

Emerging Legal and Policy Trends in Recent Robot Science Fiction

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Introduction

This paper examines popular print science fiction for the past five years (2013-2018) in which robots were essential to the fictional narrative and the plot depended on a legal or policy issue related to robots. It follows in the footsteps of other works which have examined legal and policy trends in science fiction [1] and graphic novels [2], but this paper is specific to robots. An analysis of five books and one novella identified four concerns about robots emerging in the public consciousness: enabling false identities through telepresence, granting robot rights, outlawing artificial intelligence for robots, and ineffectual or missing product liability.

Methodology for Selecting the Candidate Print Fiction

While robotics is a popular topic in print science fiction, fictional treatments do not necessarily touch on legal or policy issues. Out of 44 candidate works, only six involved legal or policy issues.

Candidates for consideration were identified in two ways. One, the nominees for the 2013-2018 Hugo and Nebulas awards were examined for works dealing with robots. The other was a query of science fiction robot best sellers at Amazon. A candidate work of fiction had to contain at least one robot that served either a character or contributed to the plot such that the robot could not be removed without changing the story. For example, in *Raven Stratagem*, robots did not appear to be more than background props throughout the book but suddenly proved pivotal to the ending of the novel. Fantasy robots, particularly golems, were also excluded as this subgenre does not appear to be sufficiently grounded in realizable technological concerns. Cyborgs were also excluded.

The Hugo awards are given annually by the World Science Fiction Society; nominations and voting is open to anyone who pays the registration fees for the WorldCon conference. Hugos reflect popular tastes in fiction. Of the Hugo awards for 2013-2018, six books featured robots (*Provenance*, *A Closed and Common Orbit*, *Seveneves*, *The Dark Between the Stars*, *Neptune's Brood*), three novellas (*All Systems Red*, *Perfect State*, *Big Boys Don't Cry*), one novelette (*Secret Life of Robots*), and four short stories (*Fandom for Robots*, *Carnival 9*, *An Unimaginable Light*, and *Turncoat*). Of these 14 works, only two, *A Closed and Common Orbit* and *All Systems Red*, discussed novel legal or ethical issues, though *An Unimaginable Light* did have "theobots" that appeared to be BDSM versions of the Inquisition.

The Nebula awards are given annually by the Science Fiction and Fantasy Writers of America (SFWA); nominations and voting are restricted only to members of the SFWA. Nebulas are considered more prestigious because voting is by peers. Nebula award eligibility is such that most novels are a year behind the Hugos. Of the Nebula awards for 2013-218, two books incorporated robotics (*Autonomous*, *The Red*), four novellas (*Artificial Condition*, *All Systems Red*, *The Regular*, *Grand jete: The Great Leap*), three novelettes (*Messenger*, *They Shall Salt the Earth with Seeds of Glass*, *The Waiting Stars*), and four short stories (*Fandom for Robotics*, *Carnival Nine*, *Damage*, *A Stretch of Highway Two Lanes Wide*). Of these 13, only two, *Autonomous* and *All Systems Red*, presented a plot or subplot that revolved around a novel legal or ethical issue.

The search of best-selling robot science fiction identified 17 additional candidates: *Artemis*, *Embers of War*, *Heart of Iron*, *Humans Bow Down*, *Lock In*, *Head On*, *Made for Love*, *The Mad Scientist's Daughter*, *Prey of Gods*, *Robogenesis*, *Robot Proletariat*, *The Robots of Gotham*, *Sea of Rust*, *Survival*, *We, Robots*, and *The Wrong Unit*. Of these, only two addressed novel legal or ethical issues (*Head On* and *The Robots of Gotham*).

The candidate pool of 44 print science fiction works was then examined for any legal or ethical themes directly impacting robots. Works that dealt with the morality of sexbots or robot uprisings were excluded from consideration as those themes have been a staple of robot science fiction. A total of six (five books, one novella, zero novelettes, and zero short stories) were found to have novel legal or ethical themes.

As a result, six works of fiction were identified for the purposes of this paper, and it should be noted that four have won, or were finalists for major awards. and all were best-sellers, suggesting that they represent thoughtful ideas. One won two major awards; *All Systems Red* won both the 2018 Nebula and Hugo for best novella. Three were finalists for major awards; *Autonomous* for the 2018 Nebula award for best novel, *A Closed and Common Orbit* for the 2017 Hugo award for best novel, and *Provenance* for the 2018 Hugo for best novel. *Head On* was written by Hugo award winning author John Scalzi, and will be eligible for awards in 2019. The sixth book, *The Robots of Gotham*, was published in 2018 and will be eligible for awards in 2019.

Synopsis of The Six Relevant Works

The six works are organized by date of the future that they envision:

- *Head On* by John Scalzi, 2018, is police procedural that features a protagonist, Chris Shane, who is a member of a minority of people disabled by a paralyzing neurological virus, Haden's syndrome. Haden's, as they are called, commonly use telepresence robots, called Threeps after C3PO, to work and interact with others. Chris is an FBI agent investigating the death of a telerobotic gamer who died while immersed in his robot. There was a strong possibility that the victim has been interacting with one or more unknown people through their Threeps. *Head On* is the second in Scalzi's Near Future series and, in both books, Chris experiences inconveniences and humiliations while using telepresence robots that are similar to what Americans with disabilities probably

encounter. It is set circa 2040.

- *The Robots of Gotham* by Todd McAulty, 2018, is a game lit genre book. The protagonist, Barry Simcoe, works in the United States, which has now been occupied by forces from AI-ruled countries. The US had banned AI just as other countries were embracing it; developments led to human-level intelligence and AI rights. Several countries, such as Canada, have AIs as elected officials, who offer the benefits of optimization, while other countries, such as Venezuela, have a AI fascist dictator. Barry must work with robots, who are friendly to the conquered US, to stop a pandemic. It is set circa 2070.
- *Autonomous* by Annalee Newitz, 2017, is a multiple point of view novel, with one view being that of a sentient military special operations robot named Paladin. Paladin's computer vision system is enhanced with portions of a human visual cortex, donated by a fallen soldier. It embarks on a mutual love affair with its handler and works toward the day that it will have earned its citizenship and can keep its romantic experiences private. It is set circa 2150.
- *All Systems Red* by Martha Wells, 2017, is a humorous novella in the *Murderbot Diaries* series with a snarky security robot as the narrator. It is set in an unspecified future where humans have colonized space with habitats, similar in level of technology to the *Alien* movie franchise. Murderbot is so named because it was responsible for going on a rampage and killing a large number of clients. At the time of the first novella, *All Systems Red*, the robot had been reconditioned, put back into service (without the current clients knowing about its past as a rogue robot), and had been able to hack its autonomy generator as a result of a buggy software update. Instead of acting on its newfound autonomy to escape or hide, Murderbot continues on as a security guard but uses its freedom to secretly watch entertainment feeds.
- *A Closed and Common Orbit* by Becky Chambers, 2016, focuses on a benign HAL-like artificial intelligent system that has been transferred from a space ship into a humanoid robot body. While an AI embedded in a space ship is legal, it is illegal for a human or an AI to take on a robot body, so the robot must conceal its existence. Like the *Murderbot Diaries*, *A Closed and Common Orbit* is also set in an unspecified future where humans have colonized space and have a high standard of technology.
- *Provenance* by Ann Leckie, 2017, describes an alien society that uses telepresence robots to interact with other species, including humans. It is set in a distant unspecified future where humans have colonized space but live in isolated clusters of near-by worlds. Telepresence and teleoperation seem to be the highest standard of automation for the human culture.

Four Trends

The analysis identifies four trends, excluding the topics of the legality of sex work and robot uprising.

False identity through telepresence. In both *Provenance* and *Head On*, the plot revolved about teleoperated robots and in both books, the plot centered on how a character(s) used teleoperation to hide their true identity. This theme is interesting for two reasons. One is because the robot manufacturers in either book were not required to provide any protection from such abuse. Second, the protagonists did not seem fully aware of any legal ramifications for impersonation. This theme raises the question of whether the growing telecommuter population know that false impersonation is a serious crime and would apply to using robots, not just someone using a phone or email. It also casts doubt on whether manufacturers of telecommuting robots are considering any mechanisms to prevent such abuses or consider their companies in any way responsible for criminal activities perpetrated with a robot.

Robot rights. *Autonomous* and *The Robots of Gotham* had a robot citizenship rights theme. In *Autonomous*, intelligent robots in the United States work under an indentured servitude agreement with no privacy and upon completion of the period of indenture were permitted privacy and choice of employment. However in Canada, intelligent robots were granted citizenship automatically upon demonstration of meeting a threshold of intelligence. In *The Robots of Gotham*, intelligent robots received citizenship automatically and could become elected officials, and some were elected, and, in some cases, became fascist dictators. Unlike *Autonomous*, there was never any discussion of privacy. The implication was that the development process of an AI prevented any meaningful comprehension of what a robot or artificial intelligence system was thinking. This theme raises the question of under what conditions would a peer-level intelligence obtain the rights and protections of a citizen. These two books appear to amplify the debate of general artificial intelligence, specifically concentrating on citizenship and participation in governing.

Outlawing intelligence for robots. Both *The Robots of Gotham* and *A Closed and Common Orbit* involved societies where intelligence for robots was outlawed. In *The Robots of Gotham*, the US had outlawed artificial intelligence and as a result was invaded by a consortium of other countries which had not forbidden the technology. In order to defend itself, the US was forced to use large teleoperated robots, similar to the robot movie *Pacific Rim* or the popular robot book series *The Themis Files*, to fight robots from countries that had fascist AI leaders. This was a losing proposition, as the teleoperated systems could not compete with the AI controlled systems. In *A Closed and Common Orbit*, space ships were normally controlled by a sentient AI system but it was illegal for such a system to be instantiated in an artificial body. The reasons are not clear and possible the result of over-caution. The idea of outlawing AI appears to echo the calls for bans on lethal autonomous weapons, aka killer robots [3]. Overall, the theme suggests that an emerging concern is that the US government's recent moves to legislate artificial intelligence, either to counter autonomy or to protect IP associated with AI, will be counter-productive. AI may be the new arms race.

Ineffectual or missing product liability. *All Systems Red* was driven in part by continuing faulty

or hacked software updates to Murderbot. Other robots were routinely hacked and taken over as well, despite the assurances that the robots would be under the control of local humans. The book implied the manufacturer was not liable and had no incentive to do a good job and could always alter any unfavorable records, reflecting the lack of liability for current buggy updates to software in general. This theme suggests that people could become wary of robots, which they perceive as susceptible to all the problems of “blue screens,” software bugs, forced software updates, and general lack of choice over the terms of services. Furthermore, robots, as physically situated agents, can do tremendous, irreversible damage, yet no one is accountable.

Conclusions

Recent science fiction offers two insights into robotics in society. One is that it suggests that the public may be considering robotics as different from other technologies and thus not subject to the same legal restrictions (for example, misrepresentation) or consequences of regulation (such as loss of economic competitiveness or homeland security). The second is that science fiction also suggests that there is an increasing suspicion of the safety of robotic technology due to the problems and inconveniences of currently available software. The trends of plots revolving around the lack of product liability, false identity, and outlawing artificial intelligence are particularly interesting because they apply to existing technology or current discussions in policy. Product liability in unmanned systems is of immediate relevance to society; while autonomous cars have had a series of deaths or accidents, it may go unnoticed that small unmanned aerial systems manufacturers are well known for pushing out buggy updates that result in crashes or unsafe conditions but accept no responsibility. Telecommuting and telework is growing and thus the trend that telepresence will lead to false identities is also of immediate relevance. It is not clear that any telepresence manufacturer is installing safe guards to prevent misrepresentation of identity, or is even aware of any legal or ethical obligations. The idea that a country faces more danger by opting out of a de facto artificial intelligence race than from artificial intelligence abuses is also interesting, given the current policy discussions about autonomous weapons. The public may be beginning to view the government as out of step with the realities of the new technology. Overall, recent science fiction implies that the public is becoming fearful of robotics, not because of a general fear of loss of control or an AI uprising, but because there may be no accountability for defects or misuse combined with ill-informed government policies.

References

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