

From Barrier-Free to Universal/Inclusive Design: How Far Have We Progressed During These 60 Years in Japan?

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Abstract. It is sixty years since ASA A117.1 was introduced in 1961, and fifty years since the US Senate Special Committee on Aging hearings on barrier-free environment in October 1971. During these years, the word "barrier-free design" was replaced with universal design, or inclusive design, with the notion that the need is not limited to people who have disabilities, but that more people will be affected by poor design. How far have we progressed in these years to solve the problems? This paper tries to examine what we have now and what still need to be done, on environments, products, and services. To sum-up major findings, the built environment is more considerate to people than before thanks to ADA and other similar laws and regulations, but improvement of existing infrastructures is slower than desirable.

Keywords. Barrier-free design; built environment; design for aging; inclusive design; universal design.

1. Introduction

It is sixty years since ASA A117.1: Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped was introduced in 1961 [1], and fifty years since the US Senate Special Committee on Aging hearings "A barrier-free environment for the elderly and the handicapped" in October 1971 [2]. The author came across this document some years ago and had a chance to read it through (by the way, it included A117.1 as an Appendix), which led the author to contemplate on the past, present, and future of designing for diversity.

During these years, the word "barrier-free design" was replaced with universal design, or inclusive design. The underlying idea behind the change is that the need is not limited to a small number of people who have disabilities, but a vast number of people will be affected for a longer period, since almost everyone must live up to the age of seventy, eighty or beyond. For a cohort, death at younger years has drastically reduced. Majority will live beyond 65 years of age, to be officially counted as senior citizens. Figure 1 shows change of population structure in countries worldwide. Even India is expected to have about one-seventh of its population 65 and over in 2050.

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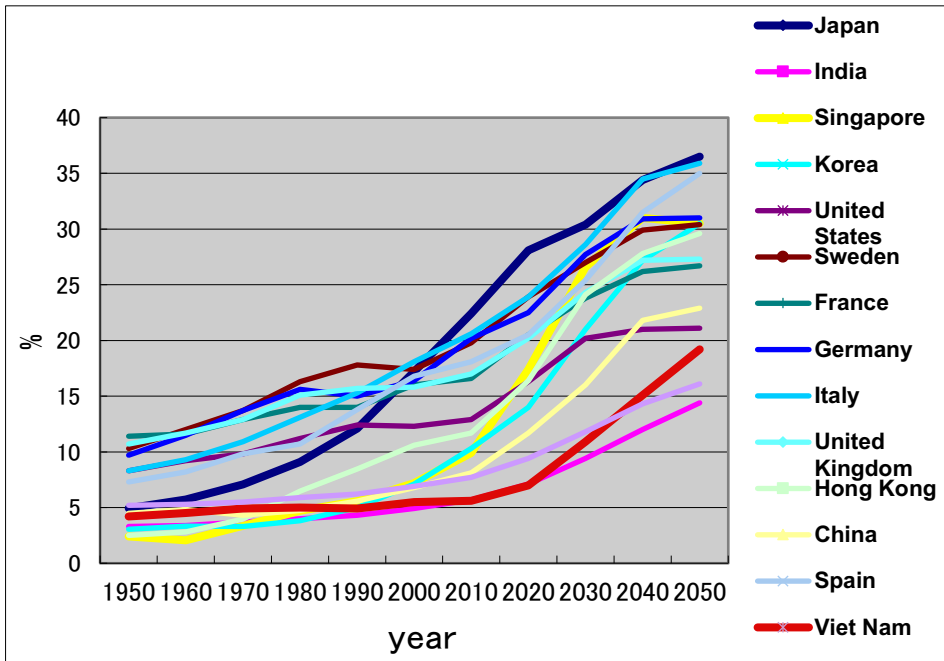


Figure 1. Ratio of people 65 and over in selected countries between 1950 and 2050 (based on UN data).

The seniors will surely experience difficulties associated with aging at various aspects, i.e., hard of hearing, vision impairment, dexterity, stamina, and above all, mobility. When we assumed that the majority in the society are young and robust, we tackled the problems of different disabilities one by one through specific solutions because each disability group was vocal about accomplishing its own interest. With the graying of the whole population in sight, the emphasis shifted toward designing for aging because seniors lose most of their capabilities: Minor loss in some, substantial loss in others, and no one can predict what will happen in the long run. Minor loss of both hearing and vision, however, makes it difficult for a senior to communicate effectively, resulting in segregation and exclusion (it would happen if one had to purchase a ticket at a station counter).

This paper will consider how far the built environments in Japan were made more accessible and usable through efforts at various stages; it will further discuss what are still to be desired.

2. Historical development toward more accessible buildings

2.1. Background history in the US and beyond

Responding to the needs of people with mobility impairments became essential during the Second World War, because the wide use of penicillin was successful in curing infection from battle-time injury, but it resulted in an increased number of paralyzed veterans in the US as stated by Lifchez [3]. It also led to a widespread introduction of ramps to buildings that previously lacked such measures to enable access by wheelchairs

[4]. Design failures preventing disabled persons from using existing buildings are not limited to stairs, and ideas for remodeling were accumulated among the specialists, and they were compiled and published as an American Standard Specification A117.1 in 1961. This document was circulated world-wide and similar guidelines were made in many countries, including UK by Goldsmith [5]. Persons with disabilities gradually started raising voices, first asking for more accessible transportation, then more accessible buildings [major events globally are listed in Table 1].

In the US, Architectural Barriers Act of 1968 paved the way toward mandatory design of accessible and usable buildings (although the starting point was just to cover federal government), and other countries took a similar path, but requiring for most new buildings to be designed to be barrier-free [6]. Some countries went even further to formulate regulations and codes for existing buildings to be modified accessible [7]. In the US, passing of ADA in 1990 [8] mandated public transportation and public buildings to be barrier-free, to meet approximately the level suggested by A117.1 (public buildings mean buildings general public has the right of access, even if they were owned by the private sector: Before the introduction of ADA, only Federal Government buildings and buildings with tax money subsidies were asked to be accessible).

This prompted a move toward the concept of universal design because it is impossible to have two buildings, i.e., one accessible and the other inaccessible, for the same purpose. In almost all cases, it is natural to choose to provide an accessible building.

However, the Guidelines [9] accompanying ADA introduced a problematic issue. Conditions necessary to make buildings accessible but not explicitly stated in the documents are quite often ignored by architects and designers. Acknowledging the difficulties, experts came to publicize the concept of design for all, with the formulation and advocacy of Principles of Universal Design [10, 11]. They covered aspects beyond buildings, and experts emphasized the benefits of universal design – UD sells. In other western countries, the concept was more related with human rights, and inclusive design was used instead, implying that no one should be excluded from the users.

Table 1. Timeline of major events related with barrier-free/universal design of buildings

Year	Event	Country/Organization
1961	ASA A117.1	USA
1968	Architectural Barriers Act	USA
1974	UN Expert Group Meeting on Barrier-Free Design	United Nations
1981	UN Year of Disabled Persons	United Nations
1983-92	UN Decade of Disabled Persons	United Nations
1990	American with Disabilities Act (ADA)	USA
1991	ADA Accessibility Guidelines	USA
1993-2002	UN-ESCAP Decade of Disabled Persons	UN-ESCAP
1994	Accessible Building Law	Japan
1995	Dwelling Design Guidelines Toward the Aging Society	Japan
2000	Accessible Public Transportation Law	Japan
2002	Revised Accessible Building Law	Japan
2006	Accessible Built Environment Law	Japan
2006	UN Convention on the Rights of People with Disabilities (CRPD)	United Nations
2014	Ratification of CRPD	Japan
2018	Revised Accessible Built Environment Law	Japan
2020	Revised Accessible Built Environment Law	Japan
2021	Tokyo Olympics/Paralympics	Japan

2.2. Early years until enactment of Japanese Accessible Building Law in 1994

In some local governments in Japan, for example in Machida City of Tokyo, officials tried to persuade building providers to make a planned building more accessible during the process of building confirmation (i.e., building permit), without which no building can be built. Although officials do not have the authority to deny confirmation in the end, they took long time to persuade with the authority of administrative guidance [12]. When the United Nations designated the year 1981 as the Year of Disabled Persons, and 1983-1992 as the UD Decade of Disabled Persons, the central government set up guidelines on accessible buildings (1981) and accessible public transportation (1983). Neither of them was mandatory, so their adoption was slow mostly due to financial difficulties. On some occasions, government subsidies (particularly for station elevators) were provided but they were rather ad-hoc basis, not continuous [13]. In general, local cities where disabled people were active tended to be more successful in making some buildings accessible compared to others.

In the meantime, a few local governments in Japan decided to require some public buildings to be accessible through a special provision, i.e., utilizing the local ordinance scheme. The Building Standard Law, which determines minimum building performance requirements as the basis of building confirmation, covers the whole country but gives the local governments the authority to add specific requirements in their own localities: It was originally intended to respond to specific natural conditions that are unsuitable to be included within the Law (such as structural load against typhoons), but some local governments used it to include the issue of accessibility. The move, first done by Kanagawa Prefecture in 1990, followed by Osaka, Hyogo and Tokyo was prompted by the rapid aging of the Japanese society: National Institute of Population Research issued its revised population forecast in 1986, which gave an alarming warning that about a quarter of Japanese population will be 65 and over in 2030 (Note 1). One of the outcomes of this impact was the formulation of Dwelling Design Guidelines toward the Ageing Society, developed by the authors [14].

The news that the US, whose principle is *laissez-faire* without government intervention in general, enacted ADA to require private sector buildings to be accessible (only exclusion in the US is buildings used solely by memberships such as religious buildings – If the facility is rented out for a fee, it must be accessible) urged the Japanese government to move toward the similar direction. It however took time to respond to make public buildings accessible, and it was not until 1994 when a special law to make buildings accessible was enacted.

2.3. Introduction of Accessible Building Law

The Japanese government had two choices in introducing accessibility issues in the building confirmation system: Inclusion of accessibility requirements in the Building Standard Law, or enactment of a special law. It turned out that a new law, Accessible Building Law was introduced, without touching the existing building confirmation system. Its lengthy official name (i.e., Making Buildings Accessible and Usable for the Elderly and Physically Disabled Law) emphasizes the aging of the society as priority because the central government officials judged that introducing building design for persons with disabilities as general requirements was still too early for the public to accept. Reflecting the society's attitude, the Law did not introduce mandatory requirements. Instead, they were recommended with some carrots such as tax deduction

or accreditation. In order to acquire accreditation, higher accessibility level must be met, not the minimum level [15]. The Law covered buildings with floor area of 2,000 square meters and over with access by the general public, i.e., schools and offices were excluded from the major target because their typical users can be identified against temporary visitors (Note 2). The accreditation by the central government slowly but steadily increased as shown in Figure 2 (As of 2011, about 50% of all special designated buildings with floor area 2000 square meters and over, both new and existing, complied with the accessibility requirements, and the expectation was the ratio to grow to 60% in 2020). In its early stage of accreditation, some competitive private sector, such as supermarkets, utilized it as a publicizing tool, trying to attract more customers to their newly opened stores. During the period, the author tried hard to tell the ideas of universal design through publication of popular books [16, 17].

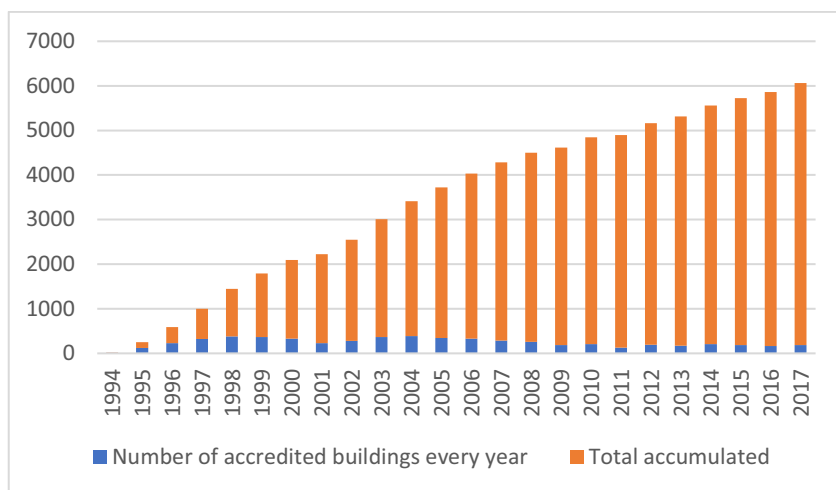


Figure 2. Accessible Buildings and Those Accredited by the Law.

An unintended impact of the introduction of Accessible Building Law was the intensified request for accessible public transportation. Persons with disabilities started to argue: If buildings can be persuaded to be more accessible, why not public transportation systems that are monopolistic in nature (it is unlikely to give license to another railway company if having two would likely result in bankruptcy of both)? The argument resulted in the enactment of Accessible Public Transportation Law in 2000, with mandatory requirements. Of course, such requirements are only enforceable for new facilities, yet refurbishment efforts were requested for existing ones. Smaller-scale ones were exempted from obligation (starting point was 5,000 users or over per day, which was later lowered).

Introduction of mandatory requirements on public transportation then led to the argument that some obligations can perhaps be introduced to public buildings, and in 2002, Accessible Building Law was revised to include some mandatory requirements. It was also decided that local governments can introduce stricter requirements with their own ordinance, should the situation allow businesses to compete to each other. In 2006, after having two accessibility laws in parallel for some years, they were merged into one to cover built environment (originally, building control was with the Construction

Ministry and public transportation was with the Transportation Ministry, but the two Ministries were merged into one in 2001). It is perhaps worth stating that building control scheme was changed, and building confirmation was made possible by the private sector certification organizations as part of deregulation and privatization of many governmental control issues. It unfortunately resulted in the loss of enforcement power by the local governments.

2.4. Accessible Built Environment Law: Merger of two Laws

When the merger of the two Laws was being prepared, a scandal surfaced. One business hotel chain violated an accessible parking space requirement enforced by Yokohama City through its ordinance. This led to the introduction of requirements on an accessible hotel guestroom, mandating at least one if the number of rooms is 50 or over (not the kind of sliding-scale requirement like ADAAG). The merger itself was straightforward, basically accepting previous requirements [18]. Detailed examination of accessibility target intended by the law against possible directions led the author to propose some ideas with research papers [19, 20].

The timing almost coincided with the establishment of the UN Convention on the Rights of People with Disabilities, but it did not affect attitude of Japanese people. Japan became one of the signatory bodies of the Convention in 2007, but its ratification was delayed until 2014. In the meantime, re-examination of existing laws and policies was done in many aspects. When almost all parties concerned agreed, Elimination of Discrimination of People with Disabilities Law was enacted in 2013, to become enforceable in April 2016 (the long period was reserved for wide publicity). Crucial problem with the law was that the requirements are non-mandatory for private sector, but it only asked efforts to abide by. Government sector is required to abide by if situation permits; otherwise, reasonable accommodation must be provided.

In the global context, in 2011, after years of discussion, ISO published an International Standard IS 21542: Accessibility and Usability of the Built Environment [21], which finally superseded a previous ISO TR 9527: Building Construction – Needs of Disabled People in Buildings – Design Guidelines of 1994 [22]. The new document had some problems, and its revision is currently underway, expected to be issued in 2021.

2.5. Accessible Built Environment Law: Revision in 2018

The Japanese law originated from the idea of persuading business entities of building and public transportation providers, not introducing requirements as mandatory. The effectiveness of the Law was still to be desired, and in 2018, a second clause was added to the first Article of the Law, including the statement on the principle of non-discrimination of people with disabilities. It is however not the first statement, but rather a bit of compromise. Another major change related with buildings in 2018 was on accessible guestrooms in hotels: One percent of rooms must be accessible if the floor area is 2,000 square meters or more.

The Law also made it more explicit that local governments should try to introduce their own policies and ordinances toward more accessible and usable built environment. According to the Ministry, only 14 among 47 prefectures, and only six among more than 800 cities have their own ordinances on building accessibility as of October 2019. The ordinances are expected to extend the coverage of types of buildings, as well as to lower the requirement on floor area from 2,000 square meters (for essential building types to

support everyday life). Some of the earlier ideas in ordinances are given in Kose and Motokado [20].

2.6. Current urgent needs for the Olympics/Paralympics

To ensure the Tokyo Olympics and Paralympics (currently expected to be held in summer 2021) a success, it is necessary to ask for a higher level of accessibility. During the events, a large number of spectators needs to be accommodated without delay in order not to miss the games. Previous assumptions such as providing only one accessible route with minimum capacity (small elevators) are simply destined to fail: Multiple routes are requested, but it is not certain if they can be provided in time for the events [23]. Most of the measures seem to be behind because it will take long time to renovate physical design of the built environment. If they could be done, that would definitely become a long-lasting legacy.

2.7. Accessible Built Environment Law: Revision in 2020

One of the crucial issues untouched by the central government is the accessibility provision of small businesses within the walking distance. As already pointed out in 2.5, some local governments introduced stricter requirements for some types of buildings where people visit and shop frequently, such as a grocery store, a restaurant, or a hairdresser. Unless newly built, these can pose basic problems because they might be quite narrow in space. However, survey by the Ministry revealed that their accessibility level is low with only around 30% of such premises complying with the requirements, even with newly opened ones (not necessarily newly built). Compared to other developed countries, life of buildings in Japan is shorter particularly due to structural requirements against earthquakes. Even under such circumstances, replacement of below minimum level buildings is slow, and remaining buildings are difficult to modify to meet accessibility requirements because they are not the priority as accessibility is not the issue of life or death.

The author's proposal in previous papers [19, 20] was to combine physical design changes with measures of reasonable accommodation. The difficulty in Japan arises from the building confirmation system, which is rigid without assumptions of lowering requirement level through negotiation basis, and inflexibility to combine hardware responses with soft approach, i.e., service provisions to meet the needs of the users. The ultimate goal must be customer satisfaction, and for small businesses, there could be several creative choices to accomplish it. In this respect, US is doing a better job by funding local non-profit centers to provide advices to small businesses toward enabling acceptable outcomes for users with disabilities: Japan has no such funding schemes based on the Elimination of Discrimination of People with Disabilities Law.

Later in 2020, the Ministry decided to relax some accessibility requirements for smaller-scale buildings (500 square meters or less) to avoid differing guidelines issued by different localities since people's expectations will be similar in any place (this will be effective in October 2021). This addition, however, touched only physical requirements and ignored possible combination of measures to fulfil the goal of the users.

Another move was that publicly established primary/secondary schools are now required to be accessible from April 2021 – It is expected to ensure financial subsidies for refurbishment of existing buildings from the central government. The major reason

for the move is that public schools are destined to become temporary refuge places during natural disasters, as evidenced on so many recent occasions.

3. Conclusion

Physical design changes should be the priority, of course, but it would not always be possible with narrow space of small businesses in particular. Simplest alternative would be to bring down the products from upper floors; to serve expensive dishes on the ground floor canteen from the mezzanine restaurant without elevator access; or, to accept home delivery or catering. Such alternative accommodation should be more widely acknowledged as it would give better user satisfaction.

Problem of existing older buildings is the biggest issue to be solved in any country. During the discussion of the IS 21542, the argument raised by experts from developed countries, from Nordic countries in particular, was that exceptional circumstances should be limited only to “existing buildings in developing countries” [24]. The reality was that problems of existing buildings were common to developed countries as well. Built-up area in historically walled cities often has buildings with difficult conditions of accessibility improvement.

Unless we can agree on policies and approaches to ensure a reasonable level of accessibility and usability, the difficulties might be left unsolved.

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Note 1: The critical year that a quarter of Japanese will be 65 and over was passed in 2013, instead of 2030. In 2018, more than 28% of population was 65 and over.

Note 2: Type of buildings covered by the Law and essential features are as follows:

Building type: Schools; Hospitals and clinics; Theaters, stadiums, cinemas and entertainment halls; Assembly halls and auditoriums; Exhibition halls; Wholesale markets, department stores and other merchandise stores; Hotels and inns; Offices; Apartments, dormitories and boarding houses; Nursing homes for the aged, childcare centers, welfare homes for physically disabled people, and other similar care facilities; Welfare centers for the aged, child welfare facilities, welfare centers for physically disabled people, and other similar care facilities; Gymnasiums, swimming pools, bowling centers, and other similar sporting or recreational establishments; Museums, art galleries and libraries; Public baths; Restaurants, cabarets, nightclubs, dance halls, and other similar establishments; Post offices, barbershops, dry cleaning agencies, pawn shops, dress hire companies, banks, and other similar service-providing establishments; Driving schools, cram schools, flower arrangement schools, go schools, and similar establishments; Factories; Buildings constituting vehicle stations/stops or aircraft/vessel terminals used for passenger embarkation/disembarkation and waiting; Motor vehicle parking or storage facilities; Public toilets; and Public passageways. For some building types, requirements are mandatory, while others are asked just to make efforts. The former building type is called as “Special Designated Buildings”, and the latter as “Designated Buildings”. The former types are basically public buildings that anyone has the right of access while the latter types are buildings whose major users can be identified from temporary visitors, and they include ordinary schools, apartments, offices, factories, etc.

Essential features to ensure accessibility: Approach, entrances; corridors; stairs; ramps; toilets; bathrooms; hotel guest rooms; signage; and car parks. Detailed requirements including dimensions are defined in two levels, minimum level, and recommended level. For example, 800mm door width is minimum, 900mm recommended. The latter level is not so much different from other countries or IS 21542. The former level is determined with due consideration of past customs and experiences as well as state-of-the-art.

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