

Mdi

Angelica REYES^{a,1} and Ruth S. CONTRERAS ESPINOSA^b

^a Technical University of Catalonia

^b University of Vic

Illustrations by J.L. Eguia

Abstract. The story that we present tries to take readers on a journey of technological marvel, and attempts to show a little view of what the future can be like. After all, the sky's the ceiling, and we are far from our limits. Our story develops the action in the Earth and mention Kepler 4b and Kepler 7B planets to show that distances there are not a problem anymore and everybody can travel from one planet to other like we do using the subway in a city. We do not get into the problems of analyse the specific physical characteristics of each planet neither to explain how humans achieve to live there. We only want to show that in a world of disruptive technologies and innovation, the imagination is and will always be a wonderful tool.

Keywords. Intelligent gadgets, ubiquitous devices

Introduction

Action in science fiction stories could be around a very big spectrum of possibilities (interstellar travels, space conquest, the consequences of terrestrial or cosmic catastrophes, human evolution caused by strange mutations, evolution of robots, virtual reality, the existence of alien civilizations, etc.) but in our story we decided to put a closer scenario, it means, an scenario with similar characteristics as the one we have in these times. The main character lives in the 2050 year and the action of the story is centred basically on her reflections about the use of multiple gadget' functions that were designed to provide us an easy way of live. The story contemplates the equal coexistence of humans and robots that follow human being patterns, in other words, there are anthropomorphic robots that seem to be and think as humans do right now.

1. Mdi

First “Why you do not use your MDI?” Sonia said me cheerfully. I gave you it few months ago and you really do not use it very much. . “In these times, all the people already have a gestural interface that helps to enhance the information of the physical world with the information usually stored in our digital profile”.

I am not used to changes quickly ... a few years ago, I had to make an effort to learn how to use the SixthSense, so, I had to wear it around my neck like everyone else (I would not like to be called a "freak") but the truth is that I never liked to use my hand gestures for interacting with mobile devices. Even now, it does not have any sense to me.

Then, in the blink of an eye, everyone had removed the pocket projector, the mirror and the camera from their necks to fit it into their ear ... puff!!! Surely in a short time the sixth sense will have to be used in a grafted way into the brain. So, I do not have any hurry in having now the Sixth Sense grafted in my ear, nooooo, I will not get it off from my neck and I do not know if I want to use the MDI all the time.



Figure 1. The MDI shows my digital profile

Sonia has always owned the latest technology, and she has now given me this "junk", so I can also be "hip". Technology is always evolving and it is anyone's guess where this will stop; this reminds me of the first MDIBook I ever downloaded, "The Shock of the future" by the Tofflers: it was all about the accelerated changes humankind is experiencing and the disruption of future over present, constantly introducing endless innovations. I was visiting Kepler 7B, and was quietly riding on the subway when I thought of reflecting my literary criticism of the book on my hand; you will not believe this, but the police was there in a flash, ready to question me! At that

time I did very much regret not having installed the literature emulator to mislead the cops... but what an experience! Now I can laugh, but back then I had a very hard time.

Sonia does not know it, but I had already seen the MDI before she had, even before it had arrived in Barcelona. It was then, when the Kepler 7B police arrived and put the MDI 5 meters from my seat on the subway, and showed the whole world my marital status, my religion, the name of my parents and my pet, the colors I like, my favorite ice cream flavor and even my mood – which was, of course, terrified. What a shame, that everyone could see it! Luckily, this has now become illegal; the upside is that all of sudden I had many suitors, and that the police left as fast as they had arrived when they found out that I was just a philosophy student.

When I arrived at Kepler 7B nobody warned me that our tastes and preferences could be seen reflected on every surface; of course now I know it, but I am constantly amazed by the fact that this device is able to reveal these many personal things to total strangers. If you ask me, I think that science fiction is used by scientists to draw on the future and rational models are used to try to imagine the future, focusing on the use of models that allow us to visualize how life will be in a few years. Why science fiction does not also denounce the potential drawbacks of technology? There must be more people that, like me, agree that any sufficiently advanced technology is indistinguishable from magic. [1]

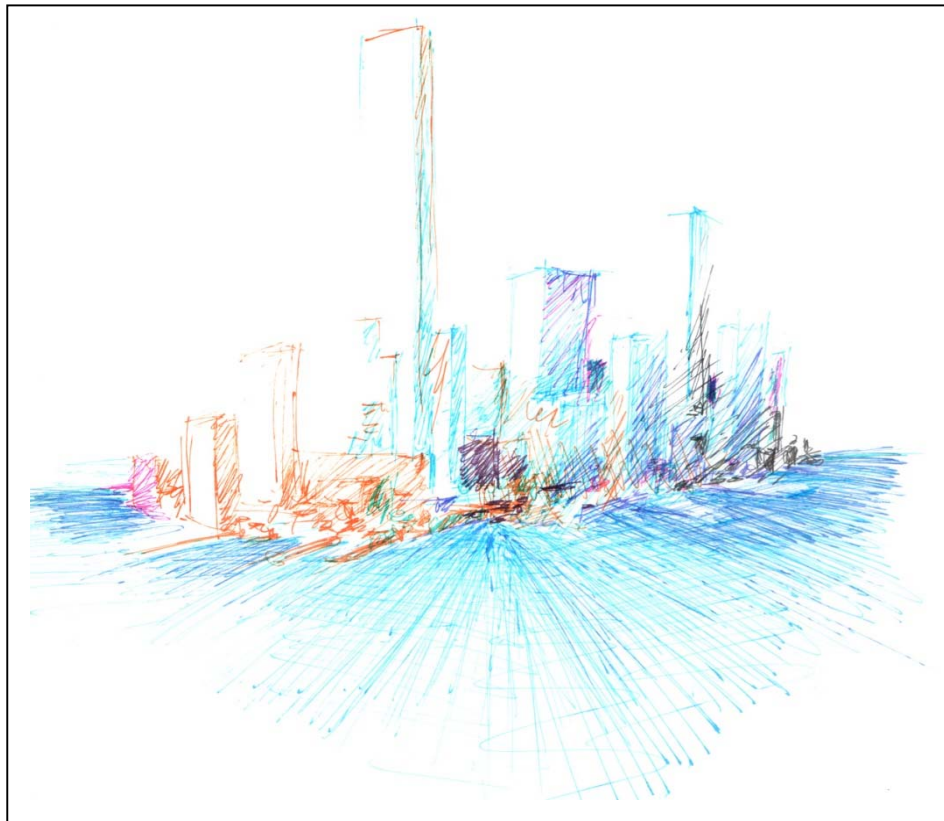


Figure 2. Kepler 4b downtown.

I mean it; sometimes I'm afraid I will no longer be able to distinguish between the real and the virtual worlds. Yesterday I downloaded a newspaper in my MDI and it showed me live images from the news. I used to watch this dynamic information on the digital display on my fridge and I think it didn't affect me so much. Not that I'm complaining, but now I can go a whole week without seeing a real person, I spend the day watching 3D images of friends I have never seen in corporeal form, my pet is virtual and so is my garden, and my work, and well...

It's been a long time since I walked through the aisles of a supermarket looking at the products on display and listening to the advice other consumers have left regarding the new meat extract, or which is the latest liquid that provides all the nutrients we need to eat every day... Nowadays, I purchase everything virtually, as almost everyone else does: poof! Sonia says the MDI has a setting of right choice and using that, the MDI is able to select the products for me, send my preferred store the list of products that they have to send to my home, taking into consideration, of course, which type of dairy is the best one to help me preserve my bone structure and which one contains the exact amount of calories I wish to consume.

The information I used to hear directly from the products when I walked the aisles of the supermarket or bookstore is now shown to me at home, in a virtual way, by the MDI. I do not need to stand near the products to obtain information that might help me make the right decision; the MDI does it for me. It is true that my senses are not able to collect all this data, that intangible information provided by the companies that place contextual and personalized information to the service of the customers, to facilitate the purchase of products correctly, according to our preferences and needs... but what if I prefer to make a mistake from time to time? I used to like it when I purchased something by mistake and was nicely surprised: that's how I discovered, years ago, that I loved salmon in olive oil -I thought I was buying rabbit... If I had been using the MDI I would have never discovered it, you know, too much technology is not exactly my thing.

Don't worry, I will use the MDI, everyone does, there is no one in the universe that does not have one grafted or attached... a few days ago I was, just for a minute, lost in downtown Kepler 4b and I forced myself not to use the device. It was depressing to discover how dependent on technology I am!. The mapping application allows me to get my bearings and find the shortest route to my destination, with a single gesture of my hand I can show the device where I am, and in a moment I'm no longer lost. The MDI uses contextual visual information to automatically inform me the means of transport I should use to get to my destination. The use of the technology these days is reduced to make a gesture to see how, in an instant, what seemed impossible years ago is now a reality. I was able to capture still and moving images from this site using my gift. Sonia insists that I underuse it but, in reality, I have had to use much more than I would have liked. I know all too well what the MDI can do, even the gesture of drawing a circle on my wrist to project an analog watch. This is a trick I learned last week thanks to the timeline that Alex published in his profile.

I did not want to forget that experience of feeling lost, and so I have captured images of that street, I store those images into my virtual memory. The MDI recognizes any gesture or posture of mine, and it makes it easy to gather and share information of all kinds. That's how I could show the captured images to Alex and Hugo. They received them on their devices and were able to project them onto the surface in front of them, as I went through the photos and explained my feelings. Before, information was limited to the digital format of a screen, and the intangible information could not

enter the tangible world, making it impossible to interact with different types of information. This liberation of information and the obsession to integrate reality with the virtual world is what is killing me. Of course I haven't mentioned this to Sonia, and I can hear her voice asking – “Why aren't you using MDI?” –

Hugo and I have been really good friends, we talk about everything... I usually explain him my fears, my opinion about MDI, robots and other intelligent agents that each day are involved in a ubiquitous way more and more into our lives. The first time that I met Hugo was in Kepler 7B, it was embarrassing, when police was showing all my profile in the wall Hugo was there.

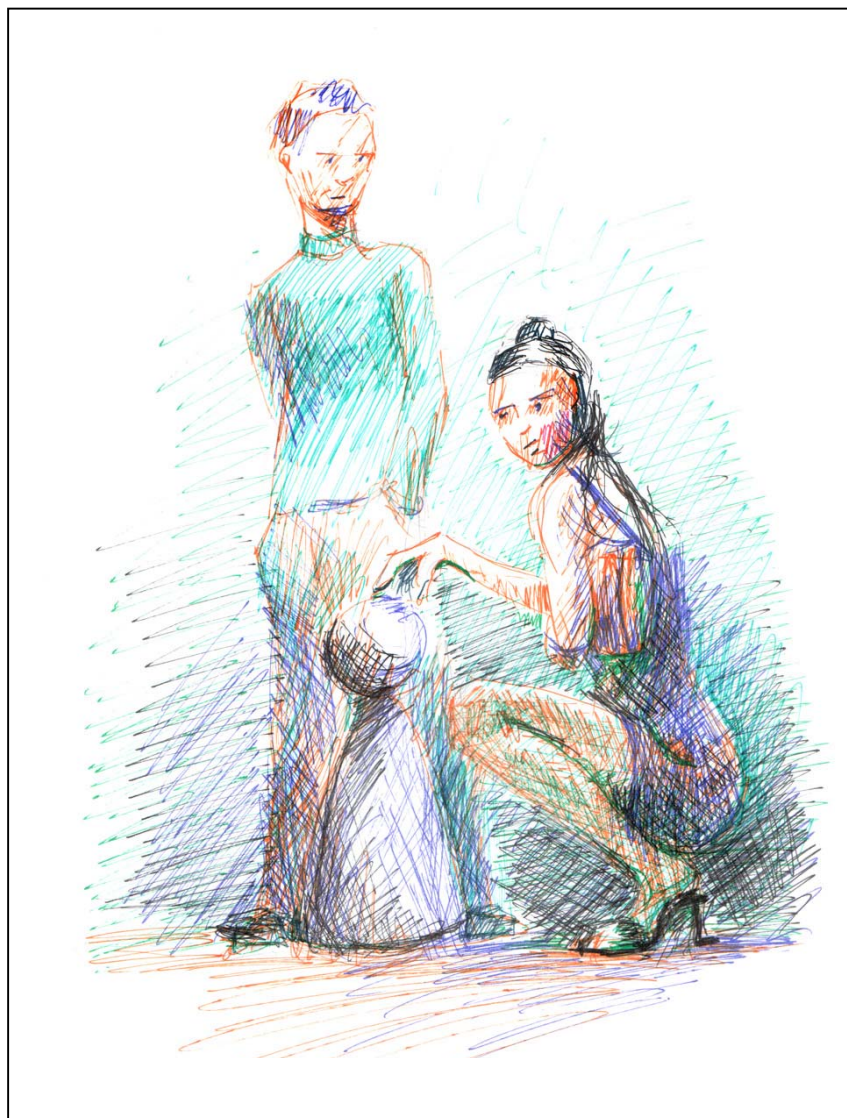


Figure 2. Alex, Hugo and me.

While I was waiting for Sonia to finish a virtual conference with her friend Cristina, I asked the device to show me Youtube3D, and watched a 3-D projection about a text written in 1980, a relic. The title was: Teaching Science Fiction: education for tomorrow, by Jack Williamson. For a long time, pedagogical material based on science fiction has been used, but I think that as much as technology advances and as much as our tools change, we remain human beings so primitive and wild as our remote ancestors. Anyway, reading this material I learned about the Science Fiction Society Library that had been established virtually in the popular Research Institute of Creative Writing in Facebook. This leads me to the conclusion that what has to be particularly interesting in science fiction is not so much the prediction of a particular technological artifact, but the human response to the changes that it introduces in our lives.

While reflecting on this, I asked the MDI for the drawing application that allows me to draw conceptual maps with my fingers. I do not want to lose my ideas, maybe one day the device will also do the thinking for me. Sonia would still be a while with her talk. Drawing icons or symbols in the air is like conducting an orchestra, for example I can draw a half circle using both index fingers, or the @ symbol to check my mail. That was enough to satisfy my impatience.

With all these multi-touch and multi-user interaction systems, I am getting increasingly confused ... I Have a big bump on the middle of my stomach... Who will teach us how to live in this always changing world, the result of this accelerated-growth technology? I'm sorry, I didn't realize before. And, where do we get?

Surely I'm rambling too much, I am very tired, and it's a shame I can't recharge myself by induction as all the electronic devices I carry with me do. These expensive fabrics that transform my movements in energy at first seemed unsanitary but I must admit they are my salvation as I never remember to charge my devices in the traditional chargers.

What I disliked was not being able to wash these clothes, but seeing as the fibers clean themselves it is not that unsanitary - in the end I think the problem is that I feel nostalgic for the smell of soap. I will stop talking now, I will go to the Higgs Boson for a while, to renew my energies, because I am dying of hunger, sleep and mainly boredom while waiting for Sonia; I will think twice before I meet friends in their corporeal form again.

Even though I was programmed to be "only a robot" I have never been feeling one of them. I am always confused about my purpose in this live, I cannot think only in an objective way as others use to do. Live is much more than a numerical matrix that combines mathematical formulas based on contextual information, where I am only a bit.....noooooooo I can feel fair and shame about it. Anyway, I am sure that I could be happier if I were able to think only as I was designed.... Ups Sonia has arrived.



Figure 3. She is Sonia

2. Technology Discussion

MDI is inspired in "Sixth Sense" a wearable, gestural interface that joins the physical world with digital information, and let's use natural hand gestures to interact with that information. This project was created by Pranav Mistry and Pattie Maes in the MIT Media Lab in 2009. [2]

Sixth Sense brings intangible digital information into the tangible world, and allow interact with the digital information via hand gestures. The information is free, is "out" of the traditional interfaces, seamlessly integrating it with reality, thus making the entire world is a computer.

The prototype comprises a pocket projector, mirror, and camera worn in a pendant-like mobile device. The projector and the camera are connected to a mobile computing device in the user's pocket.

The system projects information onto the surfaces and physical objects around us, making any surface into a digital interface; the camera recognizes and tracks both the user's hand gestures and physical objects using computer-vision-based techniques. This prototype uses simple computer-vision techniques to process the video-stream data

captured by the camera and follows the locations of colour markers on the user's fingertip. That supports several types of gesture-based interactions, demonstrating the usefulness, viability, and flexibility of the system. The software, in addition, interprets the data into gestures to use for interacting with the projected application interfaces.

This project, can demonstrate the viability of a technology like MDI in a next future.

3. Summary

The future is and will be always exciting for our human brain, every turn we take, we are thrust into a new technological world full of innovation.

Science fiction, originally known as advanced literature, has been taken in hand the tendency that technologies have to converge and integrate disciplines such as: biotechnology, nanotechnology, materials technology, information technology, etc.

The story that we presented relate different events that maintain their plausibility based on the current convergence of technologies such as the convergence that we can see in our high end mobile devices. As is well known we can watch on our mobile the world cup final match online or we can manage our financial bank accounts since some years ago, but what else we could do in only few years more?..... Imagination is the limit.

Right now, with the emergence of high speed wireless networks and parallel advancements in Internet-based technologies such as the Semantic Web, Web Services, Agent-based Technologies, Context Awareness, etc. realization of projects like MDI are not very far away from us.

Projects such as the intelligent wireless web (IWW) [2] already define network providing anytime, anywhere access to information resources with friendly user interfaces and applications that learn and thereby provide increasingly useful services whenever and wherever needed.

In the same way, the state of the art on Convergence Networks focused on the convergence of not just voice, video and data, but also the convergence of heterogeneous wired and wireless networks and context aware user information. This enables a new communication model where IP-based networks support high quality of service.

The Internet Engineering Task Force (IETF) [4] has working groups on the uninterrupted access to information, entertainment, communication, monitoring and control, giving the user a sense of being connected anywhere, anytime, to anything, with any service.

Indeed, the fundamental goal of new topics about convergence of technologies and seamless mobility [5] is to provide new types of user experience that overcome the limitations of existing technologies, systems and services.

The vision for seamless mobility is the ability for users to remain connected while roaming across different networks. Usage ranges from everyday scenarios for commercial and business applications. The networking technologies that are converging include cellular (2.5G to 4G, G: generation), wireless (wireless personal area network, wireless local area network, WiMAX, Bluetooth, Zigbee, ultra wideband), and wired (digital subscriber line, cable modems, Ethernet, Gigabit Ethernet) technologies.

This really means different levels of convergence, Strassner [6] classify it as:

- Service Convergence: End user accessing the same service using one or more devices through one or more access mechanisms
- Device Convergence: End user accessing multiple services across multiple access mechanisms through a single device
- Network Convergence: A unified network realizing multiple services using one or more devices through one or more access mechanisms
- Other types of convergence, including billing, security and management convergence.

References

- [1] Arthur C. Clarke, "Profiles of The Future", 1961 (Clarke's third law)
- [2] Sixth Sense prototype. <http://www.pranavmistry.com/projects/sixthsense/#ABOUT>
- [3] H. P. Alesso and C. F. Smith, "The Intelligent Wireless Web", Addison Wesley, ISBN: 0201730634, 2002.
- [4] The Internet Engineering Task Force. <http://www.ietf.org/>
- [5] Golmie, N. Seamless mobility: are we there yet? Wireless Communications, IEEE Volume: 16 , Issue: 4. Page(s): 12 - 13. 2009
- [6] Strassner, J. Convergence Seamlessly - A Look Inside Motorola's Seamless Mobility Initiative. The 1st International Workshop on Broadband Convergence Networks. BCN 2006.