

# **Assistive Technology and Universal Design: Language and Links for Inclusion**

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## **Introduction**

People who utilise assistive technology in their everyday life are well aware of the links between assistive technology and accessible environments and how each is diminished by the absence of the other. For a wheelchair user, the latest wheelchair design means little when confronted by a flight of steps. A barrier-free environment is also of little help if you cannot leave home for lack of the right assistive technology. People who work in the field of assistive technology often see the built environment as another sphere of expertise, and vice versa, but the language of disability is common to both.

The Association for the Advancement of Assistive Technology in Europe (AAATE) believes that environments and technologies should be seen as part of the same domain of knowledge. A continuum of knowledge where the line between one and the other becomes blurred in the quest to create an inclusive society – a society where people are no longer excluded because of a disability.

## **Language for inclusion**

Assistive technology is still referred to as “aids, equipment and devices for people with a disability”. State equipment loan schemes are named just that, and the general community refers to it variously as “disabled equipment”, and “aids for the handicapped”. Regardless of what we call AT, in the minds of the population it still remains technology for a niche group. Everyone, everyday, is not only surrounded by technologies that assist them, but also uses them without considering them as specifically “assistive”. A knife and fork, a pen and pencil, a car and bicycle, an oven and a fridge, are all technologies that assist us to do everyday things. It would be fair to say that these technologies are not considered assistive because they are not designed to overcome a functional lack or inability. So what constitutes a functional inability such that it requires assistive technology? Where is that line drawn and who drew it? I suggest the dividing line was drawn as a consequence of the medical model of disability: a focus on what people cannot do.

To emphasise my point on language, can I say, “assistive technology” and “non-assistive technology”? By definition technology assists, so what constitutes technology that is not assistive? For the purposes of this paper I shall continue the usage of “AT” and “mainstream technology” to differentiate technology for people with a disability and other technologies.

Equipment schemes are based on technologies considered assistive. Any item from a regular store rather than an AT supplier is not available on the scheme even if it makes a significant difference to the person concerned. The dividing line between assistive and mainstream technology is yet another barrier to inclusion. This is the point at which universally designed item, insofar as it is possible, starts to take shape. Universally designed items negate the need for a dividing line.

The sidelining of technologies to overcome specific disabilities is equal to the sidelining of people with disabilities. It is a social phenomenon. It has nothing to do with the technology itself – it is how it is viewed – the meaning people place on it. AT is in the domain of the disability population, which is socially excluded as a minority group. Consequently AT is destined to be socially excluded as well.

If it were the case that only people with a disability used pencils and hammers, pencils and hammers would be AT. If wheelchairs were used as transportation devices for everyone, they would be a mainstream transport technology, and not a “mobility device”.

Language is powerful – it has a major role to play in creating thoughts and ideas. If I say “pink elephant”, a grey elephant is unlikely to be conjured up. Similarly, “man” doesn’t create a visual image of a woman. Technology, however, is still technology, assistive or otherwise, but because we think in terms of disabled and non-disabled, we think of “AT” and “other” technologies.

The cultural relationship between humans and technology also affects language. We **wear** glasses and hearing aids like we wear shoes. We even wear mobile phones, yet the media insists on using language such as “confined to a wheelchair”. If I say I wear a device, the design argument suddenly becomes more important. The design has to be suited to me – my functional needs, performance requirements, my personal taste. It has to be my size and colour.

The same language issue applies to the built environment. The terminology used is “disabled toilet”, “disabled access”, “disabled parking” and “access for people with a disability”. The fact that these designs are often good for everyone is lost because of the “disabled” terminology.

### **Links for inclusion**

According to AAATE, the rapid development of various technologies is one of the factors that brought about the ICF (International Classification of Disability, Functioning and Health). ‘Disablement’ is not an attribute of the individual, but a ‘situation’ that may affect an individual. Disablement is the **gap** between individual capabilities and environmental factors that restrict quality of life and hinder participation in society. The physical characteristics of the built environment, mainstream products and assistive technology play a major role in bridging the gap between the individual and the environment.

Overcoming disablement often requires a mix of mainstream and AT whose assembly is different from one individual and another, and from one context to another. It is an “assistive solution” comprising a mix of mainstream and assistive technologies, including universally designed environments. The entire technology chain encompasses:

- the built environment
- transport, mobility infrastructure devices
- communications infrastructure devices
- ambient intelligence distributed across the environment
- individual devices designed to compensate for functional limitations.

Any links in the chain should be compatible with each other. Obviously, one missing link is sufficient to generate disablement even if the other links are working perfectly. Although this is obvious, it seems ignored. Perhaps the breaks in the chain are not technology issues per se, but the issue of diverse competencies failing to work together in an integrated interdisciplinary context. In an interdisciplinary approach we must:

- develop and expand our knowledge base
- integrate the disciplines by creating common language, references and tools
- transfer knowledge through education, training and information dissemination

From my perspective interdisciplinary action is piecemeal in Australia. The Independent Living Centre NSW is often asked to be part of working parties, advisory committees and reference groups. We are asked to contribute our expertise on assistive technology OR environmental design OR mainstream technologies and designs. We are not asked to synthesise our knowledge of AT, mainstream technology and the built environment. Yet we do this all the time for our individual clients. Combining technology and environmental design at a client level needs to be reflected at a policy level. Fragmentation within the AT sector is another matter.

### **Links for technology**

The AT sector is dominated in Australia and in Europe by small to medium sized enterprises that have little research and development capacity. Larger firms with high turnover have the capacity, but prefer to mass market instead. I often hear the argument that generally our market is too small to justify the cost of research and development. The AT market is comparatively small, but the overall technology market is not. I propose that the problem is not so much a fragmented AT market, but the divide between AT and mainstream. In the housing sector, people speak of housing and accessible housing as separate endeavours. More recently, “joined up thinking” has given greater credibility to universal housing. If we had a bit more “joined up thinking” about AT as part of the larger technology market, perhaps opportunities for R&D would be more forthcoming.

Research and development of AT suffers because the economic value has become the supreme value. The value of rights is insufficient to make the changes needed. We have yet to make an evidence-based case that inclusion of people with a disability contributes to the economy therefore investment in AT and the environment is cost effective. The government as customer also affects research.

Because much AT is beyond the financial capability of many people with disabilities, government schemes supply and fund AT here and overseas. The government, through equipment loan schemes, becomes the dominant market force. A single large customer has the capacity to control the market, just like a major shareholder on a corporate board, even if it is unintended. This must impact on our research and development capacity. Suppliers have a vested interest in maintaining the status quo if their products are included in the government equipment list. Better, newer products are often more expensive. There is more gain, therefore, in mass produced items at a lower cost.

The government as customer is a major intermediary in the whole AT acquisition process. End users are often at the mercy of government schemes that buy in bulk and apply the “one size fits all” framework. The requirements specified by the scheme may not be in line with the users’ actual requirements. If users are not able to discuss their individual needs with a qualified professional, whether an independent occupational therapist or the AT supplier, there is a risk that the “right fit” will not be made.

An equally important aspect, however, is the effect government funded schemes have on the whole supply and demand chain. If, as the largest single customer, the government schemes do not demand improved products, the climate will never be conducive to research and development in Australia. Without investment in research we reduce the speed at which we can move forward in our quest for inclusiveness. We can, however, keep up the work of continuous improvement tactics, such as creating an interdisciplinary approach.

### **Links for practitioners**

AAATE advocates an interdisciplinary approach that involves design and engineering competence, clinical expertise, socio-economic knowledge, understanding of industrial and market issues, insight into public policy matters, and last, but not least, the perspective of end users. This landscape is more conducive to the development of universal designs.

Universal design fits neatly into an integrated approach because its principles include “joined up thinking”. Whilst there are many technologies yet to be developed and produced to overcome functional loss, there are many other technologies yet to be developed that could end up being additional barriers. Every new item of industrial design, has the potential to make or break the life of a person with a disability. If it is not designed to incorporate the broad needs of users, that is, lacking the principles of universal design, a separate design is needed and that becomes assistive technology. If our society is truly committed to seeking inclusion, we have to work at minimising the need for AT products, not maximising them. The principles of universal design hold the key to making this commitment manifest.

### **Links for universal design**

The concept of universal design is not a formula, it is not a thing, it is a concept. It is a concept that needs to be built into the DNA of design thinking, and it needs to be applied to all new designs from this point forward. The principles of universal design are based on simplicity and flexibility, equitable and intuitive use, and minimal physical effort. In short, designs that create maximum amenity for the maximum number of people without the need for specialised designs. Nevertheless, universal design has its detractors.

The most oft quoted phrase against universal design is, “Universal design is about one-size fits-all therefore it fits very few”. Universal design is not about the lowest common denominator of design, but the highest form of design requiring the synthesis of all design needs of the population. This leads to the next claim, “Universal design is a myth because it is impossible to achieve except in a few circumstances”. A further claim against universal design is that function overrides form therefore designs will be useful but aesthetically sterile. The challenge of universal design is to create both beauty and function.

The quest for universal design is a process in itself – constantly seeking the answers. Universal design says that a solution is possible, but it might take a while to find it.. In seeking the ultimate answer we can move forward with interim answers that are improvements on former designs. Universal design is also about creating universal systems of design similar to the ideas discussed earlier about the chain of technology required for assistive solutions. So the principles of universal design acknowledge that one design does not operate in isolation from other designs.

Universal design has much to offer all design processes regardless of legislation, codes and standards. Designers bemoan the fact that the value of design is not appreciated. I am sure that good design is very much appreciated. But what constitutes good design, for whom is it good, and under what circumstances? From my perspective the link between functionality and design has not been made sufficiently well to create the paradigm shift needed to answer these questions.

The concept of universal design incorporates the notion that none of us knows when disability will arrive, how long it will last, and to what degree it will affect our lives. Therefore it is wise to be prepared for this inevitable event whenever it happens. The Disability and Development Advisor to The World Bank, Judy Heumann's statement is often quoted, "There are only two kinds of people in the world, those with a disability and those yet to have a disability". This simply worded statement indicates that the whole world needs to take a reality check – disability comes to us all, it is only a matter of time. Thinking in marginal and segregated terms prevents inclusive thinking, planning and designing, and this is the crux of the matter.

## Summary

We must overcome the mindset and language of segregation and think in universal terms. The language of segregation promulgates segregated thinking. Segregation and demarcation need to be replaced by inclusive practice and language. The AAATE concept of a continuum of technology and design, and the approach of assistive solutions is a good starting point for considering the merits of interdisciplinary thought and action. It is time to bring together technology and design, practitioners and end users, policy makers, and manufacturers to work together in one endeavour, instead of separate enterprises, for "joined up thinking". Such thinking embraces universal design at all levels. If we are serious about creating an inclusive society we must watch our language, bring all technologies together, and embrace the concept of universal design.

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