

Participatory Design as a Prerequisite for Safer Living Environments for the Elderly

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The steady increase in the number of elderly people in Italy and difficulties encountered in the management of the social and health services have led to such increased use of the Home Care Service that more specialised care is required.

This highlights the fact that many houses are not equipped to ensure either the safety or the wellbeing of older residents, since they have not been adapted to cater for the changes brought about by old age. A study made in Florence looked at modifications made to the houses of elderly people suffering from the first stages of Alzheimer's disease. The aim of the study was to provide tools that the elderly themselves or family members could utilise to check the adequacy of their living environments, and to make changes with or without the support of an architect. A methodology was developed for managing the participation of users (in this case the elderly residents, families, visitors, and caregivers) in the remodelling process of the housing. The study was conducted through interviews, questionnaires and focus groups. Positive aspects of the participatory process are explained, as well as the difficulties encountered.

Background

Currently, 13 of the world's 15 "oldest" countries - those with the largest percentage of elderly people (65 or older) - are in Europe¹. In Italy, the world's "oldest" country by this definition, the elderly constitute approximately 20 percent of the population (65+ 20.3%; 75+ 9.6%). This figure is expected to reach 28 percent by 2030. (Istat, 2003).

Although the most striking examples of ageing populations are in Europe, Japan and the U.S.A., they are becoming a global trend. Longer life, an achievement of modern civilization, requires changes in retirement policies and social programmes, and longer life expectancy means that people will have to re-think how they would like to spend their lives.

In Italy, this situation had been exacerbated by what used to be one of Europe's most generous state pension schemes, paying pensions of up to 80% of the final pensionable salary. Occupational and personal pension provision is now very low. Italy's finances are precarious, with a national debt of around twice the European average, expressed in terms of GNP. To address these problems, Italy recently introduced dramatic pension and fiscal reforms, with the aim of reducing the cost of the state pension scheme and encouraging private sector pension provision.

The Italian health system caters for different levels of assistance, from the initial "*home care service*", to "*day care*" and "*nursing homes*" for both self-sufficient and non self-sufficient people. This structure has been reorganised, making more room for private investment.

For the last ten years, government policies have encouraged people to remain in their own homes, supported where necessary by domiciliary services which complement the care provided by family and friends. This choice takes account of the fact that people should not be removed from their normal lives simply because they are becoming older. On the other hand, it is clear that this choice is the most economically viable for the public finances. Consequently, there is an increased call to adapt private homes and public spaces to accommodate independent older people, and this brings its own problems.

Condition of elderly people's housing in Italy

In a survey that took place in Europe on "*health and survival for the elderly*", the living conditions of families with elderly members in southern Europe was summarised by the slogan: "*rich in house - poor in cash*" (Jappelli et al., 2005).

This definition provides a good description of the situation of families in the Mediterranean region who complain about the increasing difficulties of maintaining an adequate standard of living.

In 78% of cases, the elderly in Italy are the owners of the house they live in. A large proportion of the elderly are living alone. One-person families now make up a quarter of all households. 53.8% of these families consist of people over 65 years of age.

These conditions of loneliness, which increase with ageing, affect women in particular. 50% of women 70 years or older live alone. These people live with the contradiction of owning a house where they are forced to live in very strained conditions because of the expenses arising from their financial asset. There is therefore an issue with the large number of properties which make living more of a difficulty for the elderly than a resource.

1 According to the United Nations, World Population Prospects, Revision 2004.

The houses where the elderly population live are not naturally suited to accommodating people who are growing older. More than 24 million Italians live in apartments which are falling apart or in a poor state, with damp or with inadequate electrical, water and sanitation installations. These houses are often very old, many of them built after the Second World War during the building boom of the '60s and '70s, and they have never been renovated since then. Almost 50% of the houses are more than 40 years old, the technological threshold beyond which the dwelling requires structural maintenance to function properly. These houses are mainly inhabited by the elderly (Cresme, 2006).

Houses are also often too large (3-4 bedrooms) for the real needs of families of decreasing size (1 or 2 people on average). Furthermore, the apartments are often located in buildings without a lift. A number of potential obstacles (stairs, carpets, slippery floors, incorrect lighting) present a challenge to the independence of elderly people.

These conditions in a house can contribute to an increasing sense of loneliness and social exclusion. If the old person encounters a lot of obstacles in her daily activities (shopping, meeting friends, going swimming or to the gym, going to the library or to church, etc.), she will not want to go out as often, and she will become more isolated and lose her autonomy much more quickly.

In Italy, there is a regulation (L 13/1989) which enables major renovations to be funded by municipalities to remove architectural barriers in houses for disabled citizens. This law also applies to elderly people who require changes to their own homes. The limitations lie in the bureaucratic complexities behind the demand for this support, coupled with the fact that the elderly also have to overcome the social and psychological barriers they often encounter in everyday life in asking for financial help. Moreover, the cost of maintaining the house is additional to the various forms of taxation that affect the property, and this detracts from the elderly person's ability to live a dignified existence. In short, the low pension the average elderly person receives in Italy means that they do not even consider adapting their houses.

The evolution of the concept of safety in housing in Italy

The word "safety" in architecture is generally used to define issues linked to surviving fires, earthquakes and structural collapse. Since the '90s, there has been a new and growing interest in the safety levels in housing. Defined as "safety in use"², it is a contemporary concept that sees human beings in the context of the houses they live in; homes have to be built with a lower a risk of accidents in mind.

The concept of "safety" in Italian housing has changed over the centuries according to a variety of factors. In particular, attempts to find solutions to natural disasters have been improved more and more, and this issue has always been seen as a collective problem. On the other hand, an accident which occurs at home is considered to be an individual problem, and episodic, attributed to a personal mistake as opposed to objective factors.

Only in the last 20 years have studies begun to be made of the dangers contained in a house itself. Previously considered a safe refuge, it is now analysed as a place full of small, daily risks which generally cause damage to the individual and not to the whole building. The growing attention paid to indoor pollution and the sick building syndrome brings into perspective the harmful materials used in construction, and promotes a strong, active consciousness among inhabitants, as well as a widespread "*discomfort culture*" (Tatano, 1998).

2 The term "safety in use" was defined for the first time in the European Regulation EU 89/106, 21.12.1988.

Statistical data for domestic accidents

Statistics show that the most frequent accidents happen at home, and that the primary causes are the materials used in building and the lack of security systems. Looking at this in more detail, women of 65+ are the most frequent victims. The place where accidents happen most frequently is in the kitchen (31.1 % of cases for men; 58.1% of cases for women). The most frequent cause for men is falling (33.2%) and for women the incorrect use of kitchen utensils (36.7%), (Istat, 2001), (see Table 1).

Table 1a-1b. The victims of accidents.
Statistical Data Istat 2001 (x 1000).

Gender and Class of Age	
Women 65+	26,6
Women 25-64	23,2
Men 65+	9,0
Women 0-24	8,0
Men 0-24	6,3
Men 25-64	5,5

Gender and Working Condition	
Women housewives	30,9
Women workers	17,3
Women in other conditions	15,2
Men in other conditions	8,0
Men workers	4,4

The risks inside a house can be divided into the following:

- Falls from slipping
- Falls from tripping or stumbling
- Falls from gradients and sharp dips
- Crush and traumatic contact
- Burns
- Electrocution and electrical shock
- Explosion
- Drowning
- Becoming trapped

In all these cases, technical elements (floors, stairs and ramps, windows and doors, vertical partitions, heating, lighting) and the personal skills and behaviour of the inhabitants may be responsible for, or contribute to, the accident (Tatano, 1998). (See Tables 2 and 3).

Table 2a-2b. The three major causes of accidents.
Statistical Data Istat 2001 (x 100 accidents).

Cause of accident for men	
Falls	33,2
Kitchen utensils	20,4
DIY - Do It Yourself	10,2

Cause of accident for women	
Kitchen utensils	36,7
Falls	27,0
DIY - Do It Yourself	1,4

Table 3a-3b. Rooms where accidents occur.
Statistical data Istat 2001 (x 100 accidents).

Men - Room where accidents occur	
Kitchen	31,1
Balcony - Garden	14,5
Basement - Garage	13,6
Living Room	11,7
Bathroom	9,3
Bedroom	6,3
Internal Stairs	4,9
External Stairs	4,9
Corridor - Entrance	3,3

Women - Room where accidents occur	
Kitchen	58,1
Living Room	8,2
Bedroom	6,7
Internal Stairs	5,6
Balcony - Garden	5,5
Bathroom	4,2
External Stairs	3,7
Corridor - Entrance	3,7
Basement - Garage	2,6

Elderly participation: can participation be taught?

Defining “participation”

In the Oxford English Dictionary, “participation” is defined as “the action or fact of partaking, having or forming a part of”. In this sense, participation may be transitive or intransitive, moral, amoral or immoral, forced or free, or manipulative or spontaneous. Transitive forms of participation are, by definition, oriented towards a specific goal or target. By contrast, in its intransitive forms, the subject undertakes the process of partaking without a predefined purpose. While one is listening, loving, creating, or fully living life, one partakes without necessarily seeking to achieve a particular objective (Rahnema, 1992).

The word “*participation*” does not express content in itself, but it has a function that can change in relation to the different contexts to which it is applied. The word “*participation*” could be used to express two different kinds of behaviour: communication (when you “participate” by giving information, intervening in a debate, etc.), or the sharing of interests, ideas and situations (participation in a meeting, sharing experiences, etc.) The various forms of participation differ in their levels of intensity and performance, their features and the many degrees of applicability and impact on the process (Uspel, Ecosfera, 2001).

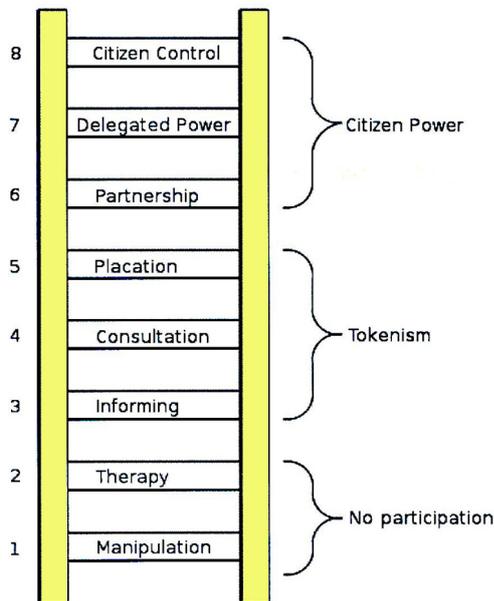
The first important distinction in the urban scenario is between “formal participation” and “active participation”. Despite substantial differences between these two forms, there is no single theoretical approach for regulating the mode of intervention for non-state actors in decision-making. This means that we continue to use the same term (“participatory practice”) to define an approach aimed at increasing popular consensus on policy decisions (*top-down*), as well as a method of design for socially shared future development (*bottom-up*) (Sanoff, 2000).

Different levels of participation

The vagueness of definition on the concept of “participation” and its different forms of application (depending on the degree of influence exercised by citizens in the decision-making processes), has given rise to a number of attempts at interpretation and classification. One of the most interesting is the “ladder of participation” created in 1969 by Sherry R. Arnstein, and many authors still refer to this. Arnstein made his classifications using an analysis of power relations established in a few experiments in the U.S.A. on development and deployment of decisions, and he based them on qualitative rather than quantitative criteria. He extracted participatory practices into eight different categories or eight steps, on a

hypothetical scale from total exclusion, to symbolic forms of participation, to a substantial increase in the responsibilities of citizens. The scale is a simplified representation of social, personal and professional interaction within a participatory planning process between administration and users (see Image 1).

Image 1. The ladder of participation by Arnstein, S.R. (1969)



Design as a participatory process

There are similarities between the community design approach (“Anglo-Saxon school”) and participatory design (“Scandinavian school”) in that both stress the importance of the user and the collaborative learning process with designers/planners. Advocates of participatory action research distinguish between *research for the people* and *research by the people* where there has been a parallel development of participatory methods in such fields as public health, resource management, adult education, rural development, and anthropology (Whyte, 1991). The participation of elderly people in the collaborative process may add to their perspective of reality. In fact, their participation in planning can solve problems and inconsistencies that the designer did not take into consideration during the design phase. The aim of this particular participatory process is to make the elderly aware of their needs and to encourage them to express them in order to improve their quality of life, influence their living environment and strengthen their sense of ownership.

Finding a common language

Projects which claim to be multidisciplinary often include expertise from different disciplines without any real integration. According to Lucien Kroll, the challenge lies in changing mindsets and organising a process of communication in both formal and informal areas. The development of a common language is necessary, and even the nuances of particular words can be important. Finding a common language for communication is not necessarily an automatic process but requires careful planning. Acronyms can prove to be particularly difficult to memorise, especially for elderly people (Kroll, 2009).

The terms “*home safety*” and “*wellness*”, for example, can be understood differently by different participants. “*Home safety*” has two slightly different meanings. It may indicate a building's ability to withstand external events (such as weather, home invasion, etc.), or it may indicate that its internal installations (such as appliances, stairs, etc.) are safe (not dangerous

or harmful) for its occupants. The term “*wellness*” is generally taken to mean a healthy balance of mind, body and spirit that results in an overall feeling of wellbeing, and from the architect’s point of view, the environment can play an important role. From a medical point of view, wellness can be defined as a view of health that emphasises the state of the entire being and its ongoing development. For the elderly, wellness seems to be a state of non-disease, as well as a peaceful and conscious pursuit of living life to its fullest.

The role of the moderator

Active participation in planning may be linked to a positive attitude towards following up participant input within the authority where the architect is based. This attitude is the first prerequisite, and being conscious of this challenge is the first condition for adopting a positive attitude. Then follows the problem of creating a “non-authoritarian place”; a communication area in which it is clear that everyone has the same right to speak, propose, discuss, create, etc. Where architecture is concerned, for example, the architect receives a lot of disjointed proposals. This chaos is a necessary consequence of communication between people, the civil area where democracy, exchanges, co-operation, justice and hospitality are the most important tools.

In this communication, the architect may be the “hinge”, but this hinge can often appear rusty and completely blocked, mainly because the participants have never been told about the role of the architect as mediator, or perhaps because they do not trust it, or because they are afraid of the consequences. People who have never had the chance to be active participants in a process can often be suspicious at first. At the start of the process, they may see the moderator as “the enemy” when they are trying to explain the conditions, what has to be done, the circumstances, the aim or the material reality. The moderator then explains, however, that the participants have to help if they are to reach the levels of quality they are looking for. When questioned, the inhabitants are no longer reluctant at all, and they willingly take on the role of participants (Kroll, Mikellides, 1982).

During the first meeting, the participants listen carefully, but they do not really believe or understand what they are hearing. The second meeting is better. The discussion is brought to a close, and we begin to construct an opinion or model. After several days, their perspective will change and they will gradually become involved in the “project”. At this point the architect may put forward his architectural proposals as they consist of what the participants have told him.

In this first phase, the moderator has to direct the process, presenting the initial problem in an easy and simple way, asking participants not to make judgements, encouraging lateral ideas, writing up everyone’s ideas on a blackboard and asking participants to think of variations on the ideas expressed by others. All the ideas from the first phases have to be incorporated (Kroll, 2009).

Creative learning

In order to create a process that can be considered “active participation”, the participants should adopt an attitude of “*active listening*” by following these “*recommendations*”:

- Do not jump to conclusions.
- What you see depends on your point of view.
- To understand what people are saying, you have to work on the assumption that they are right and ask them to help you to see the facts from their point of view.
- Emotions are very important tools of knowledge only if you can understand their language.
- A good listener is an explorer of possible worlds.

- A good listener willingly accepts the paradoxes of thought, interpersonal communication and disagreement as an opportunity to practise the creative management of conflicts.
- A good listener makes use of humour.

The right attitude is the exact opposite of what is considered a “*good observer*”, i.e. a neutral, impassive person who hides their reactions. A “*good listener*” will feel weak and will try to understand what other people are saying in order to create an atmosphere of respect and mutual learning. This is a necessary condition for addressing the various problems in a creative way (Sanoff, 2000).

Methodology

The aim of this research was to define a simplified procedure for helping the elderly and their relatives to understand the kind of changes they need to make in their homes.

The first analysis looked at how elderly people could be made aware of their new needs by considering physiological changes related to age, and how they could be “educated” to express their vision of the environments they would like to live in. The analysis also considered how they could take the initiative in making changes to their houses in order to understand what is either dangerous or feasible within their physical abilities.

I shall now describe how the involvement of elderly people in a participatory process is an opportunity for them to express their needs.

Selecting participants

The Municipality of Florence was contacted, along with a voluntary association (Auser) which develops domestic assistance for the elderly. They helped gain access to elderly people and the workers who take care of them (nurses, social workers, geriatric doctors, caregivers, etc.), so that participants could be selected. The aim was to select a group of between 5 and 20 people from which 12 participants could be chosen.

The people selected to participate in the process of evaluating housing in the elderly population were:

- four elderly residents (three living independently and one not)
- an official from the Municipality
- an architect
- two relatives of the old people involved
- two nurses
- a social assistant
- a geriatric doctor

Interviews

Interviews with each participant formed the first phase of the research. The aim of this first operation was to gather information and to form a clear picture of the participants. Once the group was formed, an initial public presentation of the project was arranged. This simply involved a unidirectional flow of information from the mediator (the architect) to the participants. Initial informative material was distributed.

Survey

In the second phase, questionnaires were distributed to the participants, the aim of which was to explore:

- their level of satisfaction with the houses they were living in;
- whether they felt safe at home;
- whether they had ever had a domestic accident;
- whether they could move around freely, or whether there were problems with accessibility;
- whether they could reach everything they needed in the house;
- the changes they would like to make in their house;
- whether they needed assistance in daily activities;
- the services they would like to be offered.

The aim of this phase of participatory design was to make elderly people aware of their needs and to encourage them to question the quality of their housing. A survey by questionnaire has the advantage of reaching a large number of people, and it is easy to keep a written record of the responses. Disadvantages include the lack of interactivity and the frequent and often necessary use of “closed” questions.

Focus group

The third step was the focus group, where all the participants met for the first time. The aim of the focus group was an in-depth investigation of the difficulties that older people experience at home. Unlike other techniques used, the focus group requires strong interaction and communication, where people can express their opinions, disagree with suggestions and highlight the weaknesses in an argument.

In discussing their physical problems and how difficult it was to do the things they used to do, the old people identified the major problems associated with living in their houses.

- The issues they raised were arranged in groups defined as “*elderly standard features*”:
- Difficulty in reaching high objects
- Difficulty in turning around
- Difficulty in moving sideways and bending down
- Difficulty of movement
- Reduced vision
- Impaired hearing
- Reduced sense of smell
- Possible confusion
- Incontinence
- Anxiety and stress

A second group of issues was added to the first group, related to elderly people in the first stages of Alzheimer’s Disease, and defined as “*expanded standard features*”(Regione Toscana, 2002):

- Speech difficulty
- Disorientation phenomena
- Perceptual and cognitive losses
- Loss of recent memory
- Wandering
- Irritability and aggressiveness
- (see Image 2)

Image 2. Cards describing the difficulties elderly people experience in the home.



A set of cards was made showing the requirements they had mentioned. This method helped to find creative solutions to problems defined in the previous phases. For each problem, everyone expressed “*the first idea that came to mind*” in a rapid sequence of association of ideas. In this way, unexpected solutions were generated, which were then carefully reviewed to make them more practical and feasible. This technique was limited in that the elderly people were often unable to go beyond their spatial experience, and often did not understand the two-dimensional drawings. A more effective tool for overcoming their initial shyness involved the use of pictures taken in their own houses.

Performance requirements for the house

During the analysis phase, performance requirements were defined for a house which would give elderly people a suitable environment to operate and move around in. These performance requirements were defined using the following variables, drawn from the data which emerged from the discussions:

- Accessibility
- Visual and acoustic wellness
- Orientation
- Safety
- Usability of all the elements present in the house
- Control of the level of privacy

Older people's perception of independence often correlates with their notions of self-esteem, self-determination and dignity (Hanson, 2003). Recent literature on how to address issues of control and access to public, semi-public and private spaces tends to recommend the model of "*progressive privacy*" as one of the most suitable options.

Hanson defines six categories of space: private, semi-public, public, staff only, other, and circulation. Each category is defined on the basis of the pattern of access and control, and the perceived "ownership" of the space (Hanson, 2003). Where old people's dwellings may be considered private spaces *par excellence*, it is also important to recognise that there are semi-public and public areas where elderly people with reduced mobility still feel part of everyday activities.

The different rooms of the house where they live have a bearing on the various areas of daily activity of the elderly, creating the concept of "*progressive privacy*".

Definition of guidelines

The purpose of this paper was to illustrate methodological criteria for demonstrating that the "*normal house*" should be converted into a "*house for special needs*" when the resident grows old. These criteria can hopefully help to create a cultural shift away from the concept of "*special needs*" towards "*lifestyle choices*". In this way, the fact of becoming older, or being temporarily or permanently affected by a disease, will not mean that a person's house is not ready to respond to these needs.

The idea was to give elderly people the tools to decide what was no longer appropriate in their houses. These same tools may also be useful for the relatives of a person suffering from dementia, to help them assess which elements in the house may become dangerous. The positioning of furniture, the use of natural and/or artificial lighting to avoid bad reactions, and taking a close look at the behaviour of caregivers, are all elements that ensure the physical environment does not become a further source of stress in the home for someone with dementia.

The final product of the participatory process was the drafting of guidelines listing prescriptive and specifically recommended actions. This guidance was divided into five levels of intervention, corresponding to the different levels of analysis undertaken on the housing. The first level of guidance involves the type of housing and its accessibility. The second involves the components of the house (floors, doors, windows, walls, stairs, etc.). The third concerns the arrangement of space (all the different rooms). The fourth involves the furniture and systems (electrical, heating, etc.), and the fifth accessories and equipment.

The proposed guidelines became a very technical document aimed at planners and public administrations, so they were very difficult for the elderly to understand. To resolve this problem, a simpler document was prepared which was easy to read and which did not contain any technical data. It takes the form of a booklet which explains in a simple way, through words and illustrations, how to adapt the home, with or without the help of technical professionals, if an old person is experiencing a specific problem. This information leaflet, which describes major risks and solutions in the home, was the final result of the participatory process which had involved the elderly in evaluating their own houses.

Discussion and conclusion

Participant satisfaction is not so much characterised by the degree to which their needs have been met, but by the feeling of having influenced the decision. The role of the moderator in this participatory design experience, as the person who collected and processed the information to obtain specific results, was particularly difficult. There is always a danger that the architect will make the final decision as a “professional”, negating the major efforts made by the other participants by generalising the ideas they have put forward. In participatory design, however, the architect’s role is no longer to produce complete and unalterable solutions but to extract solutions through ongoing discussion with those who will use them. Energy and imagination has to be channelled into raising the level of awareness of the users in the discussion, and a solution will follow naturally from this exchange. The architect’s role is to give his/her opinions, provide technical information and discuss the implications of various alternatives, in the same way as the users state their opinions and contribute their expertise.

A critical reading of this study may consider the booklet too general a solution, as the participatory process on one hand, and the approach to ageing on the other, are phenomena closely connected to the people who experience them, so they cannot be strictly regulated.

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