

Changing Perspectives on Disability and Technology: Events, Trends and Personal Choices

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Abstract. In this chapter, eight (past-)presidents of the Association for the Advancement of Assistive Technology in Europe (AAATE) reflect on their personal engagement with the *technology and disability* field. The result is a patchwork of personal contributions, reflecting aspects of the contemporary history of Assistive Technology in its broadest sense, relevant for our collective memory and for those attracted to this field for their professional career.

Veränderte Perspektiven auf Behinderung und Technologie: Ereignisse, Trends und persönliche Entscheidungen

Zusammenfassung. In diesem Kapitel reflektieren acht (ehemalige) Vorsitzende der Association for the Advancement of Assistive Technology in Europe (AAATE) über ihr persönliches Engagement im Bereich Technologie und Behinderung. Das Ergebnis ist ein Sammelsurium persönlicher Beiträge, die Aspekte der gegenwärtigen Geschichte der Assistiven Technologien im weitesten Sinne widerspiegeln, die für unser kollegiales Gedächtnis und für diejenigen relevant sind, die sich in ihrer beruflichen Laufbahn für diesen Bereich interessieren.

1 Introduction

Dr. Martin Luther King Jr. in 1963 wrote “We are not the makers of history. We are made by history”. He meant it quite negatively, referring to the tendency of mankind to adapt to rugged collectivism. However, few scientific and professional fields are more involving at a personal level than *technology and disability* or *assistive technology*. Probably because the history of assistive technology (AT) is not only the history of an area of technology; it is also the history of changing values, attitudes, paradigms, beliefs, slowly or quickly maturing insights that can be described through the eyes of individuals, testimonies, protagonists at different level and in different moments.

This chapter is an attempt to elaborate on some aspects of the history of AT, without the ambition to be complete, objective, scientifically 100% sound. It is based on the collection of personal interpretations of scientists and professionals who have had, or still have, a leadership role in the Association for the Advancement of Assistive Technology in Europe (AAATE).

The main author has approached all presidents and past-presidents of AAATE, asking them:

- to describe a breakthrough moment in their thinking around technology and disability (where, when, what), and its impact on their work;
- to elaborate on the relation between those new insights and recognisable trends in the development of the scientific and professional field of assistive technology.

The eight contributions received are all different from each other. However, their reading confirms the hypothesis that the field of AT is affecting lives as much as the life stories of individuals affect the history of AT. To respect the authenticity of their voices, it was decided not to substantially edit the contributions received.

2 Trends and eyewitnesses

2.1 Shifting paradigms (Renzo Andrich)

In my 40+ year professional life in AT and accessibility, and commitment in policy (Andrich et al. 2013) and advocacy within user organizations, I have had the opportunity to witness various paradigm shifts in policies and practice and perceive how much time may be needed before these shifts are really understood by most decision-makers, service providers, and researchers and developers.

Here, I would like to highlight two paradigm shifts that particularly struck me:

- 1) working *with* vs. *for* persons with disabilities and
- 2) the *human rights* vs. *helping* approach.

The first shift came suddenly clear to my mind in December 1985, when some people with disabilities belonging to my association said: “why do you professionals – who work 8 hours a day with disability issues – have the opportunity to attend courses to improve your competence, while myself – who live 24 hours a day with a disability – I do not have such opportunity and I have to depend on professionals for many

choices?”. The point seemed so obvious: very soon, we organized a one-week residential course for people with disabilities, with expert disabled people as teachers, and a program that included a significant part devoted to AT and accessibility. The initiative was so successful that it was repeated every summer for almost twenty years, involving hundreds of people with disabilities all over Italy, several of them later becoming leaders of similar local initiatives. It was a kind of *living lab* that inspired several EU projects and provided significant input to the building of the Italian national AT information system (SIVA - which in turn later promoted the international EASTIN network).

My *enlightenment* of the second shift happened after my retirement, when I was less active in the AT field and had more time for involvement in other societal topics. In April 2021, I was sitting in a meeting of the organizing team of an international project called *#DareToCare*. The team was mainly made of youngsters; the project was meant to spread awareness about integral ecology, calling for action and active citizenship to pursue a sustainable future for our planet. This is a heartfelt topic for the young generation, who see the urgency of the challenge much more than previous generations. I had never thought that AT and accessibility would have something to do with this topic until I was asked to introduce myself in this meeting. Unexpectedly for me, other youngsters – who had just spoken before me on the environmental consequences of plastic dispersion – were fascinated by what I said: they highlighted that working on an accessible planet, making AT available to ensure full participation of people with disability, is working towards a sustainable planet. It came out that *integral ecology* means a sustainable planet in terms of both nature and humanity; lack of accessibility or enabling technology is social injustice leading to an unsustainable society, in the same way as forced migration due to war or climate changes or lack of water or food or essential services, etc. This point – may be so obvious with hindsight – suddenly appeared very true to me; it gave full meaning to the UN Convention on the Rights of People with Disabilities (UNCRPD) principle that AT and accessibility are human rights. Therefore, accessibility and AT became part of the *#DareToCare* campaign, with a lot of young people becoming keen on the topic even if they never heard before. Today, when I deliver lectures, I very often frame AT within the bigger topic of integral ecology, encountering much wider interest in the audience than in the past when I spoke within health, social or technological frameworks. I see that young generations perfectly understand the *integral ecology* perspective, in which society is the *sick* to be cared for, not the person who is made *disabled* by barriers or unavailable technology.

2.2 Learning and developing the field together (Christian Bühler)

It was my honour and pleasure to contribute to the AT field for more than 30 years. In 1991, I joined the field where we all had a lot of good intentions, ideas and, from the current perspective, rather poor tech. In the *Technology Initiative for People with Disabilities and Elderly people (TIDE)* projects (European Commission 2014), robotic devices, innovative wheelchairs, orientation support, and many more relevant AT applications were developed. It is very important to use the best available tech to do this, which was done. However, much of the equipment was big, heavy, with limited capacity and expensive. Many of the proposed solutions are available today through

smart phones, cloud tech and Artificial Intelligence (AI). A long way, but in the end, it's pretty impressive. TIDE tried to come up with a strategic approach.

With the HEART Study (**H**orizontal **E**uropean **A**ctivities in **R**ehabilitation **T**echnology), the European Commission funded a key project related to Assistive Technology in Europe. The pan-European consortium, under the leadership of the Swedish Handicap Institute investigated in 6 lines (Testing and Standardisation, Industrial Coherence, Service Delivery, Legal and Economic Factors, Training of Professionals, Emerging Areas of Technology R&D) the state-of-the-art and developed suggestions for further development (European Commission 1993). It was a very fruitful collaboration with many lessons learned. The foundation of AAATE, the biennial AAATE conference and *Technology and Disability* (IOS-Press) as an official journal have been three of the sustainable outcomes. A very crucial aspect in the deliberation has been the participation of users and user organisations. At the time, that was already pertinent especially in the Nordic countries, the Netherlands and Italy. In HEART user representatives had a say within the working groups of the six lines, but also in a user advisory board. The idea of user participation has made its way towards many European countries.

Not all good suggestions and innovative ideas of HEART have been taken up. Unfortunately, in the following framework programmes of the European Union (EU) a struggle arose to keep project funding for AT (in ICT) up and available. Only the intervention of AAATE through the vice president of the European Parliament at the highest instance – the Commissioner himself – has saved AT a place in further ICT funding. It was a critical point, and steadfastness and being very influential of AAATE solved this crisis. Further, rather than expanding the concept of national AT centres in all European countries one had to recognise the drop down of such institutes in various countries. However, the idea of user participation made its way along. The FORTUNE project - a partnership of national umbrellas of user organisations of people with disabilities and research institutions - has come up with the FORTUNE concept for project participation (Bühler 1998). A partnership-based approach with user organisation was proposed in the seven principles of FORTUNE (Bühler et al. 2000; Bühler 2001). Actually, user participation (rather than user involvement) was introduced as one criterion in related EU programmes (Key action on the Ageing Society and in the AT area) and in several countries in related funding schemes. For at least some time, this concept and the following ideas have led to significant changes in project culture and project content concerning user requirements and user participation throughout Europe. Up to now, cooperation with user organisations in Research and Development (R&D) in the AT field is continuing. At the time of FORTUNE we did not think that much about concepts to give users with intellectual threads a say. Fortunately, today, concepts of peer research and co-research have filled this gap. A recent example is the EU-funded EASY READING project (Easy Reading n. d.), where in all participating countries peer researchers supported the success of the project. One important prerequisite for participation is accessibility. The importance of accessibility has been an important plea of the user organisations for long and, of course, respected in HEART, FORTUNE and all participative action. However, the UNCRPD made it one of its 13 principles and dedicated a whole article (article 9) to accessibility. It is considered relevant for all infrastructures such as the built environment, transportation, communication, information, including ICT and for service delivery processes. We can see development there, but slowly for the existing infrastructure and

with some reluctance of the public sector but even more in the private sector. The idea to convince the players and make accessibility or universal design a business case did not fulfil the expectations yet. In ICT, the European Web Directive (European Union 2016) has introduced some force onto the public sector in the European member states. The European Accessibility Act (EAA; European Union 2019) heads forward to make accessibility mandatory in the e-sector. However, the transition periods are very long, and we have still to observe the results of the implementation and enforcement in the member states. However, the two examples show what can be achieved in the international (UN) and European (EU) collaboration. Only a few member states may have come up with similar or better regulations!

2.3 Embracing the continuum from the personal to the system level (Gerald Craddock)

Prioritising people's needs, likes and preferences ahead of technological solutions has always been a key part of my life and continues to be the focus of my work and personal life to this day. There have been many events that have led to where I am today, but key have been my encounters with people at a national level, such as Independent Living Ireland and educational institutions, and at the international level through organisations such as AAATE, RESNA, ATIA. I have no doubt that starting my working career over 40 years ago in the first Assistive Technology Centre in Ireland, which had a school attached, formed my thinking and my career. Getting to work with children, parents, teachers, and therapists on a daily basis and being able to observe, engage and understand the issues for young people with a range of abilities and their families provided important insights that have stood my thinking to this day. When I became manager of the Centre, I ensured our ethos was person-centred and central in my team were staff with a range of abilities. I employed people with disabilities to become Technology Liaison Officers, who brought experience and empathy to the teams of therapists, engineers, educationalists and computer technicians.

Around this time, I met with Paul Hogan, the prime investigator of the Institute for Design and Disability in Ireland (IDD) and, subsequently, the European Institute for Design and Disability (EIDD). Our collaboration had an important impact on my own thinking. In 2005, Ireland was at the forefront of supporting the United Nations in framing the UN Convention on the Rights of Persons with Disabilities while at the same time framing a new Disability Act. Through close links with disability leaders, we managed to include the setting up of a centre on Universal Design as part of the new Disability Act in 2005. The Irish Delegation at the UN notified the legislators in Ireland that the term Universal Design (UD) would be used in the UN convention rather than Inclusive (ID) or Design for All (DfA), hence the change in name but not in ethos or approach.

The basis of universal design is including and working with people from the first time that a new concept of a service, system, product, digital or built environment is conceived. At the Centre for Excellence in Universal Design (n.d.), we believe that the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability. An environment (or any building, product, or service in that environment) should be designed to meet the needs of all people who wish to use it. This is not a special requirement for the benefit of only a minority of the population.

It is a fundamental condition of good design. If an environment is accessible, usable, convenient and a pleasure to use, everyone benefits. By considering the diverse needs and abilities of all throughout the design process, Universal Design creates products, services and environments that meet people's needs. Simply put, universal design is good design.

I firmly believe that removing barriers within society requires more than a focus on accessibility and accommodation. Mitigating these inequalities requires the systematic removal and prevention of barriers, preferably through a Universal Design approach. This will ensure access for persons with disabilities on an equal basis with all others.

2.4 A 35-year journey through the AT landscape (Luc de Witte)

As a young researcher, I started my working life at the Institute for Rehabilitation Research (iRv) in Hoensbroek, the Netherlands. This was linked to a large rehabilitation centre. During my medical training, I had never heard anything about people with disabilities (called 'the handicapped' at that time), let alone Assistive Technology. Early 90's, I was, without any warning, 'parachuted' into the huge network that started the famous HEART study and was made project lead of the service delivery part of that study, Line C. Without any experience with project management and international work, and not even understanding what service delivery in AT meant, I stepped into a fascinating world. I met great colleagues, visited great places, and was 'caught' by the importance of service delivery; developing new assistive devices is important and fun but meaningless if you don't get them to the people who need them. I learned that this is a major challenge, and it still is today.

This HEART study has had a huge impact on the field in Europe and still pops up every now and then. For a long time, I thought we were doing quite well in Europe, working with a great team of like-minded colleagues within the 'safe' and comfortable boundaries of our institutes. How naive! My perspective changed dramatically when I visited India for the first time. I was a member of an advisory committee for a Dutch-Indian research programme in medical technology. After a few evenings of abundant buffets and talks with colleagues, I wanted to make a walk outside. I ended up in a slum community and was suddenly surrounded by hundreds of people in a setting with an open sewer, smouldering fires, garbage, lots of dirt and dusky light. Among these people, there were also some with manifest severe disability of a kind I had never seen before. And they had clearly never received any support. This experience was the start of many visits to India, where we, colleagues from the two universities where I worked at that time and I developed a programme called 'Health in Slums' where more than 100 students did their thesis work, including a few PhD students. AT was a small part of this programme, but that changed when I met, again by complete accident, Krishna, a wonderful guy from Nepal. Krishna was born in a small village in the mountains of Nepal, and as a child, he suffered from polio. As a result, he was largely immobile and could not go to school until he was 13 years old when he met a Japanese tourist who happened to work in a wheelchair factory. That Japanese man provided Krishna with a wheelchair, which completely changed his life; he went to school, appeared to be very smart, went to university and started an independent living group in Kathmandu. In that role, he became one of the leading figures in the disability movement in Nepal. What a fantastic and motivating example of the power

of AT! This encounter re-sparked my motivation to work on AT service delivery. On the global level, we were not doing so well at all! The WHO-UNICEF Global Report on Assistive Technology, published in 2022, made that very clear with undeniably strong data showing that most people who might benefit from AT do not have access to it. In a time where technical possibilities are almost unlimited and thousands of assistive devices are ‘available’ we do not manage to get AT to the people who need it.

It is great that, during the AAATE 2023 conference in Paris, the WHO officially announced that they would start developing global guidelines for AT service provision. The HEART Line C study of more than 30 years ago is now on a global scale! It is a shame that it took so long, but it is a great step forward in realizing the ambition of the UN Convention on the Rights of Persons with Disabilities.

If we manage to steer the developments in AT towards affordable high-quality devices and combine that with good quality service provision/delivery, we can tackle the challenge mentioned at the beginning: get good AT to the people who need it.

2.5 Enriching the perspective of AT in education (Katerina Mavrou)

As a teacher, I stepped into the use of assistive technology (AT) with learners with disabilities right from the classroom. Barriers limiting physical access and functionality are the first to observe and, thus probably, the first to attend for a response. When the use of computers in education started actually gaining ground, at least in Cyprus, this was just before the year 2000, when a few teachers working with children with disabilities, either in special or mainstream education, showed interest in how technology can remove some of the observable barriers and increase children’s functionality. Assistive technology, a concept less widespread at the time, was somehow implicit in the existing legislation and emerging as a semi-official policy and practice (Mavrou 2011). As a researcher, I stepped into technology and disability from the perspective of inclusive education, and how technology could enhance collaboration and participation of all children (Mavrou 2012). It was mostly all about the role of technology as the mediator, and the scaffold, the tool for removing barriers and providing access. In 2014, I was given the opportunity to get involved in my first EU co-funded project, ENTELIS (2024), which focused on digital inclusion, which reached me via AAATE. ENTELIS was a twofold breakthrough moment: an insight into how EU project collaborations can advance the work in AT and, most importantly, an enrichment of the perspective on AT in inclusive education. The relationship between AT and education concerns the use of AT tools for access and participation in learning, but not only. It also concerns empowering learners with disabilities to develop digital competencies towards bridging the digital divide, an issue of social inequality (Sachdeva et al. 2015) and human rights (AAATE 2019). Gaining a broader insight into the role of AT in fostering inclusive education, as defined by the UNCRPD, entails a paradigm shift. Research endeavours turned interest into how digital literacy and inclusion are embraced in education goals, learning outcomes, learning design, and school teams capacity development (Mavrou 2023). In terms of policy and practice, attention also shifted to researching the development of digitally inclusive cultures as anticipated priorities in educational reforms and roadmaps (Hoogerwerf et al. 2021). Additional insights are further developed in new AT research trends within social sciences, growing from perspectives like those endorsed by ENTELIS. These can be

related to identifying prospects of competence development that are linked to the notions of choice and control as elements of learners with disability personal agency (Hewett et al. 2020). The field of technology and disability in education is essentially augmented by the increasing research work on co-design and co-creation (e. g. Right to Connect Project; RightToConnect n. d.). The design of assistive technologies, accessible learning environments and interactions enriched by living experiences of learners with disabilities as co-researchers and co-creators, is the new digital competence development playmaker in the field, towards successful inclusive learning practices.

2.6 Twinning Assistive Technology and Accessibility (Klaus Miesenberger)

I have a technical view of AT and had to learn how important legislative and standard measures are. Let me reflect on how I learned about their importance for the socio-technical advancement of AT and Accessibility.

The term Accessibility was first coined in architecture and design of the built environment (Hamraie 2017). More flexible and adaptable techniques and technologies allow and demand respecting the diverse requirements of users including those with disabilities. The potential met with the Civil Rights and Independent Living Movement strongly demanding for equal rights and access. In cooperation with science and research, they started to translate the requirements of users with disabilities into operable standards and legislative measures (e. g. Pelka 2012). The rights-based and normative approach started the field I became part of. By taking up the quote from the beginning of this chapter: Martin Luther King Jr. drove our society into a more democratic one, and leaders in the disability rights movement (Lawson and Gooding 2005) paved the way to AT, Accessibility and (digital) Inclusion.

The term Accessibility entered more and more domains of vital interest for inclusion and, in particular, into the upcoming digital revolution. Here, the socio-political movement met with the disruptive potential and flexibility/adaptivity of the Human Computer Interaction (HCI). The independence in terms of using and adapting media (presentation, output) and modality of interaction (input) provides an operational base for Accessibility. Step by step, AT and Accessibility features became available, and many are now part of mainstream systems supporting usability for everybody. The understanding that disability is not only a pattern of the individual but more a consequence of how we design, build, integrate and use (digital) artefacts and systems becomes evident and operational. Digitisation, HCI, AT and Accessibility become universal tools for inclusion (Miesenberger 2009).

Assistive Technology and Accessibility are, therefore, twins. AT empowers to be more independent and self-determined. Accessibility enables interaction with the mainstream. Legislation and standardisation facilitate this *twinning* and push technical development:

- Legislative measures, starting in the US (e. g. Rehabilitation Act 1973, Americans with Disabilities Act 1990) spread around the globe and entered into the UN Convention on the Rights of People with Disabilities (UNCRPD) as a global base for legislative measures as EU Accessibility Directives and the recent European Accessibility Act (EAA) with strong impact on national legislation.

- Disruptive digitisation makes traditional, often rigid, inflexible, and systems fluent, adaptive and open for AT, Accessibility and inclusion. This gives our field AT a strong focus on digital: The more digital, the more the possibilities for accessibility and inclusion. HCI and related standards such as the ISO 9241: Ergonomics of human-computer interaction series include Accessibility (e. g. Part 171: Guidance on software accessibility). It is remarkable that the most influential global cooperation on guidelines, standards, techniques and tools for digital Accessibility, the W3C Web Accessibility Initiative (2024) has been driven by big IT industries. They learned, besides the legal and socio-political need, that Accessibility supports usability, making their products competitive at a larger scale. This global cooperation has become a core reference for the AT sector, standardisation (e. g. EN 301 549) and legislation (e. g. EAA).

Accessibility guidelines and standards are considerably stable. They are formulated in a device, application and vendor/platform-independent manner and are open to expanding and integrating new technologies. Devices and tools change fast, but human skills and requirements, including those with disabilities, are considerably stable, making standards and legislation a strong and sustainable reference for socio-technical innovation and inclusion.

2.7 The promises of AI to people with disabilities (Pedro Encarnação)

Alex is playing with their friend Taylor. On a table, they have a play kitchen, cookware, tableware, pots and pans set, and several props representing food items. They are preparing dinner for their superheroes. Alex is sitting in a wheelchair and uses an augmentative and alternative communication (AAC) device to select messages and to speak them to Taylor. Alex also uses the AAC device to control a small robot to pick and place the play items. Both the AAC device and the robot seem to be very “smart”. In many cases, the devices are able to anticipate Alex’s intentions, and Alex can say or manipulate something just by selecting an option on the AAC device. When the message or action is not in the quick selection list, Alex can still quickly build it supported by a context-dependent predictor. This helps to keep the pace of the play.

About ten years ago, I was trying to make this scene possible. Along with a team of researchers from Portugal and Canada, we developed an integrated augmentative manipulation and communication assistive technology that enabled children with neuromotor impairments to manipulate objects by controlling a robot through their AAC devices (Encarnação et al. 2017). However, the final product was not very “smart”. Even though different degrees of autonomy were incorporated, allowing for directly control of each robot's movement or for providing higher-level commands, the system could not continuously adapt to the user.

This time holds many promises for people with disabilities. ChatGPT, a large language model capable of generating human-like text, became available to the general public in December 2022, unveiling the advancements in Artificial Intelligence technology. Suddenly, ordinary users could interact with a machine using natural language, tapping into virtually all knowledge available on the internet and obtaining answers to their questions in a conversational manner as if they were interacting with a seemingly omniscient entity. Other AI tools were also made public. For example, individuals could generate images by describing them (“Get me a picture of an actual pig driving a bicycle”) or provide an image and receive a text description. Such capabilities to

analyse a vast amount of data (written, visual, numeric, any data!) while maintaining a meaningful interaction with a human user can be harnessed to develop smart assistive technologies.

Existing apps capable of identifying objects using a phone's camera can become even "smarter" and aid blind individuals in navigating unfamiliar environments by providing detailed auditory descriptions. AI-driven speech recognition and natural language processing technologies can further enhance AAC prediction systems, facilitating more fluent oral or written communication for users. These speech recognition technologies can also be integrated into virtual assistants connected to "smart" appliances and home systems, enabling seamless environmental control and promoting accessibility and convenience within the home. Moreover, advancements in AI can lead to more natural control of artificial limbs through neural signals, alleviating the effort required to generate specific signal patterns that the system had been trained to recognize as particular commands. Intelligent learning platforms can adapt to each student's unique learning style and pace, even monitor real-time student engagement, and offer personalized curricula and tailored instructional materials. Additionally, the capabilities of robotic power wheelchairs and other mobile robotic platforms can be expanded to execute tasks with simple voice commands such as "take me to the washroom" or "get me a glass of water," eliminating the need for direct control of each robot movement.

AI capabilities can bring the futuristic scene pictured in the first paragraph to life. In that play scenario, the augmented manipulation and communication technologies can "observe" Alex and Taylor's behaviours and interactions, "listen" to their conversation, and provide the most appropriate support to Alex, enhancing their inclusive and enriching play experience.

But this time of AI revolution also entails many concerns for people with disabilities. AI-powered assistive technologies must abide by ethical principles. This goes beyond *beneficence* (doing good) and *non-maleficence* (doing no harm), with AI algorithms being reliable, accurate, accountable, and transparent. AI-powered AT must preserve *autonomy* by empowering users and considering their needs and preferences rather than imposing decisions on them. They should provide the just right amount of support without creating unnecessary dependencies. Personal information and sensitive data need strong protection to prevent unauthorized access and potential misuse. The principle of *justice* calls for a fair and equitable distribution of resources. The cost of AI-powered assistive technologies can be prohibitive for some individuals. These technologies often rely on a broadband connection to the internet, which may not be available in many locations. The principle of justice also demands impartial systems. AI decisions are based on data. If that data does not contain enough diversity, namely data originating from people with disabilities, AI systems may become biased and lead to discrimination.

These are just a few of the potentialities and challenges of AI for assistive technologies. Some are new, while others have been encountered in the past with previous technology advancements. The key to ensuring that AI-powered assistive technologies truly meet the needs of people with disabilities may very well lie in the same principle that has been advocated for many years in the field of assistive technology: end-user participation. By actively involving people with disabilities in all stages of AI-powered (or any other) assistive technology development, we can create accessible and easy-to-use solutions that will be embraced and utilized effectively. Equally critical is the

participation of people with disabilities in defining policies, setting standards, and shaping legislation related to these emerging technologies.

This is certainly the time for addressing the challenge of creating an integrated augmentative manipulation and communication assistive technology that can continuously adapt to the user and always provide the just-right amount of support!

2.8 Unlocking human potential (Evert-Jan Hoogerwerf)

My involvement with AT dates back to 1995 when I was asked by AIAS Bologna to substitute a colleague of the Ausilioteca AT Centre in Bologna during her maternity leave. Here, I learned the importance of multidisciplinary teamwork in supporting persons with disabilities to find the best possible assistive solutions for their activities and participation and the importance of independent advice. AT Centres played an important role in advancing the field in Europe at that time, combining research, policy development and service delivery, and you had them in the Nordic countries, in the UK, and in a few other places, such as Italy and Spain. Soon I considered valuing what was good in our approach and making the centre dialogue with the international context as a major drive for innovation. International development work, networking and the facilitation of knowledge development thus became my main areas of activity, at first through European projects with AIAS, such as the Bridge project, the Keeping Pace with Assistive Technology project and the ENTELIS Project (Hoogerwerf et al. 2016), but also for AAATE, and more recently for the Global Alliance of Assistive Technology Organizations (GAATO), WHO and UNICEF, including involvement in the drafting of the Global Report on Assistive Technology (World Health Organization and Unicef 2022) and UNICEF's AT and AAC Capacity framework (Banes and Hoogerwerf 2022).

Three are the main insights developed over the years:

- The importance of making different AT stakeholders work collaboratively for shared goals, namely, to unlock human potential by facilitating effective use of appropriate technology-based assistive solutions.
- The importance of seeing AT as a human rights enabler and access to AT as a human right.
- The importance of international collaboration to address global challenges.

3 A call for action: The Bologna Declaration

Many of the learnings reported above are reflected in a powerful Call for Action, known as the Bologna Declaration [<https://aaate.net/the-bologna-declaration>], written with the involvement of many different stakeholders in many countries, among which many members of AAATE. It was launched on August 27, 2019, during the AAATE conference in Bologna organised by the colleagues of the Ausilioteca AT centre. The Declaration was never published in print, although it collected hundreds of endorsements on the AAATE website. Besides being an example of how collective knowledge can be locked down and shared, the Declaration holds a still valid agenda for action, of interest for students in AT and the AT community of stakeholders, reason why it is published at the end of this chapter.

Unlocking Human Potential

A Call for Action to Improve Access to Quality Assistive Technology for Realising Fundamental Human Rights and Achieving the Sustainable Development Goals in a Fully Inclusive Manner

In 2019, worldwide, millions of citizens are disabled by inaccessible environments, products or services and/or they lack access to appropriate assistive technology (AT). That is in sharp contrast with what is technically possible, and available, in many places. This contrast is not acceptable as AT represents a fundamental tool to support equal opportunities and full participation in all aspects of life; both essential ingredients for inclusive societies. The signatories of this declaration call upon all stakeholders who have an influence on policy and practice relating to assistive technology provision, to take measures to improve access to high quality assistive technology solutions, for everyone who might benefit from them, everywhere in the world and irrespective of age, gender, ethnicity, sexual orientation, or cause of disability.

The **causes** of the discrepancy between need for and access to appropriate AT solutions are many: lack of sufficient information, of necessary skills, of resources, of well-developed health, social care or educational service delivery systems, of political priority, and of attention to fundamental human rights. The **effects** are massive: millions of unfulfilled lives, no or limited activity and participation at individual and community level by significant parts of the population, the endurance of poverty and restricted economic development, real difficulties to reach the global sustainable development goals in an inclusive way, that leaves no one behind. These are not problems in low- and middle-income countries only, but are truly global challenges that require action everywhere.

More collaborative effort is needed from all stakeholders to create equal opportunities and to bridge the “ability” gap for both citizens and societies: international organisations, national governments, regional and local authorities, service providers, professional bodies, non-governmental organisations, industry, organisations for persons with disabilities, education providers, researchers and teachers, and every individual citizen.

During a high-level meeting in Bologna held on the 27th of August 2019, representatives of these stakeholders have identified the following **agenda for action**:

- 1) To **raise awareness** about assistive technology, universal design and accessibility as a matter of human rights, with technology being a significant and often determinative enabler for people to claim and to realize their rights.
- 2) To **further legislation with strong enforcement mechanisms** on accessibility and usability of goods and services and promote good practices at all levels and in all domains of public and private life.
- 3) To promote in all relevant disciplines **socially responsive and responsible research**, investigating barriers to full inclusion of all in society and developing strategies and solutions to enable participation, many of which may be technology related.
- 4) To assure that technological innovation takes into account the greatest possible number of potential beneficiaries following a universal design approach and does not contribute to further exclusion by widening the gap between the haves and have-nots.

- 5) To foster **assistive technology provision systems** that are person-centered, independent from commercial interests, and able to provide, in a timely and affordable manner, personalised forward-looking solutions that are suitable for the environment of use and based on the abilities, preferences and expectations of the end user.
- 6) To **create appropriate and robust lifelong educational opportunities for end users of AT, the health and social care workforce and professional users of AT** involved in needs assessments, in implementation processes of assistive technology solutions and in supporting the effectiveness of these solutions in time.
- 7) To seek and require meaningful **collaboration between actors** at international, national, regional and local level, and to better define the obligations and levels of responsibility of each stakeholder, involving in all processes organisations of persons with disabilities and a wide range of AT users.
- 8) To **pursue and assure the quality of assistive technology solutions** for the equitable provision of assistive technology systems globally.
- 9) To **promote positive images, designs and initiatives** that counter the stigma sometimes associated with impairment and the use of assistive technology.
- 10) To **remove all other barriers of whatever nature** (e. g. financial, political, administrative, market, knowledge, cultural, gender, etc.) for assistive technology and accessibility adoption at all levels.

The signatories of this declaration not only call upon others to take action, but declare that they will do all that lies in their power to support the priorities mentioned above.

4 Conclusions

It is relatively easy to draw some conclusions from the sections above.

The first conclusion is that AT is a field of study and work able to capture people's attention, energy, and genuine passion. For many colleagues, the initial drive to "help" people, often friends with disabilities, and there is nothing wrong with that, made rapid place for a rights-inspired motivation and a more holistic person-centred vision, especially after the release of the UNCRPD. This change of perspective even challenges the same term "Assistive" Technology. Colleague and friend Gert-Jan Gelderblom, who unfortunately died before he could serve AAATE as its president, started that discussion during intense board meetings, but it was decided not to abandon the term, but to consider it an umbrella term, covering a broad field, including beside more traditional areas also accessible mainstream solutions, smart home technology, ambient assisted living, gerontechnology, person-centred technology for independent living, etc.

The second conclusion is that AT, in fact, is not a static field but a field in constant progression influenced by technological, social, demographic, and cultural developments.

The third conclusion is that there are still many people in Europe and in the world that lack access to appropriate AT solutions and universally designed products and services and that more should and could be done to change that reality. Hopefully, this chapter and this book will make the readers reflect on the contribution that they can make.

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