A Conversation on AI, Science Fiction, and Work[1]

Jerry Määttä, Daniel Bodén & Michael Godhe

1. Introduction

Karl-Heinz Steinmüller once remarked that SF "has become a unique medium for discussing science and technology, their prospects and hazards, and more generally their social and cultural impacts" (339). In this sense, SF as a genre forms a bridge between science/technology and the public, and is a vital aspect of public engagement with issues arising from scientific development. One such technological subject today is the development of artificial intelligence (AI) research.

At the same time, there is a growing concern that representations of AI in recent SF and popular media are misleading (Goode; Graeber). In this article, ethnologist Daniel Bodén and cultural studies researcher Michael Godhe discuss AI in the light of the future of work with Jerry Määttä, one of the foremost SF scholars in Scandinavia.

2. Some Themes in the Cultural Production of Futures

Michael Godhe (MG): There is an immense debate today on the future of the labour market and how the development in robotics, chiefly in AI, is going to transform society and our interpersonal relations (see, for example, Bodén and Godhe). How is this depicted in the SF genre?

Jerry Määttä (JM): This has been a common subject in popular culture in recent years, especially in SF, but the theme goes a long way back. Usually Mary Shelley's *Frankenstein; or, The Modern Prometheus* (1818) is

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[1] This is an abbreviated and revised version of Määttä, Jerry et al. "Ett samtal om AI och science fiction", in Bodén & Godhe.

mentioned as a starting point, as the novel deals with an artificial life form rebelling against its creator, Victor Frankenstein, a scientist who doesn't take responsibility for his creation. This trope or theme is still recurring in SF today, called the Frankenstein complex (Beauchamp). But perhaps representations of bodiless AI and big computer systems are becoming more common in the genre.

There are, of course, also other AI themes, such as AI functioning as mundane assistants. These are either independent or part of a symbiosis with human consciousness – a cyborg consciousness – and these SF stories often discuss the impact of cybernetic organisms (cyborgs) and AI on society, our social relations, and how we interact with technology. In a way, perhaps we're already there with our smart phones, social media, algorithms, and so on, even if we don't yet have strong or general AI transcending the limits of their programmes and acting independently.

So, rebellion against their human makers is one theme, and AI as assistants or symbionts another. But there are also narratives where AIs are in full control and create new and different civilisations. In these cases, humanity has often been reduced to the role of pets and children to the AI, bereft of any vital function in society.

MG: If we continue with the theme that humanity has become redundant, a common discussion concerns the nature of work and leisure in the future. What is SFs relation to questions on work?

JM: It is important to remember that SF is often produced, published, and distributed by commercial enterprises with expectations of returns on investments. Consequently, the scope of stories produced is pretty narrow, especially in film, since they often have the broad public in mind. The labour market is not a particularly hot topic, even if representations of how work is organised in the future sometimes occur in SF novels, since they are not tied to the same large economic interests as television series or films. But even in commercial SF productions there are often some thoughts in the background concerning the organisation of future labour markets with AI and automation.

The most famous example is perhaps the *Star Trek* franchise. When they produced *Star Trek: The Original Series* in the 1960s, the Federation (only implied in the series) seemed to have abolished all monetary systems. The second-run incarnation *The Next Generation* (1987–1994) introduced the replicator. Thanks to cheap and reliable energy sources, anything could be produced basically out of thin air. On the other hand, *Star Trek* is obviously not a story about AIs governing Earth and humanity. It is rather a depiction of a post-scarcity society, fulfilling its citizens' every basic material need.

In *The Next Generation*, we get to know the android Data, who tries to transcend his basic programming to become as human-like as possible. This is a very idealistic view of humanity as the ultimate goal for machine development, and perhaps not that valid among many thinkers today. It would rather seem that, if a strong AI would ever emerge, humanity is only a short stage that the AI will rapidly transcend. But above and beyond Data there are also spaceship computers in *Star Trek* as well as in other SF, such as Mother in Ridley Scott's *Alien* (1979). These are examples of control systems with a weak or narrow AI.

3. The Future of Work in Science Fiction

Daniel Bodén (DB): The representations of AI you are describing are based on very strong imagery. At the same time, it seems that news media representations of the impact of technology and science on society are also inspired by strong imagery from SF. What is your view on this? Do you see any parallels between SF and news media coverage of AI and other technologies?

JM: Indeed! Not only AI, but also common media coverage of the climate crisis, terrorism, drones, surveillance, algorithms, to name only a few phenomena that are SF clichés. In this sense, we are really living in a 20ᵗʰ-century SF cocktail, even if few, if any, SF novels have come close to describing the situation in the world today. If we could send back a current issue of a newspaper three decades in time, people reading it would probably be very surprised about how some developments have become momentous issues for the world, such as the climate crisis and AI. Two years ago, newspapers reported on the humanoid robot Fedor on his way to docking with the International Space Station – and the robot seemed to be considered part of the crew! These kinds of reports really give you a future-shock, given the sensationalist media logic.

Plenty of media coverage on AI shows pictures of the killer robot from *The Terminator* franchise, a conception of the worst-case scenario: Skynet taking control and trying to exterminate humanity. This is not very popular among AI researchers, who think that this is a way too simplified and sensationalist representation of a future world with robots. At the same time, this is a narrative that has been present since Mary Shelley's *Frankenstein* (1818) and Karel Čapek's play *R.U.R.* (1921) – the uprising of robots and the loss of control when our artificial offspring revolt. The abstract thematic in these stories, however, is not simplified, I would say: we lose control over something and suddenly our imagined freedom is lost since the system is governed by something else.

MG: Another question concerns the reorganisation of society and the equal distribution of wealth and goods. If this is possible, questions concerning *absolute* "leisure" arises, something that SF could pose. Iain M. Banks's *The Culture* series (1987–2012) is one example. And there are also novels depicting humanity on the brink of boredom, such as the *Thousand Culture* tetralogy by John Barnes (1992–2006). Humans have become potentially immortal; they don't have to work for their living; and they can do almost anything they wish. But I think there is lot to be desired here (cf. Godhe 2018). Is the SF genre missing out here when it comes to "post-scarcity" and imagining the organisation of work in the future?

JM: Well, people being bored or even committing suicide because they are bereft of meaning in their lives, or fulfilling themselves by becoming mediocre artists and so on, are not especially good stuff for making exciting stories. There is indeed a bourgeois idea that if we are not compelled to work, we can fulfil ourselves by reading or writing books, becoming musicians, or making art. There are people, of course, who would long for such an existence, but many people would probably rather just be gaming or taking drugs. If we somehow, someday, achieve a post-scarcity economy, many communities with different interests would most likely emerge, but this is seldom depicted in the SF genre. One exception is perhaps *Star Trek: The Next Generation* and

Captain Picard on the starship Enterprise: When he retires, he returns to be a winegrower. At least until the recent sequels.

In fact, *Star Trek* episodes and films are almost always taking place outside, or on the fringes of, the utopia, and very rarely in the utopia itself, because it is not very exciting to describe a perfect society. The same goes for Iain M. Banks's *The Culture*, where humans are working and finding meaning in life because they are involved in conflicts – a scenario much more commercially viable, but also more interesting to read about. This takes place in an anarchistic or extreme liberal utopia which is also in conflict with other civilisations and other forms of societies.

4. The Social Function of the SF Genre

DB: We have been discussing SF in media, news coverage, and other contexts. What is the significance of this strong SF imagery in the news media? How does it affect the public understanding of the issues raised?

JM: This is really a big and contested question. When SF emerged as a modern genre in the pulp-magazine market in the US in the 1920s, Hugo Gernsback explicitly wanted the readers of his creation *Amazing Stories* to be influenced and inspired by SF stories. Gernsback was an inventor and, among other things, imported radio parts from Europe. He had an interest in how young boys dealt with electronics. His idea was to inspire future inventions and to spread technological and scientific knowledge among his American readers, especially boys and young men. However, while some were surely inspired, it turned out many of the enthusiasts didn't want to become scientists, but rather SF writers!

At the same there are numerous anecdotes about SF as a source of inspiration in interviews with people ranging from rocket scientists and AI researchers to entrepreneurs. Look at Elon Musk and Jeff Bezos, for example: it is obvious that they have been affected by the SF genre, maybe even computer games and roleplaying games. So, there is an actual influence from SF, and even if the genre seldom invents the future, it can inspire inventions, and broaden people's minds and visions. Some would claim that space travel generally, with satellites and rocket ships, comes from the SF genre, while others would also mention the internet or television. Anyway, virtual reality and cyberspace are definitely inspired by SF, even if William Gibson's cyberspace doesn't resemble today's VR technologies all that much. Maybe Gibson was inspired by arcade games when he wrote *Neuromancer* (1984), or the Disney motion picture *Tron* (1982)?

There is a long list of things that people claim to have been invented in SF, but forecasting is not the primary purpose with the genre, I would say, but rather to test different ideas. In fact, the new field of *design fiction* is, in a way, SF without plot, where SF genre conventions are used to investigate how technology is perceived on an emotional and social level in society. They often create scenarios depicting how technology can be experienced in mundane situations. From the perspective of literary studies, these are quite boring stories – but from a history of technology or sociology of technology perspective, they become much more interesting!

But to try to answer your question: caveats asides, how the genre represents space travel, AI, or other phenomena affects people's hopes, fears, and notions of the future. SF is no doubt a substantial part of the futures industry even if many scientists or even popular science writers do not take it seriously. Some of them perhaps perceive the genre as a threat, and therefore position themselves clearly against SF. It is not uncommon to hear or read scientists saying, "It might sound like science fiction, but this is for real," indirectly showing the scientists' own importance, since the genre has had a bad reputation as extravagant, popular, and commercial culture. The physician and AI expert Max Tegmark, for example, seems to dissociate himself from SF, and the Swedish astronaut Christer Fuglesang is doing the same when it comes to space research. Sometimes this can be a little bit silly, since a lot of AI and space research has indeed been inspired by SF. One of the founding fathers of space flight, Konstantin Tsiolkovsky, started his work by imitating Jules Verne!

MG: And what is really interesting here is that Max Tegmark sometimes is more SF than the genre itself.

JM: Yes, *Life 3.0* (Tegmark) is very close to some SF speculations, but also really good SF, I would say! Contemporary science and technology are extrapolated into the future, and even if there is no plot, he sketches some interesting scenarios in just a few pages.

DB: These visions of the future are often recalled by media reports on technological development, where SF becomes a way of conceptualising technology and making extrapolations of technological development intelligible for the prospective recipients. How do you think the average citizen comprehends these SF scenarios when they are canalised through popular news media?

JM: If one is to talk about SF having a large public impact, it is probably not SF literature that should be discussed in the first place, as it is still a rather narrow niche, even within the Anglophone world. And for the few writers who do reach a larger audience, AI issues are rarely at the centre — if you think of the *Hunger Games* trilogy, for example (Collins 2008–2010), it is more about an extreme class society. What ordinary people, nonaficionados, encounter are more often films and TV series, where SF is big even in countries like Sweden. And there, AI issues often concern fear of losing control or being cheated by the machine, as in *Ex Machina* (2014), *The Terminator* (1984), or *2001: A Space Odyssey* (1968). In Kubrick's film in particular, the machine is cold and difficult to comprehend. It is just a red, shiny eye that suddenly begins to behave irrationally, unethically, or strangely unpredictably from a human perspective. These are the kinds of depictions we often encounter in movies and TV series.

MG: Can this be turned into an automation issue? The debate about automation is often about the fear of losing one's job and becoming redundant. In reality, it may be automated machines we are talking about, but in SF it is the big AGIs; that is, systems that transcend their programming and think outside themselves. Can you see any relationship between these two scenarios? That instead of making an SF film about workers who are outcompeted by robots, they take it to a much higher level: they wipe us out. Can there be a connection there?

JM: Well, obviously sensational Hollywood films sell more tickets, Blu-rays, or what have you. Abolishing workers makes me think of the film *I, Robot* (2004), which really had very little to do with Isaac Asimov's short stories when

they wrote the script. But in it, the robots are still supposed to take over some physical labour. They are on the streets and they are there as a form of second-class citizens, who then revolt with the help of a supercomputer.

DB: I find it interesting what happens when you draw parallels between the reality that people experience and what is portrayed in these scenarios. For instance, if we go back to Karel Čapek and Rossum's Universal Robots, one might think that the scenario with robots revolting and taking control of the world in some way reflects a specific part in the history of industrialisation – a world where people find themselves in a factory regime where they are subordinated to the authority of the machine system. What is your take on that?

JM: Robots and AI have, to a very large extent, been metaphors for other things in the SF genre. Mary Shelley's *Frankenstein* is perhaps about offspring in general – that is, if you don't take care of and nurture a child, it revolts and becomes a monster.

MG: Frankenstein's monster has also been interpreted as a metaphor for a fear of a working-class revolt (cf. Montag).

JM: In Karel Čapek's example, it is obvious that one can interpret it as a revolt of the working class – and similarly if one watches a Swedish TV series such as *Äkta människor* (*Real Humans;* 2012–2013). That one may not be so much about the working class itself, but rather about immigration and the fear that others will take our jobs. There is a very clear parallel in the party that is created against the "hubots", as the artificial intelligences are called in the TV series. It may not really be so much about hubots, but about the great political issues of our time. This is what SF does when it is at its best, I think, in that it both estranges trends in our time and questions what such developments can lead to. *Äkta människor* has also received international attention. There is a British remake called *Humans* (2015–2018), but also a kind of Russian remake called *Better Than Us* (*Lushshe, chem lyudi*; 2018–2019).

DB: It is obvious that the form of anticipation that SF entails raises a lot of thoughts in people. Would you then say that SF has subversive capacities?

JM: It depends a bit on how you look at AI development. If one thinks that AI is and will be the best thing that has happened to humanity, then the insistence of the SF genre that AI can be dangerous can be seen as a subversive thorn in the side. But a certain scepticism towards AI is probably more widespread, and a large part of the SF genre is perhaps more in line with the public's fears. There is also something deeply conservative and problematic in the celebration of the liberal, Western, humanist, and independent white man that characterises much commercially successful SF. So, it is perhaps in the narrower SF literature above all that one can seriously question the notion of humanity as the crown, or end point, of creation, and to a much lesser extent in SF films or TV series. Ridley Scott's *Blade Runner* (1982) did, admittedly, ask those kinds of questions and scratched the surface a bit when it comes to blurring the line between human and machine. But SF literature probably sides with the machine more often than films and TV series do. In Alex Garland's *Ex Machina* (2014), it is quite clear that humans are deceived in the end, and that AI is seen as something eerie.

There is a similar scenario in Spike Jonze's film *Her* (2013), where the AI leaves the main character for other AIs. They are more fun than being with people. This is an idea from William Gibson's *Neuromancer*, where the plot partly revolves around the Turing Police, checking so that no one creates an AI.

What happens when the powerful AI is created in the end is that he, she, or it is only interested in contacting other AIs on other planets. Humans become completely uninteresting.

MG: There have been lots of movies about AI released the last decade. The very strange movie *Zoe* (2018) is about a company that manufactures androids called synthetics, to become ideal partners to suit different people's needs as determined through computer tests. A female AI who works at the company really falls in love with her creator, with whom she also works. The film ends with them becoming a couple. Is this increasing interest in AI just a temporary trend or will we continue to discuss these issues in five or ten years?

JM: The interesting thing is that the AI question has entered "literary", or at least "middle-brow", culture now, with Ian McEwan's latest novel *Machines Like Me* (2019), which has been heavily criticised by SF readers for reinventing the wheel. But perhaps he is spreading these questions and themes to a non-SF-reading public and an educated middle class who usually won't read or watch SF at all. Then there are those who say that the novel just does again all that *Blade Runner* did almost forty years ago. But he may be doing it in a different, more literary way, to spread the word and the ideas to a new audience. It is the same with some Swedish novels that have been published recently; for example, Marina Nilsson's *Bobby Love* (2019), which addresses the topic of sex robots and may reach a larger, or at least different, reading public than proper SF does. And then, of course, there are Netflix and computer games, which also make these issues more visible than before. Although it is very rare to come across a work in which the theme is deepened with something new that has not already been done in the genre, questions are still asked that can make the public think and reflect. In that sense, the SF genre has an interesting democratic potential.

I personally think that many of the best SF short stories are those that are short and humorous, with interesting ideas being tested. For instance, I'm thinking of Robert Silverberg's "Good News From the Vatican" from the early 1970s, where some tourists sit outside a café near the Vatican discussing the latest, ongoing papal election. One of the leading candidates is a robot. And the short story ends with him coming out on St. Peter's loggia to the cheers of the people, lighting his rocket engines and taking to the skies – the Catholic Church has finally got its first pope who is a robot! The short story is slightly satirical, but at the same time it's not in-your-face satirical, as it also asks serious questions about the deeply human and whether God's deputy on earth could be a robot. It is also a part of creation, in a way, even if it is not a human being.

5. Contemporary Futures

DB: That is very interesting from the perspective of working-life research, where machines and robots are commonly seen as technical solutions to perform a certain function in the production process. In heavy industry, the design of the robot is completely dependent on what kind of product you are producing. But what we are seeing now, which Michael is talking about, and which you yourself have partly touched upon, is that we are now trying to construct robots or artificial intelligences that are humanoid. How are we to understand that development? Are we building new technology that reflects

and commodifies popular cultural ideas, or on what premises are we developing that type of technology?

JM: This is really an interesting question. When you think of the film *I, Robot,* its type of android has been popping up here and there in recent films, advertisements, and what not. I cannot remember seeing that kind of transparent, stylish robot before the film release, and I think it's obvious that popular culture has an enormous impact on how you visualise, conceptualise, design, and develop robots. And the first cell phones with lids in the 1990s were clearly inspired by old school *Star Trek* communicators, in much the same way that tablets like the iPad also resembled some of the technology in *Star Trek*, just to mention a few examples.

But what is interesting about today's technological development is that it's not just about industrial robots or how robots take over manual labour in factories. Now, it's also about the fact that even middle-class jobs are threatened. I heard a great talk by economist Jesper Stage, who explored ideas about AI in SF, and it's obvious we'll be there soon. News texts are already, to a certain extent, being written by artificial intelligences, as well as weather and sports reports.

MG: Yes, we have lived with AI for some time now; another example is cash withdrawals from ATMs or when we make a phone call to different municipal authorities and an AI asks us to specify our business (cf. Wajcman).

JM: And I imagine that many of the specialised tasks we perform can soon be replaced.

MG: Obviously, there are many economic advantages for entrepreneurs, business owners, and venture capitalists in replacing manual labour with robots and AIs. But robots are now also being used in nursing, which may have both benefits and disadvantages. This is a very complex discussion indeed. It is interesting that movies often represent robots and AIs as more humanlike, while in health care, they do not want anthropomorphic robots since they are perceived as uncanny.

JM: But robots in health care must, to some extent, be anthropomorphic and not too terrifying, like having eight arms, et cetera.

MG: And we also know that there are some cultural differences in this matter. American representations of robots are more Terminator-like, while robots in Japanese representations are cuter (see e.g. Haring et al.).

DB: It is interesting, Michael, that preferences in robot design can be culturally conditioned. However, I imagine that the pursuit of more humanoid expressions reflects much of the automation and robotisation taking place in the service sector. Here we can think, for example, of the Swedish Social Insurance Agency's response functions, where during a time the citizens could ask questions to the bot "Hanna"; that is, a picture of a woman. This is certainly a way to allay the experience of talking to a machine.

JM: Yes, the gender question becomes very interesting here. And it reminds one a bit of the good robots, or droids, in the *Star Wars* franchise. In a sense, R2-D2 and C-3PO are very humanoid. C-3PO talks like a nervous and submissive person; R2-D2 makes electronic sounds that often resemble baby babble, making it easy for us to have feelings for that machine. And *WALL-E* is another example of a very humanoid robot, since it, or he, looks like a big baby with big eyes.

DB: If you look at fictional representations in the light of Swedish structural changes and the contexts where new technology and new machines have entered the production process, the parallels between fiction and reality become very exciting. And if you go back to the Čapek version, it is obvious that it mirrors mechanisation processes and industrial breakthroughs. Is it possible to do similar comparisons with contemporary representations?

JM: Well, what is the chicken or the egg here? Is it because people once again are interested in AI that so much film, TV series, and literature on the topic is produced, or does it come from producers, directors, writers, and publishers believing that there is a large public interest in AI? Or is it a form of setting the agenda, since they believe that this is an important question, one we should be paying attention to and discussing? Maybe it is all this at once? No matter what, the effect is the same and all these representations are shaping a consciousness of something going on. We do not know the direction of the development or how much is really going to happen. There is no consensus on whether AI is dangerous or not, or if it is possible to ever create a strong AI. The only thing we know is the possibility of AI replacing many of our jobs in the future. Even middle-class jobs like medical diagnosis will be done faster and more efficiently with databases than by doctors with a five-year education. This is a development I believe will essentially transform society.

DB: So you are saying that in some way this will compel people to form an opinion about the development.

JM: Yes, but they can also choose to ignore these questions, obviously. Many of my friends do not have any interest in AI development and the challenges we face. On the hand, I know people who are active in politics and take these questions seriously. They have not been interested in SF before, but are now starting to be since it is a way of asking these questions in a playful manner. The short story with the robot pope is an absurd thought in a popular-science article or in news coverage, but in a genre that is to a great extent about entertainment, it is a fun idea to play around with. And this is what many SF writers do, and what we readers expect them to do.

MG: I think that this is not only a fun idea, since the short story also refers to the idea of human interchangeability, as we see with automation processes. We can also see the automation of religion in, for example, George Lucas's *THX 1138* (1971), where citizens confess by putting a coin into an automat. The film may leave a lot to be desired, but it also has some clever and interesting scenes.

JM: *THX 1138* was released at almost the same time as Silverberg's short story in the beginning of the 1970s, and there were a lot of issues on the agenda then. A couple of very good SF films asked interesting questions, such as Douglas Trumbull's *Silent Running* (1972), which discussed whether plants can have more value than humans. Is it worth sacrificing humans to save biotopes? And there were some interesting robots in the film that influenced the droids in *Star Wars*. They are basically sidekicks helping the main protagonist save plants by killing other humans. And then Richard Fleischer's *Soylent Green* was released in 1973, where overpopulation is one of the main issues, but also the question of work and meaninglessness, represented through the suicide clinic in the film.

MG: Concerning work and a fulfilling life, one of the best narratives I have read is Theodore L. Thomas's 1959 short story "The Good Work". It takes

place in an overcrowded future where gigantic skyscrapers prevent you from seeing the sky. Most humans have the bare necessities, but it is a very dull and meagre existence with only synthetic food. If people want to improve their life conditions, they can apply for a job, which the main protagonist does. The authorities let him work in a maintenance crew, responsible for tightening loose nuts and bolts in a skyscraper. When he finishes his workday, the story ends with the nightshift taking over (without his knowledge), loosening all nuts and bolts again.

JM: This goes hand in hand with Roland Paulsen's (2014) ideas of empty labour. What strikes me here is that what it means to be a human seems to be the same in these representations of the future, for example in *Star Trek*. According to the films and series, humanity will basically have the same Western, humanist morals and ethics as many of us have today, even if we will have AIs or androids like Data in *Star Trek: The Next Generation*, or the hologram doctor in *Star Trek: Voyager* (1995–2001), whose programme could be reproduced infinitely. And maybe this is the reason they were reluctant for so long to depict what happens after the *Voyager* series. The next logical step would be to let the hologram doctor and his friends – or copies – take over all human labour, since he can be infinitely duplicated and is extremely intelligent and adaptable. It would also be possible to create a military force consisting of grumpy hologram doctors. That would be an interesting scenario, but perhaps hard to transform into a good television series.

MG: You must not write screenplays for the *Star Trek* franchise, Jerry! One thing I have discovered when I look at the question of work in SF (Godhe 2018), at least in the novels from the 1990s and onwards that I have read, is that there are no children in the future. The whole political economy is absent. In older utopias, such as the writings of many of the utopian socialists in the 19th century, the whole political economy was present when they tried to solve the question of work and redistributive politics. Is it a fair picture that SF gives of the development in automation and AI research, how the future of work might possibly look?

JM: No, it is surely not a fair view. At least not in the big Hollywood productions, which to a great extent play on people's fears of the future. They often give a one-sided, dystopian view of AI: they resemble us and will replace us, and they will have a different ethical and moral consciousness and therefore we must watch out carefully. But now I am talking about film. There are, of course, exceptions, like the Swedish series *Äkta Människor* or *Westworld* (2016–), where we get some sympathy for the robots or hubots (cf. Hallqvist), or a motion picture like *Blade Runner*. When it comes to the perspective of the AIs, literature often goes into more depth, but this is equally not a fair view, since many of the best SF novels tend to anthropomorphise AIs too much. And it is, of course, an open question if AIs will ever have a human-like consciousness or if they are only cold algorithms mimicking our behaviour. But these are the kinds of questions discussed, in some sense. More mundane questions concerning how assembly-line work will look like when humans are redundant are very hard to explore in a popular genre, at least if you have to make it an interesting read.

6. Risks with Futural Representations

MG: SF does not necessarily take place in the future. It can also be very close to our contemporary times.

DB: Indeed. One example is the *Black Mirror* series (2011–). The extrapolation is very close to our times, but thanks to that the effect is strong. There is obviously a strength in pushing the limits and problematising, to make people reflect over matters. But are there any potential negative consequences if we occupy ourselves with the metaphors around technology, and less with the real development?

JM: Of course, there are. If SF is too much occupied with sensational scenarios and rapid technological development, and promises too much, there is a risk that people get too optimistic about the future and believe that things are going to happen much faster than they do. We still don't know how fast AI research will develop, and there is a risk that those investing in AI companies and AI technology, or doing different kinds of research, will realise that things are not going to be happening within the expected pace. And in some ways then, SF and popular science will have deceived people into believing that the future is already here, when strong AI is in fact very far from being realised. But on the other hand, we don't know, obviously. It was only recently that Google tested their so-called quantum computer.

DB: To a large extent, the PR business was responsible for creating the "dot.com bubble" (Mosco). Allow me to make a comparison: would you say that there is a risk that SF is doing the same thing, that it triggers investments?

JM: To create an AI winter, yes! But not SF in itself, but the whole media conglomerate of sensational SF and popular science, and chequebook journalism (cf. Goode). But perhaps it is a good thing that AI is represented as something negative in SF (especially film), since many AI discussions are not all that concerned with ethics. Research now is very rapid and everything that could be tested is probably tested. And maybe engineers involved in AI research haven't got the time to reflect on the possible outcomes of their research. In this case, SF can function as an arena where people in common discuss the potential threats. Then there is always a risk that the threats posed by SF and discussed by people are not the actual questions that matter, as, for example, the question of how to programme ethical parameters. But if you go into such details, the quality of the narrative maybe suffers.

MG: One problem with the AI discussion in popular media is that the development seems to be predestined (Godhe 2020; cf. Goode). As a humanist scholar, I wish that we would ask ourselves more often if we really want to have this development of AI or not. Now we are discussing how to avoid or fend off possible risks with AI – which does not mean that these are not legitimate questions. Is there a risk that SF is part of normalising this fatalistic view?

JM: The question is if it is possible to create an awareness among people how much the future is always changing and open-ended – to make people think about future scenarios in their everyday life, the way SF readers are keen to do. To ponder where we are going to be in five years' time. What will have changed by then? Will people still eat meat? Are we still going to have smartphones? It is a matter of recognising that the future is here as a living dimension of our ordinary lives. This is something SF can prepare us for – that everything could have been, and will be, different.

MG: Maybe this is a way of creating a preparedness for the future? In the UNESCO programme *Anticipation Studies*, they talk about Futures Literacy, the "capability to 'use-the-future', for different reasons and in a variety of ways" (Miller, 2018, 2). Riel Miller, the "Head of Foresight" at UNESCO and connected to *Anticipation Studies*, discusses "evocative stories" that enable us to reflect on the present and the future (Miller 2007). And this is obviously one of the strengths of SF. But one question that comes to my mind is whether we put too much hope and prospect in SF. Does the genre in fact have the great impact we are discussing here?

JM: Yes, I do believe so, but maybe not the kind of innovative and unconventional, subversive, societal narratives that SF scholars are primarily interested in. At the same time, there are examples of excellent SF literature circulated to a broader public, like Ted Chiang's short story "The Story of Your Life", which was adapted into the motion picture *Arrival*. Chiang's story brings up a lot of interesting thoughts, and most of these are kept in the film, despite it being a Hollywood product. But I don't know if all that many people saw it, compared to the *Marvel* movies released in the last decades.

Another example of really good SF literature is the novel *Autonomous* by science journalist Annalee Newitz (2017), where we follow a robot and how he experiences his ordinary life, how people can erase or limit his memory, how he – or she, when the robot eventually alters his/her sex by just changing his/her pronoun – experiences how it is to have intercourse with her human colleague. In the novel, there is also a workshop where the robots can go, when they are not on duty hunting IP pirates in the genetics business, and get secret programmes not known to the humans, making their motherboards crash with no visible signs afterwards. It's their way of taking drugs, to escape rational thinking and experiencing something else, something unpredictable.

DB: Sounds like a good ending for this interview. I have one last question, though. On the commuter train in Stockholm, I saw a poster from Luleå University of Technology with the slogan: "We turn science fiction into science". What do you think about this slogan?

JM: Well, it assumes that SF is concerned with the not-yet-real, and this can be contested depending on how metaphorically you want to interpret SF narratives. But it is not clear if they recognise SF as an important genre, or if they are in fact condescending. As we discussed, scientists and science journalists often use phrases such as "this could sound like SF, but now it is for real". However, maybe it is a sign of the genre's changing status when you can use "science fiction" in university marketing. And we all live in a sort of SF scenario today. Or, as the SF author Kim Stanley Robinson once remarked: Humans today are now living in an SF novel. The problem is that it is a lousy novel!

Daniel and Michael: Thank you Jerry!

Jerry: Thank you very much indeed!

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