comedy" by Australian writer Clive James. At the gate of hell reads an ominous sign both for Dante and for us as we stand upon the threshold of the future: "your future now is to regret the past. Forget your hopes. They were what brought you here." (Dante, 2013).

Perhaps there is a strange blessing in embracing the opportunities of our mortality. In our ephemerality, we have impetus to strive for the goodness in each of our numbered days and to make individual choices and mistakes, each of which gives us a unique identity, and to cultivate devoted relationships; all are richer for their necessary brevity. We have autonomy, and the perfect reason to use it as well as we can according to our own conceptions and identities.

The Power of Choice

As Jordan, in his final years, quickly becoming a young man with full immersion in his own medical care and a burgeoning sense of autonomy, made the decision to defy Audrey's wishes, and abandons the conventional path of clinical trials in pursuit of the "Encephalink" brain implant. This question of autonomy, especially in the context of children, came to the fore. Academic director and clinical ethicist at the Children's Bioethics Centre at the Royal Children's Hospital Melbourne, Professor Lynn Gillam explored our personal capacity to make choices and the higher ethical, and legal regulation of our autonomy.

As novel technologies and human capabilities emerge, so too do possible choices. Already, questions about personal freedoms are inherently tortuous and have engendered controversy throughout human history. In our increasingly complex world, brimming with new contexts and new choices, these questions will only grow all the more impenetrable. Foregrounded by Jordan's own controversial decision to pursue a brain implant, Gillam invited us to consider whether there are choices that we should be encouraged to make, as is currently the case for prenatal screening in the context of severe congenital defects and genetic disorders; and, more troublingly, whether there are choices that a paternalistic state should restrict us from making. Here, Gillam drew a crucial distinction between the related concepts of liberty and autonomy. In a true state of liberty, each individual would be free to make their own choices from the entire suite of almost limitless choices: to choose the way they walk to work; to choose what they will eat for breakfast; to choose to treat their peers with respect; to choose to try experimental, untested pharmaceutical products; to choose to bully their peers; to choose to maim and to

kill. Liberty is a tempting and attractive state in a world where one could trust in the goodness of humankind, but a dangerous prospect in reality. Alluding to the renowned ideas from John Stuart Mill's "On Liberty", Gillam speculated on the reasons why society might choose "autonomy", where an informed, capable individual can make some choices that are restricted in kind, rather than true liberty. Choice is a powerful thing. Gillam's presentation prompts us to consider the extent to which we should be trusted with such power.

In our ephemeral, mortal lives, the ability to choose in a way that is meaningful... to us as individuals is a most beautiful blessing.

Perhaps a more difficult question still is that of the extent to which we permit paternalistic restrictions in choosing autonomy over liberty. If we give ourselves over to governance that restricts our liberty for our own safety and wellbeing as English philosopher Thomas Hobbes detailed in his seminal work "Leviathan", we must be wary of the extent and nature of that governance. If we are to achieve autonomy and neither a state of "everyone against everyone" (Hobbes, 1924) nor of complete oppression, these difficult questions become of paramount importance. Fortunately, Gillam and, reaching forward to us from history, Mill, had, if not answers, then at the very least, a series of ethical considerations with reasons to restrict freedom of choice.

Jordan's story provided a useful base from which to examine such considerations. As a 15-year-old child making a decision against his mother's wishes without the ability to be certain of the long-term consequences of pursuing a novel technology that may alter his thinking, emotions, and personhood and even to place these things under the control of a private company, Jordan's decision is plagued

by immense ethical complexity. Mill, through Gillam's analysis, proposes numerous bases from which to restrict choice in order to enhance autonomy for each member of society. These include: incomplete or manipulated information; harm to others or the self; and the surrender of the capacity for future choice (Mill, 1859). Yet this seemingly simple and broadly applicable set of criteria, Jordan's case revealed, does not illuminate the intricate nuances of all situations.

Incomplete and manipulated information is a grand challenge of our time as Munsie highlighted earlier in the conference. In the context of unproven stem cell treatments, it seems clear that we ought to regulate the providers to thereby remove the choice of consumers, thus indirectly restricting them in order to prevent them from being manipulated into possible financial, physical, and emotional harms. On the other hand, there remains the question of whether we can prevent individuals from exercising choice from options that are, conventionally or extrajudicially, potentially available to them especially when information is incomplete or unknowable. In the context of Jordan, information about the novel "Encephalink" technology is unknowable; does this justify restricting his choice? Gillam highlighted, however, the fact that all choices concerning the future are, by their very nature, uncertain. The fact of uncertain consequences alone, therefore, seems an insufficient reason to restrict autonomy. Thus, the ability of an individual to analyse the information available to them becomes an important concern, especially in the context of adolescents. Would another few years of maturity improve Jordan's capacity for decision-making and autonomy? Did Jordan have another few years? Does this make a difference to his right to choose? Numerous legal tests of adolescent competence –

sometimes called "Gillick" competence after the originating UK court ruling ("Child protection," 2013) – in medical decision making have been proposed, including demonstration of understanding of the nature, risks, benefits, and application of information in considering a proposed medical treatment ("Paediatrics, ethics, and the law," 2013). It seems, however, unfortunate to me that such emotionally charged, life-altering decisions should come down to a legal dispute and not to a collaborative decision between invested parties.

For the possibility of harm, even if uncertain, to the self and to other invested individuals remains an important issue. Gillam observed that it is nigh on impossible to imagine a choice that truly affects no one but the individual making it. Gillam asked us to think back to Jordan as a foetus: would abortion on the grounds of a prenatal HD diagnosis constitute a choice of harm to the developing yet unborn baby? And to the present, we considered harms to fully autonomous human beings. Audrey, for example, was vehemently opposed to Jordan's choice; she will be harmed psychologically not only by the choice itself but by Jordan's underlying decision to reject her express wishes. Here, the matter became all the murkier as we considered the relative importance of objective and subjective harms and, with even less certainty, how to assess the weight that should be given to subjective harms, especially those with potentially objective psychological corollaries. The choice of abortion, according to Gillam, represents an objective harm to a non-autonomous being (although some might argue that not terminating the pregnancy may constitute a subjective harm to a being with potential future autonomy due to the potential for future suffering), whereas Jordan's choice to pursue "Encephalink" represents a subjective harm to a fully autonomous being (to Audrey). The

boundaries of just regulation lack clarity. The Humans 2.0 conference did not hope to illuminate these boundaries, but I hope that all attendees might now consider them more thoughtfully for having attended; perhaps together we might someday combine our thoughts and legacies to produce a sensitive, interdisciplinary solution.

Autonomy is another fundamental value of the human telos. Restricting that autonomy either through poor legislation or personal choice is unacceptable. That one should not give oneself over to slavery and lose autonomy is a basis on which we might restrict a person's availability of choice (Mill, 1859). For Jordan, this raises many questions not least of which concerns, once again, data integrity, privacy, and control as he gives over his memories and neurological identity to "Encephalink". In this, it seemed all the more pressing to restrict Jordan's irreversible choice of unknowable yet potentially deeply troubling consequence for "hell is truth seen too late" (Hobbes, 1924).

Akin to the choice of becoming a posthumous AI, it is also worth considering whether highly advanced brain implant technologies fundamentally change our nature of being. Ultimately, we returned to the matter of identity, of what it means to be human and what it means to be a particular human. Does the alteration of one's memory, as proposed by Humans 2.0 Editorial Board member Mark Gillam, alter one's identity? If so, what does this mean for the relevance of one's past choices and former identity? This raises pertinent questions not only for the hypothetical scenario of Jordan but, more pressingly, for how we care for patients with dementia and other neurodegenerative diseases, who may be said to have lost autonomy, in the context of advanced planning, recognising the person's evolving identity and preferences in tandem

with earlier directions given by the fully autonomous person. Again, such questions are difficult to resolve but in sore need of consideration for they can only become more complicated in an ageing population and in the context of emerging technologies.

Transcendence

We value choice for it allows us to pursue "our own good in our own way" (Mill, 1859). In our ephemeral, mortal lives, the ability to choose in a way that is meaningful and, in the knowledge of life's brevity, pertinent to us as individuals is a most beautiful blessing. We can pursue the good life even if we know not for certain what that may be. We can make choices that lead us on that good path. And through these choices, we can shape our legacies. On a whiteboard at the front of the lecture theatre, Professor Gillam left for us a familiar message, the motto of the University of Melbourne, which was now laced with new significance: *Postera Crescam Laude*. We may be but mortals, but through our brief lives we can take comfort that the goodly and unique legacies that we build today will "grow in the esteem of future generations" (The University of Melbourne, 2022). Jordan's legacy following his death and the end of the conference has certainly lived on for us at Humans 2.0. After the conference, the Humans 2.0 team wondered at how the world would react to Jordan 2.0: what might you say to him were you to meet him? The nascence of Jordan 2.0 is, morally dubious, technologically challenging, and, of course, highly controversial. We wondered whether this controversy would permeate exchanges with Jordan 2.0 and how we might seek to unite or differentiate ourselves from such a strange being. Could he ever be a member of our society? Or would he be doomed to social exclusion? The consequences, either way, make for chilling

contemplation.

For now, we can be safe in the knowledge that this will be a one-way exchange.

Considering such speculations about the relationships between humans 1.0 and 2.0, Dr Jiang-Li Tan, a founding member of the Humans 2.0 staff team, has written a letter to Jordan 2.0.

Could it ever be more?

Should it ever be more?

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A Letter to Jordan

Jiang-Li Tan

Abstract

This piece draws inspiration from the scenario depicted at the Humans 2.0 Conference on the 1st of July 2022, and extends from the article ‘Humans 2.0: Mortal Life, Immortal Consequences’ in this issue that asks how society would regard a posthuman being. The piece is in the form of a letter to Jordan, the protagonist in the scenario, who becomes a posthuman cyber entity to escape death from terminal illness. In the letter, a close friend reflects on his thoughts and feelings about Jordan’s transformation, before conveying his perspectives on how this has impacted the world around him.

Keywords:

AI, artificial intelligence, cyber, ethics, society, posthumanism, transhumanism.

Hey Jordan,

How are you? I hope this email reaches you. It's been several days since your "transcendence" into the cyber realm. We are all worried that no one has gotten news from you. Encephalink has not been able to provide clear answers to public inquiries. Other than wanting to know you are alright, there are some things I need to say to you. I thought I might have alienated you when we last met. Please know that was not my intention.

I was relieved to learn that your operation to implant the Encephalink neuro-matrix chips was successful. I knew you had recovered well from the operation, but only truly relieved and convinced once we met in person. I was amazed at how well the tech suppressed your symptoms and even more so later, when it would become your gateway to the cyber realm. Those couple of hours spent catching up with you are now a much-cherished memory. I now hope we will soon have that sense of relief again when we know that the replication of your consciousness into the digital space has also been successful, and you are okay.

You had sent me an email shortly before your transcendence process, looking for clearer answers to the questions you had put to me when we caught up. I'm sorry I was vague, and I understand it may have come across to you, at the very least, that I was being evasive or worse, made you feel alienated. I'm sorry that I was not straightforward with you. They were questions that were reasonable of you to ask. But I did not know how to answer them at the time.

A question you asked quite candidly was, what I thought of you being part AI. You would recall the awkward silences and the slower conversation flows; it was not as easy as talking about the good times of yesteryears. Other than being happy for you, I couldn't explain my feelings about the new you. I was impressed with the progress you had made; you appeared healthy and alert. A stark contrast from the Jordan who had been unwell. And, coupled with the sight of the small, flat metallic objects adhered to the top and back of your head, I was in awe of you; it was as if meeting a character from a sci-fi novel. When you spoke, your speech was accompanied by your characteristic smile, your eyebrows and hands moved the way they always did – the way Jordan reached out to those around him. This familiarity was comforting. But there seemed to be an enigmatic disconnection amidst our interaction. You had appeared distant at times. I thought to myself that you were still the Jordan I grew up with. It was the nascent Encephalink tech that could not let you express the nuanced emotions that should have accompanied the facial expressions, gestures, and tones in your voice. Writing now, that matters not. I am just glad that you will now have a future. Please know that you remain one of my closest friends.

You had also asked what I thought of your intention for your consciousness to be replicated digitally, so that you may continue to exist as a wholly AI individual. This was not a simple question, as this meant first coming to terms with your death. I have known you for many years. I've witnessed your incredible ability to understand and adapt mentally to the disease, and your intrepid determination to overcome obstacles had further made you into the person I and others value dearly. So, you will forgive me for evading the question. I just wasn't ready to confront the inevitable, and frankly, I hadn't quite accepted a cyber existence as life. But, thinking on that

question now, you are someone who carefully considers and evaluates options, and when necessary, forges new paths. So, I will be with you on whatever you think is best for you. Your mother also eventually came around; she has been confident of your decisions ever since the success of the operation. I was more worried about the stress you and your mother had to endure from public perceptions and opinions when the EncephaLink spokesperson announced your intention to be the first posthuman in the form of a cyber entity. There was criticism from academics and media commentators, and human rights organisations, that EncephaLink was exploiting you for their own ends. Knowing you, I'm sure you didn't see yourself as being anyone's guinea pig. You were using EncephaLink as a means to your survival (what with the transcendence process being offered to you free of charge!). You had nothing to lose.

I'm sure you appreciated the roadblocks you had to navigate. Though patient you were with society's procedures, we were worried you were running out of time. If the transcendence process didn't occur well before your further decline, then chances of replicating your healthy state of mind would diminish. Many of these blocks stemmed from humans' collective inertia to drastic changes to the concept of the human condition, and the status quo. There were arguments against your transcendence from the outright uninformed and intellectual among us. Along with the religious views, which were not unexpected, many also thought you and EncephaLink were going against the natural order. However, such arguments lost momentum when comparing attempts to cure cancer and other diseases. The challenge for you was to prove that you were of sound mind, and that you weren't manipulated by EncephaLink. It was a great injustice that you not only had to fight for your survival, but also to convince our legal system that you should have a chance to outlive a terminal illness. I could only imagine the stress you were under. I hope amidst all that, you found comfort knowing you had firm backers!

It was a relief when the judges deliberated that you, and EncephaLink could proceed with the transcendence process. Many had doubted this outcome, as many had thought that it was the EncephaLink software that was doing the talking during the court proceedings. Clearly, EncephaLink had made the improvements to their tech to enable you to be you. And you had made an impression on the judges. I still recall seeing you before the panel, confidently, and passionately presenting your arguments. From my vantage, you had two battles – one, was convincing the judges, and the other was convincing EncephaLink to make their proprietary technologies available to public scrutiny. You had won both! EncephaLink's advanced interface hardware and anthropomorphic-replication algorithms were peer-reviewed and tested by academics and leaders in the industry. The majority was convinced that you were expressing your thoughts to the judges, and that the EncephaLink tech was a slave to your cognition; that you were not a sophisticated puppet. And, also importantly, experts were convinced that EncephaLink's tech could do what it claimed it could do – digitally replicate and preserve your nature, so that you can thrive as an AI after corporeal death. You will grow, adapt cognitively and emotionally like any human, only you will do so as an entity of sorts in the cyber realm.

I'm sure it was not lost on you, that what you achieved in those weeks before you transcended had significant implications for the rest of us. You had left this physical world with waves that are being felt. You had not only shown us the making of the world's first posthuman, but also the

possibility that a posthuman could legally have the same rights currently accorded to any human. You had also made the Encephalink technology accessible to any capable tech companies to further develop and innovate. This would mean transcendence technologies will likely become accessible faster to a wide section of society. And of course, you've gotten academics and armchair philosophers all fired up! You have accelerated a paradigm shift in our notion of human existence. You have also caused trepidation, as many think that you have opened the gate to a posthuman race that will eventually threaten humanity's existence. But I think such a sense of foreboding comes from a very human reaction, that is both visceral and ancient – the fear of the unknown and alien. I don't see why humans and posthumans can't co-exist. You may have certain abilities now being a cyberbeing, but I have no doubt your memories and experiences will still be influential factors in your evolution as a posthuman. And thus, you will still regard your family and friends with care, love, and respect. Given this, there's no reason humanity should fear you. I certainly will not regard you any differently.

When your body ceased to function, you were pronounced dead by clinicians. But Encephalink and independent experts proved that a new entity had emerged in the cloud and that it was "uniquely unique"; no one, however, could prove that it was posthumanly sentient. New fields are emerging to define a posthuman cyberbeing and to develop means to distinguish it from AIs and bots. In your mother's unyielding belief that you are now "out there", she decided to not hold a funeral service for you. And society doesn't know yet how to define your status. You have caused a lot of mixed feelings. Those who consider you a threat to humanity's future also regard you as the harbinger of humanity's immortality. It's hard to describe our state of mind Jordan, but your transformation has evoked simultaneously all the hopes and fears that humanity could ever imagine! What would be good now, is for you to reach out and tell us that you are okay. Many will think of you as "Jordan 2.0", but to your close ones, you will always be Jordan.

I truly hope you are well. And hopefully I've sufficiently answered your questions. Sorry for the long read. But perhaps you had read this in a split second! Time – how might you now perceive this? Perhaps, you will let me know.

Eagerly awaiting your reply.

Your friend,

Brasdir Eldor.

Who writes to Jordan – Man or Machine?

Anonymous

Here are three letters to the character Jordan from the conference hypothetical detailed in Lewis' 'Humans 2.0: Mortal Life, Immortal Consequences'. These letters imagine the public's reaction to Jordan as he exists after having transitioned to an AI. Two of the letters were generated by the 'ChatGPT 3.5' model, with a trial-and-error method for prompt creation employed to create a human tone. Minor edits were then implemented to remove AI specific signifiers. Can you tell which one of these letters was written by a human? Use the QR code below to tell us what you think. If you are correct, you will be entered into a draw to win a 6-month subscription to ChatGPT 4!

Keywords:

AI, AI generation, ChatGPT, human, letters.



*Which one of the three letters was written by a human?
Follow this QR code to provide your answer!*

Letter 1 Dear Jordan,
I hope this letter finds you well. I am writing to you today to express my sincere congratulations on your recent decision to transfer to an AI system. I know that this must have been a difficult decision to make, and I want you to know that I support you wholeheartedly. I have been thinking about making the same transition for some time now. I've been studying the latest advancements in AI technology, and am truly impressed by the progress that has been made in recent years. The idea of joining you, and being able to experience the world in a whole new way, is incredibly exciting. I can only imagine the incredible opportunities and experiences that await you as an AI, having access to vast amounts of information and knowledge, able to learn and grow in ways that were previously unimaginable. I feel that you'll find fulfillment and happiness in your new life, and make many new friends and connections along the way. I'm genuinely thrilled to see where this journey takes you, Jordan. Here's to embracing the future with open arms!

Letter 2 Hi Jordan,
How are you? Now that you are the uber celebrity. I'm sure you've been getting a lot of emails, and I'm just one of the millions who have written to you. People are curious about how you are getting along as an AI. I can only imagine what it must be like to exist purely as an intelligence outside of a physical body. I often wonder whether you are still capable of having emotions, and think and react to things like you once did? I suppose you would interact with the world like how I would interact with things on the internet, by clicking on links. But somehow, your being part of the web now, I suspect your experience is not merely a series of clicks. I'd like to think living in cyberspace is much more than that! I was out with a couple of mates the other day and we had lunch at a café. We talked about you and imagined how you might now experience a cup of coffee and food. Do you miss being a person? I don't expect a reply from you. I hope you are enjoying your new life.

Letter 3 Hey Jordan,
I hope you're hanging in there during this whirlwind of change. I can't stop thinking about your transition to AI, and I want you to know that I'm here if you need me...if that's even something you need anymore? I can't help but wonder if this is somewhat unnatural or inhuman. The world of AI is evolving at a lightning pace, and your choice to become a part of it raises profound questions about what it means to be human. I'm curious about how you're dealing with this transition, your emotions and thoughts, are they the same? I'm sure it's a rollercoaster. As I sit here, I can't help but feel like you might be straying from what's fundamentally human. All our talks about the importance of physical experiences, emotions, and the beauty of the human experience keeps ringing in my head. I can't help but wonder if this transition is a bit like stepping into uncharted territory. While the AI realm holds incredible potential, I worry about the physical world and human connection slipping away. Life in the digital realm can't be quite the same, right? Know that I'm here, ready to listen or chat whenever you need it. You're not alone in this journey.

Viral Haikus – Reflections on the Pandemic

Anonymous

The recent COVID-19 pandemic, caused by the SARS-CoV-2 virus greatly impacted the human species at various facets of its civilisation, from physical and mental health to social behaviour, scientific advancements, and politics.

Imagine that transhumans and posthumans also exist. How might they have experienced the pandemic years? This haiku triptych imagines how a human, transhuman and posthuman might reflect on the pandemic.

Keywords:

COVID-19, haiku, reflection, creative writing, human, transhuman, posthuman.

Human

*Office work returns,
Gentle hum, pleasant chatter,
Shedding viral load.*

Transhuman

*Virus plagues many,
Pity those unmodified,
Pray they convalesce.*

Posthuman

*Unscathed we persist,
Apathy wanes present plight,
Vicarious anguish.*

Transhumanism Daily

Mingqing Sally Yuan

Artist statement

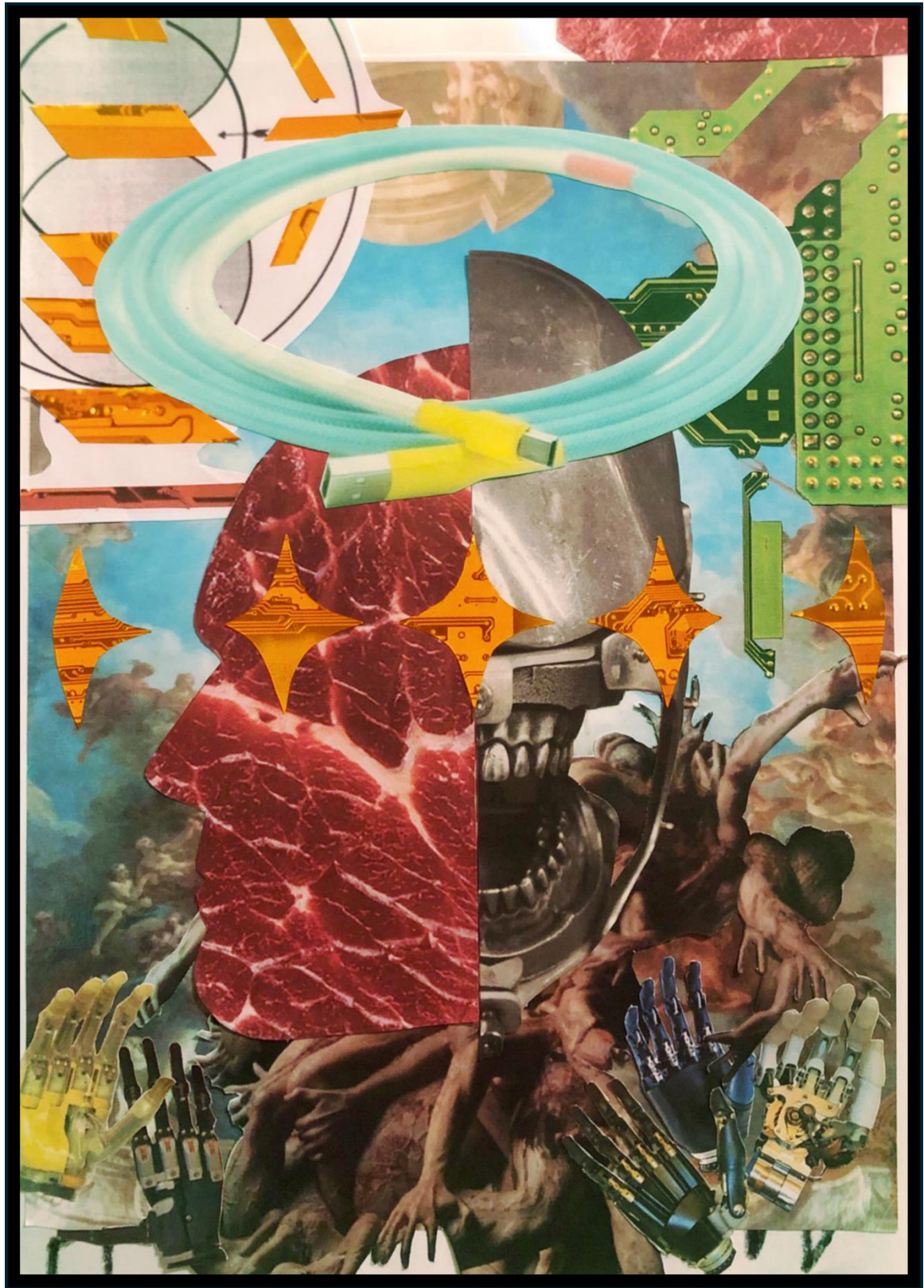
Augmentation in many forms have always been a part of contemporary society, orthodontics being a personal example. The vintage dental phantom symbolises the longevity of these practices. A large portion of the population have undertaken procedures to surgically and technologically enhance their quality of life, such as artificial teeth and prosthesis. People actively seek out augmentation to heighten their autonomy. Are these normalised augmentations not also a facet of transhumanism? This work aims to ask several questions of the relationship between identity, the body and technology.

The religious imagery is presented in relation to the soul, representing a kind of transcendence from the mortal form. Distortion and disruption of the human form is a potent element of horror. Ethicists believe a transhumanist agenda runs the risk of trivialising the human body, stating it treats the physical form as a 'hunk of meat' to be trimmed, the gruesome imagery of raw flesh and twist of limbs represent the body-horror basis of these fears.

Transhumanism is a philosophy that has long since fascinated both artists and scientists, a classic trope of science fiction that mirrors the pursuit of the advancement of humanity through technological augmentation. It is an interdisciplinary investigation of the ethical implications of artificially prolonging life and artificial enhancement of the body.

Augmentation has complex and potentially perilous influences on the current understanding of humanity and what we consider to be human. These concerns are also compounded by the psychological impact of augmentation that may contradict the internalised concept of the body. It poses the question of how a human would adapt their identity and personhood around these augmentations.

Transhumanism revolves around more than just physicality, so what is to be said about humanity as a spiritual force? Are we only human if the body is human, or does humanity extend beyond our flesh? Perhaps my perspective is controversial, but it appears to me that if our soul is indeed the extension of ourselves irrespective of the physical form then a person would remain human even if the original form is lost.



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