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FLEXIBILITY OF FLOOR COMPOSITION AND OF DWELLING SPACE AS A RESPONSE TO CONTEMPORARY FURNITURE MARKET DEMANDS

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ABSTRACT

This paper presents the application of the principle of flexibility of architectonic space on the concrete example of flat composition. This example demonstrates that with a proper choice of structural spans dimensions and regular arrangement of sanitary and ventilation vertical assemblies, a structure with high flexibility in terms of flat space organization and floor space organization, can be achieved.

Key words: flexibility, dwelling, flat, organization, furniture organization.

INTRODUCTION

Economic necessity in housing construction always urges for multiple rationalization. On the other hand, our numerous and varied requirements of an appropriated housing space comprise an ever increasing personalization of a flat. The concept realized by Mies van der Rohe in 1927, at his building for the Weissenhof district, is becoming a reality nowadays. The primary reason for flexibility is giving the user a choice. As opposed to designing the individual houses, the housing buildings design, with flats for the market, cannot be clearly defined, as neither the investor, nor the designer, knows the future users' preferences. The user is a variable factor, just as it was in the period of state built flats. The question: what kind of flats should be built, is dealt with by the planners and designers, and particularly by builders, by relying on their subjective assessment. The needs are so varied, that the solutions must be found in the adaptability of the physical structures to as many requirements of the market and users (apart from human adaptability) as possible. When it comes to adapting to the market requirements, then the solution is sought in the variable flats, that is, a flexible floor organization is required. Flat buyers look for the size of flats they can afford. For their money, they demand the flats to be as personalized as it is possible, meaning that a flat space flexibility must be provided. The common way of designing provides a solution with standard floors and standard flats, which are difficult to sell in the market. If the initial concept is that the small flats can be joined into larger spaces, or that large flats can be easily divided, then we have provided that such structure of flats can be easily sold. In this housing buildings design, I have applied this concept wherever it was possible.

Here, a concept will be presented in detail, which best represents the combination of the application of two concepts: variability of sizes and structures of flats, which means flexibility of the ground plan of a composition and the flexibility of flats themselves. In this way a wider assortment of flats in terms of size and organization is obtained, so the flats could be easily adapted to the demands of the market, and personal requirements of the users.

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This concept was implemented in the conceptual design for the housing block called "Kocka" in Skopje, for which the investor ordered a production of town planning project (still not realized). The main characteristics of this town planning proposition were the non-staggered terraced buildings placed along the north-south orientation, and the floor plan dimensions were 20X20 m. The investor's requirement was to offer solutions with maximal usable surface area, that is, without light-wells or too irregular composition, as the flats were intended for the market. The result has been presented in the following pictures. The starting point was the defined form, that is, dimensions of the size. Two opposite facades are free, and two gable walls have no apertures.

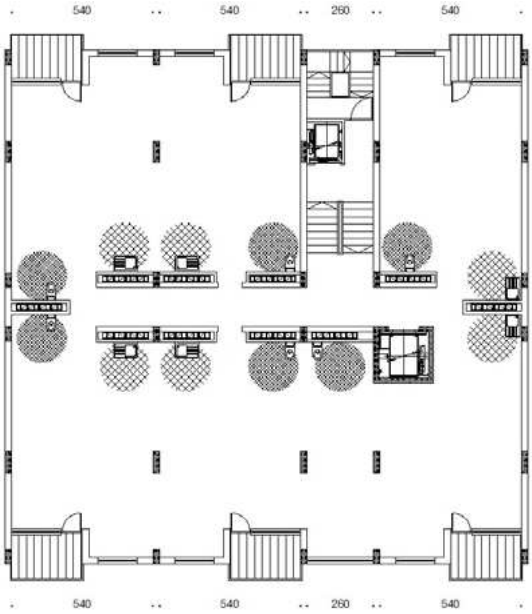

Fig. 1: Basic elements of the structural system of a composition, and arrangement of all ventilation and sanitary verticals, as well as the arrangement of apertures and loggias on the facade walls

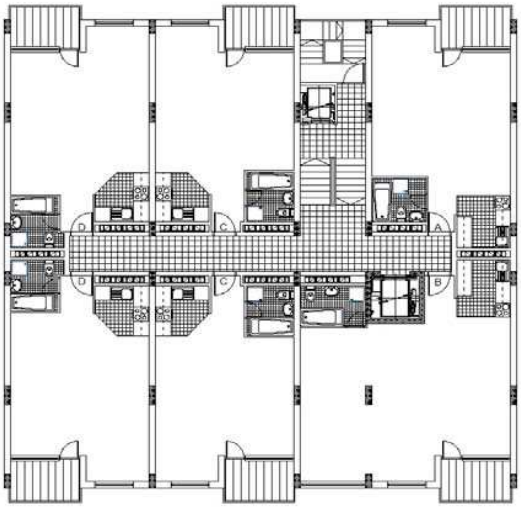

Fig. 2: Primary distribution of composition surface onto the separate flat areas

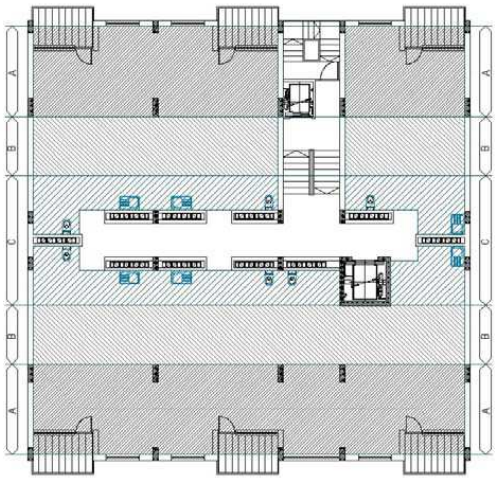

Fig. 3: Composition zoning principle

Zone **A** is the main living quarters zone. Zone **B** is the secondary zone of transversal connection of flats. Zone **C** is the zone of auxiliary rooms in flats, which entirely encircles the central lobby of the composition. A system conceived in this way facilitates variable division of floor surface area into separate dwelling territories. In the following figure, the potential patterns of such structure were presented.

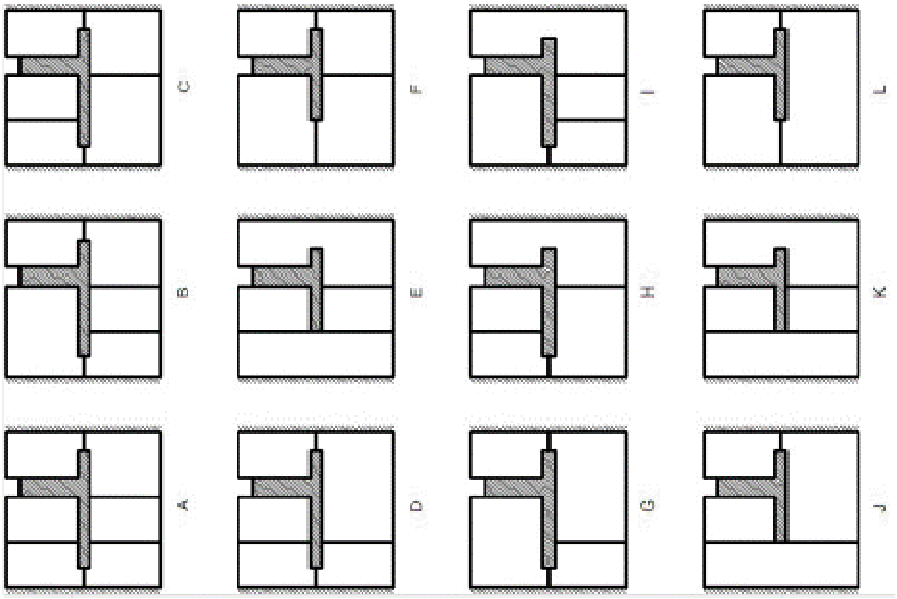

Fig. 4:Patterns with various combinations of flats within a composition

The primary structure of the composition was provided with the pattern A. In the following figures, some other concrete examples of various floor plan examples according to the given patterns were presented, which is only a part of the potential of such solution.

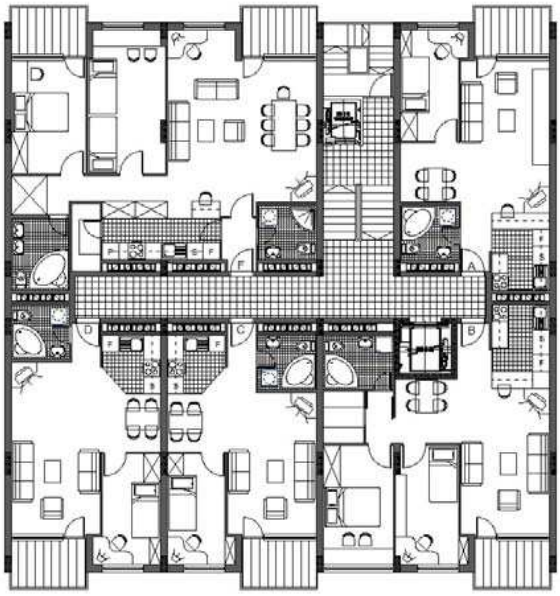

*Fig. 5: The composition with **5** flats according to pattern **B***

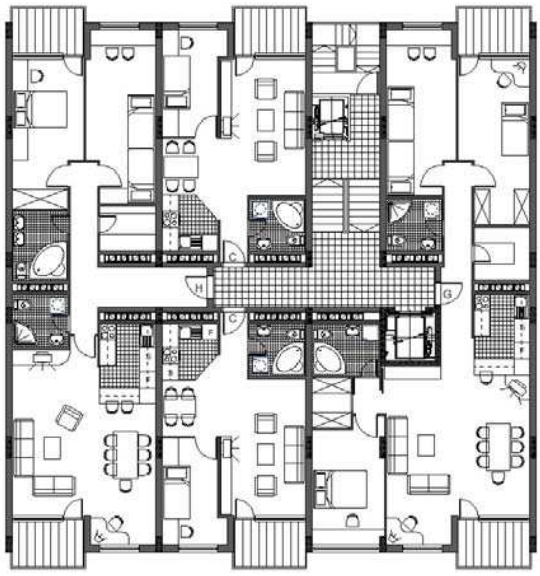

*Fig. 6: The composition with **4** flats according to pattern **E***

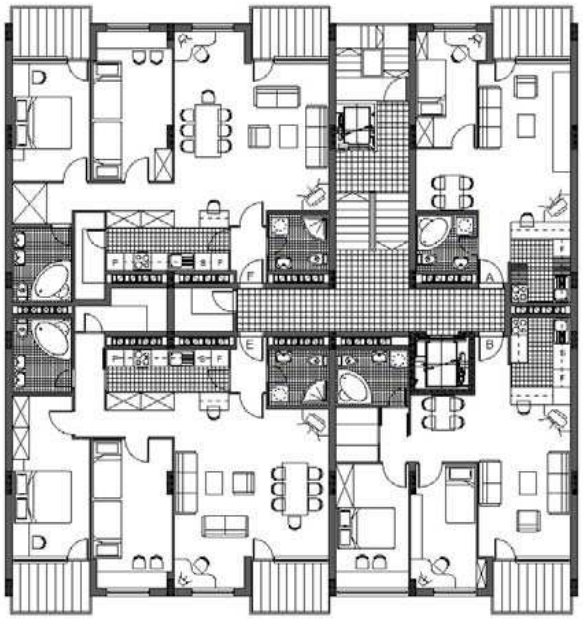

*Fig. 7: The composition with **4** flats according to pattern **F***

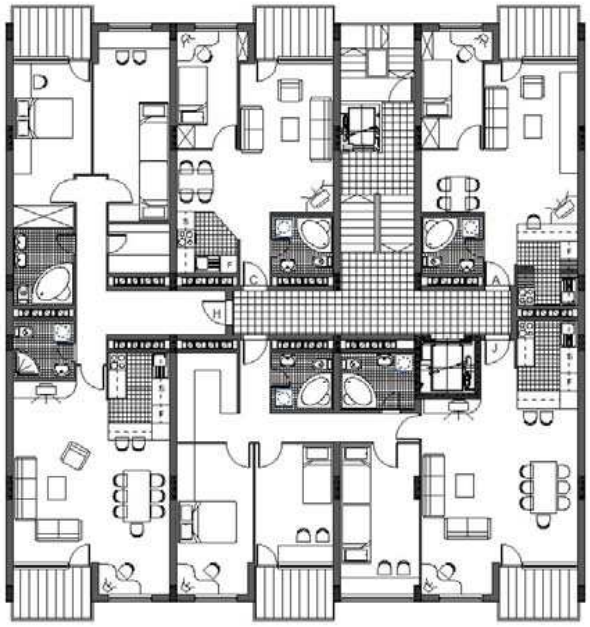

*Fig. 8: The composition with **4** flats according to pattern **J***

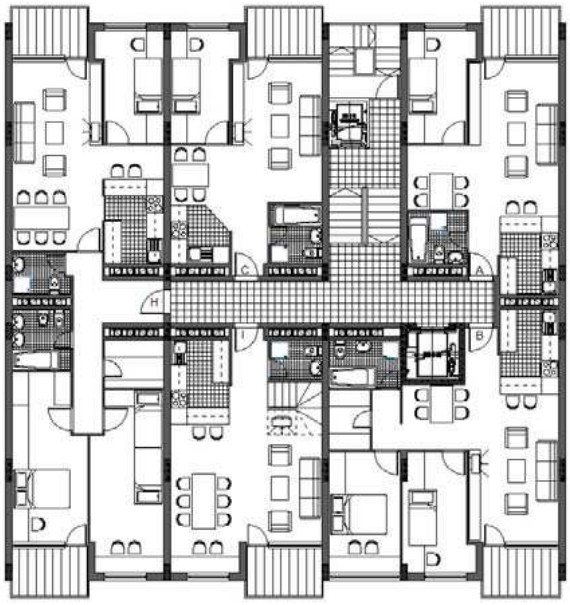

*Fig. 9:The composition with **5** flats according to pattern **K**., with I flat in two levels*

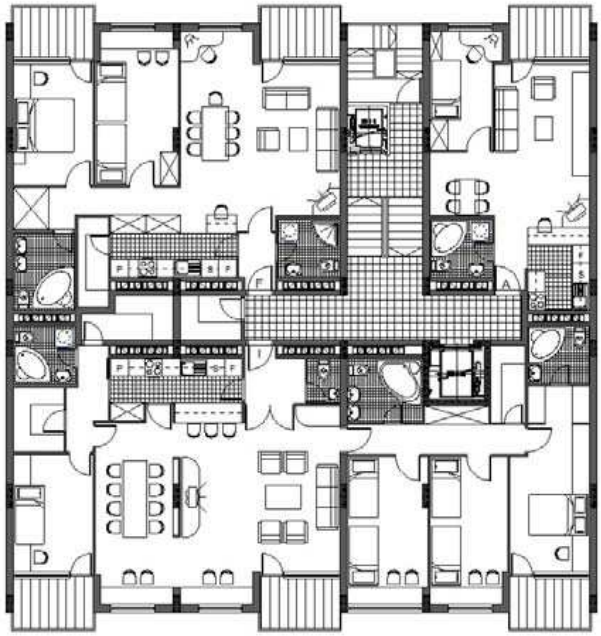

*Fig. 10: The composition with **3** flats according to pattern **L**, with a big flat for the investor*

The primary composition (pattern **A)** is made up of the **A**, **B**, **C** and **D** flats. Joining **C** and **D** flats, a larger flat of **E** type is obtained, or of **F** type, depending on the position in the composition. By joining **A** and **B** flats, **G** flat is obtained, and by joining two **D** type flats, **H** type flat is obtained. Doubling **B** and **C** flats, produces a large **J** type flat. Finally, for the needs of an investor, **B**, **C** and **D** type flats were joined, and an **L** type flat is obtained. All the primary composition configuration flats (A, **B**, **C**, and **D** flats) can be vertically connected, so the duplex variants are obtained.

The flexibility of all the flats of this solution is ensured by the choice of the skeletal structural system, with basic spans of 540 cm, with the columns blended with the walls 25 thick. Great depth of the tract and the adopted span, determined the central position of

kitchens, bathrooms and other auxiliary rooms, and their connection to the artificial ventilation. In order to allow greater flexibility, the entrances were positioned centrally. The variants offered to the market were in some cases the results of the concrete requirements of interested buyers. This is the reason for having the solutions which are not absolutely acceptable from the viewpoint of the professional practice, but their quality is acknowledged when the customers' needs are satisfied and the flats are sold. The following figures present some of the possible variants of flexible organization of certain types of flats.

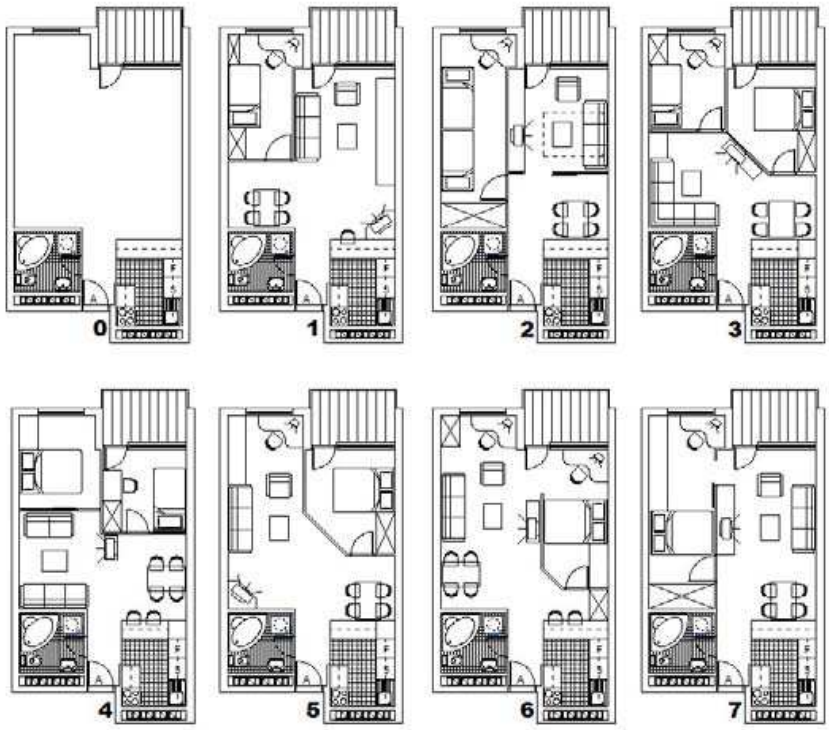

*Fig. 11. **A** type flats and variants of dwelling space organization*

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*Fig. 12:**B** type flats and variants of dwelling space organization*

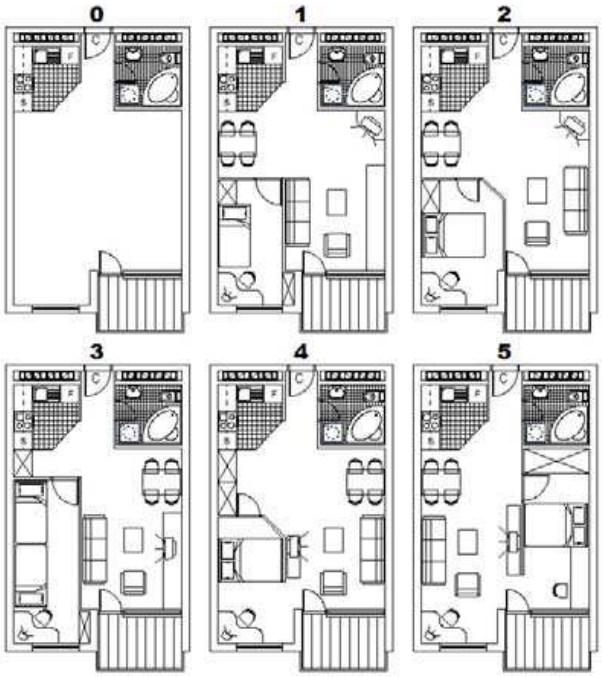

*Fig. 13: **C** type flats and variants of dwelling space organization*

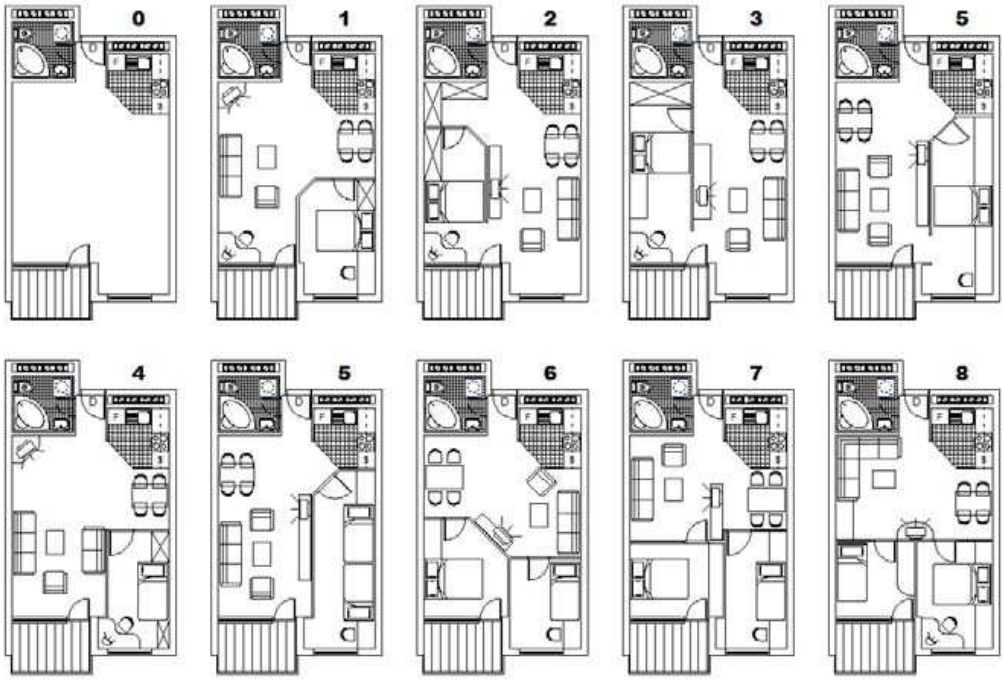

*Fig. 14: **D** type flats and variants of dwelling space organization*

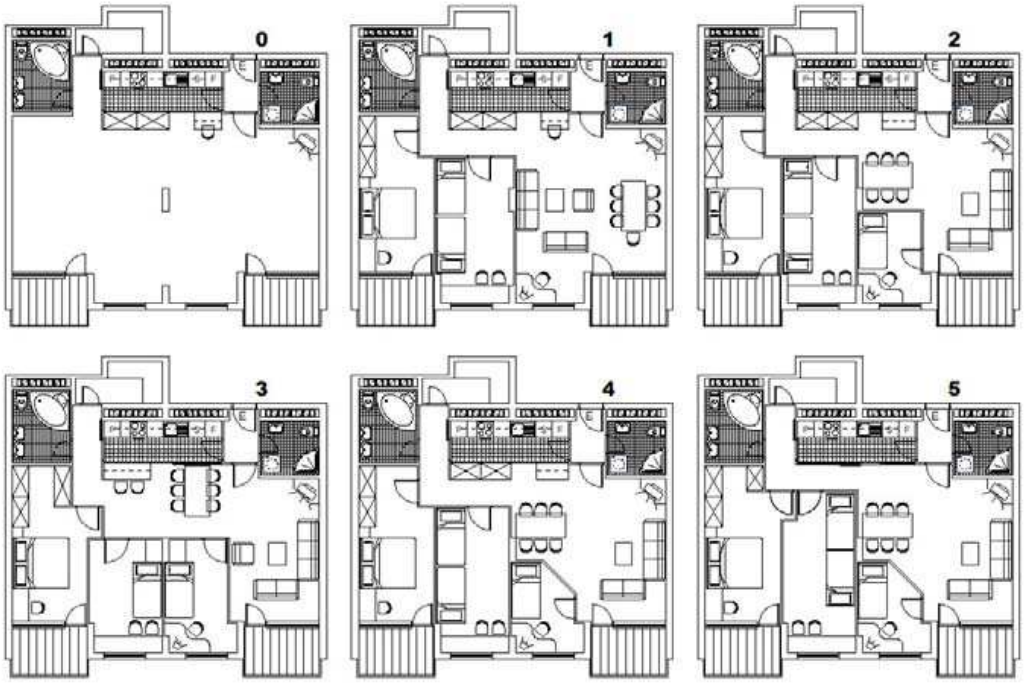

*Fig. 15: **E** type flats and variants of dwelling space organization*

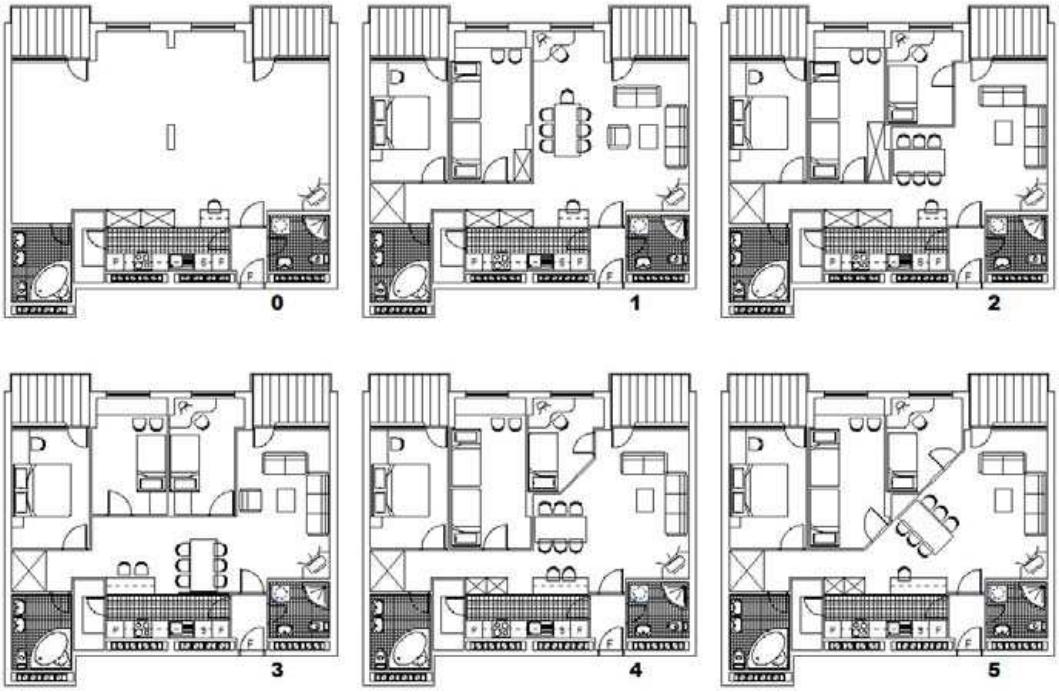

*Fig. 16: **F** type flats and variants of dwelling space organization*

*Fig. 17:**G** type flats and variants of dwelling space organization*

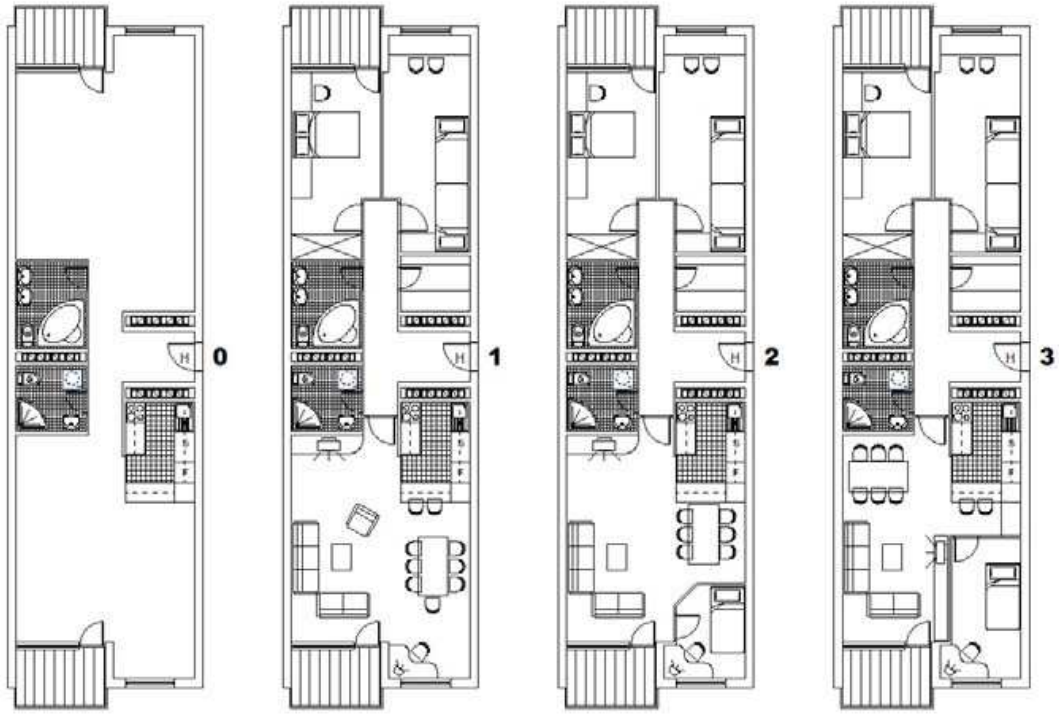

*Fig. 18: **H** type flats and variants of dwelling space organization*

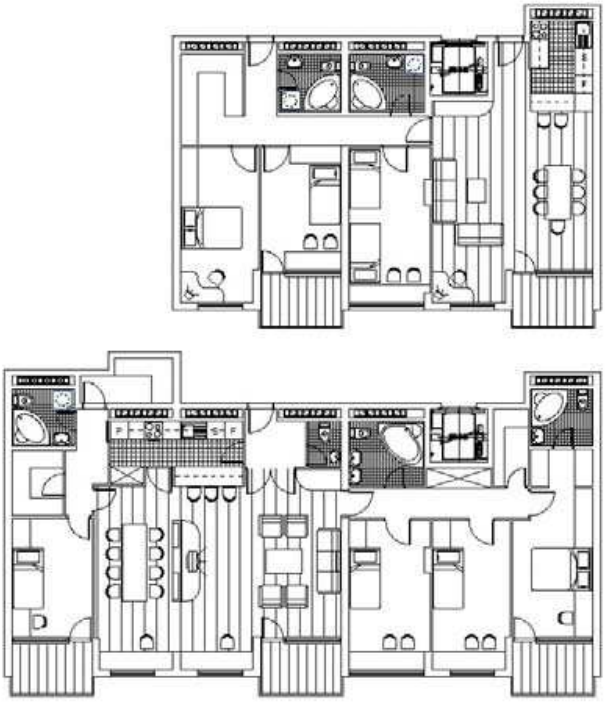

*Fig. 19: Type **J** and **L** large flats*

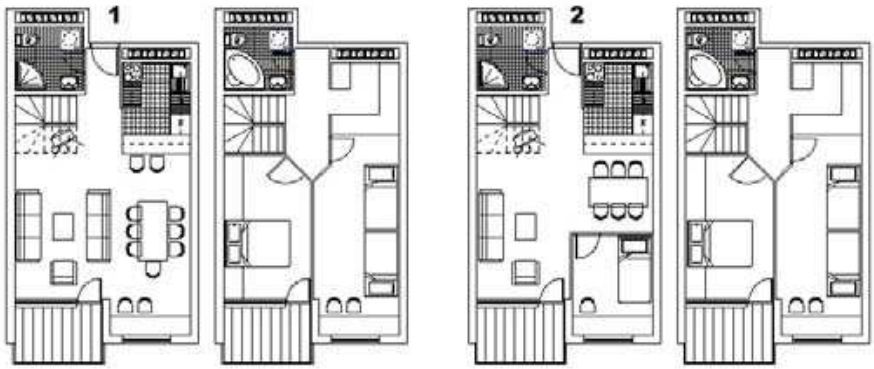

*Fig. 20:**D type flat - duplex** and variants of dwelling space organization*

CONCLUSION

Modern tendencies in flat production, as well as the presented examples, confirm that such approach offers solutions favored by the users, and also by the investors. There are an increasing number of realizations with no classic floor division, but with a complex spatial composition within a structure, where a floor is only a level from which the flats are accessed. For the solution presented here, which was a conceptual design for the housing block called "Kocka" in Skopje, the mutual relations of the organization of certain flats and the organization of the applied composition were harmonized as much as it was allowed by the basic characteristics of the composition and the arrangement of the sanitary fixings and ventilation vertical shafts. This means that an absolute harmonization was not possible, and that the places where the zoning has not been harmonized must be improved in realization through the technical means and measures. It may be expected that such solutions will be

increasingly present in the future practice as a response of the designers to the market demand and users' requirements.

Such approach will require a different treatment of the problem in the future architects' education process. Also, the existing practice from planning to realization must be adjusted to the new conditions. Flexibility of flats and flexibility of floor plan means that the finite number of flats will be known only in the final phase of structure construction. Such concept is a great problem for the bureaucracy of the local public utility services and municipality. They would prefer that the number and structure of flats remain unchanged from the conceptual design to the receiving of the inspection certificate. The consequence of the application of such a concept that there can no longer be a typical floor, a concept which dominated the practice and theory of housing for long. There can be as many floor compositions as there are floors in structures like these. The floors can be connected along all their sides and also vertically. The space of the flat is conceived in such a way that it can be organized according to the requirement of the concrete owner, meaning that it can be completely adapted to the residents' needs. Such solutions are rational, as they have compact volume of the deep wings, regular structural spans and other structural elements as well as the regular elements of installations and ventilation.

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