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Scientific eventuality or science fiction: The future of people with different abilities[☆]

DeeDee Bennett^{*}

Georgia Institute of Technology, 500 Tenth Street, Atlanta, GA 30332, United States

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ABSTRACT

Consider this, we are living in a future [in-part] imagined over 30 years ago- in science fiction film and books. We may envision that 30 years from now we could live in a future with technology developed from the concepts we see in science fiction today. In this paper, the concepts of disability are challenged in the future based on the technologies imagined in the science fiction genre of the present and past. Focused on the sub-genre, Cyberpunk, current mainstream, as well as new emerging technologies inspired by science fiction are reviewed. Future disability is reimagined dependent on continued support and acceptance of the emerging technology. If our past is any indication, our future may lie in the conceptual and slightly implausible figments of our science fiction-based imaginations. However, the cultural shift will significantly impact our laws, regulations, and policies, as well as introduce new societal concerns.

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1. Introduction

“This is not science fiction . . . it’s science eventuality”—Steven Spielberg on his film *Jurassic Park* in (Cox,1993).

Wireless Technology has long been defined synonymously with mobile phones. In the last 5–10 years, the definition has expanded slightly to include tablets, laptops, and smartphones. However, current wireless technology encompasses so much more! Today, in 2015, we include technologies that communicate wirelessly not just to the user but to each other and the environment, as well. Medical wireless technology has grown to include implantable devices that communicate to each other and signals information back to the doctor. Automobile-based wireless technology now includes sensors and radars that signal drivers for blind spots, nearby vehicles, and parallel parking. Aviation-based wireless technology has advanced to include commercial and personal use drones for videography and deliveries. Similarly other industries have metamorphosed due to various wireless technologies including banking, employment, education, and broadcast television, to name a few. While our lifestyles, education, community participation, and employment environments are quickly transforming with the help of wireless technologies, the change has been slower for many people with disabilities. Very few of these aforementioned wireless technologies were actively designed with the considerations of people with disabilities in mind. However, many of these wireless technologies were designed with inspiration from science fiction. This paper conceptualizes how to influence our current innovators to universally design the wireless technologies of the future,

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^{*} Correspondence to: University of Nebraska at Omaha, 6001 Dodge Street, CPACS 111, Omaha, NE 68182, United States.
E-mail address: dmbennett@unomaha.edu (D. Bennett).

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thirty (or more) years into the future. Since we currently use science fiction as guides to design for the widest possible number of users, perhaps we can increase the number of inclusively designed, innovative concepts depicted science fiction to encourage the development of more universally designed wireless technologies in the real-life future. Furthermore, the influence on the science fiction genre might also help to culturally transform the perception of disability. Therefore, this paper also visualizes how the perception of disability may be culturally transformed from disabilities to just recognizing that each of us have differing abilities. To conceptualize universal design, wireless technologies 30 years into the future, this paper is based on two current well-established assumptions, (1) there is an undeniable lack of wireless technology products accessible for people with disabilities – those that are accessible were often retrofitted in hindsight to be more inclusive or built as assistive technology specifically for people with disabilities and not considered mainstream products and (2) many of our most pervasive wireless technologies (designed for the mainstream) were inspired by science fiction works of our past.

2. Disability

In the U.S. people with disabilities are a heterogeneous group of people with varying types of disabilities or multiple disabilities. Disability in the United States is a spectrum of differing types, including those that are readily apparent, not apparent, constantly recurring, suddenly appear or disabilities with which individuals have had their entire life. A snapshot of disabilities in the U.S., as reported in the 2010 census, estimated that nearly one in five Americans (approximately 57 Million) have at least one disability (Brault, 2012). This snapshot showed that most individuals with disabilities have mobility-related disability (nearly 31 Million) or sensory-related disability (nearly 16 million vision-related disabilities and 7.6 Million with hearing-related disabilities (Brault, 2012). Unfortunately, the census data collected in 2010 was the last time such specific information was collected. This census data also did not include the number of people with temporary disabilities. There are other disabilities in the United States including behavioral and cognitive disabilities, however, for purpose of this scientific exploration the focus is limited to mobile and sensory disabilities, representing nearly 80% of the population of people with disabilities in the U.S., per the census data.

Several perspectives have been offered to understand disability. The medical model focuses on the condition of the individual and their inability to perform certain tasks (Jaeger, 2012; Neufeldt & Enns, 2003). Often, in this view technology is design for and not with people with disabilities. The outcome is that technology will be used to fix or assimilate people with disabilities to adopt features and characteristics much like the general population (Goggin & Newell, 2003). The social model asserts that disability is related to the society and the resistance to consider the needs of people with disabilities when designing technology (Ellis & Kent, 2011; Jaeger, 2012; Neufeldt & Enns, 2003). Both models tend to focus on the cultural perception of disability first and then use of technology for people with disability (Ellis & Kent, 2011; Goggin & Newell, 2003; Jaeger, 2012). Both models hint at the potential problems with using technology to assist, help, or change people with disabilities, especially when people with disabilities are not involved in the process (Ellis & Kent, 2011; Goggin & Newell, 2003). However, there are other models. The economic model considers primarily the costs and benefits of being a person with disability compared to not having a disability (Neufeldt & Enns, 2003) The postmodernist model does not consider that social structures shape individuals and instead focuses on the new freedoms people with disabilities may achieve in life, perhaps with the introduction of technology (Jaeger, 2012). Finally, in his book *Disability and the Internet*, Jaeger (2012) used an applied perspective to view disability as the intersection of human diversity and the environment in which the live, often shaped by attitudes in society. The perspective of this paper is more closely aligned with a combination of social and applied perspectives. While technology very well advance and enhance people with disabilities, it will also advance and enhance people without disabilities. Therefore the purpose this advancement is not to assimilate or fix people with disabilities outside of the potential future society norm to enhance everyone. This paper also does not consider the costs and benefits of adoption of such technology for either people with or without disability. The future universal design of wireless technologies should include people with disabilities in the initial stages of design to influence future cultural perceptions, much like the social model. However, our current laws and attitudes are shaping our perceptions and people with disabilities, as well. Therefore the paper discusses one very unique way of re-shaping societal perceptions through the inclusion of people with disabilities at every step of the process starting with the artistic conceptualization of human technology interaction and use depicted in science fiction.

2.1. Disabilities and technology

Currently, technology developed considering the needs of people with disabilities is either considered universally designed or assistive technology. The universal design process is one by which innovators create products that considers the needs all people, with and without disabilities of all age groups. Assistive technology is that which is conceptualized, designed and promoted for the sole use of people with disabilities, typically to assist them either in their physical capabilities or as accessible adaptors for mainstream technology. The adaptors are an additional component often at an extra cost.

Several disability policy and technology scholars have an appreciation for the potential of the universal design process (Ellis & Kent, 2011; Field & Jette, 2007; Foley & Ferri, 2012; Ostroff, 2011). However, researchers have also noticed that universal design is, at best, a smaller unique subset of mainstream design (Foley & Ferri, 2012; Ostroff, 2011). Ostroff (2011) noted that until the “attitudes of designers change to understand and appreciate people with disabilities,” universal design would remain merely a unique approach (Ostroff, 2011, 9). Foley and Ferri (2012) highlighted that accessible technology

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