

# CHANGE IN THINKING ABOUT ACCESSIBILITY IN CULTURAL FACILITIES

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<sup>2</sup> The review of Norwegian legislation took place in 2007, when Norway signed the Convention, and was completed in 2013, when the Convention was ratified. Available at: <https://www.regjeringen.no/contentassets/26633b70910a44049dc065af-217cb201/crpd-initial-report-norway-english-01072015.pdf>

**ABSTRACT:** Museum, gallery and library buildings are spaces for communication, learning and creating cultural experiences from exhibitions or events. They serve as evidence of the presence of humanity and nature. They should create opportunities for the inclusion of a wide range of visitors with different abilities, physical and mental needs, as well as preferences.

This paper focuses on presenting the implementation of various universal design principles in cultural buildings, but also the developments that have taken place in the requirements for accessible public buildings following the adoption of the UN Convention on the Rights of Persons with Disabilities in 2006. These changes in the thinking of society, but also of individuals, can be observed in terms of architecture, but also in the approach to the presentation of individual collection objects and other programming, taking into account the needs of diverse visitors.

The paper presents a comparison of case studies of new cultural buildings from the Norwegian capital Oslo that were realized with a gap of one decade - such as the Astrup Fearnley Museum of Modern Art (Renzo Piano, 2012) and the National Museum (Kleihues + Schuwerk Gesellschaft von Architekten, 2022) - and the different approaches to the application of universal design principles in their spaces and presentations.

**KEYWORDS:** architecture; public space; civic buildings; museum; gallery; accessibility; universal design

## INTRODUCTION

The following paper presents and compares two cultural institutions built in the last decade in the Norwegian capital, Oslo. Specifically, the buildings in question are the Astrup Fearnley Museum of Modern Art and the new Norwegian National Museum.

The National Museum building is presented in the paper as a realization of a vast national cultural institution completed in 2022, the second realization of the Astrup Fearnley Museum of Modern Art was already commissioned in 2012 and is presented in the paper as an opportunity for reflection and comparison of the developments that have taken place in the field over the last ten years - whether in architecture and its relationship to universal design<sup>1</sup>, or in the preparation of exhibitions and access to visitors.

Both buildings were constructed after the adoption of the UN Convention on the Rights of Persons with Disabilities in 2006, which was later adopted and ratified independently by individual countries - Norway adopted the Convention in 2007 and ratified it in 2013<sup>2</sup> - and after a number of legislative changes were adopted, including, for example, the revision of the Planning and Building Act and the simultaneous adoption of the new Discrimination and Accessibility Act in 2009. The Act and its Regulations set out guidelines and require new developments to comply with universal design rules for buildings, facilities and outdoor spaces<sup>3</sup>. A number of measures have been introduced in line with these guidelines, including the National Programme for the Development of Universal Design in Districts and Municipalities (2009-2013) and a website that provides information on good local and regional practices and examples. [10]

Universal Design has seven internationally recognised principles:

- Principle 1: Equitable, fair use,
- Principle 2: flexibility in use,
- Principle 3: ease and intuitiveness of use,
- Principle 4: perceptible information,
- Principle 5: tolerance of error (and safety),
- Principle 6: low physical effort,
- Principle 7: size and design of space; space is usable by all. [1]

We can apply these principles in various ways and forms to selected buildings, and we will gradually demonstrate the changes in design and thinking about universal design that have occurred despite the basic premises remaining fundamentally the same.

## URBAN CONTEXT

The presented buildings are located in the same area - in revitalised urban areas on the site of the former industrial districts - ports and transshipment yards of Oslo. The construction of a new urban structure, or alternatively a larger intervention into it, gives room for straightforward solutions, the possibility of creating collision-free transport and reflecting the city's current requirements for both functional saturation and spatial layout.

The Aker Brygge district, where the National Museum is located, has been undergoing revitalisation since the 1980s. The district has preserved a number of buildings referring to its industrial past. It is characterised by a pedestrian promenade along the sea, with car traffic passing along its perimeter and a tunnel under the district, and public transport stops are located directly in front of the National Museum. There are designated parking spaces for disabled visitors next to the museum, approximately 100 metres from the main entrance. [2]

The city's Tjuvholmen district, where the Astrup Fearnley Museum of Modern Art is located, served as a cargo terminal until 2000. It consists of two islands



Fig. 1.: Location of the presented buildings in the context of the city. 1 - National Museum, 2 - Astrup Fearnley Museum of Modern Art, public transport stops, parking options. (Image source: authors based on openstreetmap.org 2023)

- the first has a pedestrian promenade along the sea and car traffic situated in a parallel street, on the second island, car traffic is stopped at the beginning of the island and other public spaces are reserved for pedestrians only. Public parking is situated in a public parking garage 400 m away from the islands, directly on the museum island there are 5 parking spaces for disabled persons, which, in this case, are not located on the terrain, but in a private underground garage. The nearest public transport stops are identical to the National Museum. [3]

## ARCHITECTURAL DESIGN

The architectural design of the new National Museum was developed on the basis of the winning design of an architectural competition from 2010. The authors of the design are architects Kleiheus and Schuwerk. The architects wanted to create a building that would stand the test of time and paid great attention to the fine materials and details applied. The third, top floor of the building is distinctly different and is called the "light hall". The perimeter cladding of this floor is made up of translucent marble with built-in LED luminaires that highlight the museum building after dark in the city's texture.



Fig. 2.: Collage of images: architectural expression of the National Museum and Astrup Fearnley Museum of Modern Art. (Photo source: authors 2022)

the surrounding fjord, and the individual objects are connected to the visitor and user only by a roofed exterior - a dynamically shaped glass roof covers the entire building and museum complex and is the dominant motif of the museum's architectural design. One of the exhibition buildings houses a museum shop and café as an additional function. [6,7,8]

## ACCESSIBILITY AND ENTRANCE TO THE BUILDING

The main entrance of the National Museum can be accessed from several directions through the barrier-free public space. The floor of the public space is made of granite blocks - however, it is formed with minimal gaps, and is thus suitable and comfortable for the movement of people with prams, people in wheelchairs, people with mobility limitations, walkers etc. An artificial guiding line serving people with visual impairments leads to the main entrance.

The Astrup Fearnley Museum of Modern Art building is accessible by one route via a wheelchair accessible paved bridge and walkway with minimal gaps. The individual buildings of the Astrup Fearnley Museum of Modern Art are connected to each other only by an



Fig. 3.: Collage of images: access route to the entrance of the National Museum and Astrup Fearnley Museum of Modern Art. (Photo source: authors 2022)

Currently, the concept of universal design is a high-priority political goal in the Norwegian government. Several action plans have been developed with the aim of becoming a society where all components are universally accessible. The Parliament there has set itself the goal of making all types of housing and buildings accessible to all. Responsibility for implementing the concept of universal design is divided between three government bodies: the National Resource Centre for Participation and Accessibility under the Ministry of Children, Equality and Inclusion; the Ministry of Climate and Environment; and the Ministry of Local Government and Modernisation. A chronological overview of Universal Design implementation milestones is available on the WHO website. The most important year can be considered 2009, when the Law on Spatial Planning and Construction was revised and the new Law on Discrimination and Accessibility was adopted at the same time - with the approval of these two laws, a significant milestone was reached, promoting universal design in local and regional activities. <https://extranet.who.int/agefriendly-world/wp-content/uploads/2015/06/Timeline-Universal-Design-in-Norway.pdf>

The authorities are currently making a systematic effort to promote knowledge and set requirements for universal design in the development of the man-made environment. Key areas in this regard are buildings and facilities, planning, outdoor spaces, transport and ICT (Information and Communications Technology). The Norwegian Government is currently preparing a new action plan for universal design and increased accessibility, ICT and social technologies are a priority in this plan.

	NATIONAL MUSEUM	ASTRUP FEARNLEY MUSEUM OF MODERN ART
author	Kleiheus + Schuwerk Gessellschaft von Architekten	Renzo Piano
location	Aker Brygge	Tjuvholmen
opening year	2022	2012
area	54 600 m <sup>2</sup> 12 500 m <sup>2</sup> exhibition spaces	7 000 m <sup>2</sup>

Tab. 1.: Basic data about the buildings of the National Museum and the Astrup Fearnley Museum of Modern Art. (Source: authors 2023)

In addition to exhibition space, the three-story museum building offers spaces for a library specializing in art, cafés, a museum store, an auditorium, and several smaller gathering spaces. In the part of the building further away from the main entrance there are offices, restoration workshops, workshop rooms, photographic studios and the museum's depositories. [4,5]

The Astrup Fearnley Museum of Modern Art is the earlier and smaller of the pair of presented projects. The museum consists of three buildings - two are dedicated to exhibitions, the third is devoted to rentable office spaces. The object composition forms views of

accessible exterior space. The main exhibition building is surrounded by the museum's sculpture park, which is wheelchair accessible.

The main entrance of the National Museum is wheelchair accessible, with the floor level of the exterior and interior at the same height level. Entry is via a revolving turnstile door or directly through the adjacent opening doorway, to which the aforementioned artificial guiding line leads. The opening door is equipped with a button for automatic opening on impulse for wheelchair users for persons with mobility limitations, blind persons or parents with a pram. The main en-

<sup>3</sup> The Norwegian Building Authority contributes to increasing knowledge of building quality, regulations and application processes in society, industry and municipalities. Supervisory measures must protect the public interest so that buildings maintain a high quality and protect users from injury or discomfort and other inconveniences. Supervision is a duty of municipalities and fines, remedial orders or stop work orders may be imposed on the builder. The Building Authority has prepared a manual for the supervision of universal design. It also publishes information on universal design and accessibility on the internet.

trance is therefore accessible to all. The entrance hall of the National Museum is adequately large for a large gathering of people, with ample manoeuvring areas. There are two counters to which an artificial guiding line leads - the ticket counter and the information counter - these are designed at two different heights for better accessibility for wheelchair users with mobility restrictions, equipped with an induction loop. The information desk offers materials in several languages. There are orientation plans in the lobby for easy understanding of the museum's circulation.

The Astrup Fearnley Museum of Modern Art has two buildings, and therefore two entrances to the buildings. Both entrances are wheelchair accessible, with the exterior and interior floor levels at the same elevation. The entrance doors are double-leaf opening and open automatically upon the arrival of a visitor. The entrance hall provides sufficient manoeuvring space, there is an information desk, but this is single height, so it is not suitable for wheelchair users or for people with mobility restrictions or visitors of lower height. There is no artificial guiding line leading to the counter and the counter is not equipped with an induction loop.

The National Museum is aware of the importance of not only physical accessibility to the building, but also

the institution's website as a potential medium of first contact with the potential visitor. On their website, in an appropriate font size and graphics, they provide all the necessary information to prepare for a smooth visit to the museum, also with a separate page dedicated specifically to accessibility in the museum (information about wheelchairs for people with reduced mobility, information for visitors with hearing and visual impairments, information about guided tours, access with an assistance dog, accompanying persons, visiting with a pram or small children, information about accessible parking), they also offer the possibility of downloading a supporting Museum app<sup>4</sup>. The Astrup Fearnley Museum of Modern Art, on its website, has also opted for an easy-to-read web design, but does not place emphasis directly on the museum's accessibility information.

## DESIGN OF INFORMATION AND ORIENTATION SYSTEM, VERTICAL COMMUNICATIONS, SANITARY FACILITIES AND CLOAKROOMS

The essential facilities for the visitors of the National Museum are concentrated in the 1st underground floor directly below the entrance hall and are accessible by two staircases and lifts, symmetrically situated in the hall.

In the underground floor there is a cloakroom, toilets, areas for parents with children and areas for digital workshops (equipped with an induction loop), which visitors can visit independently of visiting the museum. All spaces are accessible, in common areas with sufficient contrast between floor and walls.

Two staircases run through the entire building with an elevator in close proximity. The staircases are equipped with a pair of handrails on either side of the staircase, set at different heights. On the top step of the staircase there are warning tactile indicators - warning tactile studs of a circular shape - on the lowest step of the staircase there are tactile indicators of a linear shape, on each step there is also one linear element on the edge. The lift had buttons marked in Braille.

There are a number of information panels and plans of the museum throughout the building for easy orientation - all the rooms are individually labelled with a description or number. All the descriptions are easy to read, large enough and contrasting, often done in embossed writing in two languages and in Braille.

Upon entering the Museum of Modern Art, the first exhibition spaces are sunken - they are located on the 1st underground floor. The height difference is bridged by a staircase or a vertical lifting platform. The staircases are smooth, without landings, with a pair of handrails on both sides of the staircase. However, the staircases are constructed without warning elements for the visually impaired. The location of the barrier-free vertical communication is in an ambiguous position in relation to the main exhibition route, which is accessed via a staircase - the lifting platforms are not clearly perceptible in the entrance area, in both buildings they are located in the museum shop or in auxiliary areas. Users who have to use the lifting platform thus go through the exhibition in both buildings partly in a different order and by a more complicated route than other users.

In the main exhibition building, there are also exhibition or facilities areas on the other floors. Vertical communication between the 2nd underground floor (cloakrooms, hygiene), the 1st floor and the 2nd floor (exhibition) is provided by an elevator located at the edge of the museum shop.

The operation is more difficult to understand despite



Fig. 4.: Collage of images: entrance to the National Museum and the Astrup Fearnley Museum of Modern Art. (Photo source: authors 2022)

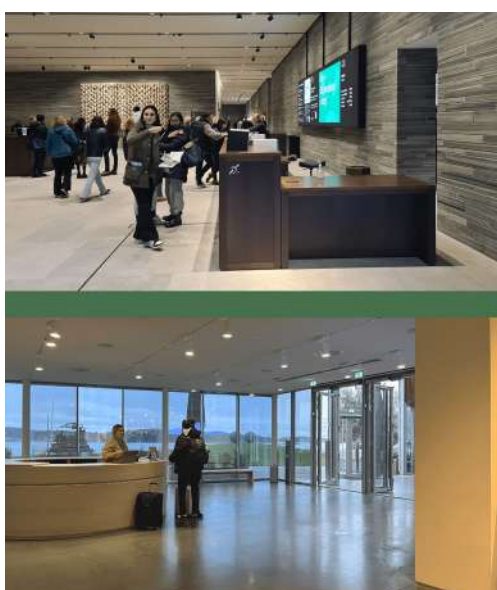


Fig. 5.: Collage of images: the entrance hall of the National Museum and Astrup Fearnley Museum of Modern Art. (Photo source: authors 2022)

<sup>4</sup> The National Museum Visitor's Guide app makes it easy to navigate through the museum. It includes an audio guide, an interactive map and other content.

the smaller size and the museum does not have an information system in place to help visitors understand the continuity of the exhibition spaces. The colour contrast of the walls and floor is sufficient, but the building lacks orientation features for the visually impaired.

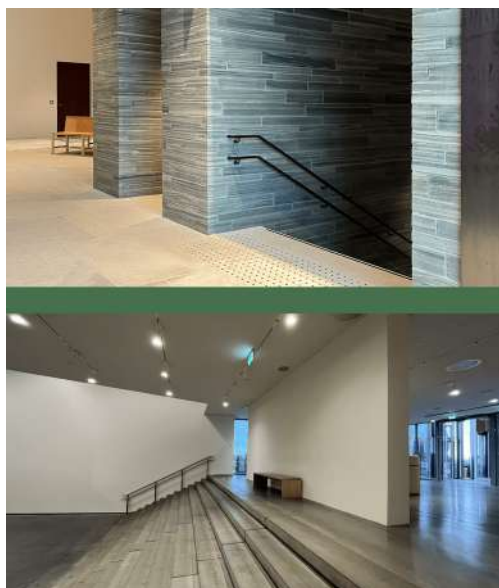


Fig. 6.: Collage of images: vertical communications of the National Museum and the Astrup Fearnley Museum of Modern Art. (Photo source: authors 2022)

Both museums have adequate cloakroom and hygiene facilities. Lockers are provided at different heights for ease of use by seated users or users of shorter height. The necessary hygiene facilities are made in a high spatial and material standard, marked with a sign with a contrasting pictogram, and in the National Museum also with a description in embossed and Braille. What could be criticised is perhaps only that the toilets are segregated - for men, women and users with health limitations - which is not fully in accordance with the principles of universal design; it would arguably have been more appropriate to integrate an accessible stall directly within the women's and men's toilets, or to create unisex toilets.

## EXHIBITION SPACE DESIGN

All exhibition spaces of the National Museum, the sculpture garden and the roof terrace are wheelchair accessible by lift, there are no other barriers within the exhibition spaces.

The exhibition provides a historical cross-section of the Norwegian National Museum's art collection. The exhibition is arranged as a tour of the individual floors, which can be tiring and overwhelming for users - however, this being a National Museum, the scale is understandable and appropriate. The exhibition spaces are equipped with furnishings for visitors' relaxation. The seating offers both seats with and without backrests, with and without armrests, according to the visitor's preference.

The vitrines for displays built on the floor have a recessed plinth for easier approach to the displays, and there is sufficient manoeuvring space in the area surrounding the displays. Smaller wall-mounted vitrines are fully wheelchair-accessible for people with mobility limitations. What could be criticised is the lack of marking of the display cases at floor level to identify obstacles using the white stick technique.

The museum has also created a number of interactive and multisensory exhibits to present different parts of the exhibition in a variety of ways - to illustrate and

complement the exhibits, for children to play with, or to present the exhibition to people with disabilities.

The exhibition spaces of the Museum of Modern Art are, despite the segregated and ambiguous route mentioned above, accessible to all users. The exhibition presents modern art, the spaces provide enough room for a smooth perception of the individual exhibits, for undisturbed interaction and for the possible manoeuvring of wheelchair users for persons with mobility limitations. The exhibition spaces are not equipped with seating for users to rest or for the possibility of extended observation of the artworks. However, resting furniture can be found in circulation areas, which could eliminate possible fatigue for users.

Individual exhibits are not complemented with multisensory exhibits to complete the museum experience for different users and children.



Fig. 7.: Collage of images: exhibition spaces of the National Museum and the Astrup Fearnley Museum of Modern Art. (Photo source: authors 2022)



Fig. 8.: Collage of images: exhibition spaces of the National Museum and the Astrup Fearnley Museum of Modern Art. (Photo source: authors 2022)

## CONCLUSION

The case studies were prepared after an in situ visit as part of the national project PUN - Project of Universal Design 312041APA3 with the intention to present cases of good practice, to broaden the awareness of

the general and professional public, for application in the preparation of new legislative documents, for the creation of design manuals and for inspiration in the practice of architects.

The case studies present how universal design principles can be implemented, and how much impact changes in design can have on the user experience for people with special needs and thus promote the inclusiveness of architectural design. Implementing universal design principles throughout the solution feels natural and does not interfere with the overall expression

of the design at all. A more detailed comparison of the application of the different universal design principles can be seen in Table 2. [1]

It can be concluded that while in the new National Museum (2022) all the principles of universal design were applied, in the Museum of Modern Art (2012) mostly only debarring elements were applied. Thus, the examples in this paper illustrate the difference between applying accessibility in design and thus making the building accessible to people with physical limitations, and applying all the principles of universal design

	NATIONAL MUSEUM	ASTRUP FEARNLEY MUSEUM OF MODERN ART
<b>1st principle: equal, fair use</b>	<ul style="list-style-type: none"> <li>*the main entrance to the building is barrier-free, it is not segregated, it can be shared by all visitors</li> <li>*the exhibition route is accessible and the same for all users, staircases and lifts are clustered in one position within the layout</li> </ul>	<ul style="list-style-type: none"> <li>*the main entrance to the building is barrier-free, it is not segregated, it can be shared by all visitors</li> <li>*the exhibition route is accessible to all users, but is different for users who have to use the elevator/ lifting platform, and thus segregates</li> </ul>
<b>2nd principle: flexibility in use</b>	<ul style="list-style-type: none"> <li>*alternative to the staircase is always a closely adjacent elevator</li> <li>*within the exposition there is also furniture for rest-with or without a backrest, with or without armrests- so that the possibility of resting is offered at the user's preference</li> <li>*multiple exhibits are presented in a multisensory way, each visitor chooses a suitable way of obtaining information and experiences</li> <li>-part of the furniture for relaxation is also a multisensory element- Braille signs, objects related to the exhibition- scents, materials, exhibits for children- each visitor chooses a suitable way of obtaining information and experiences</li> </ul>	<ul style="list-style-type: none"> <li>*alternative to a staircase- the lift or lifting platform is in a different position</li> <li>*there is no furniture for rest within the exposition</li> <li>*the exhibition does not provide interactive or multisensory exhibits</li> </ul>
<b>3rd principle: simple and intuitive to use</b>	<ul style="list-style-type: none"> <li>*guiding system to the entrance</li> <li>*orientation in the exhibition spaces is made easier by using the numbering of exhibition spaces</li> <li>*positioning of facilities for visitors in the building in one place</li> </ul>	<ul style="list-style-type: none"> <li>*positioning of facilities for visitors- the splitting of the exhibition into two objects causes, that the cloakroom and sanitary facilities are only in one of the exhibition objects, between which there is only a passage through the covered exterior</li> </ul>
<b>4th principle: perceptible information</b>	<ul style="list-style-type: none"> <li>*system of guiding lines in front of the entrance</li> <li>*information desk is equipped with induction loop</li> <li>*there are alternative formats of information at the entrance- easy to read texts, audio guide, information in several world languages</li> <li>*exhibits use a multisensory form, are diverse and presented in a variety of ways of communication and information, exhibits are well illuminated</li> <li>*the design is easy to read, visually appealing, easy to understand and all safety features are in a uniform design adapted to the museum's unique logotype</li> </ul>	<ul style="list-style-type: none"> <li>*guiding lines are absent in the museum and surrounding areas</li> <li>*the information desk is not equipped with an induction loop</li> <li>*there are alternative formats of information at the entrance- simple texts (easy to read), audio guide, information in several world languages</li> </ul>
<b>5th principle: tolerance of error (and safety)</b>	<ul style="list-style-type: none"> <li>*glass entrance doors are marked with a distinctive pictogram so that the glass is clearly perceptible</li> <li>*floor surfaces are non-slip, matt and glare-free</li> <li>*sufficient contrast between horizontal and vertical surfaces</li> <li>*stairs with full steps, straight, with no overhanging profiles, on the first and last step of the staircase with safety features</li> <li>*the question of evacuation of persons unable to move and navigate themselves independently is addressed</li> </ul>	<ul style="list-style-type: none"> <li>*glazed surfaces do not have safety features</li> <li>*floor surface is non-slip, matt, without glare</li> <li>*sufficient contrast between horizontal and vertical structures</li> <li>*stairs are with full treads, straight, without protruding noses, without warning elements</li> </ul>
<b>6th principle: low physical effort</b>	<ul style="list-style-type: none"> <li>*the main entrance is designed as a turnstile door or a door with leaf opening on impulse</li> <li>*surfaces in the museum are barrier-free and threshold-free</li> <li>*seating is equipped with back and arm rests</li> </ul>	<ul style="list-style-type: none"> <li>*the main entrance is designed as an automatic opening door</li> <li>*floors in the museum are barrier-free and threshold-free</li> </ul>
<b>7th principle: size and design of space; space is usable by all</b>	<ul style="list-style-type: none"> <li>*suitably designed sales/information counter with lowered height is friendly for all visitors, the lowered part is designed for easy approach for wheelchair users</li> <li>*sufficient width of corridors, doors, ramps, lifts and stairs, manoeuvring areas are met</li> <li>*suitable design of display cabinets- allowing the wheelchair to be slid under the display cabinet, with sufficient space around the display cabinets for manoeuvring the wheelchair</li> <li>*interactive elements are installed in two heights- at a reachable height suitable also for children and wheelchair users</li> <li>*table with variable height for children's workshops- providing a comfortable place for children of all ages to work</li> </ul>	<ul style="list-style-type: none"> <li>*adequate width of corridors, doors, ramps, lifts and stairs, manoeuvring areas are met</li> <li>*exhibits cannot be identified by white cane technique</li> </ul>

Tab. 2.: Summarised comparison of the application of universal design principles. (Source: authors 2023)

sign, which make the space, its content and services accessible "for all".

Universal design and accessibility had become standard and the norm in recent years. The understanding of this concept, which was initially perceived only in terms of the physical environment and architecture, is also changing into the activities of the whole institution. Institutions are adapting their visual communication, publications and materials, websites, as well as the planning of events and activities inclusively for visitors with specific requirements, in order to reach the widest possible range of users. Institutions become open to people with disabilities in their use, not only for visitors but also for their employees.

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