

# Accessibility: Your Ethical and Legal Obligations

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When I do a presentation like this, I find it difficult sometimes to figure out exactly who the audience is, and therefore decide what message to give. So I had a look at the web page for this conference and read the list of papers that have been accepted. I have to say that I read a number of titles there that made little sense to me, but that's ok, I won't expose you to my ignorance. It's clear that during this conference you'll be grappling with some seriously academic concepts, intricately bound up with the general subject of how humans can best interact with computers and computerised machinery. It is also clear that you are not so focused on today's technology as such, but more it seems on developing more effective ways for humans to interact with and utilise these machines in the future.

So I haven't come here today to tell you how to achieve accessibility in your designs. I'm not going to tell you how to write accessible software or design an accessible web site. There are plenty of sources of information already available on accessibility with respect to today's computer technology. Instead, I hope to inspire you to think about why you should even consider accessibility as a criterion, when designing your next interface.

I'm sure most of you have read widely in this field, and you'll be familiar with papers that explore revolutionary ideas concerning how people with disabilities can and should interact with computers. These papers envisage a variety of interfaces, such as computers we can just talk to, or special interfaces that can be used by someone with extreme physical disability. It goes without saying that this kind of work is invaluable and promises to bring real benefits to people with severe disabilities.

When I read papers on this subject, it always occurs to me that there are two fundamental perspectives at work. One perspective is to take the computer and think about new things that it can do, things that can be said to be helpful to people with disabilities. For example, It is easy to paint the picture of the smart house in which the computer is able to control all the major functions in the home, and we can readily see how helpful this could be for someone with a particularly physical disability. In this perspective, the technology is being harnessed to allow a person

with a disability to perform one or more specific functions that they otherwise would not be able to do.

Then there is the point-of-view of the person with a disability attempting to utilise all the functions of a computer, or even a typical household appliance. Here the emphasis is on how easily a person with a disability can use the appliance, and in the case of a computer, the emphasis is on the accessibility of the applications running on it, and the accessibility of information sources such as web sites that might be accessed through it. In this perspective, the person with a disability perceives the computer or the appliance in terms of what he or she can or can't do, as compared with an able-bodied user of that same computer or appliance. This I think is the perspective adopted by most blind people, since generally we can do most everyday tasks we need to do without much technology assistance.

I suggest that these two perspectives are distinctly different, and perhaps at times in conflict. The papers published in your academic field tend to focus on the progress being made as we inch towards a utopian world in which everything talks to each other and is fully accessible to people with disabilities, whereas the articles published in my disability world tend to focus on the barriers faced by people with disabilities that prevent us from having full access to what society has to offer today. Maybe it's just another illustration of the age-old difference in perspective: whether someone considers the glass to be half full or half empty.

The frustrating thing is that the world has already delivered many of the technical building blocks we need to create this utopian accessible world, and yet we are still a long way from this ultimate goal. I am of course presuming that you agree that this is our goal, but that is the overall point of this presentation and I'll come back to that thought later.

You would think though that surely we are progressing in the right direction and the situation is steadily improving for people with disabilities. But I'm here to tell you that in my humble experience, the opposite is true, at least for now. I will focus particularly on my experience as a blind person but you can probably extrapolate these comments to cover other disabilities as well.

I would suggest that even as recently as say the early 1990s in New Zealand, everyday appliances and computers were reasonably accessible to blind people. Sure we've never really been able to read displays like on a microwave or VCR, but in general if we went out to buy a home appliance like a TV, stereo, microwave, washing machine, stove or VCR, the chances were that we could at least use its essential functions simply by learning which buttons to push. It is interesting that technology commentators would often comment that most people could not programme their VCRs, and this illustrated in their view just how user unfriendly the technology was. Ironically, I can recall being able to programme my first VCR on my own as a blind person, because it had a series of pushbuttons to control its start and stop times and so on, that I could set just by counting the right number of presses.

Going back even further in time, I also recall my experience during the early 1980s, really before the advent of the personal computer, where at least on a Unix based system, a blind person with the right access technology was pretty much on par with

a sighted person and could achieve equal productivity. After all, we all had to enter commands on a keyboard and press the enter key, and then read the computer's line by line response.

In very broad terms, as computers have become more powerful, thus enabling faster processing of graphical images, interfaces have become more visual. As each new and more powerful technology appears, it seems to further ignite a kind of lust that mankind has for a better and richer visual experience.

The problem is that as each new technology appears on the market, the likelihood is that it will not be accessible to blind and vision impaired people, and often it takes a number of years before we begin to catch up. For example, in my opinion it took several years after the first appearance of the Windows operating system before access technology for blind people got to the point where we could say that we could be as productive on a Windows system as we had been on the old DOS systems, admittedly that's a bit of a judgment call, but that's based on my experience. Similarly, mobile phones have been around for well over a decade, but only recently have they become powerful enough to support access technology that lets us read text messages and gives us access to all the important features that sighted people have taken for granted for years.

Today, it's just as well my blind partner and I have all the home appliances we need because the thought of going shopping really scares us. Nowadays, microwaves, conventional ovens and even washing machines and air conditioners all seem to be equipped with new style controls and highly flexible displays that give no feedback at all to a blind user. The latest model televisions and of course the now ubiquitous DVD players are generally regarded as unusable by a blind person. We are increasingly unable to effectively use even some of the most everyday appliances, because no longer is there a simple relationship between buttons you can press and the functions they control. Even a humble ghetto-blaster nowadays is likely to have nothing more than a handful of pushbuttons that all feel the same.

And did I mention the iPod? It's funny how Apple has this reputation for being highly innovative, with the design of the physical hardware they make, and the associated user interfaces. But when it comes to accessibility to a blind person, in my view their standard is woefully inadequate.

So why should you care. Why should you concern yourself at all with the needs of people with disabilities. One view is that there are millions of us and that there is money to be made by tapping into our market. One paper I read recently referred to 30 million people with disabilities in the United States alone, and many more of course if we think globally. The argument is somehow that these figures should encourage the corporate business world to take notice, to see the disability market as an untapped source of new income.

But I don't think so. Most people with disabilities are unemployed and don't have a lot of money, especially if you think on a global scale. And if you are a big global company already making serious money manufacturing electronic products for the masses, you're not going to make significantly more money by catering for the additional needs of people with disabilities.

Now of course there are niche companies that do very well by marketing specialised products to people with disabilities. For example, the very successful New Zealand based Humanware company makes a range of products specifically for people with disabilities. But these companies don't address our everyday needs. These products are not the every day products that people in general take for granted. Specialised companies just can't economically make accessible versions of everyday appliances such as microwave ovens or DVD players.

So in general, blind people are being increasingly shut out of today's world, and we're certainly not a lucrative market on our own, so despite the visions of this fully accessible world just around the corner, I think we could be forgiven for being rather skeptical.

Still it's not all bad, because there is a lot that the computer, in its various forms, can do for us. Taking the DVD player again as an example, it is reasonably well accepted at present that blind people are unable to effectively use a typical off-the-shelf player. It is what it is and it does what it does, and there isn't much we can do to change how they operate. But put a DVD player inside a computer, and there's every possibility that additional screen reading technology running on the same computer can provide the means for a blind person to gain full control over that player. And whereas a product like the iPod might be inaccessible to a blind person, if we take a more generic hand-held computer like an iPaq, then it's easy to see how you can put not only an MP3 player on it, but also a basic user interface along with it that a blind person can use.

What makes the difference in these examples is the additional computer power available, and the ability to directly access that power by way of third party software and add the additional functionality that a blind person needs. Earlier I mentioned the latest mobile phones, and there it is the same story. The phones that are accessible to blind people today are the ones based on the Symbian operating system. These phones can run third party software, and niche companies have developed synthetic speech software to run on these phones that provides full access to all their fundamental features. Really, these phones are just another kind of computer.

It's obvious to me that as we move into an ever more visual world, the computer, in one form or another, will become in a sense the bridge to enable access by a blind person to a wide variety of functions that other people take for granted. The more we use a computer at home to process information, and as the computer increasingly takes over the functions of home entertainment, ultimately the better off blind people will be in terms of being able to access all those functions.

It's not practical to expect all appliances to be accessible. But it might not be unreasonable to expect them to be in some way networkable. If this was so, it is easy to see how the next generation mobile phone or any generic hand held computer, with its ability to network and communicate with a variety of other devices, could become like a blind person's passport to access a wide variety of functions in the home and throughout society. It might cost only a few dollars more to manufacture a microwave oven with a bluetooth interface, but at least with that I

could fully control that microwave with my hand-held iPaq or mobile phone. I suspect also that it won't be too long before the average mobile phone with its on-board camera will be able to read the label on a wine bottle, a function that I would certainly find most valuable. Even now, there are mobile phone applications for identifying colours and bank notes.

For those blind people who can afford them, the computer is already dominating the way we access information. Obviously there is a wealth of information readily available on the internet, but in addition, by working through the appropriate channels, we can often access other published books and magazine articles electronically. On my lap top I have a screen reader that reads information on the screen in a synthetic voice, and I also have a portable braille display that gives me braille access to that same information. I've just completed a law degree, and I was able to electronically access virtually all the textbooks, case books and journal articles I needed. These are all filed away on my lap top. It's fantastic to think that I can have all that information at my full disposal on one lap top computer that I can carry around with me.

So maybe the picture is looking better now. Yes we do have on-going access difficulties when it comes to using everyday appliances, and certain computer software and web sites, but at the same time, the computer also gives us so much in terms of access to information and the potential to solve our access problems.

So where is all this leading?

Earlier on, I suggested that there is no good reason why society should even care at all about the problems faced by blind people. One could even take the view that ultimately technology will solve the problem of blindness itself, and we who are here now might as well just survive as best we can in the meantime.

But surely this is where ethical considerations come in. I would not expect all computerised appliances to be accessible to me. But in time, I think it might be reasonable to expect all such appliances, at least those in the mid price bracket, to come with a cheap built-in standardised wireless interface and protocol to allow me with my specialised hand-held gadget to access and control all the functions that appliance has to offer. This is simple in concept, and I suggest if done correctly right throughout the design process, would add little to the cost of design and manufacture of home appliances.

Turning to computer applications, the more we can encourage the industry to separate information processing from the presentation layer and user interface, the more we can create applications that will work seamlessly with a wide variety of interfaces, including interfaces that are accessible to blind people.

People with disabilities throughout the developed world are already putting pressure on governments to recognise the growing problem of being shut out of our own society. Our way of looking at it is that it is not that we inherently have disabilities, but it is the way society impacts on us that disables us. As we put pressure on society to be more enabling, the pressure will go on designers of appliances,

software, web sites and so on to at least ensure that some basic requirements of accessibility are met, whatever they are defined to be.

We will also see increasing emphasis on legally enforceable accessibility standards applying to a range of everyday household products. Even now there is a growing body of case law defining minimum legal obligations for certain employers, software vendors and information providers. That case law seems to suggest that while the extent of your legal obligations to people with disabilities is perhaps unclear, it is the complete failure to take our needs into account that could very likely leave you open to some sort of legal action by someone with a disability alleging discrimination. So it is time to at least start thinking about our needs.

We will demand our right to fully participate in tomorrow's increasingly technology oriented world. Your challenge is to recognise and plan for this now. The best way for you to do that is to ensure that you include us directly into the mainstream of your thinking.

I think there is a tendency for mainstream designers to ignore accessibility issues, leaving that up to the niche companies I spoke of earlier. But I hope you realise now that that is not enough. Designers won't have to fundamentally understand accessibility issues in detail, but I believe they will have to recognise a fundamental obligation to actively consider the needs of people with disabilities who might want to use the products they design.

You have chosen to focus your academic energies on the human computer interface. We could say that society now looks to you to find ways to ensure that we will no longer be prevented from using and enjoying all of the benefits today's technology can bring. I hope you accept the challenge and ensure that tomorrow's world that you are right now creating will be fully inclusive of people like me.