Towards a Robotic Dystopia? Replacing Animal Companions with Technology in Science and Fiction

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Published in:

Section:
Articles
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Abstract: The arrival of a particular type of technology, sociable robots, can challenge our understanding of companionship. Our focus is on robot pets, as these are finding their way into our families, schools, and nursing homes. In this paper we analyse two science fiction texts on robot dogs – Ray Bradbury’s Fahrenheit 451 (1954) and Isaac Asimov’s A Boy’s Best Friend (1974) – before concentrating on technology assessment, a scientific method to describe and extrapolate possible impacts of emerging technologies. We argue in favour of the use of science fiction literature for this kind of research, as thus far technology assessment efforts have focused remarkably little on ethical and philosophical dimensions that have already been discussed in science fiction literature for decades.

Keywords: technology assessment, science fiction, relational artefacts, companion species, anthropomorphism

The robot dog: Man’s better best friend?

Technology is increasingly ubiquitous in large parts of the modern world. In the past centuries it has developed into increasingly complex devices infiltrating almost every aspect of our daily lives. While this techno-culture has always influenced lifestyle changes, recent developments in technology are challenging our basic understanding of what it means to be human. The realisation of ever more advanced sociable robots – a type of computational device that is pro-active in communication with humans (Breazeal 169) – warrants the question of the kind of relationship we should have with technology, and if

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there is a line that should not be crossed (Turkle 7). Particularly, sociable robots question our understanding of companionship. Consequently, as robot pets are finding their way into our families, schools and nursing homes,¹ we have decided to research the relationship between man and robot dog.

We focus on robot dogs because dogs are often considered man’s best friend; they are everywhere in our society,² and as a pet and loved friend, the dog’s ability to express non-verbal messages of love and its responsiveness towards its owners (Serpell 129) has secured this position especially in Western households. However, the dog seems to be in the process of being replaced by computational devices in several settings: robot dogs, until recently strictly belonging to the realm of science fiction, have become creatures of reality, and not without consequences. For some, human-robot pet interaction offers a first glimpse into how humans might one day perceive and interact with humanoid robots and artificial intelligence, an issue laden with ethical and philosophical implications.

In order to analyse the phenomenon of the robot pet (dog), we will look at two strands of literature: science fiction (SF) publications and descriptions of human-computer interaction in academic literature on technology assessment (TA). In the light of our literature analysis, we argue that SF can be read and utilised in a similar fashion as a scenario, a form of TA, because science fiction explores different kinds of interaction between humans and artificial intelligence. Since SF is naturally based in and often critically reflecting on the present, it is able to explore different kinds of ethical questions. As Lauge Rasmussen points out in the context of scenarios as TA, “[s]torytelling is an excellent method weaving together the relatively certain aspects of the future with imagination about the uncertain” (229). This also has its dangers, as strong rhetoric can mask political or other intentions, which means that SF should not replace more systematic analyses of technologies and their (future) impacts. Similarly, Darko Suvin has pointed out that SF is an art form and as such, ontologically speaking, neither pragmatic truth “nor is fact fiction” (28). But he also acknowledges that SF can “be used as a handmaiden of futurological foresight in technology, ecology,

¹ In Denmark, for instance, one thousand PAROs (robot seals) were introduced to support the elderly (Turkle 103).
² According to some sources, almost 40% of US households own dogs (“Market Research Statistics US Pet Ownership”), while the figure is around 25% in the European Union (“FEDIAF Facts & Figures”).
sociology, and so on” (Suvin 28). Indeed, the connection between literary texts and society, as pointed out by New Historicism, lies in the fact that the former “do not originate above history, transcending it; they are part of the political, religious and social institutions that form, control, and limit them; they do not exist outside of but within the discourses of power. The text is an element of social practice, not a mere reflection of it” (Berghahn 144f). Similarly, our case studies are expressions of (imagined) social practices between robots and humans, which our analysis will render visible especially in their relational nature.

Since our main interest in this article is in how the distinction between living and robot animals is (re)presented in science fiction, and how this helps assessment of real-life developments in robotics, we are using two SF stories on robot dogs, written by central science fiction authors: Ray Bradbury’s dystopian novel Fahrenheit 451 (1954) and the short story A Boy’s Best Friend (1974) by Isaac Asimov. They extensively deliberate on the man-robot dog relationship. While it should be noted that in the stories, from their contemporary point of view, the robots are futuristic elements functioning as a means of estrangement as part of a larger storyline including critical reflection on the present, from today’s point of view, with the recent developments in robotics, these originally futuristic elements are now available and present in society. This is exactly what makes them such interesting cases. As we show in a close reading, looking at the (re)presentation of the relationship and interaction between the human characters and the robot dogs, the narratives construct expectations that – with today’s realisation of the technology and the increasing real life interaction between robot pets and humans – need to be (re)addressed and, perhaps, questioned in their reality and desirability. In that context we then also focus on questions of companionship. Here, Donna Haraway’s concept of “companion species” and Sherry Turkle’s “relational artefacts” guide our close reading.

Secondly, we concentrate on a group of methods for describing and extrapolating possible future impacts of (emerging) technologies: technology assessment. We argue in favour of the possible use of science fiction in this field of research, since – as this article will show – the previous century’s SF, as a creative form of engagement with the present and the future, has already addressed issues of ethical and philosophical dimensions which only slowly and often negligibly emerge in forms of TA. We are looking more broadly at works by philosophers and scholars of science and technology studies (STS), Sherry Turkle among them, to find a better reflection of issues revolving around questions of
aliveness and consciousness and the nature of the relationship between humans and robots – all integral to our understanding of companionship – to see how the analysis of science fiction texts can be related to real-life developments. Starting from the premise that emerging technologies like sociable robots have a significant impact on these notions, we differentiate between the expectations set in science fiction and the real-life consequences of developments in robotics as handled by technology assessment. Is the robot dog in the process of becoming man’s better best friend? More importantly, should it be?

Two robot dogs: Your worst nightmare and your best friend

_Fahrenheit 451_ follows Guy Montag, a fireman who is allocated the task of burning books. The Mechanical Hound’s role is that of an advanced tracker with a highly enhanced sense of smell, sniffing out the books that have to be burned. Montag is initially “fascinated […] with the dead beast, the living beast” (Bradbury 28), but having taken some books, feels increasingly threatened by the Hound. The description of the Hound as dead and alive at the same time, as if Montag were not sure which is the case, is striking in and key to the characterisation of the robot. Being repeated three more times – Montag watches the Hound that “slept but did not sleep, lived but did not live” (Bradbury 27), the “dead-alive thing” (Bradbury 117), “something that was not machine, not animal, not dead, not alive” (Bradbury 130) – this dualism echoes the different interpretations the various characters have of the Hound. Montag sees it as a thinking being, something that can develop a like or dislike for someone, while his colleagues say that the Hound is simply programmed: “[i]t doesn’t like or dislike. It just ‘functions’” (Bradbury 29).

Montag acknowledges that the Hound might have a state of mind, while his colleagues firmly deny this. STS scholar Sherry Turkle has written extensively about technological, particularly computational, devices, and defines those that “present themselves as having ‘states of mind’” as “relational artefacts” (Turkle et al. 347). In essence, relational artefacts appear to have feelings and consciousness, and they also appear to respond to and recognise human emotions. Bradbury’s protagonist obviously feels that the Hound is such a relational artefact, ascribing dislike to it and feeling that it reacts to him. Moreover, he wonders, “what does the Hound think about down there nights? Is it coming alive on us, really?” (Emphasis added, Bradbury 30). This interpretation of the Hound as something likely to be sentient informs Montag’s interaction
with it; his fascination turns into fear as the distinction between machine and individual threat start to blur. He finally distances himself from the Hound, and the robot’s depictions give him an otherworldly quality that is both eerie (Bradbury 132) and beautiful in its efficiency (Bradbury 143).

Montag’s interpretation of the Hound as a sentient being is based on his personal interaction with it. He recognises its sounds as growling and its looks at being directly aimed at him, from which he deduces the robot’s dislike (Bradbury 29). This recognition of the Hound as looking “at him” has Montag “[back] up” and get away from it as quickly as possible (Bradbury 29). The incident reflects philosopher Donna Haraway’s concept of the “companion species,” a term she came up with after reading Jacques Derrida’s famous description of his cat looking at him: “Derrida knew he was in the presence of someone, not of a machine reacting” (“Encounters” 103). While Haraway criticises Derrida for not recognising all the implications of this mutual looking, she sees the importance of this first step, which Montag takes too. He recognises the Hound as looking at him, thus interpreting it as a being in itself that can independently act and not just react according to a pre-programmed command. This is reflective of posthuman thought on the seemingly absolutes of dead and alive, as Haraway shows that there is a blurring of the distinction between what is biological and mechanical, and she illustrates that these absolutes are not quite as clearly defined as generally thought.

The blurring of this distinction is starkly illustrated in the alive/not alive dichotomy of the Hound in Fahrenheit 451’s characters’ perception. The Hound can be a companion to both Montag and his colleagues, as technological artefacts can be companion species so long as they interact with and are, to a degree at least, interdependent with the other partner of the relationship. One central aspect to Haraway’s concept is missing in Bradbury’s characterisation of the Hound and Montag’s relationship: (mutual) respect. Any respect is overridden by fear due to the robot’s efficiency. What is more, distance is created with the Hound staying an “it” throughout the novel; there is no sign of Montag considering the Hound as a companion in the sense of friend. Indeed, the robot’s alien-ness is emphasised: it is essentially dog-like but has eight legs and a

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3 Companion, from cum panis (literally, with bread), could, in this case, be related to the firemen and the Hound’s working relationship.
4 Neither would the other firemen see the Hound in that capacity. For them in particular, it is a functional tool to work with, not even a co-worker.
beautiful yet terrifying predator-like efficiency (Bradbury 28, 143). It is a menace, not only because of its technological powers but also because of its apparent recognition of Montag.\footnote{A "Robot-as-Menace" (Asimov 9).}

In contrast to Bradbury’s evil Mechanical Hound stands Asimov’s Robutt. The name “Robutt” is in itself an intriguing illustration of how both the makers and (most of) the primary users of the robot dog in the story see this computational device: Robutt is a “robot-mutt,” a filthy low-life creature designed to be a substitute for a real dog. Nevertheless, when Mr Anderson, Jimmy’s father, brings a living dog from earth as a present, Jimmy rejects the notion that there is a difference between a real and a robot dog. Jimmy has never seen a real dog so he cannot understand why a real dog should be better than the robot dog he already has. At the same time Mr Anderson is incapable of explaining what exactly the differences between animal and robot are: he continuously calls Robutt “only a mechanical imitation” made of “just steel and wiring and a simple positronic brain. It’s not alive” (Asimov 17).

In the descriptions of Robutt, it is interesting to note the shift in personal pronouns whenever Mr Anderson talks about the robot: he changes from “he” (once) to “it” (the remaining times); Jimmy, in contrast, continuously uses “he.” Jimmy, in his view of the robot as an independent and sentient being, therefore transcends the traditional division between animal and machine. His father, on the other hand, cannot change his definition of Robutt as essentially an ersatz dog to something worthy of strong emotional ties; Mr Anderson’s readiness to replace the robot with a real dog shows how he has failed to develop a bond with Robutt.

These different ways of relating to Robutt can be seen in connection to Haraway’s “companion species” and the related notion of “symbiogenesis,” a term Haraway derives from biology and evolutionary theory. In effect, symbiogenesis is a contrasting idea to the “survival of the fittest,” in the sense that species are “becoming with” instead. Haraway argues that species are inextricably linked in their development and come into existence because of interaction with and interdependence on each other, hence they are becoming with. No subject or object is pre-constituted; the resulting relationship is what matters (“Companion Species” 6), and no entity would be what it is without another entity determining it. Jimmy and Robutt are becoming with because Robutt’s existence allows Jimmy to become more independent as a person.

\footnote{A “Robot-as-Menace” (Asimov 9).}
Firstly, his independence is secured by the robot’s taking care of him: “Jimmy couldn’t go wrong while Robutt was around” (Asimov 16). Secondly, their friendship defines both of them, allowing Jimmy to see the human–machine relationship differently from his parents. Robutt himself is even more literally becoming with the boy, as he is purpose-built as a pet to a human being. Jimmy takes the imperative step from simple ersatz to recognising the robot as a being in its own right, acknowledging him as a member of a companion species.

The interdependency between boy and pet is illustrated in a sense of mutual understanding, based on communication. Robutt can hear Jimmy “by radio” and knows where he is “by radar”, while Jimmy talks to the robot as if Robutt could talk back, and he interprets his “squeaks” as answers. There is also a sense of trust: when Jimmy says, “I don’t trust you, you faker” (Asimov 16), he implies that Robutt understands the concept of trust. Jimmy has a very intimate relationship with the robot dog, an affection that seems to be reciprocated by Robutt, who tries to impress the boy by jumping “on him to show how much he loved him, or circling around and squeaking low and scared when Jimmy hid” (Asimov 16).

Another interesting aspect of Jimmy and Robutt’s relationship is Jimmy’s reading of the robot’s expressions and body language. Similarly to Montag, who interprets the Hound’s “strange rasping combination of electrical sizzle, a frying sound, a scraping of metal, a turning of cogs” as a growl (Bradbury 29), Asimov’s narrator differentiates the robot dog’s squeaks as “the special squeak that meant ‘Yes’” or as “happy squeaks” (Asimov 16, 18). Hence there is not only an assumption on the boy’s side that the robot understands concepts such as trust, Robutt also seems to understand human emotions and actions and can respond and react to these. Robutt is presented as a relational artefact with a state of mind, though in this case from the perspective of love and friendship rather than fear.

The obvious differences between Robutt and the Hound therefore lie in their functions that divide them into categories of the friendly and the evil robot (in Asimov’s terms, Robot-as-Pathos and Robot-as-Menace respectively). However, their representation is only superficially opposed. Both are characterised as improvements and enhancements of living dogs and as having a self that is visible in their interactions with their human companions. In this sense, the Hound and Robutt both reflect a dualism by which the different characters perceive the robots: the question of aliveness, both with regard to whether or not
the robots are sentient beings, and concerning the possibilities of their thinking independently and truly feeling.

Consequently, each narrative debates whether the robots can and should, to a certain degree, be worthy of respect, love or any other (strong) emotional response from humans. Continuing this train of thought, the question is if these kinds of relational artefacts can or should be companions for humans. An important reason why Jimmy cannot see the difference between robot and dog is that he has never seen a living animal. In a sense, the situation is in reverse for him as it is for most of us: we will have had encounters with living dogs while we primarily know robots from science fiction or, considering recent developments in robotics, from promotional videos, documentaries or other sources that only allow for second-hand knowledge. But the increase of robots outside of laboratories and factory halls makes asking questions about the kind of relationship humans can and should have with them indispensable. What has started in science fiction over fifty years ago is now in the process of becoming a reality.

**From science fiction to real science**

Our analysis of science fiction literature has shown the centrality of questions dealing with aliveness, consciousness and companionship. These are of major concern when it comes to the relationships humans can potentially have with robots. Epistemological uncertainties therefore tie in with ethical issues. Can a robot think independently and truly feel? If so, how could we know? What consequences would there be for our attitude towards robots? In view of these questions, the next part of the paper will focus on real-life events in the field of robotic pets.

Today’s robot pets are mainly smaller robots fashioned after animals, very much reminiscent of Asimov’s Robutt. Over the course of the last twenty years, robotic pets have started to appear, pets that asked their owners to take care of them and promised individual personalities. These came in the shape of toys such the Japanese Tamagotchis or the American Furbies, first introduced in 1996 and 1998 respectively (Turkle et al. 314). Since then, we have seen Teksta Dog, AIBO, and Zoomer – all in the shape of dogs – as well as Pleo the dinosaur and PARO the baby seal. AIBO is “Man’s best friend [gone] high-tech” (“Timeline 1999”), Zoomer is “your new REAL best friend” (“Zoomer”) and Pleo is “everyone’s favorite life-form” (“Life Form”). These robot animals all have in common that they
are marketed at least, as life forms, as real-life entities in one way or another. While they are clearly not ‘alive’ in the traditional sense, they are marketed in ways that can contribute to a blurred distinction between the mechanic and biological. Baby seal PARO takes these questions of aliveness and authenticity to a different level: PARO is marketed and used as a “therapeutic robot.” PARO is advertised as a robot that “allows the documented benefits of animal therapy to be administered to patients in environments such as hospitals and extended care facilities where live animals present treatment or logistical difficulties” (“PARO Therapeutic Robot”). PARO is marketed both as a substitution for a real animal, not unlike Mr Anderson’s perception of Robutt, and as a tool that fulfils a function, like the Mechanic Hound.

As robot pets are moving from labs into children’s rooms and nursing homes (PARO), it is time to continue the discussion started in the 1960s. We need to think both about the philosophical implications of human-robot interaction and about its ethical implications. In STS, several methods for assessing technology have emerged. Ethical technology assessment (eTA) offers one way of studying emerging technologies that includes ethical dimensions, as does scenario building, with scenarios being “descriptions of possible futures that reflect different perspectives on the past, the present and the future” (Netton et al. as cited in Boenink et al. 6). These are concerned with “soft impacts” of emerging or future technologies, the idea that “novel technologies may not only produce risks for human health and safety; they may also impact social practices and routines, and the moral norms underlying such practices” (Boenink et al. 2).

As pointed out, we argue that SF texts are similar to scenarios in their creative exploration of the future – imagined and extrapolated from present conditions – and in their ability to explore different kinds of ethical questions. Looking at TA studies of robots, we found that remarkably little attention has been paid to the particular kind of soft impacts delineated in the SF narratives analysed.

What becomes quite clear in more recent writings on human-robot interaction is a tendency to point towards rather dystopian futures reflecting concerns about current developments. Most of the authors who write about this have a background in psychology, philosophy or STS. Both Sherry Turkle and Robert Sparrow doubt that considering robots as true companions is a good thing. According to Turkle, a clinical psychologist and sociologist, “[t]echnology is seducing us with the illusion of companionship that we can turn on and off at will, without any mutuality” (Brown 37). Philosopher Sparrow makes the much more
critical argument that robotic companionship necessitates delusion on the human’s part: “[f]or an individual to benefit significantly from ownership of a robot pet they must systematically delude themselves regarding the real nature of their relation with the animal. It requires sentimentality of a morally deplorable sort” (306). These arguments tie in with Mr Anderson’s definition of his son’s Robutt as “only a mechanical imitation” and his insistence that only the dog he had brought from Earth is “real” (Asimov 17).

Robutt, for Mr Anderson, is only what Sparrow calls an “ersatz companion”: a device “designed to engage in and replicate social and emotional relationships of sorts that we value" (306). If such robots are considered ersatz companions, what kind of interactions do people have with them? How alive are they in the eyes of children or elderly people? To what extent are these kinds of robots perceived as sentient, as having feelings? When it comes to science fiction, both of the stories we analysed suggest reading “body language” and “expressiveness” as key notions of aliveness. If Jimmy can understand Robutt’s squeak as a confirmation or happiness, or when Robutt jumps high or somersaults and Jimmy sees this as “showing off” (Asimov 16), is Robutt not alive? Similarly, in Fahrenheit 451, Montag interprets the Mechanical Hound’s “electrical sizzle” and “scraping of metal” as a menacing growl (Bradbury 29). Because of this expressiveness, or capability of making noises which humans attach meaning or assign moods to, they are seen as alive. In fact, this is precisely what makes real dogs such good companions, according to Serpell: they are easy to engage with on a quite intimate level because we can see human-like expressions in their faces (140). But according to psychologist F.J.J. Buytendijk, a dog is a suitable companion because of its loyalty and obedience, coupled with the fact that man, in order to benefit from having a dog, should be lonely, longing for nature and generally be disappointed with human relationships (19). Ethologist Konrad Lorenz pointed out that man, by having a dog as a companion, can find refuge in nature after being “disappointed by human weaknesses and bitter” (44). These two then not only mirror Mr Anderson’s interpretation of Robutt as ersatz companion (that is, ersatz for a real dog), they mean it as ersatz for a human companion.

More recent studies have primarily considered the man-(real) dog relationship as valuable but not as substituting for human-human relationships (Gavriele-Gold; Serpell). This shift takes place at the same time that robot dogs seem to be taking over the position of ersatz companions from live dogs.
Considering real-life developments in robotics, and more specifically with regards to robot pets, the main focus for innovation, and the driving force in accepting or resisting these robots, is exactly this notion of being (or at least convincingly seeming to be) alive. Of course, humans anthropomorphise many things, from cars to stuffed animals (Sparrow; Breazeal). The anthropomorphising of robots is thus probably only logical, even if today’s computational devices are not yet as advanced as Robutt and the Mechanical Hound.\(^6\) The important ethical and moral implications of anthropomorphisation lie in the consequences that it brings. What does it mean if we no longer distinguish between a real and a robotic animal? And, considering the move from human to dog to robotic dog as a form of chosen or ersatz companion, why do we seem to prefer machines to humans? Because we, like the lonely man who prefers a dog over a fellow human being, are disappointed by our human-human relationships and find refuge in technology (Turkle)? But the science fiction narratives also show us a different way of thinking about the human-robot interaction in Jimmy and Robutt’s relationship. Jimmy transcends human/non-human categories when he thinks or talks about his friend and thus gives us a more positive interpretation of how we might interact with and consider robots in the near future. What is more, if the robot’s responsiveness is paired with respect and our recognition of it as a being in its own right that we are becoming with, the elements for Donna Haraway’s companion species are given.

**Concluding thoughts**

The current discussion of human-robot interaction revolves around concepts of consciousness linked to anthropomorphism, often with a strong dystopian undertone. As robot pets are already in place in the Netherlands, Germany, Australia, Denmark (1000 PAROs) and in the United States and Japan, the question of soft impacts cannot be put off any longer. Technology assessment needs to pay more attention to this in order to create a fruitful dialogue with roboticists involved in the development of both robot pets and other sociable robots. Science fiction, despite it being a genre of fictional literature, can offer valuable insights into the implications of technologies, as it has the advantage of being able to explore the future from a variety of perspectives, and present the

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\(^6\) We use the definition of anthropomorphism as given by Duffy: “Rationalisation of animal or system behaviour through superposing aspects of the human observer” (177).
reader with expectations about impending developments via its natural “creative power” that scenarios increasingly attempt to achieve (Rasmussen 248).

The analysis of Ray Bradbury’s Fahrenheit 451 and Isaac Asimov’s A Boy’s Best Friend highlights parallels in thought about philosophical and ethical implications, or soft impacts, of robot animals, which we related to works by academics such as Donna Haraway and Sherry Turkle. Most strikingly, the issues of personhood, aliveness and consciousness addressed in science fiction about fifty years ago are now becoming reality. In fact, we have argued that it is possible to read science fiction literature as scenarios of the future, regarding ethical and philosophical implications of technologies - scenarios as they are created as forms of ethical technology assessment. While this particular analysis focused on two influential authors and their narratives on robotic dogs, it will be valuable to look at other media such as TV or film. Discussing fictional representations of robotics and artificial intelligence can widen the perspective and further enrich the discussion of technology’s soft impacts in the future, without replacing other, more systematic analyses of these issues or assuming that science fiction should be the sole source for exploring soft impacts. In that context it needs to be acknowledged that the speculative nature of science fiction can be problematic and SF’s powerful narrative can be veiling political or other intentions, two elements that are making science fiction interesting and valuable from an analytical point of view. The authors’ creativity can open doors that had not even been conceived beforehand. Ultimately, we need to decide how we want to define possible relationships with robots. The question posed in the beginning then is still the question that should be addressed. No longer should the question be “how far we can go in our relationships with robots?”, but instead one should ponder: how far will we let it go?

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