SUSTAINABLE LIVING ENVIRONMENT IN THE CONTEXT OF SOCIAL NEEDS

Katarzyna Kołacz

Institute of Civil Engineering, Warsaw University of Life Sciences – SGGW, Warsaw, Poland

ABSTRACT

A sustainable living environment should be shaped in an ecological, economical and pro-social way. The aim of this work is to draw attention to this last, often overlooked aspect in the context of designing sustainable residential architecture, what can be achieved by taking care to maintain social relations at the appropriate level. The article reviewed the existing theories of sociologists, psychologists and architects on the features of architecture and residential spaces. The analysis of literature sources showed that there are architectural elements that can support the formation of social contacts. On their basis, a set of ten evaluation criteria was developed, which can be used for further research, e.g. in the context of evaluating pro-social solutions in selected architectural and urban projects.

Keywords: sustainable environment, residential architecture, social contacts

INTRODUCTION

To obtain a fully sustainable living environment, it is not enough just to design buildings in an ecological and economical way. It is also important to meet the physical and mental needs of human beings by properly setting their relationship with the natural environment, as well as taking care to maintain social contacts at an appropriate level. Understanding the mechanisms of control of the interaction between people, buildings and the space between them can help in obtaining information on how to shape the housing environment to make it pro-social. Of course, even well-designed architecture of a residential building and the shape of the space around it cannot guarantee social contacts at an appropriate level. There are many factors influencing it. The relationship between the environment and what is felt by a human being is so complex that the ability to predict a specific dimension of this relationship seems to be impossible. However, a properly shaped living space may, to a greater or lesser extent, support the formation of social contacts between neighbours. It is about some kind of 'activity generators' that enliven residential spaces and architecture, making them more susceptible to the formation of this type of relationship.

FEATURES OF ARCHITECTURE SUPPORTING SOCIAL CONTACTS

The aim of the article is to make an in-depth analysis of the literature on architectural elements which can support the creation of social contacts from various points of view – presented not only by architects and urban planners (Christopher Alexander, Jan Gehl, Jan M. Chmielewski, Sławomir Gzell, Bartosz Czarnecki, Henry Sanoff, Kathryn McCamant, Charles Durrett) but also by ethnologists (Edward T. Hall), sociologists (Alexander Wallis, Stanisław Osowski, Waldemar Siemiński) and psychologists

Katarzyna Kołacz https://orcid.org/0009-0005-2050-2512
✉ katarzyna_kolacz@sggw.edu.pl

(David Canter, Augustyn Bańka, Maria Lewicka) – to obtain a broader perspective of the examined issue

As a result of the analysis of literature sources, a similarity of ideas was noticed regarding architectural solutions which may have an impact on the formation of social contacts. The quoted opinions of individual authors have been compared and compiled according to these perceived, convergent architectural solutions such as: the optimal size of the housing estate and the residential building unit; residential buildings corresponding to human scale; smooth transition between private, social and public space; common outdoor space; greenery available; common indoor spaces, service infrastructure complementing residential spaces, diversity of households; territorial distinctiveness of the neighbourhood; architectural detail.

The optimal size of the housing estate and the residential building unit

Czarnecki and Siemiński, referring to the concept of the 'behavioural swamp' created by the ethologist John B. Calhoun, formulate the idea that overcrowding causes a permanent situation of inability to maintain personal distance, i.e. to maintain a balance between being in a group and being alone. According to the authors, the development of the situation depends not only on the density index itself, but also on the cultural circle from which the members of the community come from and on the detailed lifestyle and spatial conditions (Czarnecki & Siemiński, 2004, p. 21). According to Czarnecki and Siemiński, the size of the community allowing to maintain social contacts and close neighbourly relations is between a dozen and 20–25 families. In such a community, it is possible to flawlessly recognise strangers based on full knowledge of all residents and the circle of their most frequent guests. A group of no more than 25 people is also able to maintain relations of cooperation, common goals and informal sanctions in the event of breaking established rules what allow community members to feel co-responsible for the neighbourhood space (Czarnecki & Siemiński, 2004, p. 171). The authors recommend that when designing low-rise housing estates, the scale of neighbourhood spaces should be considered, which

would allow for grouping residents into communities of such a large number. However, the authors note that the possibility of integrating a neighbourhood group also depends on the type of development, population density and the way the space functions.

According to Alexander et al., the optimal group size should be between eight and twelve households (Alexander, Ishikawa, Silverstein, Fiksdahl-King & Angel, 1977/2008, pp. 202–204). According to the authors, small groups are more conducive to a sense of community. With the increase in the number of inhabitants, the identity of the group weakens, and the commitment and responsibility decreases.

McCamant and Durrett define the optimal group size between 15 and 30 households. According to the authors, such a group is small enough to be able to remember the faces of all inhabitants of the community, but also large enough to avoid those with whom it does not want to have contacts (McCamant & Durrett, 2003/1988, p. 158).

According to Chmielewski, many sociological studies confirm that the number of families living in a separate housing estate unit determines the nature of neighbourly relations. In a group of up to 20 families, social contacts are formed, between 20 and 150 families these contacts are neighbourly, while over 150 families they turn into formal contact (Chmielewski, 2010, p. 92). The author suggests that the given numbers of families should be deliberately referred to the design of units organising architectural and urban space, starting from the shaping of apartments and ending with a housing estate. In this way, they create a hierarchical set of places corresponding to an ever-increasing social community (Chmielewski, 2010, p. 94).

Gzell, in his reflections on the elements of architecture supporting the formation of social contacts, also draws the conclusion that the impact of architectural solutions which connect people in small groups helps integration processes (Gzell, 1987, p. 149).

Sociologists Wallis and Siemiński also come to the same conclusion. According to them, there are a certain number of neighbours whose faces we can recognise in our residential environment. "If the number of neighbours we meet when entering and leaving the house is too large, we adopt a defensive

attitude and try not to enter into closer contact with them, even superficial contacts [own transl.]" (Wallis & Siemiński, 1974, p. 29). Wallis and Siemiński note that social control is very important in the living environment, the most common form of which is visual control. It occurs when several people appear in the same space. However, its functioning is completely different among people who associate each other's faces and among a group of people who do not know the faces of their neighbours, sometimes even completely, even though they live close to each other (Wallis & Siemiński, 1974, p. 29). Using the example of high-rise blocks of flats in the Warsaw housing estate Za Żelazną Bramą, the authors show how messages are conveyed differently in a large block of flats and in a small house. There are usually information boards on the ground floors of high-rise buildings, the content of which resembles newspaper advertisements, e.g. 'a bargain sofa for sale' (Wallis & Siemiński, 1974, p. 29). The authors note that these are anonymous messages and that in smaller residential buildings such matters are dealt with through neighbourly conversation. According to Wallis and Siemiński, the reason for this state of affairs is, among other things, too many apartments in the building, what has a huge impact on the social life of the residents (Wallis & Siemiński, 1974, p. 29).

Residential buildings corresponding to human scale

An optimal size of a residential building unit is connected with another factor influencing the formation of social contacts, which is the height of the building. It is the case because the number of apartments usually increases with the number of floors. As Wallis and Siemiński note, residents of three-, four-, eight- and 15-storey houses have different connections, acquaintances and a sense of responsibility for their environment (Wallis & Siemiński, 1974, p. 29), but not only that. The relation towards the landscape of the estate is also different when viewing it from the fourth floor and completely different from the high floors. From the windows located on low floors one can see the estate, and from those located on high ones – mainly the city (Wallis & Siemiński, 1974,

p. 29). According to Kazimierz Z. Sowa, quoted by the authors: "Tall buildings distance residents from the estate, both visually and socially [own transl.]" (Wallis & Siemiński, 1974, p. 29). It is also related to a different form of communication between the floors of low-rise and high-rise buildings. An elevator is required to connect storeys in a 15-storey block, but the four-storey distance can also be covered on foot using stairs. These two different solutions also determine different types of contacts and different forms of isolation (Wallis & Siemiński, 1974, p. 29). By using the lift, we bypass all floors except our own and the ground floor, and by using the staircase, we can increase the chance of meeting a neighbour.

The influence of building height on the intensity of social relations is also noticed by Gehl. He believes that the number of contacts between neighbours significantly decreases in tall buildings. Short and spontaneous behaviours disappear to a large extent, especially in people whose apartments are located on high floors, because it is too absorbing for them to go downstairs and go outside (Gehl, 1971/2013, p. 184). The author also notes that the spaces around tall buildings take on an impersonal character. There may be benches and walking paths, but rarely something more. Users do not decorate the outdoor space with their own furniture, equipment or toys because it is too much problem for them to carry all these things out and in every time. In the face of such architectural conditions, outdoor activities become very limited, both in quantity and character (Gehl, 1971/2013, p. 184). The possibility of spontaneous reactions does not have a chance to develop here. On the contrary, in low buildings, with easier access to the external space, events inside and around the building have a 'different flow' (Gehl, 1971/2013, p. 185). Residents living in low-rise buildings do not have to make many decisions and preparations to go outside. When we notice something interesting through the window, it is easier to go outside and ask the neighbour what is going on. Such small, spontaneous contacts between neighbours can also lead to the development of deeper relationships (Gehl, 1971/2013, p. 185).

Modern urban psychologists explain that living in high-rise building can hinder a children's psychological growth. They suggest that one of the best ways

for children (ages between two and seven) to become independent is to gradually allow them to go out on their own to experience the neighbourhood. However, such approach is only possible in a low-rise environment where the parents can hear and see their children from their flats' windows (Story & Saul, 2015).

Lewicka has similar observations regarding the influence of building height and social contacts. She states that numerous studies in the field of environmental psychology show that large buildings promote anonymity and create a feeling of crowding (Lewicka, 2012, p. 209). The author notes that, paradoxically, despite the large number of neighbours, the contacts between them in high-rise buildings are fewer and the bonds are weaker (Lewicka, 2012, p. 209). According to Lewicka, the most interesting theory linking the height of the building with the social behaviour of the inhabitants, and indirectly also with their emotional connection and with the place, is the theory of the architect and urban planner Oscar Newman. The researcher presented several guidelines on how to transform a 'defenceless space' (Lewicka, 2012, p. 209) into that which will defend itself. He postulated that an important premise is the existence of a relationship between the size of the building and the degree of control over the living space (Lewicka, 2012, p. 209). He assumed that security in the place of residence is best guaranteed by the residents themselves, assuming, however, that they have a sense of control over the area of their estate. According to Newman, this feeling depends on the scale and height of the building. It means that the level of control over the space of residence is the highest in the case of single-family houses, and the lowest in the case of blocks of flats (Lewicka, 2012, p. 209). Newman's theses were also confirmed by Lewicka's researches. It is worth mentioning one of them, carried out in two districts of Warsaw (Bródno and Włochy), where two types of neighbouring block buildings were compared: lower blocks of flats – up to four floors, and the so-called skyscrapers – over four floors. Residents were asked to rate their level of attachment to their place of residence. Even though both types of blocks of flats belonged to the same housing estates and were therefore administered by the same cooperative, the inhabitants of lower build-

ings declared a stronger attachment to the place of residence and had closer neighbourly relations, and felt safer and a bit more willing to get involved in the benefit of their estate than residents of neighbouring skyscrapers (2012, p. 214).

These studies show a significant difference in the impact on building social relationships between low-rise and high-rise buildings. In this case, the boundary was the fourth floor, beyond which different statements regarding the intensity of neighbourly contacts were observed. The four-storey limit as a pattern for building residential blocks was also defined by Alexander. According to the author, the connection between the apartment and the street disappears above the third floor: "visual details lose focus, people talk about what is happening downstairs as if it were some game from which they are completely excluded [own transl.]" (Alexander et al., 1977/2008, p. 118). It looks completely different if a person observes the world from behind a window located on the first or second floor. He then notices "people, their faces, leaves, shops [own transl.]" (Alexander et al., 1977/2008, p. 118). According to Alexander, respecting the four-storey limit is also an appropriate way to maintain the proper relationship between building height and people's health (Alexander et al., 1977/2008, p. 118).

Smooth transition between private, social and public space

Considerations on the impact of building height on the intensity of social contacts showed how important it is to be able to easily move between the private space of apartments and the social space organised around residential buildings. Chmielewski, writing about the social character of space, notes that the concept of 'community' is being broaden quite freely in Poland today (Chmielewski, 2010, p. 84). The difference between the public good and the social good is blurring (Chmielewski, 2010, p. 84).

Chmielewski reminds us how important it is to properly zoning a space and smooth transitions between private, social and public spaces. According to the author, a social space can be called a set of places in which the goals and interests of the inhabi-

tants are most fully expressed and implemented since the community is created by a group of people united by some common goals or interests (Chmielewski, 2010, p. 84). These are primarily nodal points around residence, as well as areas where the same people meet multiple times (Chmielewski, 2010, p. 85). Public space should be combined with everything that is state and municipal, i.e. space organised in accordance with the regulations of state and local law, completely subject to the control of local authorities and managed by these authorities and maintained in proper condition. This space should be common and publicly available to all who wish to stay there (Chmielewski, 2010, p. 85). It is therefore important to connect residential buildings or housing estates located in the suburbs with the city centre if the location of a given building or housing estate does not provide it with sufficient contact with public space.

Gehl provides valuable tips how to design the boundary between the private zone of apartments and the social space. According to the author, the building plan must be designed so that the events taking place inside the house can freely flow outside (Gehl, 1971/2013, p. 187). The entrance should be designed in the way which will best enable to pass through, both functionally and psychologically. Intermediate corridors, additional doors, and especially changes in the level difference between indoors and outdoors should be avoided so that events can freely flow outwards and inwards (Gehl, 1971/2013, p. 187).

According to architect and planner Dorit Fromm, establishing contacts is facilitated using soft boundaries between what is private and what is common, as well as between what is common and what is public. It creates a greater opportunity for visual and verbal contact. An example of the use of such soft boundaries is a kitchen facing neighbourhood spaces. It is important that the worktop in the kitchen should be located under the window so that a person, while cooking, can see what is happening outside (Fromm, 1991, pp. 12–14).

Hall, observing people in various social systems, distinguished four types of distances occurring between people. These are: intimate, individual, social and public distance. For each of them, the author distinguishes a closer and a further phase (Hall, 1976, p. 186). Hall points out that the factor determining which distance people perceive from each other depends on a given system: on the bonds between the contacting individuals, as well as on what they feel towards each other (Hall, 1976, p. 186). Each of these distances corresponds to appropriate distances between people, i.e. the intimate distance is up to 45 cm, the individual distance is between 45 m and 1.2 m, the social distance is from 1.2 m to 3.6 m and the public distance is over 3.6 m (Hall, 1976, p. 186). These distances correspond to specific distances in space. Therefore, according to Hall, learning about these different contact zones and the specific emotions, bonds and activities associated with each of them is extremely important also when designing space. "However, if we look at a human being as someone stuck in a network of invisible spatial envelopes with measurable quantities, architecture will appear to us in a completely different light [own transl.]" (Hall, 1976, p. 186).

Common outdoor space

The above research indicates another important aspect that influences the development of social contacts. It is the presence of a common outdoor space centred around the building complex.

According to Wallis, one of the basic human needs is the expression of one's personality by individuals and social groups (Wallis, 1971, p. 74). Social needs, however, require appropriately designed common spaces to be fulfilled. Therefore, it is necessary to design open, semi-open and closed, semi-private and public spaces, and shape the space so that it provide various social situations and the needs of contacts with various requirements (Wallis, 1971, p. 74).

According to Alexander, common area is a place for meetings and smooth joint activities undertaken by the residents of a given group of houses. This function is not fulfilled by larger spaces of common land served by entire housing estates, such as public squares and parks. They are necessary for the functioning of the entire neighbourhood, but they do not ensure the implementation of functions common to the inhabitants of a group of households (Alexander et al., 1977/2008, p. 344). According to Alexander,

common space should constitute at least 25% of the area within each group of houses, adjoining or close to the houses (Alexander et al., 1977/2008, p. 523). This area should also be well sunny, preferably open to the south (Alexander et al., 2008, p. 523), and provide various common functions, such as: a vegetable garden, a playground, an area for local sports, etc. (Alexander et al. 1977/2008, p. 346).

Gehl also draws attention to the quality of the designed common spaces. According to the author, if the outdoor space is of poor quality, only necessary behaviours take place there (Gehl, 1971/2013, p. 11). However, if the space is of high quality, the necessary behaviours occur with approximately the same frequency, but their duration increases significantly because the physical conditions are better. Optional activities also occur in high-quality spaces as the place and situation prompts people to stop, sit, eat and play. Well-designed spaces between buildings, where people can meet and then stay in a given place for a while longer, can also turn into more advanced forms of social contacts (Gehl, 1971/2013, p. 11).

Greenery available

As a result of the analysis of various literature sources, it was noticed that several authors see the potential in building social relationships in various types of green spaces, such as: home gardens, nearby parks, as well as by making common spaces more attractive in a form of trees or shrubs planted along the main paths located around the building.

Gehl believes that neighbourly relations between buildings can develop if opportunities are offered to stay outside in the semi-private gardens located in the transition zone between the buildings and the street (Gehl, 1971/2013, p. 11). In an Australian study cited by Gehl, covering 17 terraced streets, it turned out that front gardens played a very important role in the activity in street spaces and that stationary outdoor activities and conversations between neighbours had particularly good conditions as a direct consequence of the existence of semi-private outdoor spaces in a form of gardens in front of buildings (Gehl, 1971/2013, p. 189). These studies also showed that gardening activities often took much more time

than necessary. If neighbours showed up, work was eagerly interrupted in favour of a short chat over the fence (Gehl, 1971/2013, p. 191). In this way, the accessible garden fulfilled a double function: in addition to being purely utilitarian, it also contributed to the creation of social contacts.

Gzell, writing about a garden from a semiotic perspective, defines it as a sign emphasising the privacy of the area, which is 'a dam and a lock' (Gzell, 1987, p. 148) separating the private space of an apartment or house from the space used socially.

Alexander pays attention to maintaining the appropriate distance between green areas and buildings: "People need green areas for walks. If these areas are close to home, they will use them. However, if the green area is more than three minutes' walk away, then the need to walk will be dominated by the distance which must be covered [own transl.]" (Alexander et al., 1977/2008, p. 310). The research conducted by Alexander shows that it is very important for people to be able to regenerate strength while walking (Alexander et al., 1977/2008, p. 310). Such a walk among greenery creates an opportunity for passive contacts, i.e. contacts when we only see or hear other people. However, just meeting someone can also be the seed for other, more complex forms of social behaviour (Gehl, 1971/2013, p. 191).

Common indoor spaces

The observations of McCamant and Durrett (1988/2003, pp. 184–187) as well as Alexander (1977/2008, p. 628) show that common areas located in the centre of a residential building support the creation of social contacts. The shape and location of these common areas is very important. According to Alexander, the passageway used by all residents every day should run tangentially to and open to common spaces (Alexander et al., 1977/2008, p. 628). This kind of location of the common space is the best possible because, on the one hand, thanks to its tangential location to the main passage, it does not disturb people passing by, and on the other hand, thanks to its openness, it encourages people to stop and see what is happening inside (Alexander et al., 1977/2008, p. 628). Centrally located common spaces

serve to maintain contacts between residents. In addition to meeting rooms or internal halls, such common spaces may also include: laundry rooms, kitchens, drying rooms, carpentry rooms, and even pantries or bicycle rooms. Performing various activities together helps to establish neighbourly relationships.

Gehl, citing research conducted in rural communities, calls shared laundry rooms and wells "overriding catalysts for informal contacts [own transl.]" (Gehl, 1971/2013, p. 117). In San Vittorino Romano, where the research was carried out, leaving a bucket by the well turned out to be an intentional act. It was left so that one can come back for it at any time if someone showed up to talk to (Gehl, 1971/2013, p. 117).

It should be noted that all the rooms mentioned above, such as laundry rooms and kitchens, should have a complementary function. It is important that residents also have private kitchens in their apartments or houses, what gives them independence and the ability to decide whether they want to spend time only with their immediate family or join a group of other people living in a residential building or in a complex of residential buildings. However, it should be admitted that the lack of such a choice, as in the case of, for example, a communal laundry room, may result in more effective creation of social contacts.

Service infrastructure complementing residential spaces

Buildings for other purposes also play an important role in the spatial structure of the estate, such as: shops, schools, services, universities, which attract people during the day (Alexander et al., 1977/2008, p. 263).

Czarnecki and Siemiński, citing Gerda R. Wekerle and Carolyn Whitzman's research, confirm that an appropriate variety of functions is conducive to urban life, social control and interpersonal contacts during the day and in the evening (Czarnecki & Siemiński, 2004, p. 112). According to the authors, it can be obtained using services, including first-need services (2004, p. 112). It is also important that the introduced services are associated with local employment, which is particularly conducive to social control. Employees of such services, who are also members of the neighbourhood community, pay more attention to what is

happening in the space surrounding the services than employees commuting from other parts of the city (Czarnecki & Siemiński, 2004, p. 112). As Czarnecki and Siemiński note, this is a return to the traditional 'corner shop', which is consistent with the principles of sustainable development set out in Agenda 21 (Czarnecki & Siemiński, 2004, p. 112). This also reduces commuting to work and strengthens the neighbourhood community (Czarnecki & Siemiński, 2004, p. 112).

Gzell, comparing streets in districts distant from Warsaw with the Śródmieście Passage (in the central district of Warsaw), states that this latter, thanks to the huge number of services, is popular among city residents, which ensures its vitality. On the contrary, streets located outside the city, made up exclusively of residential buildings, despite unusual urban solutions, are not socially accepted. They lack a nameless crowd of passers-by stimulating unusual behaviour (Gzell, 1987, p. 140).

Gehl notes that the requirements which must be met in public spaces include the needs of contact, knowledge and stimulation. They belong to the group of psychological needs (Gehl, 1971/2013, p. 115). Satisfying them is often connected with basic physical needs, such as eating, drinking or sleeping. As the author states, adults rarely go to the city with the expressed intention of satisfying the need for contact, however, as research shows, adults working at home spend three times as much time for shopping than those who work outside the home (Gehl, 1971/2013, p. 115). These conclusions lead to the assumption that many daily shopping trips are not only caused by replenishing missing resources, but also result from the desire to meet psychological needs (Gehl, 1971/2013, p. 117). Other types of development located among residential buildings create additional opportunities for social contacts between neighbours. The usual shopping trip described above also becomes an excuse to contact other people. Thanks to this, physical and psychological needs are met at the same time.

Diversity of households

Another important criterion in the light of considerations on social housing architecture is the diversity

of households. Today's housing patterns are increasingly separating different types of households from each other. In some areas large apartments are designed, in others bedsits. In this way, we obtain living spaces where only elderly people live, only young families with children or only single people. The result is a situation where people do not have the opportunity to experience the full human life cycle.

According to Alexander: "At no point in the life cycle a person is self-sufficient. People need support and validation from those who have already reached a higher stage in the life cycle. At the same time, they need support from those who are at the same stage of the life cycle as they are. [own transl.]" (Alexander et al., 1977/2008, p. 193). According to the author, contact with people of different ages is possible only when the balance of life cycles corresponds to the types of housing available in the neighbourhood (Alexander et al., 1977/2008, p. 193). Therefore, in the process of designing residential architecture, it is important to pay attention to the possibility of creating various types of apartments, tailored to the needs of people of different ages.

Gehl also has a similar point of view. He also argues that children's demands on the external environment should be considered simultaneously with those of other age groups. According to the author, "Supporting outdoor activities of adults and older people is in itself considered as the best possible way to support children's activities and the environment in which they grow up [own transl.]" (Gehl, 1971/2013, p. 131).

While diversity in terms of age is confirmed in the works of many authors, the mixing of representatives of different professions, and therefore people with different financial status, is not so obvious. Wallis, analysing the socialist housing policy formulated in the 1950s in Poland, which consisted in the maximum mixing of various professional groups in the place of their residence, i.e. both in houses and housing estates, states that there are indications that this policy failed (Wallis, 1971, p. 67). According to Wallis, neither excessive economic, cultural and prestigious dissimilarities between neighbours, nor another extreme in a form of excessive homogeneity of the estate's inhabitants, lead to the maximisation of necessary contacts

(Wallis, 1971, p. 67–68). The ideal seems to be a compromise between these two different possibilities. According to Wallis, the most appropriate situation seems to be when people can choose their own place of residence (Wallis, 1971, p. 68).

A research described by Lewicka shows that living in an ethnically mixed neighbourhood increases mutual tolerance, but at the same time reduces trust in neighbours and attachment to the community, which in turn causes a decrease in motivation to undertake various forms of social activity for the sake of the place of residence (Lewicka, 2012, p. 189). However, the factor having the greatest impact on social cohesion turned out to be the average income of a neighbourhood unit (Lewicka, 2012, p. 190).

Territorial distinctiveness of the neighbourhood

According to Wallis, the identification of residents with the housing estate as a socio-spatial integrity is an important but usually underrated factor of integration in a housing estate. "The architectural separation and fencing off an estate (sometimes only symbolically) strengthen the sense of social distinctiveness of its inhabitants and allow them to create a sense of responsibility for it, even though it remains available to every passer-by" (Wallis, 1971, p. 76). This feeling is manifested in the way residents take care of the space, where they feel they belong, e.g. tending lawns, keeping it clean, etc. (Wallis, 1971, p. 67).

Gzell has a similar opinion, claiming that the creation of integration processes of small groups of people requires the adoption of appropriate spatial solutions (Gzell, 1987, p. 149). The author, citing research conducted by the Greater London Council (GLC), indicates that in addition to using the lowest possible buildings and introducing space distinguishing features, a factor integrating residents is also the complete surrounding of the courtyard with buildings. The GLC study lists two types of interiors: closed, approximately equal in length and width, and linear – a short street (1987, p. 149).

Czarnecki and Siemiński also claim that private streets, internal courtyards and closed building complexes serve to improve the territoriality of residents and collective responsibility for the place and for

others (Czarnecki & Siemiński, 2004, p. 20). The authors, citing Irwin Altman's research, indicate the empirical manifestations of the phenomenon of territoriality in human behaviour as: "occupying or using places or objects, as well as demarcating and defending the zone of home space [own transl.]" (Czarnecki & Siemiński, 2004, p. 19).

Alexander claims that a gate is also an architectural element that strengthens the territoriality of a given area. It marks the end of one type of activity or place and the beginning of another (1977/2008, p. 282). "Gates can take many forms: a gate in the literal sense, a bridge, a passage between buildings standing close to each other, an avenue of trees, a passage leading through a building. They all fulfil the same functions: they mark the point of crossing the border and help to distinguish it [own transl.]" (Alexander et al., 1977/2008, p. 282).

Architectural detail

Gehl notes that it is not enough to just create a good space and let people move around in it. There must also be appropriate conditions for moving and staying in spaces, as well as for participating in a wide range of social and recreational activities (Gehl, 1971/2013, p. 129). The quality of individual elements of the environment plays a key role here. The details of these spaces, with the smallest component parts, are the determining factors. The space must be attractive for walking, standing, sitting, looking, listening and talking. Such an important detail may be, for example, a bench located by the entrance door, protected from rain and wind, with a good view of the street. A seemingly modest piece of furniture can become quite an important way of maintaining life between buildings. The author emphasises that benches should be placed so that they define a semi-private domain in front of the house. A low wall, plants and a tree can help to create this domain (Gehl, 1971/2013, p. 129).

Gzell points out that details in architecture and urban planning should not only be perceived from a functional, aesthetic or compositional way, but also from a semiotic one. According to the author, details such as a row of benches in a park carry certain meanings and shape the resident's awareness and the atmosphere of the environment (Gzell, 1987, p. 147). According to Gzell, signs emphasising the privacy of the area include all details separating the apartment or house from the public space, i.e.: a fence, a wall, a hedge, a change in level, terrain modelling and any vertical barrier separating the private area, equipped with a closed passage that emphasises the existence of an intimate, 'own' world behind the fence (Gzell, 1987, p. 148).

A similar point of view related to the detail in architecture and urban planning is presented by Wallis. He claims that: "Each element of small architecture, apart from the basic function for which it was designed, performs secondary functions which are a derivative of its size, shape, material, place in the landscape, and in some cases – e.g. a newsstand – also a derivative of its specific information values" (Wallis, 1971, p. 126). A small architecture, in a form of benches, walls, fountains or a newsstand, also supports various social phenomena occurring between residents and related to the perception, feeling and use of various types of space. According to Wallis, its most important task is to structure the space and introduce its own, intimate scale. According to the author, the small architecture also designates places for social contacts (Wallis, 1971, p. 127). The already mentioned bench and newsstand define these places not only because of the function assigned to them in advance, but also because they make it easier for human memory to capture images of the surroundings. They constitute a set of visual reference points in space, and as we spend more time with them, they also become an element of our identification with this space (Wallis, 1971, p. 128–129).

A detail in architecture does not have to mean only small architecture, but also the quality of a given space, thanks to elements such as properly selected lighting or properly designed surface. Czarnecki and Siemiński point out the importance of proper illumination of space. According to the authors, the space after twilight often has a completely different structure than during the daytime (Czarnecki & Siemiński, 2004, p. 116). The same place may have good visibility during the day, be safe and frequently visited, and at night turns into a space completely devoid of visibility, abandoned and dangerous. If, for example,

an important space for residents, which is a place of intense social contacts during the day, is not sufficiently illuminated at night, it is highly probable that after twilight, when all services increasing urban traffic are closed, this space would lose its importance in favour of another better lit space (Czarnecki & Siemiński, 2004, p. 116).

RESEARCH RESULTS

The aim of the article was to make an in-depth analysis of the literature on architectural elements which can support the creation of social contacts from various points of view – presented not only by architects and urban planners but also ethnologists, sociologists and psychologists. As a result of the analysis of literature sources, a similarity of ideas was noticed regarding architectural solutions which may influence the formation of social contacts. The cited opinions of individual authors were compared and collected (Table 1) according to the identified, convergent architectural solutions in a form of 10 evaluation criteria such as: the optimal size of the housing estate and the residential building unit; residential buildings corresponding to human scale; smooth transition between private, social and public space; common outdoor space; greenery available; common indoor spaces; service infrastructure complementing residential spaces; diversity of households; territorial distinctiveness of the neighbourhood; architectural detail.

Table 1. Architectural elements supporting the formation of social contacts

No	Evaluation criterion	Description	Pictogram
1	The optimal size of the housing estate and the residential building unit	maximum number of apartments in one building: 30 maximum number of apartments in the development quarter: 150	
2	Residential buildings corresponding to human scale	maximum number of floors in a residential building: 4	
3	Smooth transition between private, social and public space	The boundary between private and social space is designed in such a way that events happening at home can flow freely outside. The boundary between social and public space separated by a system of buildings, a wall or a hedge. Social space well connected to the city centre.	
4	Common outdoor space	A common outdoor space is of high quality, well-sunlit and designed in such a way that each resident has easy access to it.	
5	Greenery available	Home gardens, green areas, parks, trees and shrubs making common spaces more attractive.	
6	Common indoor spaces	Common internal spaces located tangentially to the passages most frequently used by residents. Rooms for spending free time together or rooms where residents can perform everyday activities together, such as: kitchens, laundry rooms.	
7	Service infrastructure complementing residential spaces	Services located on the ground floor of a residential building or in the quarter to which the analysed building belongs.	
8	Diversity of households	Age diversity of residents. A diverse layout of building plans adapted to the requirements of residents of different ages.	
9	Territorial distinctiveness of the neighbourhood	Closed development layout with a courtyard in the middle, short, private street. Architectural elements strengthening the territoriality of a given area, e.g. a gate.	
10	Architectural detail	Small architecture which structures external spaces and becomes an element of residents' identification with this space. Quality of space: properly selected lighting, properly designed surface.	

Source: own research.

The optimal size of the housing estate and the residential building unit

Opinions of both sociologists and architects specify the maximum number of families in one residential building between 20 and 30. It was decided to adopt the widest possible range of the numerical limits given by the authors. Thus, the optimal number of families, and therefore also apartments in one residential building, was set as 30. Citing Chmielewski's research, the maximum number of apartments in the entire building block was also assumed to be 150.

Residential buildings corresponding to human scale

Based on research conducted by psychologist Lewicka, as well as the arguments presented by Alexander, the maximum height of the building was assumed to be four storeys.

Smooth transition between private, social and public space

All of the above-mentioned literature sources confirm the importance of proper zoning of space and smooth transition between private, social and public space. It was assumed, in accordance with Gehl's instructions, that the boundary between private and social space should be designed in such a way that events happening at home can flow freely outside. However, the boundary between social and public space should be clearly separated, e.g. by the arrangement of buildings, a low wall or a hedge. However, social space should not be radically separated from public space. It is also important to connect further buildings with the city centre if the location of a given building or housing estate does not provide it with sufficient contact with public space.

Common outdoor space

Both the analysis of architectural designs and theoretical research have shown that the common external space organised around the building complex is an element supporting the creation of social contacts. What is important, it is not only the existence of a common space, but also its location, enabling an easy access to it for each resident; the space is of high quality, well sunlit and shaped to serve for various social situations and the needs of contacts of various kinds.

Greenery available

Based on the conclusions of Gehl, Gzell and Alexander, resulting from observations of residential buildings and adjacent spaces, it was assumed that available greenery, in a form of home gardens, nearby parks, as well as making common spaces more attractive in a form of trees or shrubs, can be helpful in building social relationships.

Common indoor spaces

Research by both architects and environmental psychologists has shown that common spaces located inside the building maintain social contacts. It has been also adopted after Alexander that common, internal spaces should be located tangentially to the passages used by all residents on a daily basis to facilitate spontaneous contacts.

Service infrastructure complementing residential spaces

The analysis of literature sources has shown that an appropriate variety of functions is conducive to urban life, social control and interpersonal contacts. It is therefore important that there be services in the residential building (e.g. on the ground floor), as well as in its immediate surroundings (e.g. in the quarter where the building under study is located), especially the basic ones, such as a grocery store, pharmacy.

Diversity of households

For the purposes of this assessment criterion, it was decided to consider only the diversity of households in terms of age. It was decided to omit ethnic, cultural and professional diversity due to the fact that Wallis's opinion seems to be correct: neither excessively economic, cultural and prestigious distances between neighbours, nor excessive homogeneity of the estate's inhabitants lead to the maximisation of the necessary.

Territorial distinctiveness of the neighbourhood

Theoretical research presented by Gzell, Wallis, Czarnecki and Siemiński showed that the urban forms most conducive to the creation of social contacts are a closed building system with a courtyard in the middle and a short, private street. It will also be important the presence of architectural elements

strengthening the territoriality of a given area, which, according to Alexander, is for example a gate.

Architectural detail

Many authors point out that urban detail in a form of small architecture is important in maintaining social relations, as it not only structures external spaces, but also, with the length of contact with it, becomes an element of our identification with this space. The presence of architectural details expressed in the quality of a given space, i.e. properly selected lighting or properly designed surface, is also important.

DISCUSSION

Ten evaluation criteria presented above can be used for further research, e.g. in the context of evaluation of pro-social solutions in selected architectural and urban projects, not only Polish examples but also European ones, because they are based on universal human needs, Architectural elements supporting the formation of social contacts, developed for this work, set general conditions of social architecture without limiting the creativity of its creators. The similar evaluation criteria were used by the author of these article to evaluate Polish and European projects using participatory design (Kosk, 2016, pp. 1471–1474; Kosk, 2017, pp. 35–37), but they can also be used in the evaluation of any other residential project to find individualities in their applications and to assess methods by which the considered assessment criteria were achieved.

It should also be noted that architecture can support the creation of social contacts not only when all the evaluation criteria developed here are met. Such an eventuality may only indicate the maximum possibility of social contacts occurring in the analysed case study.

This is also confirmed by the research carried out by the author of this work (Kołacz & Podlasek, 2024, pp. 1–19) in three flat blocks being a part of a bigger urban block in Austria. In the study area, although all three analysed architectural buildings forming part of the mentioned urban block did not meet the assessment criterion regarding building height (seven floors instead of four), a lot of social contacts

between neighbours were observed since many other assessment criteria considered here were met in these projects. One of the buildings was designed in such a way that its shape consists of a series of gradually rising sections. As the cor of this project pointed out, the building cannot be considered as seven storeys high, but is instead composed of different combinations of heights. This arrangement, reminiscent of a residential hilltop, may lead to more social interaction between neighbours than in a traditional seven-storey building. While looking out of a seventh-floor window makes it difficult to initiate a conversation with, for example, someone in the courtyard, the terraced layout of the building allows to establish relationships with a neighbour living on a terrace on a lower floor (Kołacz & Podlasek, 2024, p. 11).

As noted by Al-Kodmany, tall buildings are becoming increasingly an integral response to massive urbanisation. However, this building typology has unique challenges and issues, and therefore, planners, architects, community leaders, politicians, and the public at large bear the responsibility of finding effective ways to integrate them in cities in a sustainable manner (Al-Kodmany, 2018, p. 25). The researcher lists many threats that are associated with the tall buildings not only in social but also economical and ecological aspects. However, Kodmany's studies do not conclude that all tall building developments are unsustainable. It depends largely based on place, culture, climate, location, and quality of design and construction. In some countries, such as Singapore, given by the author as an example, excellent design coupled with cultural practices has resulted in socially successful high-rise developments (Al-Kodmany, 2018, p. 26).

CONCLUSIONS

In the introduction of the work, attention was drawn to the importance of meeting the physical and mental needs of man by appropriately setting his relationship with the natural environment, as well as maintaining social contacts at an appropriate level. The research conducted here, analysing the available literature sources, was aimed at presenting the mechanisms that control the interaction of people, buildings and

the spaces between them. As a result, ten evaluation criteria were developed, which are practical recommendations for architects and urban planners on how they should shape the housing environment to make it pro-social.

REFERENCES

Alexander, C., Ishikawa, S., Silverstein, M., Fiksdahl--King, M. & Angel, S. (1977/2008). *Język wzorców. Miasta, budynki, konstrukcja*. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.

Al-Kodmany, K. (2018). The Sustainability of Tall Building Developments: A Conceptual Framework. *Buildings*, *8* (1), 7. https://doi.org/10.3390/buildings8010007

Chmielewski, J. M. (2010). *Teoria urbanistyki w projektowaniu i planowaniu miast*. Warszawa: Oficyna Wydawnicza Politechniki Warszawskiej.

Czarnecki, B. & Siemiński, W. (2004). *Kształtowanie bezpiecznej przestrzeni publicznej*. Warszawa: Difin.

Fromm, D. (1991). *Collaborative Communities Cohousing, Central Living, and Other New Forms of Housing with Shared Facilities*. New York: Van Nostrand Reinhold.

Gehl, J. (1971/2013). *Życie między budynkami. Użytkowanie przestrzeni publicznych*. Kraków: Wydawnictwo RAM.

Gzell, S. (1987). *Fenomen małomiejskości*. Warszawa: Instytut Urbanistyki i Planowania Przestrzennego Politechniki Warszawskiej.

Hall, E. T. (1976). *Ukryty wymiar*. Warszawa: Państwowy Instytut Wydawniczy.

Kosk, K. (2016). Social Participation in Residential Architecture as an Instrument for Transforming Both the Architecture and the People Who Participate in It. *Procedia Engineering*, *161*, 1468–1475.

Kosk, K. (2017). Co-housing as the way to achieve a good density in the cities – Warsaw case study. *Challenges of Modern Technology*, *8* (3), 31–39.

Kołacz, K. & Podlasek, A. (2024). Pro-Social Solutions in Residential Environments Created as a Result of Participatory Design. *Sustainability*, *16* (2), 510. https://doi.org/10.3390/su16020510

Lewicka, M. (2012). *Psychologia miejsca*. Warszawa: Wydawnictwo Naukowe Scholar.

McCamant, K. & Durrett, C. (1988/2003). *Co-housing: A Contemporary Approach to Housing Ourselves* (wyd. 2). Berkley: Ten Speed.

Story, L. & Saul, S. (2015, 8 February). Stream of Foreign Wealth Flows to Elite New York Real Estate. *The New York Times*. Retrieved from: https://www.nytimes.com/2015/02/08/nyregion/stream-of-foreign-wealth-flows-to-time-warner-condos.html [accessed: 06.12.2023].

Wallis, A. (1971). *Socjologia i kształtowanie przestrzeni*. Warszawa: Państwowy Instytut Wydawniczy.

Wallis, A. & Siemiński, W. (1974). *Ankieta o jednostkach mieszkaniowych: opinie 91 architektów*. Warszawa: Instytut Urbanistyki i Architektury.

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STRESZCZENIE

Zrównoważone środowisko zamieszkania powinno być kształtowane w sposób ekologiczny, ekonomiczny i prospołeczny. Celem pracy jest zwrócenie uwagi na ten ostatni, często pomijany, aspekt w kontekście projektowania zrównoważonej architektury mieszkaniowej, który możemy osiągnąć poprzez dbanie o utrzymanie relacji społecznych na odpowiednim poziomie. W artykule dokonano przeglądu istniejących teorii socjologów, psychologów i architektów na temat cech architektury i przestrzeni mieszkalnych. Analiza źródeł literaturowych wykazała, że istnieją elementy architektoniczne, które mogą wspierać kształtowanie kontaktów społecznych. Na ich podstawie opracowano zestaw dziesięciu kryteriów ewaluacyjnych, które mogą posłużyć do dalszych badań, np. w kontekście oceny prospołecznych rozwiązań w wybranych projektach architektoniczno-urbanistycznych.

Słowa kluczowe: zrównoważone środowisko, architektura mieszkaniowa, kontakty społeczne