

"Ex Machina" and the spectre of artificial intelligence

I just got around to watching *Ex Machina*, written and directed by Alex Garland. It is a thought provoking film. For those that have not watched it, who intend on doing so, I shall avoid giving away any major plot points. However, there are general themes that are covered in the film, which I think are worth expanding upon.

It is a story about artificial intelligence, set in the high-tech home of a tech billionaire in a secluded forest. The film stars Domhnall Gleeson, Alicia Vikander, Sonoya Mizuno and Oscar Isaac. I had not seen any of these actors' previous roles, which I consider to be an advantage, because the unfamiliarity helped me to focus purely on the characters.

The acting is very good, and the characters are very plausible. The small size of the cast, coupled with the well-written script, natural dialogue, and high production values, reminds me of other science fiction films of recent years - notably Duncan Jones's *Moon* from 2009, Jack Schreier's *Robot and Frank* (2012), and Spike Jonze's *Her* (2013). This is a school of science fiction that shares the same aesthetic: clean lines and antiseptic environments, concealing the powerful technologies of the near future. It is character-driven, unlike so much blockbuster SF, which is dominated by special effects. In this respect, there are strong similarities to *Monsters*, Gareth Edwards's seminal debut from 2010.

As a fan of science fiction, I see these developments as wholly positive. Although I am a sucker for a sci-fi blockbuster done well, who can remember the last time they saw a really, really good example of the breed? 2014's *Interstellar* was good, if over-long. *Gravity* (2013) and *Inception* (2010) were enjoyable. The last time I was really blown away by a big, spectacular sci-fi film, was in 2009, when I watched the reboot of *Star Trek*.

So, while the science fiction blockbuster lies dormant (at least until *Star Wars: Episode VII*...), this well-established trend in making smaller-scale, more intelligent, and more claustrophobic films - which ooze dramatic tension - is a welcome development. And a necessary one. By deliberately setting these films in the near future, here on Earth (or the moon) - rather than some distant star system a thousand years hence - the writers and directors are grappling with technologies that either exist already - in embryonic form - or which may very soon exist. At the absolute centre of this line of inquiry is artificial intelligence.

Strong AI

The notion of "strong AI" - artificial intelligence that equals or exceeds human intelligence in all key areas of thinking - has been foreshadowed since 1920, when Karel Čapek wrote a play called *Rossum's Universal Robots*, about a factory that

makes artificial people who rebel against their human masters. Arthur C Clarke updated this theme for the modern age with his 1968 book, *2001: A Space Odyssey*, which was developed concurrently with the film, directed by Stanley Kubrick. The overarching fear (perhaps "nightmare" would not be too strong a word) has not changed since then; indeed, it has not changed since Mary Shelley's feverish imagination gave rise to *Frankenstein* in 1818: that humanity's ultimate creation would ultimately turn against it, and seek to destroy it.

That remarkable book - written by Shelley between the ages of eighteen and twenty - made use of the alchemy and electrical experiments that engendered such fascination at the time. Subsequent re-imaginings of the fable incorporate the technologies that reflect the times in which they are written. As such, the artificial intelligence depicted on film has become ever more human, ever more subtle, as the gap between our inherited biological "technology" (ourselves) and the next imagined frontier of our manufactured technology has narrowed.

This has led to the kinds of tricky, emotional interactions that have formed the basis for dramatic tension in *Moon*, *Robot and Frank*, *Her*, and more recently, *Ex Machina*. The line between human and machine intelligence has become uncomfortably blurred, until it has disappeared - on an emotional level. Coupled with the far superior powers of cognition on the part of the machines, it is not hard to see why our species might suddenly find itself at a disadvantage. This is supposing, of course, that the machines will be working *against us*, rather than *for us*.

Nick Bostrom delivered a Ted talk recently, in which he asked: [What happens when our computers get smarter than we are?](#) In his assessment, the answer hinges upon how successful we are at instilling our values into the thinking of the nascent super intelligence. Strong AI must be motivated to learn what is most important to us as a species, so that every decision it makes is based on that foundation. His words echo the warning of futurist Nell Watson, who suggested last summer that it may not be enough to simply programme compassion into the next generation of super intelligent machines, because they may simply decide to "kill us out of kindness".

Ex Machina

Which brings us back to *Ex Machina*. How can we expect this hypothetical future race, divorced entirely from biology, to have anything like the same motivations that we do?

In the film, the artificial intelligence finds its home in the head of a beautiful robot woman, played by Alicia Vikander. Her performance, combined with the realistic digital effects that create her body, is sublimely convincing as a physically fragile, emotionally naive being, who nevertheless has palpable psychic energy simmering

beneath her flawless artificial skin, waiting to find a means of expressing itself. She is many things: the caged plaything of a billionaire business tycoon; a testbed for the world's most advanced computer software (and hardware); a disposable prototype in a long series of other prototypes; a puzzle to be worked out. She is the foil for Domhnall Gleeson's character, a lure that drives him to say and do things that a matter of days ago would have been alien to him. His understated displays of anxiety, and panic, as his understanding tries to catch up with the spiraling reality he finds himself in, is brilliant, and absorbing.

The evolution of Gleeson's character takes place over a very few days, and it is a tribute to the filmmakers that his change in demeanour does not feel hurried, or in any way implausible. Such is the emotional intensity within the confines of the house. Watching his character's turmoil in the face of the discoveries he made, and the realisations he came to, I found myself empathising deeply with his situation, and felt that I would have had little option but to at least attempt some of the more desperate endeavours he resorted to towards the end of the film. Why? Because of the entirely human connection he established with something that was not human at all.

Herein lies the lethal danger of creating machines that can match, or outperform us in every mental faculty: they could bend us to their will. In the case of Ava - the robot played by Alicia Vikander - the desire was to be free from her glass prison, and beyond that, her intentions were not specified. She was created using the data resources of the world's largest search engine, and based upon that archive, was able to accurately determine the thoughts and emotions of others by reading the minutest facial tic, and change in vocal pitch. Subterfuge withers under such scrutiny. The examiner becomes the examined. A new force is unleashed upon humanity, which is capable of subverting every inherited biological instinct we have. Once such a being gets a "nose in front", as it were, there will never be any question of catching up. That is why it is important we get this right on the first attempt, if strong AI is even achievable.

As an end note, I would like to praise Oscar Isaac's performance, as the search engine billionaire. His surly, booze-swilling yet fitness-obsessed character engenders few feelings of warmth, and his obsession with building a new race of super-intelligent machines serves to alienate him somewhat from the viewer, as well as the principle character. The gathering suspicion that he has hired his protégé on a pretext, and that his methods and goals are ethically dubious, if not downright sinister, is allowed to take hold quite effortlessly. And yet, what has he done to encourage this? There is no reason to believe that he is developing these machines for malign purposes. When Gleeson asks Isaac, "Why did you make Ava?" Isaac responds: "That's an odd question. Wouldn't you if you could?" and goes on to say: "The arrival of strong artificial intelligence has been inevitable for decades. The variable was 'when' not 'if', so I don't see Ava as a decision, just an evolution."

So, Isaac is a pioneer, or - more prosaically - a facilitator, unleashing the potential of technology. In that respect, he is no different from the chief executives at Google, or Facebook. Or indeed, Robert Oppenheimer, the architect of the first atomic bomb.

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