Robbie, the pioneer robot nanny

Science fiction helps develop ethical social opinion

Carme Torras
CSIC-UPC, Spain

I fully agree with Sharkey and Sharkey's statement that "there is a need to examine the ethical issues before the technology is developed for the mass market", and would like to add that we should make every effort for the ethical debate to transcend the research community and reach lay people.

Robot nannies may be viewed as just a further step in technology development, but, in my opinion, the commercialization of emotional surrogates constitutes a qualitative jump in technical progress as, for the first time, machines are entering the intimate circle of human feelings.

If a technology can be developed, it will, as history has repeatedly demonstrated. Thus, fancy robot nannies will soon be affordable to many people. To some extent, they will bring up future generations. But education and feelings are at the core of human nature and, therefore, what type of robots to devise should not be a specialized debate confined to scientific grounds, but one that should concern everyone. Thus, it is crucial that society at large gets enough information and motivation to form an opinion concerning service/social robots.

Let us consider the example of *tamagotchi*, the first relational artifact to enter the marketplace. In the 1997 holiday season, many children became attached to this toy which emulated a living creature that needed to be fed, cured when ill, and, in sum, be taken care of. According to Turkle (2007), "*tamagotchi*s demonstrated a fundamental truth of a new human–machine psychology. When it comes to bonding with computers, *nurturance* is the 'killer app' (an application that can eliminate its competitors)".

Robot nannies are aimed at establishing such a nurturing relationship, although in the reverse direction, which may have stronger consequences. As robot nannies enter the marketplace, these consequences must be unravelled and consumers should be able to distinguish robots stimulating the child's best abilities from those just creating dependence, spoiling children or becoming a substitute for parenting.

To help form public opinion, science fiction offers a wonderful playground to discuss possible good/bad uses of technology, to anticipate problems and ways

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out, and to favor the involvement of lay people in shaping the way robot technology develops.

It is fascinating to see how, sixty years ago, Isaac Asimov (1950) anticipated, in his celebrated short story "Robbie", some of the issues raised in Sharkey and Sharkey's paper. To name but a few, the authors ask "if a child was about to run across the road into heavy oncoming traffic and a robot could stop her, should it not do so?" and the story implicitly poses the same question by showing Robbie saving the girl from being run over while the humans watching the scene, her parents among them, are paralyzed as they cannot do anything to rescue her. It is no news that Asimov saw robots positively. Thus, according to his first law of robotics, robots should always save people even if they didn't want to (which is not the case in this story) and saving people would limit their freedom.

Another parallelism between the paper and the story is that both raise the comparison between a robot pet and a dog. In addition, Asimov uses this issue to put forth another controversy in depicting a mother in favor of the dog and emotionally against the robot, and a very rational father convinced of the benefits of technology. This opposition allows the author to enrich the debate by making the reasons behind one and the other viewpoint crop out.

Philip K. Dick (1955), in his short story "Nanny", was less positive about robots than Asimov. Actually, he satirized the battle between manufacturers to make competitor products obsolete and, on the rebound, their own products also, so that they could sell newer versions. Along the way, he raised interesting questions about robots. For instance, he took for granted that robot nannies should not spoil children and he elegantly framed in the narrative context two topics covered by Sharkey and Sharkey's paper. Namely, a visual report screen mounted on Nanny allowed parents to follow the activities of their children outdoors from the comfort of their living room; and, more essential, the story made evident how difficult it was to fit robots in the binary categorization animate/inanimate. To make his point, Dick resorted to the effective linguistic trick of referring to the Nanny as *it* or *she*, depending on whether the scene was described by an omniscient narrator or watched from the child's viewpoint.

There are many related stories, such as "I Sing the Body Electric" by Ray Bradbury (1969), whose TV sequel Twilight Zone is cited at the beginning of Sharkey and Sharkey's paper. In the original short story, a child is unwilling to accept an electrical grandmother as a surrogate for her dead mother, until the grandmother demonstrates her immortality. This is an advantage of robot nannies: they do not come and go like their human counterparts; and they do not tell lies, so that parents can know precisely in what hands they leave their beloved children.

Domestic robots can be very handy as household appliances, even to entertain and look after children, like TV sets, security cameras or play-stations; the problem

comes when they are sold as emotional surrogates "whose stock in trade is love", as the citation reads and Sharkey and Sharkey's paper provides evidence for. Collecting this evidence is very important, because if such issues are to be transmitted to a general audience, they must be well-documented and grounded on facts as long as law permits. And the fact that "it would be unethical to conduct experiments on long-term care of children by robots", as the authors point out, should not open the door to such experimentation taking place uncontrolled and online in the homes of many incautious consumers, due to the pressure of the market.

Back in the fifties it was premature to start a public debate on robot nannies, but now it has become very timely as the future is here to stay. Science fiction stories may provide good clues for a fruitful discussion in schools and parenting forums, as well as in technology prospect meetings and social gatherings related to education. Because this is the key word: education; families must have access to faithful information in order to form their own opinions, which should allow them to make an informed decision when manufacturers flood the marked with robot nannies and other household appliances. Who is responsible? In my opinion, the long chain of responsibility that Sharkey and Sharkey mention starts at researchers, who have the information first.

I was fortunate to run into this paper and be able to contribute a commentary. Through the years, I have participated in several projects related to social robots, and I have tried to communicate the technological prospects I was gathering to lay audiences, with little success. Society at large is only barely interested in scientific and technological discourse, and robots are definitely seen as harmless toys. This made me give science fiction a trial, and one year ago I published the novel *The Sentimental Mutation* (Torras, 2008), whose plot conveys my views on the advantages and dangers of personal robots. I am still surprised at the great attention it has attracted from the media and the general public. One can speculate on the reasons, but the fact is that my views reached incomparably many more people through fiction than through science.

"It is the relationships that we have constructed which in turn shape us" is the citation opening my book. I borrowed it from philosopher Robert C. Solomon (1977), who meant to refer to human relationships. In this new context it acquires another meaning, since it is human–robot interaction that we are constructing. Along this line, one character in *The Sentimental Mutation* says that slave robots make owners despotic, the entertaining ones take away their users' brains, and the efficient ones spoil people by doing everything for them, even making their decisions for them. But another character counters by showing that robots can be stimulating and foster our creativity, thus enabling humankind to reach unforeseen goals.

This is the dilemma: how to take the good part, without suffering from the bad side-effects? How to make robots improve the quality of our daily lives and

increase our freedom, while avoiding their making us more dependent and emotionally weak? By being progressively brought up by robot nannies, children may further develop some capacities to the detriment of others. Hence, a gradual evolution of human thought, feelings and relationships will naturally take place, this being what the sentimental mutation refers to.

Turkle (2007) points toward this evolution of human nature when she asks: "What kind of people are we becoming as we develop increasingly intimate relationships with machines?" or "How will interacting with relational artifacts affect how people think about what, if anything, makes people special?" and, more concretely, "What will loving come to mean?".

The danger of Reactive Attachment Disorder, pointed out in Sharkey and Sharkey's paper, shows up in my novel through a girl character that clearly suffers from it, and also in a school context, where students are subject to a very extreme form of socialization training. Moreover, the point on the confidentiality of what a child discusses with his robot, also raised in the paper, appears framed in the same school context, making it clear that several of these conflicts of interest have been the object of careful regulation by law in the described futuristic society.

In Sharkey and Sharkey's paper the aforementioned concerns are well documented and nicely exposed, ready to be discussed by the scientific community.

Let me conclude by saying that years ago science fiction was perceived as talking about a far-off future, while nowadays it is seen as anticipating what will happen tomorrow. This is why it is penetrating more and more into academic circles, thus postulating itself as a way to bridge the gap between academia and lay people. As an example, the Technical University of Catalonia has sponsored, since 1991, the well-known UPC international science fiction award (UPC website, 2009), it maintains an up-to-date wide collection of science fiction books in its library, as well as a specialized forum and a website. The web homepage states "Universities around the world are welcoming science fiction. This genre, which has been included in literary academic programs, is also beginning to be used by many universities as an element that complements and consolidates scientific and humanistic education".

A related initiative is the Robot Hall of Fame (2009), created by Carnegie Mellon University in April 2003 to call attention to the increasing contributions from robots to human society. It honors robots that have inspired and embodied breakthrough accomplishments each year, without making any distinction between fictional and real robots. Thus, the inductees range from the C-3PO film robot character of "Star Wars" to the research robot Shakey (Nilsson, 1984), from the humanoid Asimo to the Mars Pathfinder Sojourner rover (Mishkin et al., 1998).

Finally, the prestigious journal *Nature* included several papers devoted to science fiction in a 2007 issue ("Many Worlds", 2007). The editorial reads: "Serious

science fiction takes science seriously. […] It does not tell us what the future will bring, but helps us to understand what the future will feel like, and how we might feel when one way of looking at the world is overtaken by another".

In sum, like most researchers, I endorse neither a catastrophic view of the future nor a blind optimism as regards to technological progress. With particular reference to robot nannies, I believe that they have a place at home as a complement to other household appliances, but they are not in any way to be taken as emotional surrogates. In this slippery terrain, science fiction may help us clarify the role that the human being and the machine have to play in this *pas de deux* in which we are irremissibly engaged.

References

Asimov, I. (1950). *I, Robot.* New York: Gnome Press.

Bradbury, R. (1969). *I Sing the Body Electric.* New York: Knopf Publishing Co.

Dick, Philip K. (1955). Nanny. *Startling Stories*, Spring issue.

"Many Worlds" (2007, July 5). Special issue on the 50th anniversary of the celebrated quantum physics hypothesis. *Nature, 448*, 1–104.

Mishkin, A., Morrison, J., Nguyen, T., Stone, H., & Cooper, B. (1998). Operations and Autonomy of the Mars PathFinder Microrover. *Proceedings of the IEEE Aerospace Conference*, *2,* 337–351.

Nilsson, N.J. (1984). *Shakey the Robot*. Technical Note 323, AI Center, SRI International, Menlo Park, CA.

Robot Hall of Fame (2009). URL:http://www.robothalloffame.org/, last access 10 March 2010.

Solomon, R.C. (1977). *The Passions*. Garden City, NY: Anchor Press/Doubleday.

Torras, C. (2008). *La Mutació Sentimental* [The Sentimental Mutation]. X Manuel de Pedrolo Science Fiction Award, 2007, and 1st Ictineu Prize, 2009. Lleida, Spain: Pagès Editors.

Turkle, S. (2007). Authenticity in the Age of Digital Companions. *Interaction Studies, 8(3),* 501–517.

UPC website (2009). URL: http://bibliotecnica.upc.es/cienciaficcio/premi_upc/angles/presentacio.asp, last accessed 10 March 2010.

Author's address

Carme Torras
Institut de Robòtica i Informàtica Industrial (CSIC-UPC)
Llorens i Artigas 4–6
08028 Barcelona
Spain

Email: torras@iri.upc.edu