

Tradition and innovation in contemporary Romanian architecture

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ABSTRACT: As the communication possibilities increase the physical distance between people, decreases. In the same time a change of the mentalities takes place and it tends to uniform and unify practically all fields of material products: from cell phones and computers to food and clothing. Buildings are no exception to this trend.

While changes of clothing and food style may not have severe implications in the physical field of the users (the implications on the cultural level are not discussed), the architectural style of the building and the traditions may have important implications both in the way the building is carried out and in the way it is exploited.

However, the different climatic conditions that act in different countries, even though they may be located on the same parallel, dictate different conceptual approaches and different architectural and constructive solutions.

Therefore it is important not to forget the lesson learned “the hard way” by generations of craftsmen and make use of it in the building design.

The paper focuses on some of the traditional building concepts of improving winter and summer thermal comfort by design, as a response to the impact of climatic conditions, in an excessive continental temperate country like Romania.

Keywords: tradition, energy, thermal comfort

1. GEOGRAPHY AND HISTORY

While “urban” today architecture joins the international trend, based mainly on the technology of curtain walls, in the traditional architecture one may find perennial elements, based on logical facts, ascertained by generations of craftsmen and users, determined by the geographic position and the influences of the environment.

The climatic conditions in Romania are very severe: the winters are very cold (this year temperatures went as low as -35°C) and the summers very hot (in the past few years temperatures of over $+40^{\circ}\text{C}$ were quite often). Not only the air temperature gradient is broad ($75 \div 80^{\circ}\text{C}$), but the temperature difference on the horizontal surfaces is about 100°C .

Therefore, traditional architecture has special characteristics that are a consequence of the climatic conditions. And not only.

2. LESSONS OF THE PAST

2.1 Traditional architecture

In this climate there are some features that can be found in the traditional, vernacular, architecture and that resulted from the need to provide a comfortable indoor environment both during the winter and the summer season. The aim is to ensure both thermal

insulation during the winter season and solar protection in the summer.

With some variations, the features can be seen in the traditional houses of practically all Romanian provinces, either of domestic or of religious function.

Since the beginning of the first millennium (IV-th – VI-th century and again in the IX-th and X-th century) the architecture in this part of the world was strongly influenced by Rome and then by Byzantium. The influence of the Byzantine style was stronger in Walachia and more vague in Transylvania and Moldova, where interferences with the features of the western and northern architecture can be felt [1]. Therefore the resemblance with the XIX-th century traditional architecture of Fanar and Galata – neighbourhoods of Istanbul dwelled by Greeks as well as Turks is not accidental [2].



Figure 1: Traditional house, of the XIX-th century

The other current system of windows is the one with interior opening.

Romanian traditional “interior opening windows” (Figure 4) are double - two sashes - both opening towards the interior of the room.

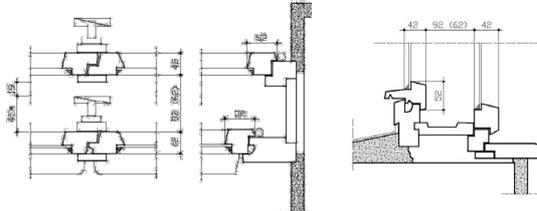


Figure 4: “Interior opening” windows; horizontal and vertical sections of existing windows

In this cases exterior shutters were usually provided or at least roller blinds in the space between the sashes. The role fulfilled by the supplementary device is to protect against the sun, during the summer, to increase thermal insulation by adding an extra air layer during the winter or by... cutting the existent air layer in two, when provided between the two sashes, thus increasing the thermal performance of the air layer.

2.2 From the “Brancoveanu” style to the Neo-romanian style

The same principles have been developed in the urban architecture of the late XVII-th Century (the “Brancoveanu” style, named after the prince under who’s reign it was developed) and can be easily spotted until the beginning of the XX-th Century.

All the features that were presented as characteristic may be found here as well. The scale of the buildings is different, the materials involved, the nature and quality of the decorations (a refined combination of oriental and western motifs). The functions of the buildings that have been preserved are either civilian (palaces: see Figure 5) and / or religious (many more examples of churches than palaces are preserved).



Figure 5: Mogosoia Palace, early XVIII-th century; example of the “Brancoveanu” style (photo: www.romaniatravel.com)

A mention should be made, about the porch or loggia: in the case of churches it is an “intermediary” space, facing the western façade - as the altar is East oriented – for shelter and waiting.

In the case of larger buildings, like the inns or the monastic assemblies, the inner courtyard surrounded by porches is obviously a feature of warm climate,

while the sloped roofs refer to a rainy climate (as can be seen in Figure 6).



Figure 6: Manuc's Inn, XVIII-th Century

In many situations of merchant houses the porches are closed with glass, in wooden frames, thus creating an extra storage space and also a buffer zone that contributes, due to the green house effect, to the heat gain in the wintertime as well as to protect against major winds (as seen in Figure 7a).

Buffer space that protects against the wind is emphasized in the architecture of the late XIX-th century, when the zone of the entrance was covered in a metal and glass skin (Figure 7b). The frame was highly decorated, or simple, wooden, according to what the owner could afford.

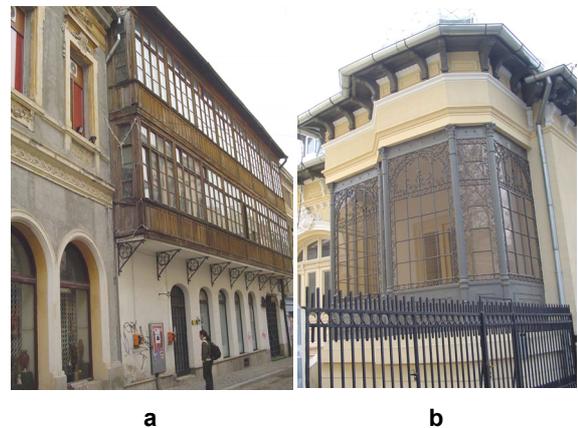


Figure 7: Buffer spaces: closed porch (a) and entrance (b) in the historic area of Bucharest

The influence of the European architecture, especially the French one, is obvious after the middle of the XIX-th century, as two Romanian Principalities unified and eventually became one kingdom.

The need of public buildings led to a period of effervescent building activity and the influence of the classic style is obvious. However, the traditional features have not been forgotten, especially in the traditional architecture [2] and although western and eastern currents influenced the building activity, towards the end of the XIX-th century, the principles established in the previous periods crystallized into what is known as the Neo-Romanian style. Historically it can be included in the Art Nouveau style, but has particular characteristics.

Important buildings or simple dwellings were designed according to these principles, where the intermediary space – the loggia – is never failing. As the buildings were higher, at the beginning of the XX-th century, the “customary opening” windows became less and less used as, along with their major quality, some important deficiencies of the system can be encountered, mostly in terms of exploitation (an abrupt opening of the window might hurt a by-passer, if the window is on the ground floor and facing the street) and maintenance (of the outer sash: exposed to weathering and deterioration and also difficult to clean).

As shown in Figure 8 (The Palace of the School of Architecture – currently the “Ion Mincu” University of Architecture), an example of Neo-Romanian architecture, there are more characteristics of the traditional architecture that can be emphasized: not only the open loggia, but also the proportion glazed – opaque, the small windows, the large eaves and, last but not least, the rich decoration in stone.

The thickness of the walls count for the mechanical stability of the building, as Romania has to withstand very serious earthquakes. It is more than one meter in the basement. It, of course, helps to improve the thermal resistance of the opaque part of the envelope and ensures thermal comfort in winter as well as in summer time.



Figure 8: The Palace of the School of Architecture, Bucharest; detail of the main facade

2.3 “Yesterday”

In the XX-th century, Romania has passed through decades of trauma. Understanding that period’s architecture is understanding the mechanisms that governed everyday life.

During the “Modernist’ period (between the two World Wars), the main boulevards were cut and the high rise apartment blocks were built. The pitched roofs, and the eaves were forgotten. So were the “customary opening” windows. The idea of balcony (or loggia) survived, but so it did in most of the apartment buildings throughout the world.

The local building traditions, based on the climatic factors, begin to dim. Only the exterior rolled shutters remind of an architecture where sun protection should be ensured in summer and thermal protection should be provided in winter. But not for too long. In the early fifties they were considered a luxury and therefore were excluded from the mass dwelling designs (with one or two exceptions ...) [4].

The first major energy crisis effects were felt at the end of the ‘70s. Throughout the next decade the economy became drastic. Energy saving was understood, in a primitive way, as the decrease of indoor temperature, in real life as well as in the standards. The simplest approach was adopted: no heat was coming on the pipes, from the steam-generating plant. The measure affected most of the mass buildings as they were (and still are) provided with thermal agent from such plants.

The end-users’ response to the drastic economy was to look back to the past and adopt what was appropriate from the old principles: the buffer zone, closed with glass is a space that is heated by the sun during daytime; the heat is absorbed by walls, floors and ceilings and transported inside the rooms. It also protects against wind, dust and noise (if properly sealed). The balconies were closed with glass and transformed into “buffer zones”.

An alternative measure was to improve the performance of the windows. It was accomplished by adding, in principle, an extra air layer. Technically this was carried out by adding a rolled blind, a glass sheet, a window on the inner side of the wall [5]. I.g. units were not available for individuals before 1989.



Figure 9: Apartment buildings of Bucharest. Individual interventions over the windows and balconies

So in less than a decade, most balconies and loggias were closed with less elegance than in the nineteenth century house, but efficiently enough. The fact that there is no preoccupation for the image of the building as a whole (see Figure 9) derives from the fact that each end-user, tenant or owner, improved the comfort of his house, without asking permission from anyone (which was not granted anyway and eventually we lived a “war of balconies” when the closings had to be demolished).

2.4 “Today”. State of the art.

The lesson of history appears to have been somewhat forgotten: the contemporary architecture seems to have abandoned the “old” principles. They can only be found in the existence of balconies and loggias in the mass dwelling buildings.

The last decade of the last century witnessed an immense building activity: the explosion of individual dwellings ordered by the newly appeared companies

and enriched people, are a combination of huge space and bad taste. It takes time to process the information, to recover the common sense and return to perennial principles. In many cases the houses are provided with unnecessary curtain walls. The terraces are large and don't protect from the sun any more.

The double sash windows are replaced with the contemporary window with thermal insulated glazing units. The demand of replacing the old is so violent that in many situations the evaluation of the state of the art is not considered necessary (by the owners) and many valuable windows disappear.



Figure 10: Wooden windows replaced with Aluminium window, in the historic, protected area of Bucharest; not even the geometry of the original situation was respected.

The use of i.g. units, PVC and aluminium profiles, with sealing gaskets lead to condensation on the adjacent walls or on the parapets, as the thermal insulation of the parapet is weaker than the one of the newly glazed part. The newly created airtightness of the buffer zone keeps the humidity and the pollution emissions within the space, producing another source of mould on the walls. The balconies are again closed with glass; when they are transformed in extra heated space (extension of the living rooms, usually), in the absence of a coherent hygrothermal study, water condensation and mould appear, due to the airtightness and to the material characteristics. Fortunately in many cases a correct solution is adopted (when the owner does not consider that he can do anything in his apartment and hires an architect to design the changes).

The "international" architectural style that can be seen all over the world leads to buildings that use the same principles. The sensible differences are at the scale of the detail: the specifications have to take into consideration the local conditions.

Curtain walls invaded cities everywhere and the performances of the material overwhelm the old principles. At least for a while. But while at the beginning of the '90s there was no criteria to adopt a curtain wall solution except the price per sqm, today the demands of the architects - the check list - repeat some of the traditional principles: thermal insulation, ventilation and sun protection. Special glazing, shading devices and buffer spaces conquer the market of the architectural design projects. The place of the sun protections resulting from the geometry of the building (eaves, consoles, slabs etc) or of the

traditional sun shading devices (blinds and shutters) was taken by more sophisticated glazing systems (Figure 11).



Figure 11: Headquarters of the Romanian Union of Architects, Bucharest

Voices are being heard that for the Romanian climate roof terraces are not appropriate and there is a movement of influencing the authorities and the owners towards covering the terraces with sloped roofs (the attic it is also a possible usable space).

The use of solar energy, as an alternative, is at the beginning. In the '80s there was a move of providing solar captors on buildings, but today there are few examples of the use of contemporary solar panels, as the prices are still prohibitive for the Romanian market.

3. CONCLUSION

In the era of new materials and technologies, the principles remain, but the means change radically. New systems are also expensive systems.

In Romania, the period of "transition" stated by the politicians works for the activity in the field of construction as well. We are still in "transition". The price still rules the market. Until we can afford to use the new expensive materials and contemporary technologies, we still have to improve what we have inherited, with more traditional means.

Tradition is also perennial. Back to tradition is back to an efficient building, with natural materials, that understands and respects the environment.

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