

# Universell utforming som en positive utfordring eller en unødvendig byrde?

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*Helena Nordh and Sigmund Asmervik: Universal design as a positive challenge or an undue burden?*

The Norwegian State has been working for more than ten years on different types of measures to improve accessibility for the Norwegian population. An important part of this work has been to develop new legislation and other types of formal guidelines to reduce physical barriers. As stated in the Anti-Discrimination and Accessibility Act that came into force in 2009, existing buildings should adapt to universal design if this does not entail an undue burden. When assessing whether a change of a present structure will entail an undue burden some specific values need to be taken into consideration: economics, safety and cultural heritage. Using examples from architecture and landscape architecture, we illustrate how universal design can be adopted well in old and new buildings and environments, without necessarily compromising either economy, safety or culture/history. We discuss the importance of flexible solutions and point out that universal design is much more than standards and regulations.

*Keywords:* accessibility, architecture, discrimination, inclusive design

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## What is universal design?

To quote Ron Mace, one of the creators and promoters of universal design, «*Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. The intent of universal design is to simplify life for everyone by making products, communications, and the built environment more usable by as many people as possible at little or no extra cost. Universal design benefits people of all ages and abilities.*» (The Centre for Universal Design, 2010).

The statement above illustrates that universal design applies not only to people with disabilities but to all people, including, for example, families with children in prams and elderly suffering various kinds of impairment (Asmervik, 2009). As Lid (2013) states, universal design is not design for people with disabilities. Instead it is design with a wide variety of people in mind. Universal design is about respectfulness and accessibility. It is about a society in which people feel wel-

comed, a society that is open for change and that allows a diversity of people to live and participate. It is a society that sees people's differences as enrichment rather than a barrier.

Lid (2013) talks about accessibility contra equal accessibility. She illustrates this with an example of a building. The building can be accessible for all, but if some people need to enter the building from the back, because the front door is inaccessible, then the building is not equally accessible. This is also illustrated in an article by Asmervik (2008) in which architect Sverre Fehn, at the opening of the new building for the National Museum of Art, Architecture and Design in Oslo, had to take the back door instead of the front door together with the king and queen.

An equally accessible society is given for many of us but sometimes difficult to achieve in practise. Nilsen et al. (2013) found in a study on Norwegian kindergartens that several landscape architects think that universal design is adopted at the cost of other functions such as play space. This means that for some landscape architects there

might be an issue with integrating quality with universal design. We are afraid that several architects also agree with this. According to the Norwegian Anti-Discrimination and Accessibility Act (Ministry of Children, Equality and Social Inclusion, 2009a) «*Public and private undertakings that offer goods or services to the general public are obliged to ensure the universal design of the undertaking's normal function provided this does not entail an undue burden for the undertaking. When assessing whether the design or accommodation entails an undue burden, particular importance shall be attached to the effect of the accommodation on the dismantling of disabling barriers, the necessary costs associated with the accommodation, the undertaking's resources, whether the normal function of the undertaking is of a public nature, safety considerations and cultural heritage considerations.*»

In this paper we will discuss these burdens, *culture/history, safety and cost*, from an architectural point of view. Our focus here is therefore on the physical environment and how equally accessible it is. The discussion will be illustrated with good examples from architecture and landscape architecture, and will refer to research on universal design in relation to culture/history, safety and cost. In the reflections and concluding remarks we discuss how the burdens relate to aspects of ethics and respectfulness. The article is not a comprehensive literature review, but rather a discussion of dilemmas related to implementation of the Norwegian Anti-Discrimination and Accessibility Act. Before going into the burdens we will give a very brief history of universal design in the following two sections, starting with universal design as part of architecture and continuing with an overview of development of universal design in Norway.

### **Universal design in architecture – a historic perspective**

Universal design has evolved as a concept during the 20th century. One of the important milestones is The Civil Rights Act signed by USA in 1964 (National archives, 2015). During the 1960s the focus was mainly on wheel-

chair users. The architectural solutions were based on special designs for people with impairments, rather than universally designed solutions (Asmervik, 2009). USA has been the forerunner when it comes to universal design, and in 1990 the Americans with Disabilities Act came into force (Department of Justice, 1990). In Norway a similar act was not passed until 2009. Even if universal design is considered a rather new concept, particularly in Norway, it has long been an integral part of architecture. To illustrate this we will give some examples of use of ramps as an architectural element rather than a universal design element. The modernist movement and functionalism provide many examples of how architects expose the use of ramp and lift as a substitute for stairs. An example of a well-functioning and aesthetically pleasing ramp is the Oscar Niemeyer's buildings in Niterói in Rio de Janeiro, see figure 1. Here the ramp is part of the architectural construction from the beginning and contributes in a positive way to the architectural image. Good examples can also be found in which the ramps are added to the original building, see examples from Barcelona in figures 2 and 3. The city was awarded the RIBA gold medal in 1999 for good architectural solutions when it transformed the whole city after the fall of Franco in 1975. There are many historical monuments in Barcelona, but it is quite obvious that accessibility for all has been prioritised over historical conservation.

Ramps are also a common element in landscape architecture. They are often experienced as a natural part of the landscape rather than as a classical ramp. Examples can be found in historic gardens as well as in modern landscape architecture. Schandorffs plass in Oslo is an example of the latter. It is a good example of how a ramp can be incorporated into the park design in an aesthetically pleasing way and function as more than just an element to reduce a barrier caused by height differences. Along the ramp there are seats and small places where one can stop and rest, see figure 4. In 2011 the park was awarded the innovation prize for universal design from The Norwegian Design Council (The Norwegian Design Council, 2011).



Figure 1. Entrance by ramp to the Niterói, Rio de Janeiro, by Oscar Niemeyer.  
Photo: S. Asmervik



Figure 2. The new entrance to a historical building in Barcelona, with a ramp and stairs, is a good example of how a modest additional design can even improve the architectural quality of the building.  
Photo: S. Asmervik

### The development of universal design in Norway

The UN Convention on the Rights of People with Disabilities was adopted by the UN General Assembly in December 2006 and ratified by Norway in June 2013 (Ministry of Children, Equality and Social Inclusion, 2013). This international convention includes a wide range of elements to ensure the rights of all people with disabilities, irrespective of their age, gender, sexual orientation or ethnic background. However, it was not



Figure 3. Here was not only a new ramp added outside a historic building in Barcelona, but the additional construction was used as a new building with an outdoor restaurant on a levelled floor. It is an interesting example of how far some are willing to go with radical solutions to secure accessibility.  
Photo: S. Asmervik



Figure 4. Schandorffs plass in Oslo. The park was built in 2009 and designed by Østeng & Bergh AS. Photo: Østeng & Bergh

until Norway passed the Anti-Discrimination and Accessibility Act in 2009 (Ministry of Children, Equality and Social Inclusion, 2009a) that more attention was directed to universal design in Norway.

The Norwegian government wanted to avoid the ideas that the individual was defined as the problem and that special measures for people with disabilities were the main solution. In January 2009, the Act relating to prohibition against discrimination on the grounds of disabilities (the Anti-Dis-

crimination and Accessibility Act) came into force (Ministry of Children, Equality and Social Inclusion, 2009a). The purpose of the Act is «... to promote equality regardless of disabilities. Equality means: equal opportunities and rights as well as accessibility. The Act shall help to dismantle disabling barriers created by society and to prevent new ones from being created.» The Act stipulates a duty to universally design enterprises that offer products or services to the general public. As stated in section 13 of the Act; «Public and private undertakings that offer goods or services to the general public are obliged to ensure the universal design of the undertaking's normal function provided this does not entail an undue burden for the undertaking. When assessing whether the design or accommodation entails an undue burden, particular importance shall be attached to the effect of the accommodation on the dismantling of disabling barriers, the necessary costs associated with the accommodation, the undertaking's resources, whether the normal function of the undertaking is of a public nature, safety considerations and cultural heritage considerations.»

The definition of universal design in this act is more or less an interpretation of the American understanding of universal design (Department of Justice, 1990). The physical environment should be arranged such that the main body of the building can be used by as many people as possible. There are, however, differences in the definitions of universal design between the Norwegian Anti-Discrimination and Accessibility Act and the UN Convention on the Rights of People with Disabilities. The differences relate mainly to the people for whom the act is meant. The UN convention talks about all people: «Universal design» means the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design (UN, 2008). In comparison, the Norwegian Anti-Discrimination and Accessibility Act talks about as many people as possible: «By universal design is meant designing or accommodating the main solution as regards to physical conditions, including information and communication

technology, so that it can be used by as many people as possible» (Ministry of Children, Equality and Social Inclusion, 2009a).

The act gives opportunities for «complaint» if one feels discriminated. There is an organ called «Likestillings og diskrimineringsombudet» (LDO) that deals with complaints regarding violations of acts (<http://www.ldo.no/en/>). The instance is not juridical and can only give recommendations. However, the complaints can be sent on to a juridical body if agreement is not reached. In 2014, 36 complaints related to discrimination due to disabilities were sent to LDO. In about half the cases the conditions on which the complaint was based were found to be in violation of the act.

In addition to the Anti-Discrimination and Accessibility Act, a new Norwegian Planning and Building Act came into force in 2009 (Ministry of Local Government and Modernisation, 2009). Among other things, the new law includes regulations regarding design of outdoor areas and buildings. After the introduction of the new laws, universal design is now a visible concept in almost all Norwegian municipality plans. All new buildings or outdoor areas need to be universally designed. This is a major step toward achieving universal design in Norway by 2025, which is the goal of the government (Ministry of Children, Equality and Social Inclusion, 2009b).

International efforts to arrive at standardisation in the building industry have led to many discussions. Various construction elements have traditionally been described using very specific measures. The tendency over the last 20 years has been in the direction of describing a specific required performance. This is in part due to developments in building and material technology. Standards Norway (SN), a private and independent member organisation, has worked out and published Norwegian standards on universal design for a variety of topics such as: buildings, information technology and outdoor environments (Standard Norge, 2009, 2011, 2013). These documents have a great impact in construction of new buildings and outdoor areas, and include more details than the Norwegian Planning and Building Act (Ministry of Local Government and Moderni-

sation, 2009). However, standards are not legal documents.

### Undue burden

As mentioned earlier, the Norwegian Anti-Discrimination and Accessibility Act sets out a few premises in relation to implementation of universal design in already existing buildings. Burdens related to cost, safety and cultural heritage are considered. In following sections we will discuss these issues and give examples from Scandinavian architecture.

### The necessary cost

Economic concerns are very often the crucial argument when deciding if a change to universal design will cause an undue burden. Cost in relation to universal design is a topic of great interest in media since the new Anti-Discrimination and Accessibility Act came into force. Big construction companies such as Skanska and OBOS have made contradictory statements regarding the cost of universally designed dwellings (see for example Pettersen, 2012; Mjaavatn 2012). We can calculate the cost fairly easily, but it is often very difficult to calculate the benefits in a convincing way. Odeck et al. (2010) has done a cost-benefit analysis in the Norwegian transport sector focusing on design of busses and bus stops. They found that universal design was profitable and benefitted all users. It is not only the individual in need of universal design who benefits from the new solution; there is a cumulative effect because everyone saves time when *one* saves time. Saved time is equal to saved cost.

Another way to calculate cost is to look at the amount of money saved if one could reduce the number of accidents caused by poor design. In 2008, the Norwegian Association of the Blind and Partially Sighted undertook a survey to quantify accidents and injuries caused by poor design. The investigation is based on 1000 telephone interviews, and calculated in relation to the population of Norway. The study is not scientifically verified but gives an indication of the high cost caused by poor design. The results shocked many. In Norway, with a modest total populati-

on of 4.8 million, there were an estimated 1.2 million accidents a year: 40 000 fractures, 160 000 injuries due to the lack of contrast markings on glass walls and doors, and a huge 685 000 injuries caused by falls down staircases. Between 40 and 50 people died each year due to falls down staircases. All these accidents are related to barriers in the environment caused by architecture and resulting in major economic costs that society has to bear (Synovate, 2008).

Other publications on the cost of universal design show that the cost of implementing universal design in existing situations is dependent on the pre situation and the extent of the changes that have to be made. Thus a generalized cost in relation to universal design is difficult to calculate (Medby et al. 2007). The best way to reduce costs for universal design is to bear in mind the needs of all kinds of users in the early phase of a project. All post-construction solutions are, needless to say, usually a costly affair. Cost is one of the parameters that need to be taken into consideration according to the Norwegian Anti-Discrimination and Accessibility Act. Of the 36 complaints that were sent to LDO in 2014, only four were evaluated as an undue burden due to cost. One example is the lack of universally designed toilets and showers at Gjøvik hospital (case 11/399). The conclusion from LDO was that there was a lack of universally designed toilets/showers, but that changing the showers and toilets would be an undue burden since hospital's renovation process was delayed due to parallel construction projects as well as poor economy. The conclusion was that the hospital was not in violation of the act.

### Safety considerations

We have already made some comments on safety related to cost. Safety considerations are often concentrated on horizontal and vertical circulation, and focused on details of stairs and handles in connection with stairwells and ramps. Stairs at public transportation stations have heavy streams of pedestrian traffic, often people in a hurry. To reduce the risk of accidents, it is very important that stairs and handrails are properly designed. We easily accept warnings from contrast

marking on platforms for trains and subways. Hence, similar warnings should also be accepted in other areas, for example on stairs. Examples can be found in which absence of contrast marking in stairs has resulted in yellow stripes on each step. This is very often the result of an injury. Such additions are often in conflict with aesthetics. Again, if the warnings are part of the design from the beginning, they could be used as a way of increasing aesthetic quality, as in the example from Järnhuset in Helsinki (see figure 5).



Figures 5, The stairs at the Järnhuset in Helsinki, built in the 1950s and designed by architect Alvar Aalto. The solution is universally designed with good contrasts, oak and white marble in the steps, and handles made of brass. This is also an example of an architect who was prior to his time, creating universally designed solutions as early as the mid-1900s. Photo: S. Asmervik

We can point to many examples in which safety is compromised due to incompetence or conflict with aesthetics. A very recent example is at the multi-award winning Norwegian Opera House by Snøhetta. A dominant concept for the entire building is the walkable roof which is accessible to the public. However, there are several information boards telling you that it is dangerous to walk on the levelled roof (see figure 6). This is specifically the case in wintertime when the surface is covered by ice and snow. In addition, the white surface can cause reflection and confusion in relation to orientation.

### Cultural heritage considerations

In the beginning of this article we gave some examples from Barcelona on access to historical buildings. There seem to be very different views on cultural heritage considerations when refurbishing historical buildings, both indoors and outdoors. Several of the complaints sent to LDO (<http://www.ldo.no/no/Klagesaker/>) are related to inaccessible buildings, many of them along Karl Johan's gate, which is the main shopping street in Oslo, the capital of Norway. The street has several buildings with cultural heritage values that can be in conflict with universal design. Due to the volume of complaints, the municipality of Oslo decided to evaluate the degree of accessibility along the street (Oslo municipality, 2013). Accessibility to 75 companies in 39 buildings was evaluated. The results show that several of the buildings were not accessible. The

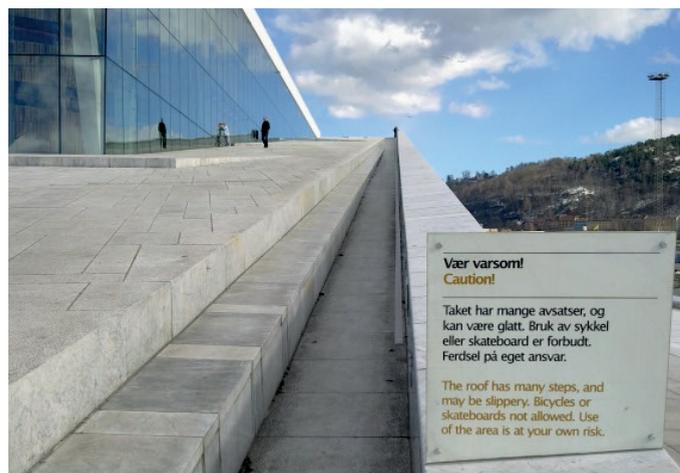


Figure 6: The roof of the new Norwegian Opera House in Oslo. The sign signals danger, and informs the visitor to use the roof at his or her own risk. Photo: H. Nordh

problems had to do with barriers to getting from the street into the building as well as to vertical circulation inside the building. Interestingly, the municipality concludes that reducing the barriers would not be in conflict with historic values, since many of the buildings have been changed over time.

There are several historical buildings at the Oslo university campus Blindern. The Blindern campus has been working with universal design for more than 15 years and many good examples can be found; however, many buildings at the campus are still not accessible for wheelchair users due to conflict with cultural heritage. The solution in many cases has been to use alternative entrances for wheelchair users. The alternative entrances make the buildings accessible but do not follow the concept of universal design. An alternative solution would be to change the use of the building so that no education rooms are located in inaccessible buildings.

Universal design can obviously be in conflict with historic values. In some cases the burdens are related to size constrictions; there might not be enough space outside the building to accommodate a universally designed entrance, for example. Cases like these are complicated, and a change of the space might have major consequences for traffic, pedestrians or other nearby buildings. In many cases solutions are possible, though. Many good examples can be found, even among protected buildings. Some examples are mentioned already in the beginning of this article and others can be found, in the city of Bergen in Norway, for example. The Agency for Cultural Heritage Management City of Bergen has developed eight general principles for preserving and changing the use of historical buildings (Nilsen, 2011). The principles are:

1. *Wholeness* – It is of importance of thinking of the whole environment, not just the single building or entrance in isolation.
2. *Addition* – When adding new solutions to old buildings it is highly important not to destroy any old traces. The new solution should be an addition, not a transformation.
3. *Readability* – It is important that the history of the site is readable so that one can

judge what is an addition and what is the original construction.

4. *Contrast and adaption* – In some situations it is better that the addition contrasts with the old building to increase readability, while in other situations one wants to adapt to the existing design to make a smooth (less obvious) addition.
5. *Design and visual expression* – The universal design solution has to be site specific so that it does not destroy any of the historical traces.
6. *Reversible* – It should be easy to remove the universal design solution to go back to the original design if needed.
7. *Sustainable* – It is important that the materials chosen do not destroy the original materials.
8. *Enriching* – The universal design solution should not only enrich the building by getting it more accessible but should also enrich the design of it.

These eight principles are not specifically related to universal design. The examples from Bergen below, however, show quite convincingly that these principle can be used applied to old buildings that are rebuilt to comply with universal design (see figures 7–10). According to Nilsen (2011), making old buildings more accessible does not mean that the universally designed solution should be hidden. Instead, the new solution should add new values. This is an interesting way in which to think about universal design. Universal design can become something creative rather than a burden.

### Discussion and concluding remarks

In this paper we have given some examples of how universal design is implemented in architecture and landscape architecture. The examples are discussed in light of the Norwegian Anti-Discrimination and Accessibility Act (Ministry of Children, Equality and Social Inclusion, 2009a) which stresses that implementation of universal design into existing buildings should not entail an undue burden. The undue burden can relate to cost, safety or cultural heritage.



Figures 7 and 8: Example of addition and readability at Valkendorfsgate 6 in Bergen. The hanging ramp does not cover the original stair but makes the building accessible. Photo: Arkitektgruppen-Cubus.



Figure 9: An example of contrast and adaptation as well as readability at the building Permanten in Bergen. The entrance to the building was previously through the red doors on the first floor. After the building was universally designed, the entrance was moved to the ground floor. The new design works smoothly with the historic entrance. Photo: Helena Nordh



Figure 10: An example of reversibility at Finngården in Bergen. The glass elevator does not interrupt the visual expression of the building. Photo: Det Hanseatiske Hotel

It is fairly easy to show that the cost of introducing the principle of universal design is very modest if the principle is taken into consideration at the very start of a project. However, adding universal design to already existing buildings or structures can bring extensive costs. If the principles of the Agency for Cultural Heritage Management City of Bergen are followed, the solutions should be site specific, which of course raises the costs. It could be argued that the costs will often be lower than the benefits. This is particularly so if one counts the cost of injuries caused by poor design as was done in the study by Synovate (2008), initiated by Norwegian Association of the Blind and Partially Sighted. In this regard one should note the part of the Norwegian Anti-Discrimination and Accessibility Act stating that «particular importance shall be attached to the effect of the accommodation on the dismantling of dis-

abling barriers». In the example by Odeck et al. (2010) mentioned previously, making bus stops more universally designed clearly caused an effect reaching far beyond people with disabilities.

Safety is a question that always has to be taken into consideration and this aspect seems fairly well implemented, especially in public transport systems. The most complex dilemmas we find are related to questions of cultural heritage. In this paper we have presented a number of good examples related to improvement of accessibility to existing buildings. At the core of these dilemmas we find a question of quality that always includes aesthetics, sound economics, safety and resilience. Finding good solutions should be a tempting challenge for architects and landscape architects. When looking at dilemmas connected to architecture we can easily end up in situations where arguments based on aesthetics takes us into issues of ethics. Who decides what is beautiful? What cultural filters tell us what is an undue burden? What costs are acceptable in a wealthy country such as Norway? These are dilemmas that LDO has to deal with in all the complaints sent to them.

A common trend now, probably the best approach, is to end up with flexible solutions in universally designed environments. In doing so one would meet the need of a diverse population, which is one of the aims of universal design (Waller et al. 2015). The idea of a flexible solution is well illustrated at the new building of the Danish handicap association's building outside Copenhagen. There a number of different types of meeting rooms and interiors meet the needs of a variety of users. They have even several types of restrooms so that there is at least one WC in the building that fits each individual user. The users of the building were very involved in the planning process. Involving the user is one of the success criteria for good inclusive design according to Heylighen and Bianchin (2013).

New laws and standards can result in a more universally friendly environment. The proper development of detailed guidelines or standards requires time; in the meantime, however, new technologies and new trends in

the way we organise society emerge. This time aspect is problematic in terms of developing guidelines. The new acts and standards demands that professionals working with architecture are familiar with laws, standards and not least, with the various kinds of disabilities. But is perhaps the focus in the architectural world is too influenced by standards and laws, with too little focus on the ethical aspect of universal design? As teachers at the Norwegian University of Life Sciences, educating landscape architects, landscape engineers and urban and regional planners, we have experienced that the interest for universal design has been growing every year since we first had a course in universal design in 2008. During the last three years about 80 students have taken the course. On the first day of the course we handed out a piece of paper asking the students to write down why they chose to take the course. The responses were grouped into categories of similar motives. The result are clear. About thirty percent of the students took the course because they are interested in the topic and its ethical aspects and fifty percent thought it was important and highly relevant in their future work. Interestingly, very few students said they took the course to know more about standards and laws. This indicates that this group of students think of their future work in a socially responsible way (c.f. Sungur Ergenoglu, 2015).

One could argue that strict and detailed design guidelines could have a negative effect on creativity and promote standardized, mainstream solutions. Even if the guidelines are often presented as a set of minimal measures, architects and landscape architects may feel hindered by these standards, despite the fact that they are intended to be a practical tool (Ryhl, 2012). This could explain why some landscape architects thinks that universal design is adopted at the cost of both functionality and play space, for example, as in the example by Nilsen and colleagues (2013) in the introduction. We do not want a society with a minimum standard, which would actually be in contrast to the very idea of universal design. Instead we want architecture with high quality, welcoming solutions.

Universal design is very much about ethics and a way of thinking. However, it results in many concrete solutions and dilemmas related to cultural history, safety and cost. Many changes friendly to universal design have been made in the recent years, but more needs to be done. Drawing parallels to other design professions, such as web design, we see that universal design is a prerequisite rather than a burden. All web designers want a web page that is easily understood, readable and accessible; otherwise, no one would visit them. If architects and landscape architects would think the same way, there would be many exciting universal design solutions in the future. Examples, such as the ones from The Cultural Heritage Management, City of Bergen, helps show how universal design can be a creative process rather than a burden.

Although the Norwegian state has been working for several years to improve universal design, it is a relatively new research field, specifically from a national point of view. Few empirical studies have been published, and there is a pressing need to develop knowledge about universal design from a variety of research- and design perspectives (Clarkson and Coleman 2015). We question whether Norway will manage to reach the goal set by the government of a universally designed society in 2025, but it is a strategy with an important aim that signals an inclusive society.

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