# TECHNOLOGY AND DISABILITY.
# THE ENRICHMENT OF HUMAN RIGHTS

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**Abstract:** Our primary aim is to analyze the impacts of technology on people with disability. Persons with a disability can be encouraged to fully engage in society by using specific types of technology (medical devices that target particular limitations). Many experts argue that medical exoskeletons or wheelchairs with motorized stand-up function provide people with severe disabilities with new possibilities. Impact of these opportunities is enormous and they directly influence the quality of life. Philosophers Amartya Sen and Martha Nussbaum in their "capability approach" assume that any form of impact that enables a person to pursue what they deem as essential influences quality of their life. Similarly, Eva Feder Kittay (philosopher) argues that care for the elderly, disabled, or children is crucial for any society. These authors will provide a philosophical basis for our arguments for the enrichment of human rights through technology for persons with disabilities.

**Keywords:** Human rights, people with disability, technology, care.

## 1. Introduction

Impacts of technology on people with any form of disability are enormous because they present plenty of new opportunities. What any "regular person" considers to be daily activities are often difficult or impossible to do for many people with severe disabilities. The real "game-changer" in this situation can be the use of new technologies. They could allow overcoming some of the natural predispositions that limit persons with disabilities. Even something so simple as an advanced wheelchair could open new options.

**People with disability in technological age**

People with disability often face discrimination and need to overcome multiple disadvantages throughout their lives. For the definition of disability, we can use the one presented by the World Health Organization (WHO). Here they declare: "Disabilities is an

umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations" (World Health Organization – Disabilities, n. d.). For our purpose, the most significant part is in the second paragraph. WHO states: "Disability is thus not just a health problem. It is a complex phenomenon, reflecting the interaction between features of a person's body and features of the society in which he or she lives" (World Health Organization – Disabilities, n. d.). This passage indicates that persons with disability face many obstacles, and some of them are not related to health. Society often creates barriers for people with different needs. These barriers are not intentional, but often governments or companies ignore the fact that some people need specific measures to be a part of an environment (schools, workplace, or others).

There is a dilemma about how to resolve this issue. Government laws and regulations provide measures to combat specific disadvantages of this minority group but are not often adequate. One of the possibilities is the implementation of new forms of assistive technology. There are plenty of authors and articles arguing that assistive technology eliminates some of the crucial barriers encountered by people with disabilities. For example, Ted Burke, Annraoi De Paor, and Eugene Coyle wrote an article "Disability and Technology: Engineering a More Equitable Ireland" (2010), where they explain the benefits of technology for the people with disabilities. They start with a very interesting thought about engineers. They argue that engineers should be directly involved in the creation of devices for people with disability because "they can promote greater equality of opportunity in education, employment, and citizenship for disabled people" (Burke, De Paor, and Coyle, 2010, p. 35). As we are arguing, this approach is crucial for the improvement of the situation for persons with disability. Authors add that "by developing and providing appropriate technology and by promoting inclusive design of devices, environments and services, engineers can help to build a more inclusive society." (Burke, De Paor, and Coyle, 2010, p. 36) The terms we have to highlight are the inclusive design of services, environments, or devices. These are particularly significant since they have an immense impact on the lives of people with disability. For example, by creating an inclusive environment, we eliminate plenty of barriers that prevent persons with disability from participating in various activities.

Authors Bodil Ravneberg and Sylvia Söderström in work *Disability, Society and Assistive Technology* (2017), explain the value of assistive technology for persons with disabilities. Just as Burke, De Paor, and Coyle argued in their article, these two authors claim that technologies have become essential for human lives. They even argue that technology influences our values and identities (Ravneberg, and Söderström, 2017). This statement is accurate because we are using devices for everyday activities. For people with disabilities, the situation is almost the same. The only difference is that they require specific tools. Daily activities for these people would be much simpler, but also the quality of their life would

improve. Authors also claim: "even though disabled people are just as different and diverse as non-disabled people are, they seem to share some vital perceptions of usable AT as technologies that symbolize enhancement, capabilities and identities" (Ravneberg, and Söderström, 2017, p. 3) Technology is becoming an essential part of our lives. For people with disability, this scenario is even more valid because AT (assistive technology) is massively improving and changing their lives. For example, exoskeletons in the future can be a huge life-changer for people who are unable to walk. Using devices to gain fundamental ability can greatly enhance the quality of life. Unfortunately, this scenario is not always the case. Authors declare that sometimes the identity of the persons with disability is so prominent that they perceive these instruments as an intrusion to their identity (Ravneberg, and Söderström, 2017, p. 8). For example, some people may consider disability to be a part of their identity; therefore they refuse devices that change them. For our current section of the analysis, these quotations were crucial because they demonstrate the impact of technology on people´s life.

Technology is becoming present in our daily lives. We use it to enhance ourselves and to make our regular activities easier. The situation is similar for people with disabilities, but there is an additional important factor. The barriers preventing them from fully participating in a society can be partially removed. Therefore, we as a society should focus on creating devices that would allow people with disabilities to have a higher quality of life.

## 2. Disability and future of assistive technology

We have described the impacts of technology on the lives of people with disability, and now we will focus on the future of assistive technology. There are several crucial domains in society that lack the devices, tool, and environmental adaptations to include persons with disability. On the one hand, we need to make assistive technology more available in the future. On the other hand, we need to focus on improving technology and designs, so the people with disability will feel comfortable using it.

In the short report "Assistive/rehabilitation technology, disability, and service delivery models" (2012), authors discuss the issues with accessibility of AT. They argue that "people with disabilities still experience limited access to, and awareness and acquisition of, appropriate AT products" (Adya, Samant, Scherer, Killeen, and Morris, 2012, p. 75). They add that huge factors are personal and cultural assumptions because they often dictate what we view as a good quality of life (Adya, Samant, Scherer, Killeen, and Morris, 2012). These are extremely important aspects we need to consider while we develop any form of assistive technology. Engineers and designers of AT should consider personal and cultural preferences while developing, upgrading devices and tools. For example, they should effectively communicate with people with concrete disability to find a design that would meet the expectations of the

targeted group. They even point out in the article that people should know their options because they can choose more appropriate devices that would reflect their specific needs (Adya, Samant, Scherer, Killeen, and Morris, 2012). Ability to choose is essential for every human being. Discrimination is a common problem for people with disabilities because they often do not have options from which they can pick. Authors in their article suggest an appealing solution to the discrimination issue: "healthcare workers and policymakers need a knowledge base in the extant ways that AT may be provided to end users to improve their well-being and participation" (Adya, Samant, Scherer, Killeen, and Morris, 2012, p. 76). The simplest solution is to provide the key figures with appropriate knowledge. This approach would ensure that people who are creating environments would understand the needs of the targeted group.

To improve the future of assistive technology, we should focus on the availability of the AT. We should also increase the number of options people with disability have by providing more types (models) of AT. Providing more options or types of AT is a very complicated situation because of the current economic system. For example, Burke, De Paor, and Coyle write: "in some of the world´s most prosperous nations, assistive technology that could facilitate a reasonable level of independence for people with disabilities is simply not available to them" (Burke, De Paor and Coyle, 2010, p. 36). The term most prosperous is crucial because it reflects the inability of a developed world to satisfy the needs of certain disadvantaged groups. This scenario does not apply to every developed country, but there are plenty of countries that do not provide adequate services to disadvantaged people. Authors even claim that "even when an innovative assistive technology addresses a clearly articulated need, unless the potential market is large enough to persuade a manufacturer to turn the solution into a product, it remains unavailable to potential users" (Burke, De Paor, and Coyle, 2010, p. 38). The problem with current approach is that it relies on the size of the potential market. This practice is very discriminating towards people who have very specific disabilities because they are not able to have the devices and tools they could have. These are not the only problems with the future of assistive technologies, but they are some of the most fundamental. We need to focus on how to make assistive technology more available to the targeted groups. We also need to create a more variety of equipment[1] because people with disabilities have various preferences.

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[1] For more information about various devices intended for people with a disability, see K. Rockefeller. She wrote the article "Using Technology to Promote Safe Patient Handling and Rehabilitation" (2008) where she describes multiple devices and their impact on the practice of handling, and rehabilitation of people with disabilities and other targeted groups.

## 3. Technology and approaches enhancing human rights[2]

In the next part of the article, we will analyze authors whose arguments strengthen our theory about the importance of assistive technology and its development. The first one will be presented by Martha C. Nussbaum and Amartya Sen in their capability approach. The second will be by Eva F. Kittay in her ethics of care. These both approaches are very significant because they relate to the topic of human rights. They offer interesting solutions to various discriminatory practices of laws and regulations. Our purpose is to promote the purpose of assistive technology for people with disability. For example, Martha C. Nussbaum in her book *Frontiers of justice: disability, nationality, species membership* (2007) write that persons with disabilities "need many things: recognition that what they are doing is work; assistance, both human and financial; opportunities for rewarding employment and for participation in social and political life." (Nussbaum, 2007, p. 100) This suggestion is connected with our position on assistive technology because by creating more useful and flexible devices, we create more opportunities for people with disabilities. For example, the Convention on the Rights of Persons with Disabilities – Article 27, section 1 (Work and employment) declares: "States Parties recognize the right of persons with disabilities to work, on an equal basis with others; this includes the right to the opportunity to gain a living by work freely chosen or accepted in a labour market and work environment that is open, inclusive and accessible to persons with disabilities. States Parties shall safeguard and promote the realization of the right to work, including for those who acquire a disability during the course of employment, by taking appropriate steps, including through legislation" (Convention on the Rights of Persons with Disabilities, n. d., article 27). In the article 27 section 1 – (d) it is said: "Enable persons with disabilities to have effective access to general technical and vocational guidance programmes, placement services and vocational and continuing training" (Convention on the Rights of Persons with Disabilities, n. d., article 27). This section proves the importance of developing appropriate technology for persons with disability. Also, the market economy should not be the main factor while developing any new form of AT. The state should find new ways to develop and distribute technology for these people to live a dignified life. Nussbaum adds to her reasoning that: "they can contribute to society in many ways, when society creates conditions in which they may do so." (Nussbaum, 2007, p. 105) This quotation means that persons with disability are productive and can participate in a market economy. Therefore, there is not even an economic reason to not provide them with sufficient technology. Nussbaum mentions a few additional times in the book that not creating conditions for people with disability is a huge

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[2] For more information about human rights and technology, see for example work: *Disability, Human Rights, and Information Technology* (2017) edited by Jonathan Lazar and Michael A. Stein. In this book, there are numerous chapters about complex problems concerning disabilities and information technology.

injustice and discrimination towards these people (Nussbaum, 2007) Nussbaum[3] is not the only author that realizes the importance of supporting person with disabilities.

Amartya Sen, in work *The Idea of Justice* (2010), defines one of the most significant approaches (the capability approach) concerning the disadvantaged groups. He claims that: "the freedom to determine the nature of our lives is one of the valued aspects of living that we have reason to treasure" (Sen, 2010, p. 227). In definition of the capability approach, he states: "the idea of freedom also respects our being free to determine what we want, what we value and ultimately what we decide to choose" (Sen, 2010, p. 232). These statements are significant because they reflect on the ability of the person to decide what he or she wants to do in life. People with disabilities are often discriminated and do not have sufficient means to make their own free choices. Technology plays a major role in this case because it gives this group a new means of manifesting their wishes. For example, a person who wishes to walk can use various technological gadgets to experience the motion. Even the means of transport are improved by new technological devices. For our argumentation, it is important what Sen says next: "functionings and capabilities are diverse, as indeed they must be since they deal with different features of our life and our freedom. This is, of course, a most unremarkable fact, but there is such a long tradition in parts of economics and political philosophy of treating one allegedly homogeneous feature (such as income or utility) as the sole 'good thing' that could be effortlessly maximized (the more the merrier), that there is some nervousness in facing a problem of valuation involving heterogeneous objects, such as the evaluation of capabilities – and functionings" (Sen, 2010, p. 239). The technology for persons with disabilities needs to be diverse because they, as a group, are very diverse. They originate from various cultures; have personal preferences, or specific disabilities. Sen argues that our current society is not oriented this way and need to adopt a system that recognizes diversity.

When we look at Article 9 – Accessibility of the Convention on the Rights of Persons with Disabilities, it is said: "1. To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas" (Convention on the Rights of Persons with Disabilities, n. d., Article 9 – part 1). Sen´s capability approach supports this thesis because it focuses on a person´s capability to achieve its aims, plans, and wishes. Sen recognizes that each person has the right to live independently and to participate in all spheres of society. For him, the exclusion of persons with disability is an absurd notion. He claims: "people with physical or mental disability are not only among the most deprived human beings in the world,

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[3] For more about Nussbaum´s work, see for example article "Capabilities, Entitlements, Rights: Supplementation and Critique" (2011). In this work, Nussbaum presents interesting ideas about her version of the capability approach and provides an additional enlargement of the concept itself.

they are also, frequently enough, the most neglected" (Sen, 2010, p. 258). Later in this part, Sen adds "many of the tragic consequences of disability can actually be substantially overcome with determined societal help and imaginative intervention" (Sen, 2010, p. 259). Sen perceives disability as a crucial factor that society cannot ignore. He believes that we can overcome disability to some extent. In our context, this means proper use of adequate technology. Sen ends his argumentation about people with disability by claiming that this group faces many obstacles but has the right to lead a good life (Sen, 2010). Sen´s capability approach is very interesting and supports our thesis of the importance of technology for the lives of people with disability.

Article 19 and 20 are also very significant for the role of technology for people with disabilities. Article 19[4] – "living independently and being included in the community" recognizes that persons with disability need to be part of the community. They need to have access to their residence and to various services and assistance (Convention on the Rights of Persons with Disabilities, n. d., Article 19). Similarly, article 20 – "personal mobility" states that the state should create measures to increase the independence for this disadvantaged group; for example by use of various technological devices intended for personal mobility (Convention on the Rights of Persons with Disabilities, n. d., Article 20). These sentences raise urgent concerns with human dependency for people with disabilities. Human dependency means that persons with disability are in special relationships with other individuals who provide care for them. Eva F. Kittay is an author that analyzes this phenomenon in her work *Love´s Labor: Essays on Women, Equality, and Dependency* (1999). Kittay claims: "dependency, then, is not only an exceptional circumstance. To view it as such reflects an outlook that dismisses the importance of human interconnectedness" (Kittay, 1999, p. 29). Kittay understands that some disabilities need human assistance, and this frequently requires instruments and devices (technology), to provide good quality support. Throughout her book, we can see that she considers the dependency to be an extremely important issue. For us, this is also significant because it explains that developing technology for people with disability is a normal situation. Therefore, we need to approach it with such an attitude when companies (state or private) create devices or tools for this group. Kittay, throughout her book, argues that dependency is a crucial factor in our lives. She believes that society often thinks of disability as something distinct and not crucial, and this leads to plenty of problems (Kittay, 1999). For our analysis, this is a sufficient understanding of Kittay´s work because she mainly argues that dependency is not a special condition in our lives. Therefore, we need to create an environment that supports people who provide care for people with a disability, or other dependent groups. In the context of our analysis, this means creating appropriate technology which caregivers can use.

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[4] For articles about the issues of living at home safely for people with disabilities, see the book: *Safe at Home with Assistive Technology* (2017) edited by Ingrid Kollak.

## 4.  Conclusion

In our paper, we demonstrated the immense connection between disability and technology. Development of assistive technology is crucial for people with disabilities because it enhances the quality of their life. The future problems of AT primarily reside in the availability and accessibility of the technology. These are aspects that need a lot of improvement because many people with disability often lack adequate technology. They also need plenty of options to choose from otherwise, they mind find the devices inappropriate (individual and cultural preferences). In the final part of the article, we have introduced concepts from Martha C. Nussbaum, Amartya Sen, and Eva F. Kittay. They served as a philosophical foundation for the analysis of certain aspects of human rights for people with disabilities. We also used the "Convention on the Rights of Persons with Disabilities" to further our argumentation. This document is significant because it addresses some of the direst problems persons with a disability encounter. In this study, we explained what role the technology occupies in the sphere of human rights. Technology can enrich the lives of people with disability by enabling them to do activities they could not before, or by providing them with options they did not have. Therefore, to conclude our analysis, we must argue that technology is extremely crucial for the enrichment of human rights.

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