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Housing Design for the Ageing: Struggle Toward Supporting Age-in-Place Instead of Special Housing for Seniors

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Abstract. With the global trend of population ageing, efforts are in progress in many countries to cope with the problems associated with it. As one grows older, his/her capabilities gradually deteriorate. What need to be done to mitigate mismatch of dwelling design, and to enable age-in-place? A comparative study of design guidelines in Japan, UK and USA is conducted to find out challenges and opportunities we are faced with. In Japan, design guidelines for the ageing society were proposed in the early 1990s, and they have been used ever since in several contexts. Although they were not mandatory, policy-linked incentives have worked to some extent. In the UK, Lifetime Homes concept has been formulated, and it seems to have gained momentum with its adoption in the Approved Document M. In the USA, Fair Housing Amendment Act in 1988 [5] introduced requirements on wheelchair accessibility on rental sector, and Visitability concept, less stringent than liveability, is being adopted in some localities. Although wheelchair accessibility is not the same as design for the ageing, most of the issues are shared. What are the problems we still face with, revealed from the survey? First is the time lag between acquisition of the dwelling versus one's senior years, which sometimes extends to 40 years. Second, many of the dwellings are already built with lower standards than desirable, not as new construction. Third, home modification quite often lacks financial support through government policy. This presentation will give some proposals toward improvement over the situation.

Keywords. Ageing, dwelling design, universal design, Visitability, Lifetime Homes

1. Introduction

In many countries, longevity has become the norm, which necessitated the provision of dwellings suited to seniors who will experience general deterioration associated with age [17]. Regarding public buildings and outdoor environment, accessibility and usability issues have long been discussed and provisions proposed and implemented, but as to individual dwellings, the measures have been left behind because it was more of personal preferences rather than of public interest. In some countries where the multifamily housing was the norm, some accessibility recommendations have been introduced even for the existing buildings as well as requirements for new construction [27]. In countries where detached houses are a dominant type of dwellings, however, residents have been

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given the freedom what to choose. It was fairly recent that the governments in Japan, the UK, and the US moved to introduce some policy measures toward population ageing. This paper will compare three approaches, and discusses problems needing solutions.

2. Situation in Japan

In Japan, when the National Institute for Population Research issued a revised population forecast in 1986 [24], people were alarmed, and various policy measures were sought to cope with the coming of a highly aged society (see Fig. 1). Although there have been several proposals to house the seniors, they were all incremental and specific, not intended to become a general solution [13]. The forecast told us that specific measures such as sheltered housing and the like would not be enough to accommodate baby-boomer generation in the years to come (in reality, the forecast told us that in 2030, the seniors would occupy about a quarter of the Japanese population, but it was in 2013 when a quarter level was reached).

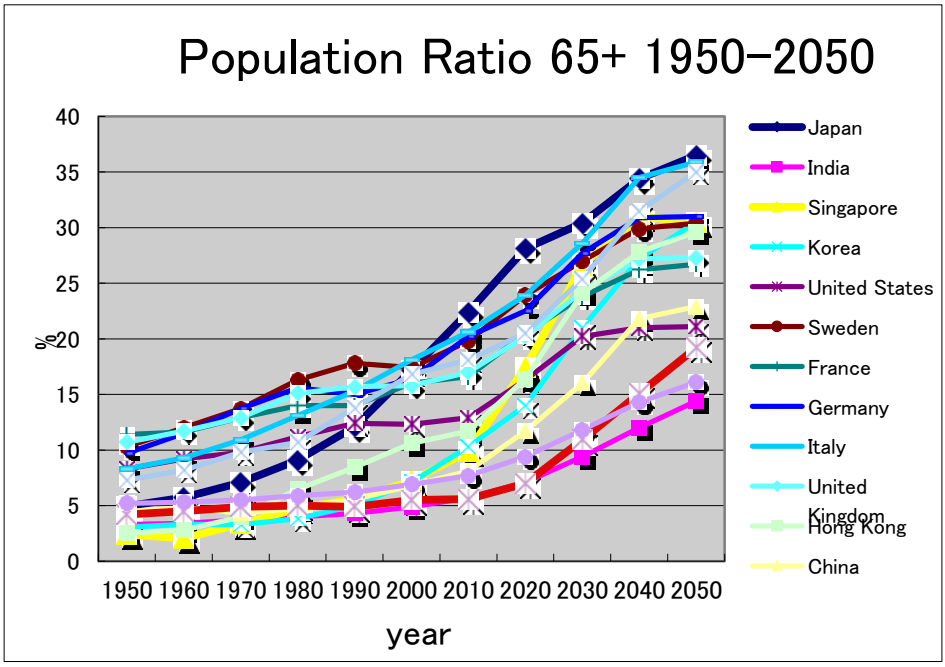

Figure 1. Ratio of people 65 and over in selected countries between 1950 and 2050.

2.1. Design Guidelines Development

To prepare for the future, the Building Research Institute, Ministry of Construction, Japan started a research and development project, which resulted in the formulation of design guidelines of dwellings for the ageing society [10, 11, 12, 13, 20, 21, 22]. The draft design guidelines were submitted in two parts, focusing on multifamily housing and detached houses respectively, in 1991 and 1992 [14, 15, 19, 23].

2.2. Efforts Toward Implementation

After several procedures within the government, the guidelines were issued in 1995 from the Director-General of the Housing Bureau, Ministry of Construction, with more detailed accompanying documents from the Director of Housing Construction Division. They were non-mandatory when issued, but the Housing Loan Corporation of Japan (HLC) adopted key features for their new housing policy linked mortgage scheme in 1996, and major housing providers followed because lower interest rates (interest subsidies by the government) and larger sum were only eligible if policy linked requirements were met. Toward the end of 1990s, it turned out that more than half of those who asked for mortgages accepted the design for ageing society features [16].

Unfortunately, along with the government policy toward privatization, the role of HLC was gradually diminished and changed its status into Japan Housing Finance Agency in 2007. General housing mortgages are now handled by the private banks. Under the current situation of very low interest rate, it is virtually impossible to differentiate between accessible and usable design versus non-accessible design through economic incentives [18].

3. Situation in the UK

In the UK, where the wheelchair housing concept was introduced in the 1970s, dwellings for seniors were first introduced as sheltered housing but the idea on more accessible housing was also sought.

3.1. Lifetime Homes

Lifetime Homes concept was developed in the UK by the Joseph Rowntree Foundation and Habinteg Housing Association. To cite from the web (http://www.lifetimehomes.org.uk/pages/history.html):

> Lifetime Homes emerged from work developed by the Helen Hamlyn Foundation and Habinteg Housing Association in the late 1980s. Helen Hamlyn Foundation's focus was on the impact of an ageing society on design standards, whilst Habinteg was a housing organisation founded by Scope, with an interest in the housing needs of disabled people. Together both organisations approached the Joseph Rowntree Foundation to carry forward their ideas.
> The objective was to devise a set of features that would make a home accessible and usable for disabled people. Homes that would allow future adaptation to meet the changing needs of occupiers. Reaching agreement about the design criteria was not just a technical matter, many other factors such as cost, implementation and regulation were critical.

They have five principles: Inclusivity; Accessibility; Adaptability; Sustainability; and Good value.

> A set of 16 design criteria were established and agreed by the Lifetime Homes group. These design criteria were then worked up into house plans by architect

> Edwin Trotter, who had a long experience of working with Habinteg in designing inclusive homes and neighbourhoods.

They are: (1) Car Parking Width; (2) Access From Car Parking; (3) Approach Gradients; (4) Entrances; (5) Communal Stairs & Lifts; (6) Doorways & Hallways; (7) Wheelchair Accessibility; (8) Living Room; (9) Entrance Level Bedspace; (10) Entrance Level WC & Shower Drainage; (11) Bathroom & WC Walls; (12) Stair Lift / Through-Floor Lift; (13) Tracking Hoist Route; (14) Bathroom Layout; (15) Window Specification; and (16) Controls, Fixtures & Fittings

The outcome of work was published in three books from Joseph Rowntree Foundation [3, 4, 25].

3.2. Efforts toward implementation

The expression was slightly changed later as below to give the intent more clearly: (1) Parking (width or widening capability); (2) Approach to dwelling from parking (distance, gradients and widths); (3) Approach to all entrances; (4) Entrances; (5) Communal stairs and lifts; (6) Internal doorways and hallways; (7) Circulation Space; (8) Entrance level living space; (9) Potential for entrance level bed-space; (10) Entrance level WC and shower drainage; (11) WC and bathroom walls; (12) Stairs and potential through-floor lift in dwelling; (13) Potential for fitting of hoists and bedroom / bathroom; (14) Bathrooms; (15) Glazing and window handle heights; and (16) Location of service controls

Some key ideas have been incorporated into the Approved Document Part M: Volume 1 Dwellings. Besides, the visitability concept was scheduled to be adopted as obligatory, but after the Tory took over the government in 2010, the idea was put into question and it was eventually abandoned. They were described as follows:

> The government suggests that the large number of competing standards can be confusing, and that "standards are all drawn from documents produced by non-Governmental groups who perceive that current national guidance, policy or regulation is deficient in some respect, and needs to be supplemented. They are rarely subject to cost benefit analysis when they are developed, unlike government guidance or regulation". Cited from the web below.
> (https://www.designingbuildings.co.uk/wiki/Lifetime_homes)

Somewhat compromised requirements than originally proposed are in place as "Category 1: Visitable dwellings" with Approved Document Part M 2015 edition [6].

4. Situation in the US

Visitability is a concept originally proposed in the UK, but it gained momentum when Eleanor Smith founded Concrete Change in Atlanta, Georgia, to improve accessibility of conventionally designed dwellings (https://visitability.org/about-concrete-change/). The essentials are:

> One zero-step entrance, at the front, back or side of the house; all main floor doors, including bathrooms, with at least 32 inches of clear passage space; and at least a half bath, preferably a full bath, on the main floor.

The minimum key concept, therefore, is that a person who uses a wheelchair, whether a friend or a relative of the resident, could visit and stay for longer hours during daytime.

4.1. Visitability Development

To cite from the web of IDEA Center (http://www.udeworld.com/visitability-initiative.html#ProjectUpdates), conceptual background of visitability is:

> Visitability is an affordable, sustainable and inclusive design approach for integrating basic accessibility features into all newly built homes and housing. Visitability is based on the conviction that inclusion of basic architectural access features in all new homes is a civil and human right and improves livability for all. This project is a collaboration between the IDeA Center and Concrete Change. Founded by Eleanor Smith of Atlanta, GA, Concrete Change has been a leader in advocating for and otherwise promoting visitability for many years.

A model plan in a booklet includes following features to enable visitors to come in and move around: On grade rear entry, open floor plan, lifespan bathroom, space for residential elevator, and front porch.
(http://www.udeworld.com/visbooklet/inclusivehousingvisbk.pdf)

Modest request on accessible entry at the rear, not the front, seems to come from the idea that the design continuity along the street be preserved.

4.2. Efforts toward implementation

According to the IDEA Center, some states and local governments have introduced laws to promote visitability ideas into reality (last updated January 2014).

http://idea.ap.buffalo.edu//Visitability/reports/existingstatelaws.htm
http://idea.ap.buffalo.edu//Visitability/reports/existingcitylaws.htm

The lists tell that in some cities visitability is mandatory for all new homes, but mostly the requirements are linked to public funds, tax incentives, or just advisory.

5. Discussion

The comparison of these three approaches reveals several key issues. I will discuss them one by one.

5.1. Emphasis on wheelchair accessibility - explicit or implicit:

In the UK and the US, use of wheelchair by the resident or by a visitor was stated as one of the requirements to enable the dwelling livable or usable.

In Japan, the requirement was more modest, and only the use of indoor-type wheelchair was assumed because Japan has had the tradition of taking off shoes at the entrance. Indoor-type wheelchair was therefore expected narrower in width and smaller in size, the minimum corridor width designated as 780mm (another reason for this was to accept Japanese modular dimension of 3 Shaku, about 3 feet, center to center between walls on both sides). In addition, for detached houses in Japan, the access possibility from the outside was difficult to control - Stepless entry was often difficult due to topographic and climatic conditions. For multifamily dwellings, stepless access toward the entrance door of a dwelling unit became standard with the Accessible and Usable Building Law in 2002.

5.2. Linkage to policy - mandatory or voluntary:

Requiring some design features as mandatory is no easy task. We have witnessed accessibility of the built environment gradually becoming mandatory in most countries, but they were more related with public areas. Buildings where anyone should be allowed to access and use can be regulated, but dwellings have some issues different from public areas: the main user of a particular dwelling will be different from typical "Mr. Average," which was original human factors approach. It is difficult to identify in advance who would be the main user of the dwelling, and better strategy would be to ask for accessibility and usability of a certain level but enabling later modification that would respond to change (deterioration) of the capability of the resident. In all three examples I have chosen in this paper, the level of design requirements is not too extreme, but kept at halfway.

5.3. Incentives - tax incentives or subsidies:

Persuading people to make their dwellings prepared for their future ageing is no easy matter. For most, their own pension age is years away, and they may find it difficult to acknowledge the benefits of advance preparation, even if the additional cost is modest. Therefore, the government of Japan and some local governments in the US have tried incentives such as interest subsidies or tax rebate. In Japan, where housing loan mortgages by the Housing Loan Corporation (HLC) has been the most common method of financing, it worked quite effective until the role of HLC was radically diminished. Such nationwide measures were non-existent in the UK and the US.

Compared to design for ageing, energy conservation and sustainability issue was much easier to adopt since monthly energy bill clearly tells the difference. As regards design for ageing, on the other hand, we have to wait years before its benefit is realized, thus making it difficult to persuade people to adopt the ideas.

5.4. Coverage - nationwide or localized:

In the US, the Visitability concept is being adopted locally. It is because there is virtually no centralized system of law enforcement (In the US, people agreed to give the Federal Government the authority of diplomacy and war only, keeping other policies within themselves. Of course, there is much federal law enforcement, but it seems a very painstaking process).

In Japan and in the UK, where the central government has more power, the nationwide coverage is much easier to adopt. In the UK, the Lifetime Homes concept

was partly adopted within their Approved Document Part M for new construction. More extensive adoption was planned, but when the Conservative Government took over, the idea was abandoned.

5.5. Government or non-government:

In the UK and in the US, the idea of both Lifetime Homes and Visitability was initiated by the non-government sector. The developer of Lifetime Homes guidelines was Habinteg Housing Association in cooperation with Joseph Rowntree Foundation. The former is just one of many housing associations in the UK, and because there were other design guidelines, the Conservative Government rejected the idea more extensively adopted. If it was developed by the Building Research Establishment with full support from the government, the outcome could have been different.

In the US, the Visitability concept was originally introduced by a small non-profit organization. Now it is supported by AARP, the largest non-profit organization of pensioners (which started as an organization of retired teachers), but their influence is limited, particularly compared to NAHB (National Association of Home Builders), the organization of housing providers who seem concerned more about the cost increase than livability.

In Japan, the design guidelines were originally developed by the Building Research Institute of the Ministry of Construction, and were issued as government circulars. The Housing Loan Corporation, a semi-governmental body, used the concept for the mortgage scheme with tax subsidies, which worked effective to persuade housing providers change their course toward design for ageing since new construction was quite easy to apply the ideas. However, it was less effective in modifying existing dwellings where seniors have lived so far. The situation of dwellings complying with recommendations for design for ageing can be found in 2004 government survey [26].

6. Conclusions

The different approaches in three countries were examined. From the comparison, it seems that we need sticks and carrots, i.e., mandatory requirements and some incentives with our housing policies. The actual measures taken in each country have had limited success largely due to the complex nature of housing provision.

Particularly in Japan where housing construction was assumed to be the booster of economic growth, quality of dwelling design was out of question. Now, Japan must pay the cost of that ignorance as the country grows older and older (now 28% of total population is 65 years of age and over, and it is still getting higher). The UK and the US are getting older more slowly, but design for ageing is also critical over the years to come.

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