

MAKE THE

SMART MOVE

If Ethical Technological Innovation is the Challenge, is Science Fiction the Solution?

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Profile: Dr. Ciara Heavin

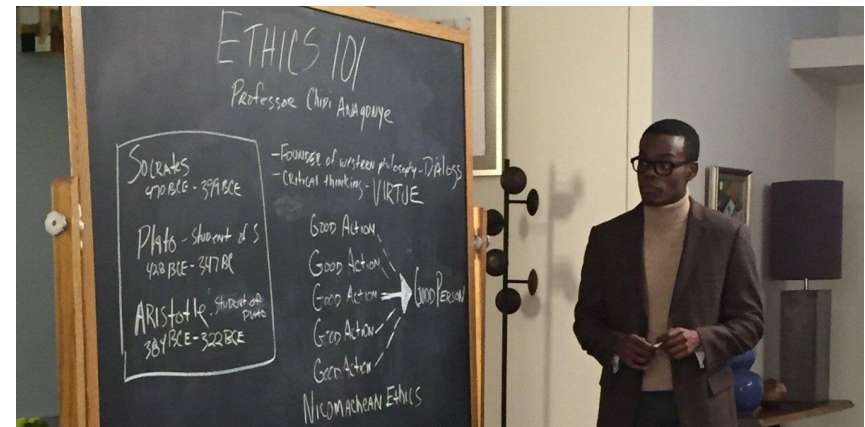
@c_heavin

- Senior Lecturer in Business Information Systems, UCC
- Co-Director of the Health Information Systems Research Centre (HISRC)
- Teaching areas:
 - Digital Health, Analysis and Design, Data Modelling and Database Design, Opportunity Assessment and Recognition.
- Research interests:
 - Health Information Systems/Digital Health, Decision Support Systems and Analytics.
- A selection of Sci- Fi / Horror / Fantasy influences
 - Atwood, M., Orwell, G., Pullman, P., Roth, V., Rowling, J.K., King, S., Lewis, C.S., Tolkien, J.R.R., Wells, H.G.

Why embed ethics in the IS/IT curriculum?

What is Ethics?

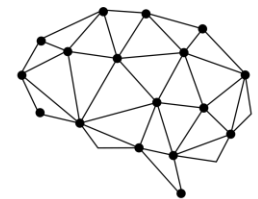
- The issues of ethics, privacy, and, trust are not new.
- Ethics refers to “moral rules, codes, or principles which provide guidelines for right and truthful behavior in specific situations” (Lewis 1985, p. 382).
- There are diverse schools of thoughts on ethical decision-making including Consequence (Teleological moral systems) (Sinnott-Armstrong, 2019), Duty (Deontological moral systems) (Alexander and Moore, 2016), and Virtue (Virtue-based ethical theories) (Hursthouse, 1999) perspectives.



The Good Place

Why Teach Ethics?

- As the rate of technological change increases, and innovative technologies are embedded in everything we do, governments, organizations, and individual citizens are exposed to new ethical dilemmas arising from technological innovation.
- Zuboff (2015) characterizes this new society as 'Big Other' - "the sovereign power of a near future that annihilates the freedom achieved by the rule of law. It is a new regime of independent and independently controlled facts that supplants the need for contracts, governance, and the dynamism of a market democracy" (pp. 81-82).
- Emerging technologies have the potential to affect who we date, what we buy, our reputation, how we vote.....
- "It is difficult to predict...the influence that hyper-connectivity and our increasing interaction with machines will have on the evolution of society, the economy, and on people's daily lives" (Torras, 2019).



Cambridge
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Why Teach Ethics?

- Students have difficulty appreciating the human cost of unethical acts (Promislo and Giacalone 2013).
- However, with the emergence of sophisticated AI/ML and Big Data Analytics techniques "Computer science faculty have a responsibility to teach students to recognize both the larger ethical issues and particular responsibilities that are part and parcel of their work as technologists." (Burton, Goldsmith, and Mattei, 2018).
- There is broad agreement that there is a growing need for an ethics curriculum in fields such as Computer Science and Information Systems (Burton, Goldsmith, and Mattei, 2018).
- In parallel, there is a growing demand for employee ethics training programmes, for those designing, building, and using AI technology (Forbes Insights, 2018).

Potential Methods of Teaching Ethics

- Case Studies
- Guest Speakers
- News Stories
- Prototyping
- Viewing Art



How About Using Science Fiction?

- A number of US universities have developed courses using Science Fiction to teach Ethics and human value (Burton, Goldsmith, and Mattei, 2018; Torras, 2019)
- It has been suggested that this a safe, realistic, and interesting way to consider what is possible, legal, and ethical in terms of technological innovation.
- Science fiction allows for social and cultural introspection and for inspiring multiple interpretive possibilities (Zigo and Moore 2004)

Science Fiction Teaching Methods

- Reading/Watching science fiction
- Writing short stories
- Science Fiction Prototypes
- Games





Profile: Dr. Simon Woodworth

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- Lecturer in Business Information Systems, UCC
- 15 years' experience in telecommunications industry
- Teaching areas:
 - Python & Java Programming, data strategy, data management, ethical hacking
- Research interests:
 - Health informatics, cyber risk, data analytics



- Sci- Fi / Horror / Fantasy influences

- Aldiss, Asimov, Banks, Barker, Baxter, Bear, Brin, Card, Clarke, Corey, Donaldson, Hamilton, Heinlein, Frank Herbert, Hertling, Huxley, Koontz, Stephen, King, CS, Lewis, Niven, Orwell, Pournelle, PKD, Reynolds, Simmons, Stephenson, Tilley, Tolkien, Tchaikovsky, Weir, Wyndham.

How does Science Fiction engage with Ethical Dilemmas?



Movies and TV

Source	Synopsis	Dilemma
2001: A Space Odyssey, 2010: Odyssey Two	HAL9000 resolves conflicting imperatives by killing 4 astronauts	AI finding unexpected solutions to problems.
Terminator 1-3	Skynet becomes self – aware, proceeds to kill humans	How to limit reach of AI while retaining effectiveness.
Person of Interest	Finch repeatedly stops the Machine from trying to escape	
Black Mirror	Society governed by social media scoring	Aggregation of data and combination of existing technologies to disastrous effect. How to decide appropriate use of data.
Captain America: The Winter Soldier	Use of helicarriers to eliminate terrorists	
SlaughterBots	Autonomous weapons tied to social media	
Sneakers	Device cracks all known cryptography	Privacy vs government oversight and control.

Literature

Source	Synopsis	Dilemma
Hyperion Cantos	Human race unknowingly enslaved by AI TechnoCore	How dependent do we want to be on information systems?
Avogadro Corp	ELOPE program accidentally exceeds designer's expectations	Control of runaway AI
Artificial Condition	Sentient AI charts a moral path	Can we design AI to be benevolent? What does benevolent mean? Will the AI interpret things the same way as us? What ethics do we give autonomous machines?
I, Robot; Robots and Empire; Foundation and Earth	3 Laws of Robotics; Ultimately Robot Giskard understands he is permitted to harm individual humans to preserve humanity.	
The Light Of Other Days	Wormhole camera makes privacy impossible	Is a society with no privacy safer?
Billion dollar brain*	Large computer is used to direct espionage operations	Use of large amounts of data and computational power for nefarious purpose.

* 1966 Len Deighton Novel. Not Sci – Fi but rather prescient

Questions

1. Are we seeing similar scenarios in real life?
2. Can we think of examples where existing information systems have done harm to humans?
3. Is the problem with the software or the humans that write it?
4. Do we need a Hippocratic oath for information systems professionals?
5. When we teach students, how to we get them to think of realistic worst-case scenarios?



Profile: Dr. Carolanne Mahony

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- Lecturer in Business Information Systems, UCC
- Co-Director Design and Development of Digital Business
- Teaching areas:
 - Web Development, Systems Analysis and Design, Designing Systems, Information Systems Solutions
- Research interests:
 - The impact of systems of individuals and society, information processing and use, eHealth, teaching & learning.
- Sci- Fi / Horror / Fantasy influences
 - Abrams, Asimov, Armstrong, Briggs, Canavan, Cameron, Cashore, Clare, Collins, Dick, Ende, King, Koontz, Lee, Lucas, Maas, Martin, Nix, Orwell, Paolini, Rowling, Sanderson, Scott, Spielberg, Snyder, Tolkien, Villeneuve, Wolverton, Wells

What is the impact of Science Fiction?

New idioms from the fringes of the Internet

Sciencefixtion

noun

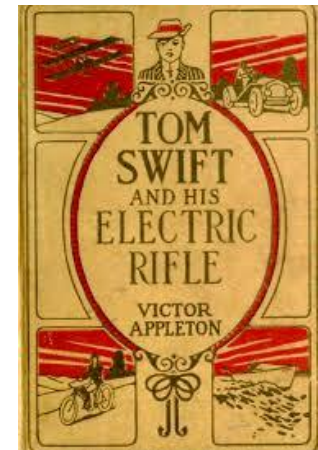
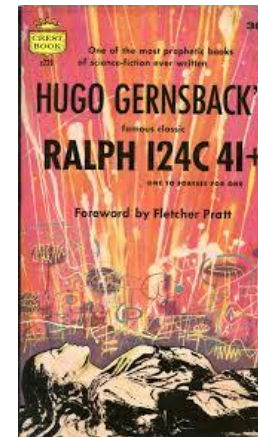
The use of science fiction to "fix the world",
in particular by creating new narratives
of our relationship to the planet

photo: @nicolasnova

nearfuturelaboratory.com

Impact of Science Fiction

- The first U.S. Navy submarine and the modern helicopter were inspired by Jules Verne.
- The Star Trek communicator inspired the mobile phone, the TNG PADD predates the iPad.
- Hugo Gernsback in “Ralph 124C 41+” predicted TV, video calling, transatlantic flight, among other things.
- The word TASER stands for: **T**homas **A** Swift's **E**lectric **R**ifle, after a fictional series.



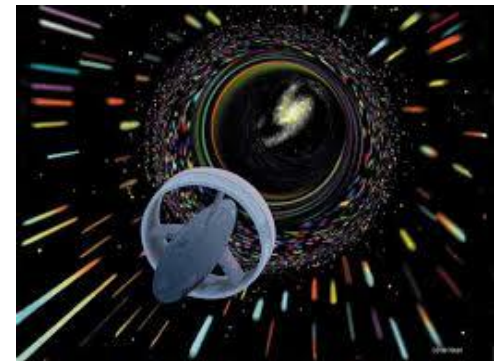
Impact of Science Fiction

- Post 9/11, the US Government consulted with Hollywood producers on possible large scale threat scenarios.
- Intel hired science fiction writers to write short stories imagining future technology
- The French Army is recruiting science fiction writers and futurologists to foresee future threats and consider potential defences. (This was done by the US government in Niven / Pournelle's novel "Footfall").
- Modern wormhole theory was inspired by physicist Kip Thorne's involvement with the movie "Contact."
- Minority Report influenced user interface design



Future Technology

- The Japanese government is offering \$1billion in research funding for projects in the areas of human augmentation and cyborg technologies.
- Spanish research in China have been experimenting with human – animal chimeras.
- Quantum computing is slowly entering the mainstream with service offerings now available to users from IBM, Microsoft, D-Wave and Rigetti.
- Companies like Facebook are researching brain computer-interfaces
- A small NASA research team has been researching Warp Drive based in part on Miguel Alcubierre's theoretical work.



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