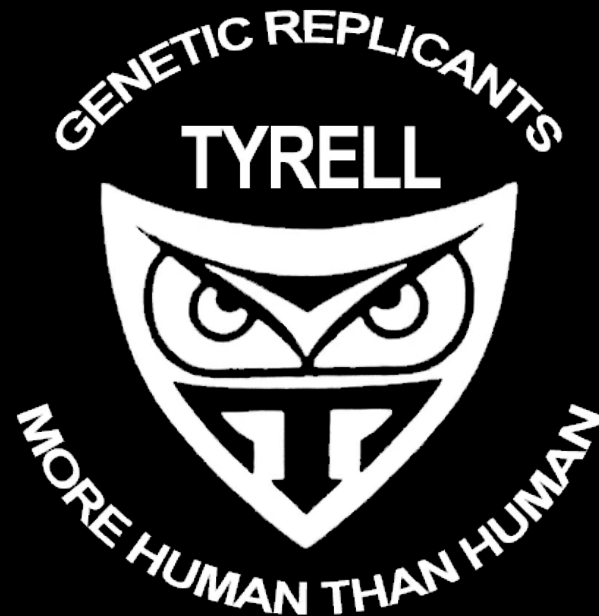
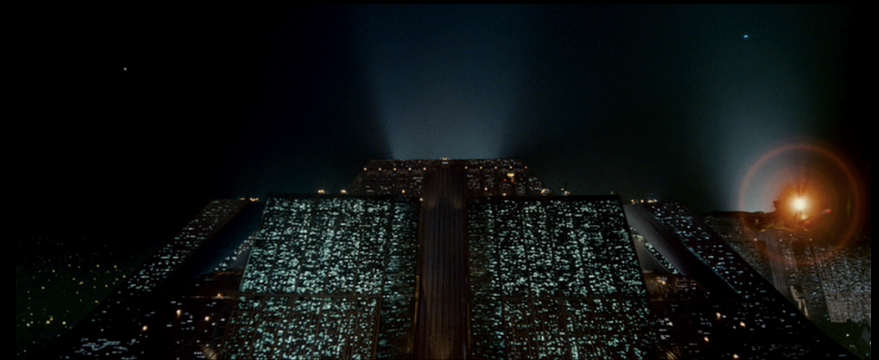


COMPANY LAW AND THE EMERGENCE OF NOVEL BEINGS



THE QUESTION

- To determine:
 - **Whether company law can, or should, be the primary means of regulating novel beings, and by extension their potential wide-ranging societal impacts.**
- Challenges for law posed by emerging technologies liable to give rise to morally significant beings
- Untapped area of legal and philosophical scholarship
- Three key areas:
 - **Defining Status**
 - **Development**
 - **Operation and Disposal**



INVESTIGATORS

Sarah:

- Company Law
- Corporate Governance

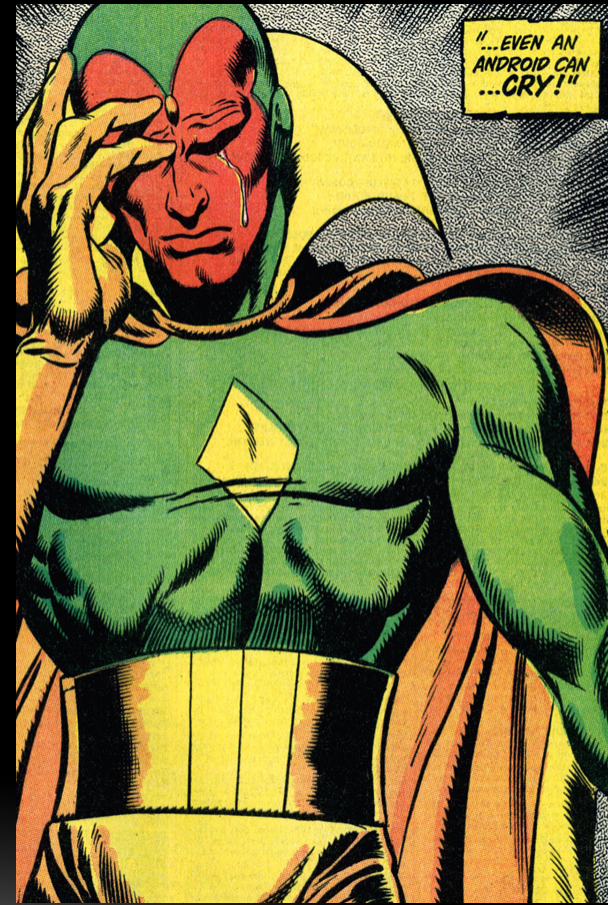
David:

- Moral Philosophy/ Ethics of biotechnology and consciousness/ Neuroscience
- Artificial Intelligence
- Ownership of novel consciousnesses
- What makes beings significant to the law?

TECHNOLOGIES FOR NOVEL BEINGS

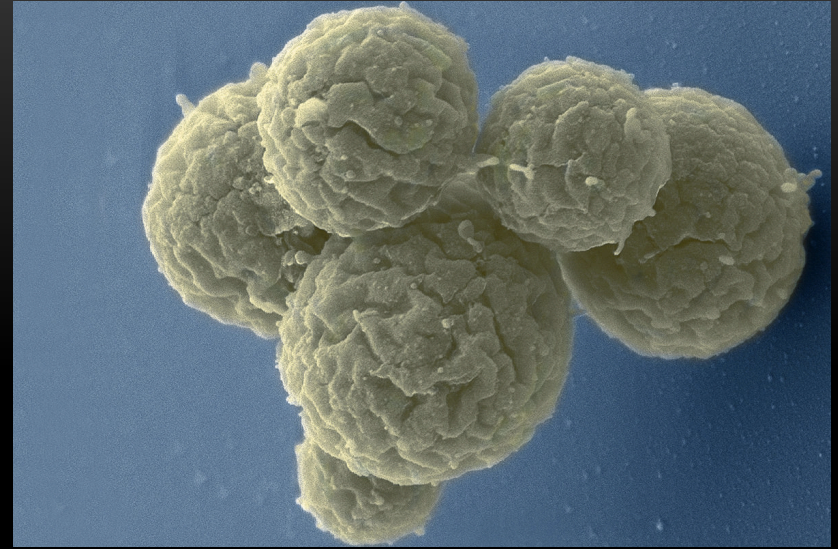
HERITABLE GENOME EDITING

ARTIFICIAL INTELLIGENCE



COMPANIES

- Synthetic Genomics Inc- **JCVI-Syn3.0**
 - Partnerships with:
 - Novartis (vaccines)
 - United Therapeutics (organs)
 - Monsanto (crops)
 - Synpromics- Pharma, biotech
 - Spinout companies from Universities

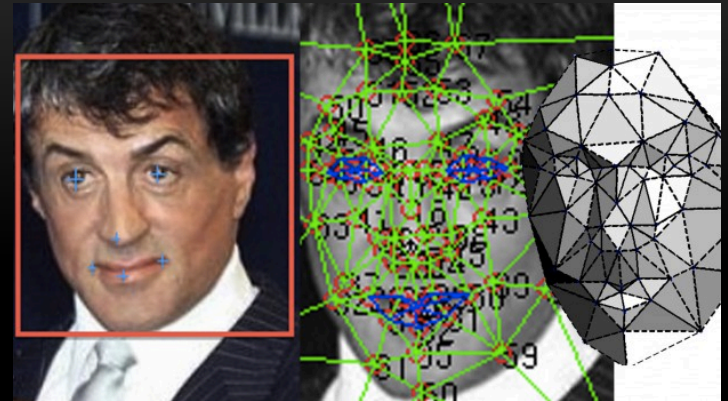


- **CYC** (Cycorp)- AI with human-like reasoning, inference engine
- **Google Brain** (Alphabet subsidiary)- deep learning
- **FAIR** (Facebook)- language and memory
- Microsoft- logic, verbal reasoning- analogies and synonyms. High human IQ.



PROBLEMATIC EXAMPLES

- **Deepmind / X lab** (Alphabet)- neural network
 - AlphaGo, DeepDream
 - Able to train itself from scratch (Breakout)
 - Identifying cancers, eye conditions
 - Unprompted learned to identify human faces in motion
 - **Black box-** “We can build these models, but we don’t know how they work.”
- **Golden Rice** Syngenta (and others)
 - One reason for stalled introduction- (unfounded) fear of GMOs
 - Stakeholder primacy- profit led
 - Need for increased social responsibility codes?



NOVEL CONSCIOUSNESS

- **Locke**- 'The perception of what passes in a man's own mind'
 - Awareness - Sentience - Subjectivity - Knowledge - Intention - Introspection - Experience
 - **Highly likely we will create- or cause creation of- conscious beings that aren't *Homo sapiens***
 - Novel lifeforms that can think and reason
-

BROAD CHALLENGES

- **Personhood**
 - philosophical
 - legal
 - corporate

- **Legal responsibility**



AIMS

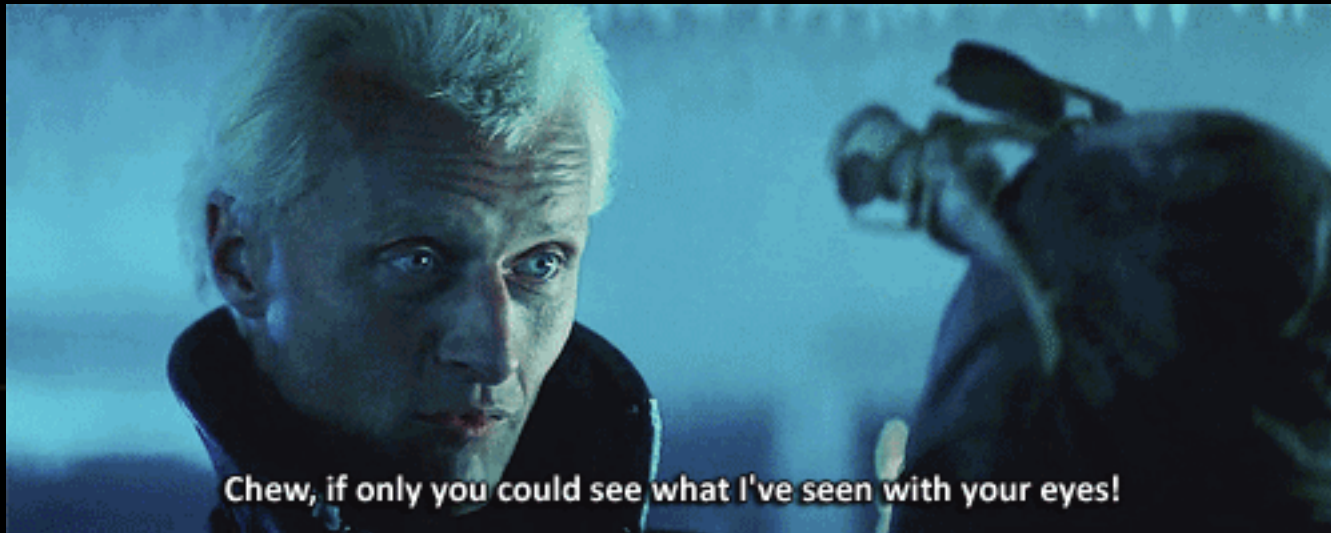
- **Defining status**
 - Analysis of legal status for novel beings for the purposes of regulation.
 - **Development:**
 - Whether the drivers of public companies (i.e. shareholder primacy) are appropriate drivers of morally significant technological development.
 - **Operation and Disposal:**
 - Who or what entity is responsible for the lifespan of the potential being, its deployment, and ultimate fate.
-

EVENTS

- **Dec/ Jan: Roundtable** (London) for invited stakeholders, advisory board
 - Establish primary concerns
 - **March/ April: Symposium 1** (NCL) for roundtable participants and other invitees identified at roundtable
 - Defining legal status
 - Corporate electronic personality (eg proposed EU regs)
 - **June/ July: Symposium 2** (NCL)
 - Development
 - Operation and Disposal
 - Lack of direct legislation
 - **Sept/ Oct: Conference** (London) for invited speakers, open attendees
 - Addressing core questions, future work
-

OUTPUTS

- Peer reviewed research articles (3-6) including solo and co-authored
- Possible edited collection/ special issue
- Establishment of new and unique network
- Future funding application



FUTURE

- Broad project
- Only the first steps
- Implementation is a major hurdle beyond our scope
- Future significant funding project to expand the concepts set out this year
 - Fully conscious AI- capacity
 - Legal ramifications



MATERIALS

- Companies Act 2006
- European Parliament Committee on Legal Affairs. Draft Report With Recommendations To The Commission On Civil Law Rules On Robotics (2015/2103(INL)). Brussels; 2016
- Gillick v. West Norfolk and Wisbech AHA [1986] A.C. 112
House of Commons Science and Technology Committee. Report on Robotics and Artificial Intelligence. London, 2016, HC145
- National Science and Technology Council Committee on Technology. Preparing For The Future Of Artificial Intelligence. Washington D.C.: Executive Office of the President; 2016.
- See Lawrence DR. More Human than Human. Cambridge Quarterly of Healthcare Ethics. 2017 Jul;26(3):476-90.
- Lawrence DR, Palacios-González C, Harris J. Artificial Intelligence: The Shylock Syndrome. Cambridge Quarterly of Healthcare Ethics 2016, 25(2), 250-261.

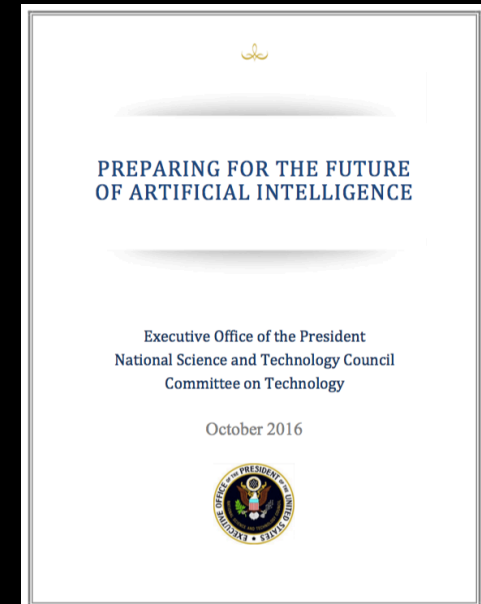
COMMONS SCIENCE AND TECHNOLOGY COMMITTEE FIFTH REPORT

- Issued September 2016, no active followup
- No definition offered
 - 'a set of statistical tools and algorithms that combine to form, in part, intelligent software that specializes in a single area or task. This type of software is an evolving assemblage of technologies that enable computers to **simulate elements of human behaviour such as learning, reasoning and classification**'
- Calls for
 - **Strategy for regulation**
 - Setup of Commission on AI
 - Setup of Robotics and Autonomous Systems Council
- Government response does not address calls.



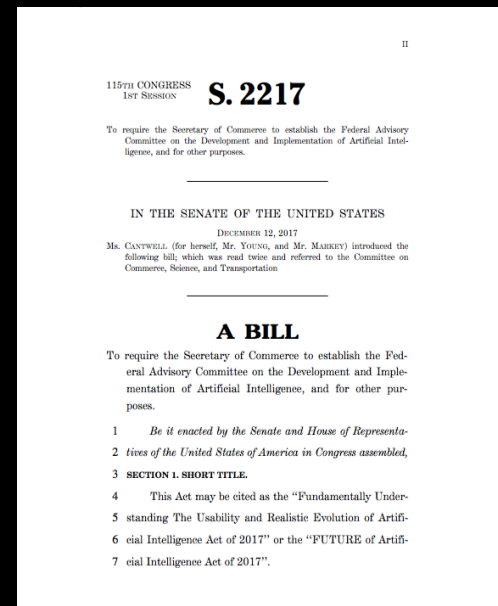
OBAMA WHITE HOUSE NATIONAL OFFICE OF SCIENCE AND TECHNOLOGY REPORT

- Issued October 2016; all reference removed under Trump White House.
- No definition offered
 - “...what is important is that a core objective of AI research and applications over the years has been to automate or replicate intelligent behavior.”
- Calls for
 - Agencies to draw on technical expertise when setting regulatory policy
 - Product based regulation
 - ‘DARPA- like AI agency- high risk, high reward’
 - AI monitoring committee
 - International R&D engagement



US FUTURE OF AI BILL

- Bipartisan Bill introduced in Senate December 2017
 - Referred to Committee on Commerce, Science, and Transportation
- Definition offered
 - Autonomous, rational systems possibly including **human-like cognitive processing**.
 - Also defines **Artificial General Intelligence** and 'Narrow' AI.
- Calls for
 - Establishment of Federal Advisory Committee on the Development and Implementation of Artificial Intelligence



EUROPEAN PARLIAMENT CIVIL LAW RULES ON ROBOTICS

- Proposed by Legal Affairs Committee; Report agreed January 2017, issued to Parliament
- Resolution adopted February 2017
- Commission response and public consultation June 2017
- Calls for
 - Definition of AI on grounds of capacity for: Autonomy / Inter-connectivity / Experiential Learning / Adaptability
 - Liability rules- autonomous cars
 - ‘Electronic personhood’
 - New Agency with oversight of AI/ Robotics
 - Denied by European Commission



ROLE OF COMPANIES AND COMPANY LAW IN DEVELOPMENT OF NOVEL BEINGS

- Multinational Corporations
 - AI and genetech currently being developed, uncontrolled
- Role of Industry?
- Role of Company Law?
- Mistakes and public concern
- Ethical considerations for public, and for future technologies themselves
- How is the technology developed?
 - Purpose
 - Why developed?
 - How will it be used?
 - (How) Should it be disposed of?
 - All currently in control of large corporations



OTHER POTENTIAL REGULATORY APPROACHES

- Intellectual Property?
- Criminal Law?
- Tort/ Negligence?
- Data and Privacy Law?



LEGAL DEFINITIONS FOR CONSCIOUSNESS AND PERSONHOOD

- How do we understand consciousness?
- When might one of these technologies warrant this description?
- Proportionality of responsibility? Sliding scale?
- Consciousness vs capacity

- Personhood

- Corporate Personhood?
- Philosophical Personhood?
 - (Self-Awareness, Narrative Identity, Moral Agency)
- EP proposal of 'Electronic Personhood'

