

CONTEMPORARY PROBLEMS OF PLANNING AND DEVELOPMENT OF ELDERLY CARE FACILITIES

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Abstract. *The location of the facility greatly influences its attractiveness to the residents, as well as its commerce, accommodation and service fees, and reasonability of services at the wider location, i.e. the rentability of investment. The location and urban parameters influence the form of the facility: vertical development is limited by the location, whereas horizontal development is characteristic of the facilities located in rural areas and the suburbs. Conclusively, it is obvious that the analysis of the parcel and determining the optimal location is of crucial importance. Apart from the general factors influencing the choice of the optimal location, there exist certain specific location parameters relevant to the urban, suburban and rural context. The city municipality is supposed to take responsibility, or have the greatest impact on the choice of location of the elderly care facility. The optimal number of residential units – the capacity of the facility – is determined by the choice of location with a reasonable spatial coverage, and amenities servicing the elderly on a wider location. In this way, the capacity of the facility is integrated into the spatial planning, while the interests of the investors are being harmonized with the interests of the community.*

Key words : *optimal location, elderly care facility, urban context, location analysis.*

1. INTRODUCTION

It may be claimed with certainty that location analysis is the crucial factor when it comes to determining the building site for an elderly care facility: considering the climate, building orientation, as well as age structure analysis of the location.

This paper presents the most interesting urban architectural characteristics of different construction systems, the ones proven best in practice. Regarding the selection of the sample structures, the most relevant aspects were the similarities and differences stemming above all from: the size of the city, position in the urban context, belonging to different urban block types, as well as the characteristics of physical structure organization.

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In summation, the entire effort was aimed primarily towards establishing an innovative perspective of elderly care home construction in Serbia, a country in which the practice has unfortunately fallen well behind the contemporary standards. The existing elderly care facilities offer nothing above the depressing hospital-like environment, which is unspeakable in the 21st -century context. Outside of Serbia, the basic function of this type of object has evolved from the institutional model to the „homely environment“ model quite some time ago. For this reason, it is necessary to undertake a serious amount of reconstruction of the existing capacities, in accordance with the scientific findings and parameters provided by contemporary psychology, social science and ecology.

2. THE CHOICE OF OPTIMAL LOCATION

The optimal location is the space chosen for the construction of a new elderly care facility, i.e. the best of all the possible locations. The location is the main condition of successful operation for this type of an object, fixed capital invested into an object in which the resident pays for the service provided on the spot. A possibility especially desirable if the investor wishes to fund the construction and operation of service facilities, would be that of selling these services on a wider market – the area surrounding the elderly care facility. Once constructed, the building cannot be moved in accordance with the residents' demands, and its services can be transported and sold in the area limited by the facility's location. The importance of the optimal location choice is obvious, since an elderly care facility must meet the needs of the market and the users of its services, i.e. – the elderly population.

What is the right way to find the optimal location? It is necessary to analyze the largest number of possible locations available for the construction of an elderly care facility. After consulting the investor, the choice of location should be made according to the type of accommodation and the investor's economic interests. There are numerous factors that could possibly influence this choice, such as: age structure of the population in the area, the proximity of medical and trade facilities, the price of land, the size of the building location and the green surfaces, the slope, the geomechanics of the ground, communal and traffic infrastructure, sport and leisure amenities, the workforce, the type, category and size of the facility, the competition, neighbouring structures, the regulations regarding zoning and the urban construction parameters, the availability of the building to people with mobility impairment, the expenses of construction and supply, the natural characteristics of the location – insolation, wind rose, the applicability of geothermal energy use, stability of the soil and safety from landslide, etc. All in all – the synthesis of geographical, economic and social data on the location. Based on this kind of analysis, it is possible to construct an optimal layout of the elderly care facility at an optimal location.

3. URBAN CONTEXT

Within the urban context, three types of approach to the choice of location can be recognized:

1. Urban
2. Suburban
3. Village

Apart from the general factors influencing the choice of optimal location mentioned in the previous chapter, there are also some specific location factors relevant in these contexts.

3.1. Urban context

Elderly care facility in an urban context requires a quiet location that is nevertheless close to the city center, since the demand of the residents is clear: it is their choice to live in the city center, and the location must meet their needs within the urban context. In the densely populated urban context, the building itself will most likely take up the entire location. The facility is an enclosed box inside which all its functions take place. The limited outside space is used to soften the harsh border of the building. This type of facility needs balconies to take over the function of the outdoor – the recreation and relaxation space. Dining out on an open balcony with lush vegetation, isolated from the street noise, can help achieve a relaxing atmosphere and an exquisite visual effect. The construction of a parking lot in this type of object requires large investments, therefore a garage would be much more convenient. Parcels are usually smaller in the city center, and the regulations tend to limit the height of buildings, which results in the capacity of elderly care facilities being limited.



Fig. 1 Urban context facility – axonometric projection of Humanitas Bergweg facility¹

Humanitas Bergweg is located in the center of Rotterdam. The facility has an interesting layout consisting of two separate housing blocks linked by an atrium. The first block is a tower rising from 4 to 12 floors at a length of 140m, while the other is a four-story block with units connected by a single-loaded corridor. The site was originally a hospital, before the elderly care home was constructed. The concept of the facility implies a wide area of public space open to the elderly population in the neighboring community – the covered atrium stretches up across three stories and opens on both sides to the single-loaded corridors. The atrium is 3,8 m above the sidewalk, and is approachable via elevators located on the northern side of the building. Stores located on the ground floor stretch along the street. The restaurant, lounge, bar and health center are open to public. 27% of the neighboring population are older than 65.

¹ Project bureau EGM; www.egm.nl/en

3.2. Suburban context

An important factor in suburban contexts is the connection to the city center and availability of amenities: shops, culture, leisure, recreation, parks, etc. Before choosing a suburban location, it is necessary to analyze the traffic pattern. Public transportation stations and their proximity to the facility represent an advantage for both the residents and the staff. It would also be desirable for the facility to reside on the river bank or another prominent location which provides an attractive view of the city and the surroundings.



Fig. 2 Facility in a suburban context - Salem in the suburbs of Copenhagen²

Salem is an elderly care facility located in Gentofte, a Copenhagen suburb, 10km north of the city center. The original facility was built in 1963, later to be demolished due to its outdated state, and finally reconstructed in 2005. The reconstruction of the original object was determined by the urban conditions: it was necessary to maintain the existing two-story (plus basement) scale of the building, while preserving the architecture of the existing object in terms of materials – light-color bricks, roof tiles and materials to connect to the design of the neighboring buildings. The facility is surrounded by residential-business type buildings on three sides: blocks of flats, small companies and another elderly care home – Kløckershøve, connected to Salem by a hall, as well as some shared amenities, such as the café/restaurant and a hair salon. The local school and shops are in the close vicinity, which enables integration of the elderly into the wider community.

To the west of the facility lie the city park and lake, providing a breathtaking view from the building. The path through the city park to the lake shore is lined with trees. The facility corresponds exquisitely with the surroundings, with large glass surfaces, an atrium and its traditional cubical form.

3.3. Rural context

The construction of a facility on rural locations demands larger surfaces and bigger investments into the necessary amenities lacking in the surrounding area. The idea of moving the elderly away from their former place of residence is potentially attractive provided that the nature and surroundings of the location are extraordinarily attractive, and the quality of

² Gentofte Kommune 2002 Juni; Lokalplan 205 for Kløckershøve og Salem:
http://soap.plansystem.dk/pdfarchive/20_1037022_APPROVED_1177935537320.pdf
 Project bureau *Thora Arkitekter*; <http://thora.dk>

accommodation is very high. Therefore, in order for the choice of location to be justified, lower investments should not necessarily be hoped for, considering the lower prices of rural properties, which is very common in practice. In rural areas, in which water supply and sewerage systems are being built, the type of land may significantly influence the budget.



Fig. 3 Facility in a rural context – De Hogeweyk facility in the Dutch village of Weesp³

At first sight, De Hogeweyk does not give the impression of an elderly care facility, but rather a large residential block. This comes as a result of the architectural decision to construct an enclosed residential block built on the perimeter of the 1,531ha property, while the streets, square and gardens are placed inside the block. The object is approached through the main entrance turned toward the village of Weesp near Amsterdam. The facility specializes in dementia care, with a capacity of 152 residents. It contains various amenities such as a theater, supermarket, beauty salon, café, restaurant, shops, as well as a doctor's office, physiotherapist and cleaning service. The parking lot provides 46 parking spaces within the facility and an additional 10 outside the facility. The layout of the streets and squares resembles that of a city: with street signals, streetlights, water surfaces and benches, as well as sidewalks which provide safe spaces for the residents to gather. De Hogeweyk contains several parks and public squares.

4. URBAN FORM – HORIZONTAL AND VERTICAL DEVELOPMENT

The design of an elderly care facility is closely bonded to the location and its urban parameters; the concept is laid out depending on the location intended for the construction of the facility. Through a meticulous analysis of 22 objects constructed between 1990 and 2010, authors have noted three separate construction models:

³ http://mbvda.nl/assets/files/PDF/357A_Hedy_dAnconaprijs_lowres.pdf

<http://www.detail-online.com/architecture/topics/dementia-village-de-hogeweyk-in-weesp-019624.html>

1. horizontal,
2. vertical and
3. community for the elderly – composed of several objects, may include the two aforementioned models.

Depending on the location and its urban parameters: density, degree of availability etc., the facility may develop either horizontally or vertically. Vertical development is conditioned by the limits of the location. Residence is organized in the form of clusters stacked in a multistory configuration, and connected to one another as well as the common rooms via an elevator. Horizontal development is a typical form in rural areas and the suburbs. Residential clusters are designed as separate single-story buildings grouped around a centrally located community center with common rooms. The facilities are interconnected by walking paths placed around the shared courtyard. Each object has a separate parking lot.

In the case of vertical development, the architect should provide a sufficient amount of open spaces, such as a shared balcony, garden or courtyard and large balconies on every floor.

4.1. Horizontal development

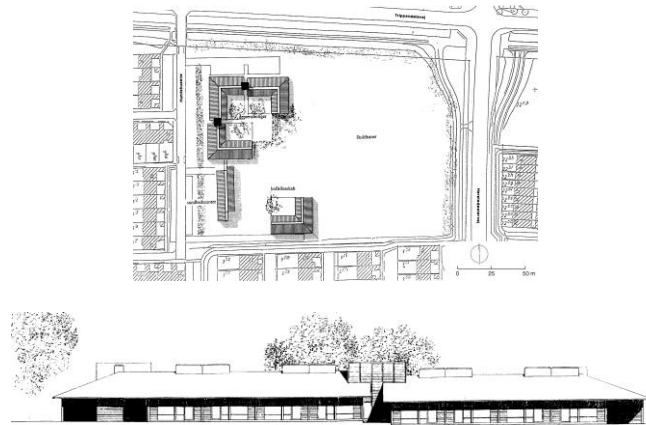


Fig. 4 Horizontal development – Humlehusene facility in the Albertslund suburb⁴

The Danes have switched from building large elderly care facilities, giving advantage to smaller decentralized objects with 18 to 30 residential units organized into clusters of 6 to 8 units. Humlehusene is an example of this kind of facility: a one-story building composed of three smaller eight-unit clusters. The buildings are L-shaped, interconnected with a shared square courtyard. However, even though interconnected, each object functions individually. Humlehusene is located in the suburb of Albertslund. The facility is collocated with a day care center serving the community in the neighbourhood.

⁴ http://albertslund.planvis.dk/download.php?kunde_id=165&filename=/LP-18_3.PDF

4.2. Vertical development



Fig. 5 Vertical development – Neptune facility in the waterfront region of Malmö, Sweden⁵

The facility is a part of plan Bo01, within the internationally recognized ecological development of Malmö Western Harbour area. What sets Neptune apart from the traditional residential elderly care facility schemes is the fact that its layout places the elderly in the center of a new, high quality upscale waterfront community. The scale of the four-story building is in accordance with the master plan which implies placing larger buildings along the seafront in order to shelter the domestic-scale objects located in the inner spaces from the wind. The U-shaped building possesses a central courtyard with a winter garden. The project is owned Stifelsen Sodertorpsgården, a non-profit trust. The building possesses seven elevators with additional staircases, each serving four residential units per floor, with no halls to connect these functional clusters. This kind of layout contributes to the size of residential space at the expense of hall space, at the same time providing greater privacy for the residents and a homely atmosphere, although it diminishes the spontaneous interaction among the residents.

In the close vicinity of Neptune, there are numerous shops, cosmetic stores, beauty parlors, hair salons, and other commercial facilities catering to the residents' needs. On the other hand, Neptune itself contains several amenities available to the public: a bar, a coffee shop and a large restaurant with a street and seafront location. This kind of layout enables socialization at several levels, as well as intergenerational activities. The central courtyard and garden not only projects the designer's vision for the wider area, but its openness also stimulates the intergenerational communication and integration, so often neglected in other models of supported communities for the elderly, which are focused on security and thus often produce a sense of isolation rather than integration. This is an innovative elderly residence model which breaks away from the traditional design of elderly care facilities, resulting in a greater degree of socialization within the community, without the social life being limited to the facility itself.

Neptune integrates the ambitions of design and environment with a wider development program, creating an innovative residential space and objects that promote extensive inclusion and interaction with the community.

⁵ <http://www.arkitektgruppen.nu/vara-projekt/aldreboende1/neptuna-vastra-hamnen/>
<http://www.urbangreenbluegrids.com/projects/bo01-city-of-tomorrow-malmo-sweden/>

4.3. Elderly care community

Legenda:

1. Friendship center
2. Bridgewater
3. Crosswell Trace
4. Briarwood
5. Willows
6. Bridgegate



Fig. 6 Elderly care community – the situational plan of Friendship Village of Schaumburg near Chicago⁶

Friendship Village, located near Chicago, Illinois, offers a range of services and amenities to retired and elderly persons aged 62 and older. This facility is an example of combined horizontal and vertical construction. The complex provides housing to different categories of residents: independent living, assisted living, skilled nursing and memory support for dementia and Alzheimer's care. The community spans across a 24,28ha space, and it took three phases to construct. The first phase, in 1974, implied the construction of the residential area – Bridgegate (6), Willows (5) and the 3-story health center with a stationary – Briarwood (4). Further strategic planning resulted in the development of a new community in 2004 – Crosswell Trace (3) – with seven 28-unit single-story garden facilities. Bridgewater (2) is a 6-story building around 200m in length, constructed in the third phase in 2007. The main challenge consisted of constructing the object on the limited space among the three existing buildings and the lake, which resulted in its curved linear form. There are 66 underground garages below the ground floor. At the same time, the one-story Friendship (1) day center was constructed. All the buildings except the garden houses are interconnected with halls.

5. HETEROGENIZATION OF POPULATION ON THE SITE

Innovative tendencies in elderly residence claim that the elderly population on the location should not be homogenized, but rather integrated with the wider community of diverse age, so that the young can learn from the experience of the elderly, and the elderly get the opportunity to be stimulated by the vitality and energy of the young. This way, people of different age groups are able to support one another. Various programs and

⁶ http://friendshipvillage.org/uploads/FC_Rental_-_Welcome.pdf

workshops aimed at linking the elderly to children have also become popular. There are certain situations existing in practice, in which an elderly care facility is consolidated with a kindergarden within the same building, such as Metsätähti⁷ facility in Hankasalmi, Finland. Within this facility, the two populations each have a separate territory, as well as a shared space: a centrally located common dining room, designed as a multi-purpose space.

6. LOCATION AND THE INVESTOR'S ROLE IN THE DECISION PROCESS

The municipality should take responsibility or at least have the crucial influence on the choice of location intended for an elderly care facility. The site should be located in a place that best suits the needs of the facility and is close to the stores and service amenities. The amenities available to the residents are also available to the elderly in the neighboring community. They are usually organized either in the form of a day center within the facility, or as a separate building in the complex. Day care centers mostly provide health care and dining, while larger objects can also include physical therapy, work therapy through various workshops, recreational amenities, beauty salons, swimming pools, rehabilitation programs, specialist medical services and 24h ambulance services. If the territory is small considering the number of users, the service center is usually organized as an office within the facility, with the staff visiting the elderly at their homes, providing aid in everyday activities and taking care of their health.

An elderly care facility should be planned for construction in areas with a high percentage of elderly population. Home care service and day care center cater to the needs of the elderly in the neighborhood and are focused on supporting the elderly in staying in their homes as long as possible. In Denmark, the services provided by the day care center are identical to the services in the facility itself within the independent living program. The home care staff organizes their work within the facility as well as in the neighborhood, and this program of health care and support is financed by the government funds. At a certain point when the elderly can no longer remain in their own homes because they no longer feel safe due to age and weakness, they are moved to elderly care facilities.

The municipality and the investors should work together to organize elderly care and residence as a public good, instead of focusing on profit. In Northern Europe, most investors in the construction of elderly care facilities are non-profit organizations.

7. CONCLUSION

The central issue in this analysis revolves around which methods should be used to determine the optimal location, based on the general and specific location factors mentioned in the paper. In practice, a list of potential locations is usually determined first, and after a comparative analysis they are ranked according to their function and convenience in terms of various contents, characteristics of accommodation and services. Since the economic implication is also of great importance, it is suggested that a tabular form be used for the evaluation of locations, by a system of ranking the relevant location factors. This is the most convenient way to determine the highest ranked location which would represent the optimal site for a new elderly care facility.

⁷ <http://www.hankasalmi.fi/paivakodit/paivahoito/paivakodit>

The capacity of the facility – the optimal number of residential units – is determined by the choice of location with a particular spatial coverage, with amenities servicing the elderly in a wider area. In this way, the capacity of the facility is integrated into the spatial planning, while the interests of the investors are being harmonized with the interests of the community.

Facilities with a large number of residents require larger surfaces, which can only be provided on the edge of a city, whereas buildings with a smaller number of units are more easily constructed inside cities. Urban locations have a range of advantages, such as: infrastructure – traffic, heating, water supply and sewerage systems; the vicinity of various institutions and their services – delivery, health, culture, etc.; the vicinity of green surfaces and residential areas. When deciding on an urban location, all the advantages and possibilities of the neighboring institutions should be individually considered. Using a kitchen belonging to a larger institution in the vicinity, or using medical services of a nearby medical center would mean large investments into the facility when picking the location.

The atmosphere of the facility should have as much of a homely feeling as possible. This is precisely why contemporary facilities are designed to resemble village communities with multiple ground floor buildings, aiming to make the buildings smaller yet economically justified to a greater extent.

Choosing the right location for an elderly care facility implies:

- the site located on a relatively flat surface with no slopes;
- quiet residential zones, without noise and pollution;
- suitable climate conditions;
- vicinity of commercial facilities;
- integration with residential spaces of other age groups;
- availability of medical service facilities.

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REFERENCES

1. A. W. Jeffrey, H. David, J. Stephen, K. Emi, W. Monique, "Design for Aging: International Case Studies of Building and Program", John Wiley & Sons, Inc., New Jersey, 2007.
2. AIA Design for Aging Knowledge Community, "Design for Aging Post-Occupancy Evaluations", Wiley, 2007.
3. B. Anđelković, "Samostalno-vaninstitucionalno stanovanje ostarelih osoba", Arhitektonski fakultet u Beogradu, Beograd, 1989.
4. B. Anđelković, "Stanovanje starih osoba", Izdvačko informativni centar studenata, Beograd, 1977.
5. B. Koružnjak, "Stanovanje za starije - interdisciplinarni pristup u formiranju općeg modela stanovanja za starije osobe", Prostor, broj 11, Arhitektonski fakultet, Zagreb, 2003.
6. Gentofte Kommune, Lokalplan 205 for Kløckershave og Salem, Teknisk Forvaltning Gentofte Kommune, Juni 2002.
7. H. E. John, R. M. Jennifer, R. H. Phillip, "Senior residences: designing retirement communities for the future", John Wiley & Sons, Inc., New York, 1998.
8. J. P. Rosenfeld, W. Chapman, "Home Design in an Aging World", Fairchild Books, New York, 2008.
9. P. Bradford, "Building type basics for senior living", John Wiley & Sons, Inc., Hoboken, New Jersey, 2004.
10. S. Benyamin, B. Ruth, "Aging, autonomy, and architecture: advances in assisted living", The Johns Hopkins University Press, United States of America, 1999.

11. The American Institute of Architects Design for aging Center, "Design for aging review: 8th Edition", The Images Publishing Group Pty Ltd, Australia, 2006.
12. The American Institute of Architects Design for aging Center, "Design for aging review: 7th Edition", The Images Publishing Group Pty Ltd, Australia, 2004.
13. V. Regnier, "Design for Assisted Living: Guidelines for Housing the Physically and Mentally Frail", Wiley, New York, 2002.

SAVREMENI PROBLEMI PLANIRANJA I RAZVOJ DOMOVA ZA NEGU OSTARELIH

Od lokacije doma u velikoj meri zavisi njegova, atraktivnost za korisnike, promet, cena smeštaja i usluga, opravdanost rada uslužnih servisa na široj lokaciji, odnosno rentabilnost investicije. Lokacija i urbanistički parametri uslovljavaju oblikovanje doma: vertikalni razvoj je uslovljen ograničenom lokacijom, dok je horizontalni razvoj objekta osoben za domove u ruralnim područjima i u predgrađima. Imajući to u vidu, uviđamo značaj analize i utvrđivanje optimalne lokacije. Pored opštih faktora za izbor optimalne lokaciji, postoje neki specifični lokacioni faktori relevantni za gradski, prigradski i seoski kontekst. Opština grada treba da preuzme odgovornost ili da ima najveći uticaj na izbor lokacije na kojoj se gradi dom za negu ostarelih. Izbor lokacije sa određenim prostornim obuhvatom, sa uslužnim servisima koji obslužuju ostarele na široj lokaciji, utiče na utvrđivanje kapaciteta doma – optimalan broj korisničkih jedinica. Na taj način se obuhvat doma za negu ostarelih ugrađuje u prostorni plan i interesi investitora usklađuju sa društvenim interesom.

Ključne reči: *optimalna lokacija, dom za ostarele, urbani kontekst, analiza lokacije.*