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CHANGES: THE BRIDGE BETWEEN THE PAST AND THE FUTURE

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ABSTRACT

Architecture is a frozen history and we are compelled to live in it. A building is meant to last for years, decades, centuries, and even millennia. However, 'to last' is only a relative term. In reality, a building is a process instead of a product. Over time it becomes obsolete, inappropriate, difficult to use, and a burden to maintain, does not meet new needs and regulations, and even falls out of fashion. So it is obvious that it must be under constant pressure to be changed. A whole set of activities is to be recognized: simple maintenance work, refurbishment, reconstruction, modernization, adaptation, addition, and in the end, unavoidable demolition and removal. The changes in the built environment, in architecture and – to limit the scope of the discussion – in housing, are caused and stimulated by past events at several levels: anthropological, historical, technological, cultural and architectural.

The only constant is man, speaking in a more or less biological sense and within the framework of a time span that we can comprehend. The basic needs for food, shelter, safety, reproduction, caring for offspring, and cultural continuity remain essential regardless of time and space. However, even regarding this, things do change at least formally: the hunt has become sport, collecting food in the forest has been replaced by shopping, and telling stories has today been replaced by TV. Some other changes in the dwelling culture are well known: the separation of home and work, the size and kind of family, different patterns, and the attitude to privacy.

Several new design methods have been invented to make anticipated future changes and adaptation possible: the flexible layout, modular coordination, the support and

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infill system, and so on. Recently, new doctrines have been introduced: allowing building parts to be changed or replaced independently, separating structural elements from the building envelope and technical equipment, and introducing new materials not traditionally used in building. The recent state of the art is to build temporary and even recyclable buildings.

This paper presents several examples of these issues closely related to the regional (central European) tradition based on the author's personal experience and limited to the time span of the last hundred years.

Key words: changes, human needs, building process, design methods

Introduction

Heraclitus said: 'PANTA RHEI – everything flows'. It was a statement to express the endless admiration and amazement at observing life and the world as a whole. Two thousand years later, Goethe recognized that 'everything is transitory, it is only an apparition'.

As a humble small part of our world, the limited scope of this paper represents housing, our immediate living environment where changes are also constant and can not be avoided.

A house or a flat may be considered as a complete 'home' when it contains both 'hardware' (space, structure) and 'software' (people, functions). Both parts cause the changes and suffer by them at the same time.

Other – urban and global – changes on a big scale are not discussed here, although they represent another vital part of our living environment. Their impact is bigger and dealing with them is too complex to be dealt with only by technical professions.

The Life Span of Dwelling

Normally people take a flat or a house as a stable commodity, which they enjoy as long as they live or want. As the housing stock of a whole community or country is the largest single item of national accountancy, a broader aspect is needed to keep its value and use. The terms 'new' and 'old' are common descriptions of any object and 'old' means several years or several millenniums. A life span of any building can be expected, planned, even prescribed by authorities, and it is usually longer than the average life expectancies of the population.

To maintain the building as long as possible, to the limit of its usability or at least to yield its return, a sequence of activities appears: the standard cleaning and maintenance works as well as more or less radical changes (Figure 1).

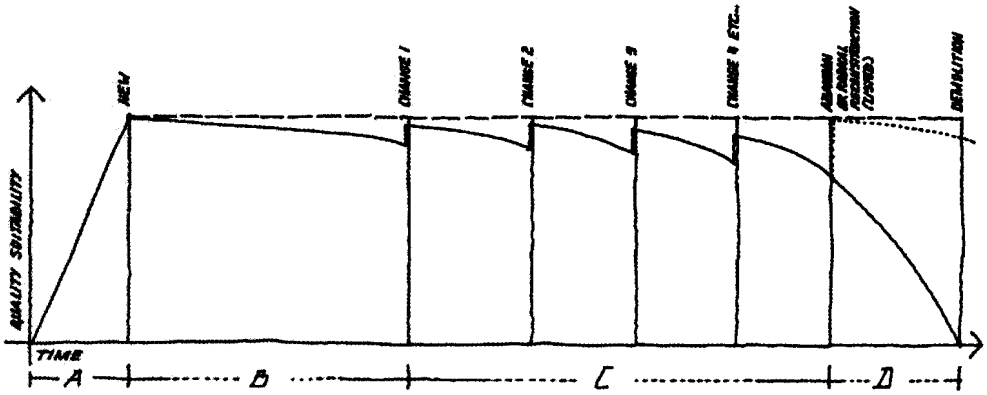

Figure 1 : The lifetime circle of a dwelling (building).

The first phase begins with the design concept. The very nature of design is a process of looking for the best solution and the daily changes on the drawing board is just the way to do it. This does not stop during the erection and only the finished building is considered final. The next phase has to do only with dwellers while the next one begins with physical interventions to the building's fabric. This is where the problems appear to be analyzed.

The Sequence of Changes

The Time of Construction

Even at the very beginning, changes cannot be avoided. There are several reasons for this: bad and superficial design, short time, unobtainable materials, money shortage, new market situation and other unknown circumstances. The standard Slovenian experience of the last 60 years (after the 2nd W.W. in the era of extensive housing construction) can be described by the simple fact: Literally, the majority of new buildings have not been executed according to the original design.

The social mass housing supported by the government was usually implemented in large residential estates (up to several thousands of dwelling units). When the main contractor was appointed, he usually based his tender on the technology, which he was used to, had the experiences, skills and equipment. Two authors' experiences can be quoted here.

In the early sixties, the famous new technology of tunnel shutters was introduced to make on-site concrete pouring more efficient. The design for the whole project had to be changed accordingly (to use as little different spans as possible, to unify the overall thickness of walls and floors, to avoid distortions and overhangs in floor plans) (Figure 2). Twenty years later, another large estate was entrusted by public tender to a large firm which was the owner of a modern factory for prefab concrete elements. The initial design (the competition winner) anticipated a rather conservative technology of brick walls and concrete floors to make the whole 'healthier'. A radical new design was again necessary in order to use as little different sizes and shapes of panels as possible before the construction started.

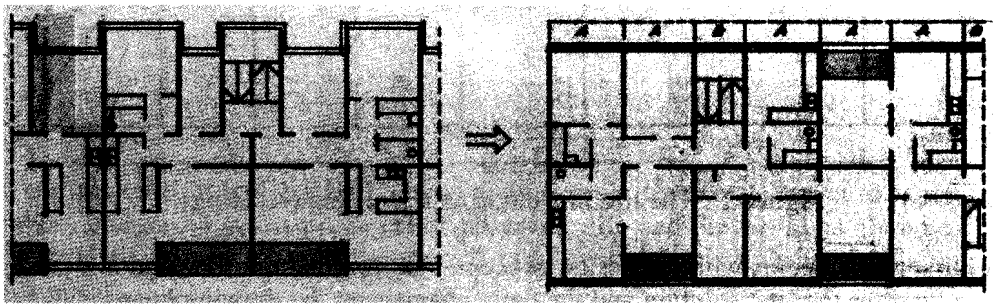

Figure 2 : Initial design had to meet the rigid technological demands.

The other half of the building construction boom consisted of private self-built houses. People used to change their minds in the middle of the building process. The standard (typified) plans were used to get the building license. Later, everyone was supposed to know best how his own house should look like. Enlarging the ground floor dimensions by a meter here or there, adding some layers of brick to the attic breast wall and changing the roof pitch – were all common practices.

The time when Dwellers Move in to Their Dwelling

When people move in – whether into a new flat or house or an old one – it was rarely built to meet their unique needs and expectations. In mass housing, of interest for this paper, the concepts (or layouts) were, as a rule, based on a statistically determined standard family size, its needs, social and cultural background, and income. The 'functional approach' prescribed the number and size of the rooms named by their use (living, dining, bedroom, kitchen, bathroom...) It provided the necessary space for (standard) furniture and communication around it. Quite often, such a layout omitted, forgot, or ignored a set of 'non-standard' functions concerning disabled people, a new baby, cottage industry, hobbies, pets and similar. The other common problem in social housing is overcrowding, but there is no way to anticipate and accommodate it.
The first problem appeared with the family structure. The ideal household of two parents and two children was just wishful thinking. Even in the early 70ies, the

statistically determined family consisted of 3.5 members (whatever the half person means). So the distribution of inhabitants in a dwelling was often quite unexpected: parents slept in the living room, grandma in the dining corner, children in the parents' bedroom, the washing machine was squeezed into a small bathroom... As a rule, the majority of new dwellings are not used in the way as it was anticipated in the original plan (Figure 3).

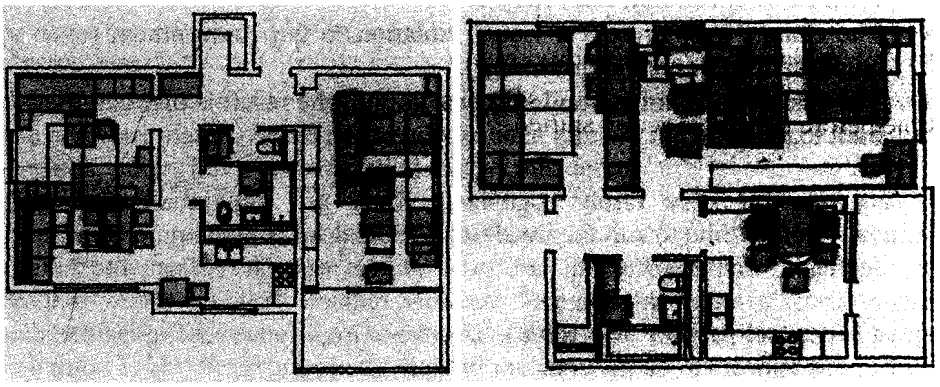

Figure 3 : The actual use of a flat is very often different from the designer's proposal.

Extensive research was made to analyze this phenomenon in Germany, Scandinavia, even in Slovenia in order to find out what people really want. The general dissatisfaction with the dwelling standards lead in some cases to abandon them. The result was the other extreme: a lot of bad, even stupid layouts appeared in the atmosphere of 'anything is possible', of aggressive marketing and speculation.
One of the conclusions may be that Man is an extremely adaptable animal (it is his advantage for survival) and that overregulation is a dead end.

The Time of Physical Changes of Dwellings to Meet New Conditions or Needs

Sooner or later, the readiness of the dwellers to accommodate comes to an end. When there is no possibility to move to another flat, the following may happen.
The first set of changes – to meet new needs of the household:

- Inserting a new partition (to make two rooms out of one big one).
- Cutting a new door (to provide alternative access).
- Walling up a door (to assure privacy).

The second set of changes – to assure a higher living standard:

- Installing a new kitchen and bathroom equipment, new household machines.
- Installing a new heating system (individual to central).
- Providing more wiring and plugs for new audio, video and pc gadgets.

The third set – to follow new general conditions:

- Replacement of the floor finishes.
- Changing the windows (with better u-value).

- Increasing thermal insulation.
- Introducing sun shades and air conditioners.

All these changes do not include standard maintenance work. Phase C represents physical (visual, dimensional and technical) changes and a lot of problems turn up:

- The change may cause tension between the neighbors (noise and dirt during the time of execution, fear, envy).
- The change may present a visual violation to the environment (even a new aggressive color can be disturbing).
- The change may not get building permission (the result is often an illegal self-built extension).

These changes are very rarely organized. They are individually initiated and implemented at any time to suit the dwellers. In social mass housing, changes provoke a high degree of disturbance, but are more or less only seen from the outside. In individual housing areas, the changes are more radical. Building a new outhouse (a garage, a hothouse, patio, a new room), a massive high fence, changing the shape of the roof... this appears to be the constant process all around the world (Figure 4).

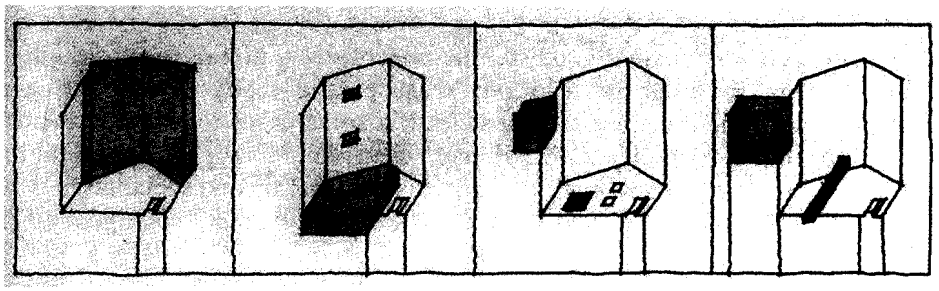

Figure 4 : What happens to a detached house in time.

The Time when the State of the Dwelling is no Longer Adequate

The deteriorated structure and building elements become more and more difficult to repair or replace, the cost of it even higher than investing in a new building. It may be the result of bad or no maintenance or any other reasons discussed above. The dwellers move out and leave the place to those with low or no income (squatters).

In the case of an important listed object, the strict directives of the heritage protection institutions are too demanding and the inhabitants (usually elderly people) cannot afford to meet them. The final state of any building – as sad as it seems to admit – is demolition. It is just a question of time.

The Methods of Dealing with Changes

A set of professions is to be involved in order to:

- Anticipate.
- Make possible.
- Minimize.
- Avoid.
- Regulate the inevitable changes.

Following the sequence of changes indicated previously, there are many ways to cope with the complex matter. Some of them have been already implemented with minor or better results, others have yet to be tried and reconsidered.

In phase A, it must be emphasized that planning and designing is a never ending process. It demands extensive collaboration of designers, investors, other professionals, and also the future dwellers. The state of the art in information technology and CAD makes it much more possible and promising than in the past.

Some examples were rather successful, especially in attracting future users at the early stage of the design. W. Segal (GB) was personally involved in the design and erection of self-build homes. R. Erskine put his design office in the center of the new development in Newcastle (GB). Sziskowitz and Kowalski even built their own dwelling as a part of the new community in Graz (A).

In phase B, the above mentioned may be neglected, but the dwelling must offer solutions which allow or make possible for people to arrange their living space to suit their own needs. Accordingly, the apartment should have several properties:

- It must remain neutral (the prescribed functions should be omitted or limited to such spaces as bathrooms).
- It must offer generous dimensions and shapes of the rooms.
- It must have doors and windows positioned in a way that does not obstruct flexible furnishing.
- It must provide over dimensioned installations and fittings.

While the majority of the housing stock before the 2nd W.W. remained within the frame of these qualities (except for installations), the predominant doctrine of functionalism later lead to the solutions where every m2 of the layout gets its own function.

Phase C is the most important in this discussion. This is where the crucial decisions have to be made concerning the design concept, the appropriate technology, choice of materials, the investment / maintenance ratio, demographic trends and predictions of new technologies.

The design concepts remain the most important task for architects and structural engineers. Several well known attempts have been made to conceive the 'flexible block of flats' (Mies van der Rohe, Stuttgart, and many others), the concept of 'empty space' (Reya, SI), to establish the comprehensive system based on separation of the structure and infill (SAR, Habraken, N). As a rule, all of these concepts also included well elaborated systems of modular coordination. Lately, some radical high-tech concepts comprise demountable houses (HUT by BAAD, GB) or planned short-time buildings to serve only one generation or even less. They may be demounted, demolished or even recycled. Such a case is also the standard American house. It may be considered as evidence of a throw-away society, but also as a commendable recycling system.

In the field of building technology, a long history of development and improvement can be followed, especially after the industrial revolution. There was a constant endeavor to avoid time consuming and wet systems and to introduce industrial, efficient, off-site production of prefabricated elements, put together with dry joints.
The choice of materials is closely connected with the technology. Buildings of wood, clay, brick or straw can be considered as made of 'soft' materials. They are easy to cut and transport, they facilitate the making of small openings, holes and niches of any shape. Their only disadvantage is that they produce dust, waste and noise. One of the best modern examples of the kind is plasterboard; it is easy to cut to fit on site, all dry and widely used in old and new buildings. Otherwise, the extent of concrete structures in the late 20th century does not allow any serious changes. To cut a new door in a concrete wall is of course possible but needs heavy machine tools and the structural safety must be previously checked, especially in heavy earthquake regions.
Phase D is the final state when only radical changes are feasible: to demolish and replace the building or to reconstruct and ameliorate it at a very high cost. The latter is used for listed objects where the cultural and historical values prevail over just functional and physical ones.

Conclusion

The changes in housing are expected, even planned, or unexpected (caused by catastrophes, tiring of material, collapse of the structure, pest invasions...). They can be provoked by the dwellers themselves (the change of the household structure, higher income, desire for higher standards, following trends...) or by outside reasons (like energy crisis, higher safety measures, new regulations, climate changes ...).

Normally every change interferes with the everyday life routine and means a smaller or larger inconvenience at least for a short time. It usually also poses several technical and logistical problems. To make it easier and more convenient, many efforts have been made throughout history.

In the short time of one's life, a change is often unexpected and not wished for. However, professionals must consider the broader aspect. Changes are inevitable, an imminent part of life. It is necessary to cope with them and to manage them in the best possible way.

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