



Applying the Concept of Eco House in Reality. Concerns and Trends in Design, Arrangement and Optimization of Kitchen Space

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Authors' contributions

This work was carried out in collaboration between both authors. Author BVC designed the study, performed the research analysis and wrote the first draft of the manuscript. Author MC managed the literature searches and the analyses of the study. Both authors read and approved the final manuscript.

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ABSTRACT

Over the years, the role and appearance of the kitchen have changed. The story of the simplistic kitchen begins before the advent of modern man and continues until the early 20th century, when the concept took on a new meaning, becoming a welcoming room with the introduction of running water, electricity, and gas. Nowadays, we witness a mixture of world cuisines, trying to imitate the specifics of the kitchen even at home. The era is also characterized by a tendency to reduce the time needed to prepare food, a phenomenon that is partly explained by the requirements of

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professional life, and technical and scientific progress. Due to the progress of the technical sciences, both the design and the arrangement and optimization of the kitchen (as a living space) have become, as expected, in terms of computer technologies, elements that can be accessible to anyone, without thorough specialized knowledge. In this context, this paper aimed to present the transition from realistic housing design - in the form of models and plans - which was the merit of specialists, to the design of the dream home - through computerized assistance - which today is considered a real opportunity for development, which can also be applied to greenhouses. Starting from the kitchen space and going, in turn, through the stages of design, arrangement, and optimization, the aim was to show that the policies and strategies of good practice that are suitable to be adopted can make the kitchen become one with low impact on the environment. This desideratum can be met by an efficient design of the space, by common sense and meticulous arrangement, respectively by optimizing the storage space, the route of the activities carried out and, the energy consumption. Based on the most frequently consulted literature and good practice guides, it was concluded that the kitchen is by far the space with the most significant impact on the environment, and as such a new approach is needed for it to fit within acceptable limits relative to energy consumption, pollution and waste generation.

Keywords: Ecological house; kitchen space; modern appliances; optimization trends.

1. INTRODUCTION

Over the years, the role and appearance of the kitchen have changed. The kitchen is the art and technique of preparing food for human consumption and includes the practical notions of ingredients and their preparation, the tools used and cooking methods, and the differences between them [1]. It is also associated with the art of dining and gastronomy. The story of the kitchen begins before the advent of modern man, when his ancestors, like many animals, used rudimentary functions in food preparation: cleaning food in river water, taking a consumable part of a corpse or fruit, opening the bark, crushing with hand, or with the help of another object or knife [2].

The discovery of fire was an essential step in the invention of the kitchen itself. One hypothesis would be that the kitchen appeared as a result of a ritual: the collective devouring of the sacrificed issue, after the partial embalming, associated with funeral embalming [1]. This hypothesis highlights the strong ritual and the collective dimension of culinary practices, which an accidental discovery does not make. The addition of products that will substantially change the taste and preservation of food, even in small quantities, was also an important step in the evolution of food and the history of the kitchen. Salt, in particular, played a key role in preserving food, a product that will be used for this purpose until the advent of the refrigerator in the early 19th century.

If now the kitchen is a place where the family gathers around the table, in the evening, to enjoy

dinner with the family, in the past, the kitchen was the place where only the servants had access [1]. In Roman times, for example, the kitchens were annexes of the house, with separate entrances so that the masters did not meet with the servants who worked in the kitchen [2]. After the Industrial Revolution, which took place at the end of the 18th century, the notion of modern cuisine appeared [2], which brought order to a chaotic space. It was equipped with compartmentalized pieces of furniture and storage spaces that allowed housewives to keep the room in which they cooked in full order. At the beginning of the 20th century, the concept of the kitchen acquired a new meaning, becoming a welcoming room with the introduction of running water, electricity, and gas. The kitchen is no longer marginalized, being integrated into the house plan [2]. After the end of the Second World War, more and more women are forced by circumstances to become model housewives, and household appliances are already helping them. Since the Modern Age of cuisine is marked by a second food revolution, the introduction into Europe of food from the American continent.

Nowadays, we witness all kinds of attempts to mix all the cuisines of the world. Not only do we eat from restaurants with foreign culinary specialties, and more or less exotic, but we have come to imitate those varieties of food at home. The globalization of food trade is the main culprit in this regard. Access to such a variety of dishes has never been easier. The era is also characterized by a tendency to reduce more and more the time needed to prepare food, a phenomenon that is explained in part by the requirements of professional life, in part by the

leisure society and even by the market of industrially cooked food. If in the past they were separated from the house, now the kitchens have become the most important rooms. Most of us prefer open space arrangements that include the hall, kitchen, and living room.

The functional-ecological house, of which the kitchen is a part, is perceived as an organism, a system open to the environment [3]. By open system we mean it takes matter and energy from the environment, burns it, and releases it in the form of debris, waste of various types. In this context, the present paper aimed to show the kitchen space from a modern approach, in which the design, arrangement, and optimization are well-defined with the requirements of the current society.

2. MATERIALS AND METHODS

Although currently, the computer technologies in the form of software such as SweetHome 3D, Home Designer and others [4], allow us to think, design and arrange to the smallest detail the living space, without requiring advanced knowledge in the field of construction, of architecture, landscaping, and interior design, however, we also need an integrative approach in design, arrangement, and optimization, with the use of resources and environmental protection. As such, the consultation of the specialized literature and some guides of good practice [5,6,7], are elements that were the basis for shaping this study.

Several elements were also taken into account to characterize the kitchen space, configurations and functional areas [8,9], namely the types of kitchens [6,7], to have an overview of what needs to be thought, adapted and achieved, especially

with the environmental requirements specific to ecological houses.

For example, a series of comparative studies were carried out between various specialized blogs, including sites regarding elements of good practice in the design, arrangement, and optimization of the kitchen space. The most frequently encountered information was collected, analyzed, and put together, thus generating a study like this one, with a limited character, based mainly on good practice articles published on blogs and specialized sites.

3. RESULTS AND DISCUSSION

3.1 Design, Arrangement and Optimization of Space. Types of Kitchens

Today, the kitchen is the place where we spend more and more time, cooking, or having fun with family and friends, so space must reflect, more than ever, our lifestyle. Depending on the house design lines and, especially, the style of the household appliances, we can also choose the style of the kitchen [10]. It has evolved in parallel with the evolution of technology, the progress of society often emphasizing the need for users to have products and services that ensure a higher degree of comfort and safety [11,4].

Nowadays, also due to the progress of technical sciences, both the design and arrangement and optimization of the living space have become, as expected, in terms of computer technologies we have [11,4], elements that can be accessed by anyone without specialized knowledge, that is, you do not have to be an architect to design or a landscaper to arrange.

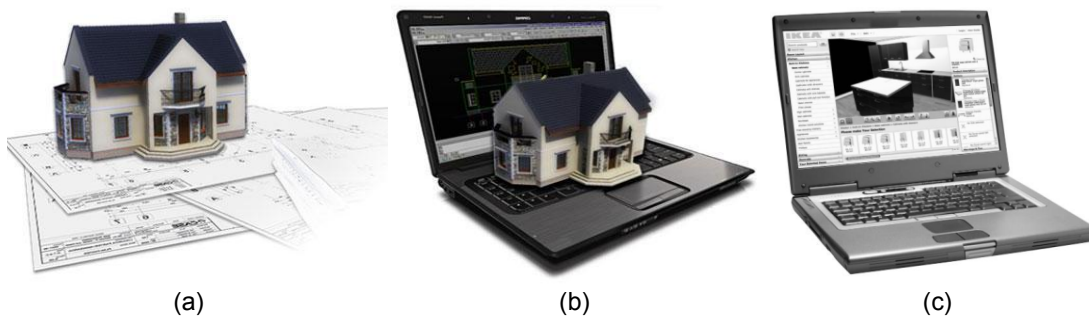


Fig. 1. Stages experienced by the design, development and optimization of space [10]:a) manual design (made on paper); b) assisted design and arrangement;c) design, arrangement and assisted optimization

In these conditions, the transition was made from the realistic design of the house - in the models and plans form (see Fig. 1) which was the merit of specialists (architects, builders, decorators, etc.) to the design of the dream home (as shown in Fig. 2) [12] by computerized assistance - which we consider today, even if we are not specialists, a real development opportunity, which can be applied to ecological houses.

The ideal configuration for kitchen space is influenced by the geometry of the room, but also by the family's choices as a lifestyle or by the special storage needs. In a house with a kitchen in an open space, a kitchen with an island is suitable, and in an apartment with a small kitchen, where it is not often cooked and where the dining area must be provided, the option could be the kitchen in line. Regardless of the shape of the kitchen, it must be thought as efficiently as possible, respecting the ergonomics rules, implicitly those of resource and environmental protection.

For most people, the kitchen is the room where they start their mornings, but also the place where they spend their most relaxing moments before bed. After waking up, they go there for the first time in search of a cup of strong coffee, and there they return with their family, to depend on memories of the events of the day, and to serve a portion of something good.

As such, the design and arrangement of the kitchen are much more accessible if you start by correctly measuring the dimensions of the room (from floor to ceiling, the distance between the walls and from each corner to the door), respectively the size of doors and windows, with notation and taking the calculation of the geometric arrangement of the room and the main things that come placed in the kitchen (radiators, pipes, ventilation systems, or other architectural features), as shown in Fig. 2 [5,13]. All this takes into account the positioning of switches, sockets, water and gas pipes, although they can be moved along the way.



Fig. 2. Example of design, arrangement and assisted optimization of the kitchen [12]

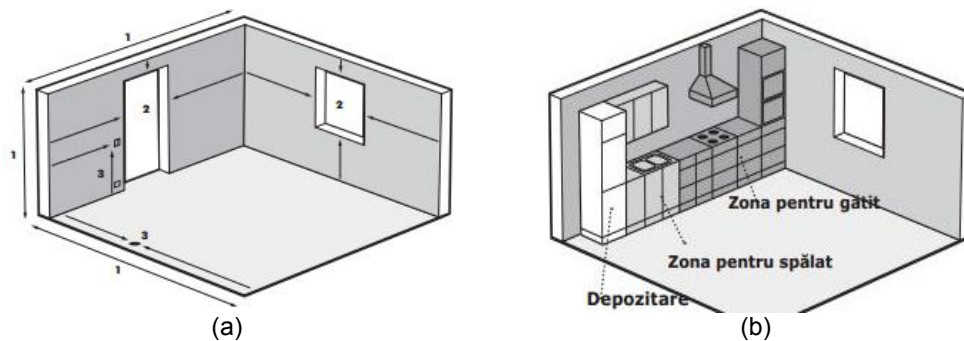


Fig. 3. Reference stages for kitchen design, arrangement and optimization [11,4]: a) manual realization; b) assisted realization

The small size of a kitchen can sometimes limit design and arrangement options, but it all depends on perspective and planning. Design ideas for small kitchens need to be properly thought out, to increase the amplitude of the entire space. The layout of a small kitchen must also be carefully planned, functional, and practical [8]. From the spatial configuration, the kitchens are differentiated according to the number of work fronts, their shape and arrangement within the whole, the distribution of the storage areas and the way of integrating the dining place; all these elements making it possible to define an extremely large number of types of kitchens, some examples illustrated in Fig. 3.

However, in the most common situations, kitchens have basic geometric configurations, as shown in Fig. 4; the location of the elementary endowments of a kitchen establishing the main routes and influencing the optimization of the circulations and the correct relation of the different work surfaces.

Compared to a randomly designed kitchen, a kitchen structured on functional areas and storage levels [9] - shown in Fig. 5, tends to reduce roads and working hours by up to 20%, thus contributing substantially to the harmonization of activities carried out with the reduction of energy consumption, directly, and with the transition to the principles of operation of the greenhouse, indirectly.

- The supply area includes consumables, food that is kept cold or at room temperature, refrigerator or refrigerator. It is recommended to locate near the access area, sizing according to the number of

family members and the pace of supplies, respectively the use of special mechanisms such as sliding pantry or rotating basket.

- The storage area includes frequently used goods (crocery, cutlery, glasses, etc.). It is recommended to place in the vicinity of the cleaning area, sizing to 1/3 of the storage space and using special accessories such as separators.
- The cleaning area includes the sink, the dishwasher, the trash can, the detergents and the cleaning utensils. It is recommended to place this area in the vicinity of the preparation area and to use special drawer-type systems.
- The preparation area includes work utensils, small electrical appliances, food processors, spices, etc. It is recommended to place it between the cleaning area and the cooking area, lighting and generous sizing of the work surface.
- The cooking area includes the hob, hood, oven, microwave, cooking utensils, etc. It is recommended to place it in the vicinity of the cooking area, to ergonomically position the oven at (semi) height etc.

By ordering, relating, and dimensioning the appropriate specific spaces (in the form of functional areas), a correctly functional and sustainable organization of any type of kitchen can be achieved. For easy access, it is also recommended to distribute the goods according to their frequency of use, so that the most frequently used goods must be positioned in the space delimited by the lower half of the suspended furniture and the upper half of the bodies under the counter. An example of the relative positioning of goods is shown in Fig. 6.



Fig. 4. Various geometric configurations of the kitchen space (micro-aspect) [11]

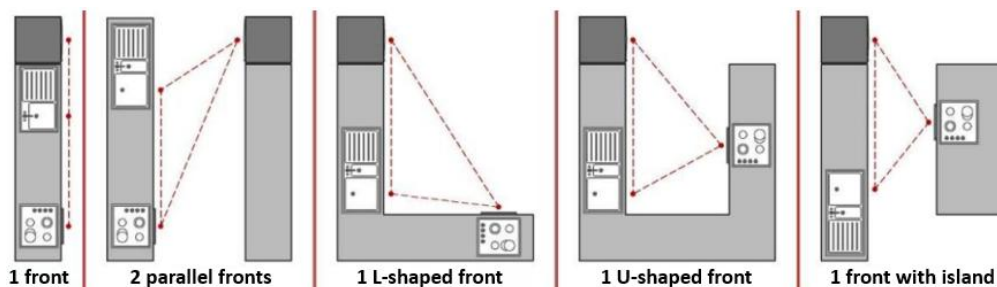


Fig. 5. Various geometric configurations of the kitchen space (macro-aspect) [4]

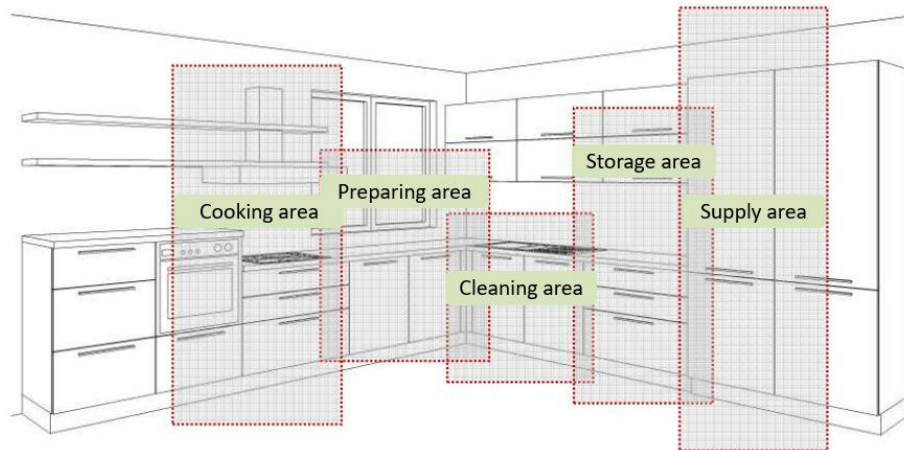


Fig. 6. Configuring the kitchen space on functional areas [4]

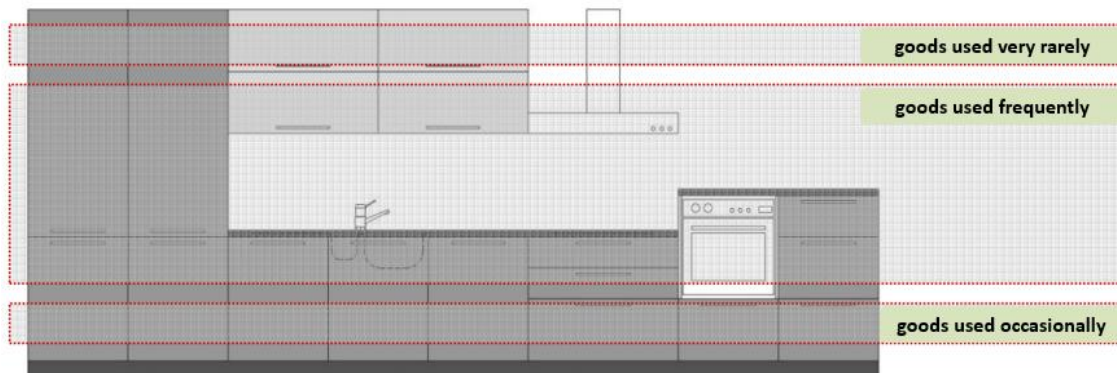


Fig. 7. Configuring the kitchen space in relation to the goods positioning [4]

Regardless of the design style chosen for the kitchen space, the functionality of the room is paramount, followed later by the design and decoration. To streamline the specific activities of the kitchen, the design of the arrangement scheme is made with the household appliances with frequent use [8].

By making the most of storage space, the use of special accessories and mechanisms for furniture ensures extra comfort and functionality. The ideal configuration for the kitchen space is influenced by the geometry of the room, but also by the family's choices as a lifestyle or by the special storage needs. In a house with a kitchen in an open space, a kitchen with an island is suitable, in an apartment with a small kitchen where it is not often cooked, but where the dining area should be provided, the option could be the in-line kitchen. Regardless of the shape of the kitchen, it must be thought of as efficiently as possible, respecting the rules of ergonomics.

One of these rules states that there must be a generous piece of countertop between the sink and the stove, the location of the latter as well as the refrigerator being also particularly important relative to the triangle of activities in the kitchen. The kitchen work triangle is a concept often used in the field of interior design [8], which refers to the recommended relationship between the areas for cooking, storage, and preparation.

The ideal kitchen is one where the beneficiary can move effortlessly in the center of the work triangle, without long interruption of activity. As such, taking into account all the elements presented above, it is appropriate to make a presentation of the most common types of kitchens. Kitchens can take the following main forms [6,7].

3.1.1 Single wall kitchen (or in-line kitchen)

The so-called line kitchens are perhaps the most common, especially in old apartments with less

generous spaces. Compact but functional, they require an orderly chef. Kitchens on a wall also allow the location of a dining area in the same room, often the table being used as an auxiliary worktop. Unfortunately, the temptation to overload such a kitchen turns cooking into a kind of obstacle course.

Inline kitchens, all appliances, and cabinets are placed on a single wall. This layout is suitable for narrow kitchens, for small or medium-sized homes, or if only one person works in the kitchen. If you use this layout for a large kitchen, there is a risk that there will be too much space between work areas. Use double rows of suspended bodies or very high bodies to make the most of the space on the wall.

Advantages: compact and economical arrangement, respectively efficient and functional configuration requiring a good organization. Disadvantages: cannot place many appliances, positioning a microwave on the counter will waste 50 cm; the food storage space is practically limited to the refrigerator and possibly to one of the suspended bodies.

3.1.2 Kitchen on two walls (parallel fronts)

Kitchens of this type offer much more storage space under the counter. It is a desirable configuration for narrow kitchens (2.5 m), where another dining space has been provided, as can be seen from Fig. 8.

Advantages: more storage space, the worktop housing all appliances, and the arrangement allows the oven to be placed above the level of the worktop. Disadvantages: the dining area is sacrificed for better storage space and ergonomics.

3.1.3 L-shaped kitchen

For the placement of an L-shaped kitchen, a room with sides of at least 3 m is required. This type of kitchen is among the most ergonomic ways of organization due to the triangular shape that fits very well with the production circuit. Everything is at hand without being crowded. The countertop space is generous. The sink should be placed at the top of the L, and the hob and refrigerator at the end of the sides, as shown in Fig. 9.

Advantages: efficient organization, perfectly molded on the productive circuit; short distances between different areas; adequate storage space and generous worktop. Disadvantages: implies the existence of a relatively large room; for a smaller room it is recommended to use a corner solution with a mechanism that increases the storage space and facilitates access.

3.1.4 U-shaped kitchen

A U-shaped kitchen provides plenty of work and storage space. It is recommended that the side forming the base of the letter U be at least 3.5 m. In order to respect the production circuit, the sink must be placed on this side which is usually positioned on the window. U-shaped kitchens, as shown in Fig. 10, can also be configured in spaces with a narrower base, but the minimum to be able to place the bodies and open the doors is 2.4 m.

Advantages: efficient organization, perfectly molded on the productive circuit; acceptable distances between areas; adequate storage space and the existence of an auxiliary worktop that can accommodate appliances. Disadvantages: requires a relatively large room.

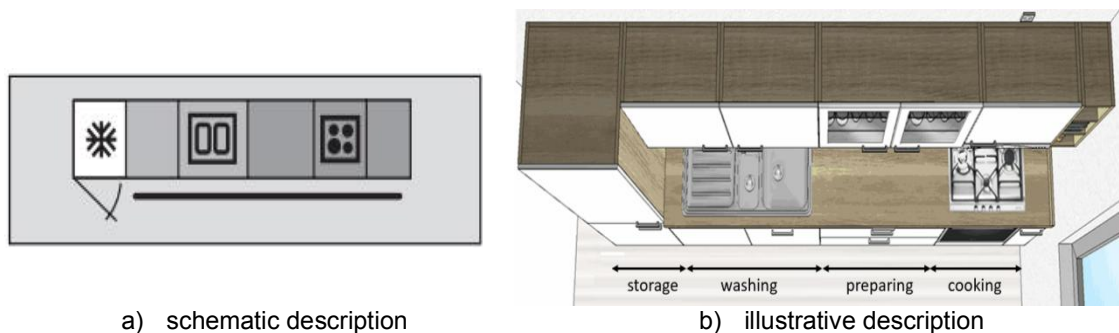


Fig. 8. Configuring the kitchen space on a single wall [4]

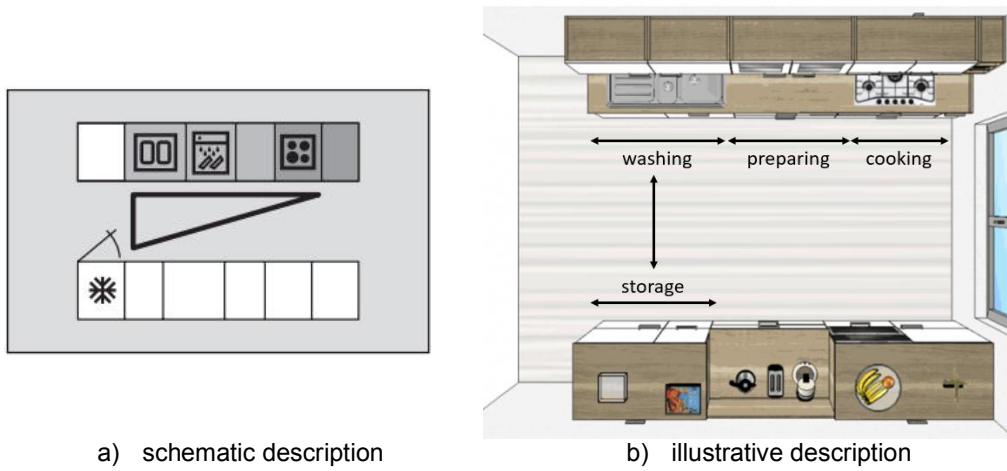


Fig. 9. Configuring the kitchen space on two walls [4]

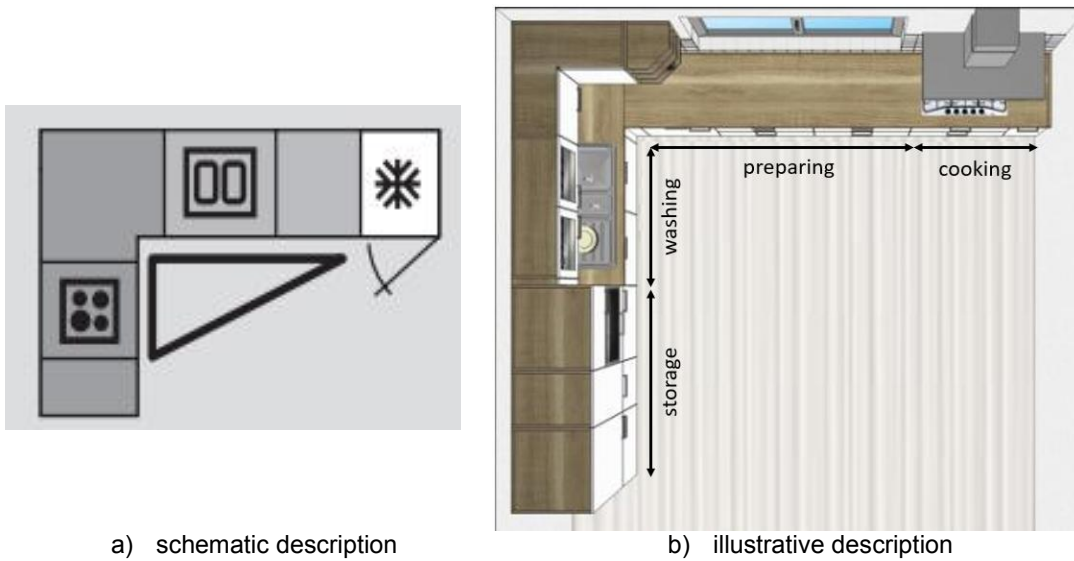


Fig. 10. L-shaped kitchen space configuration [4]

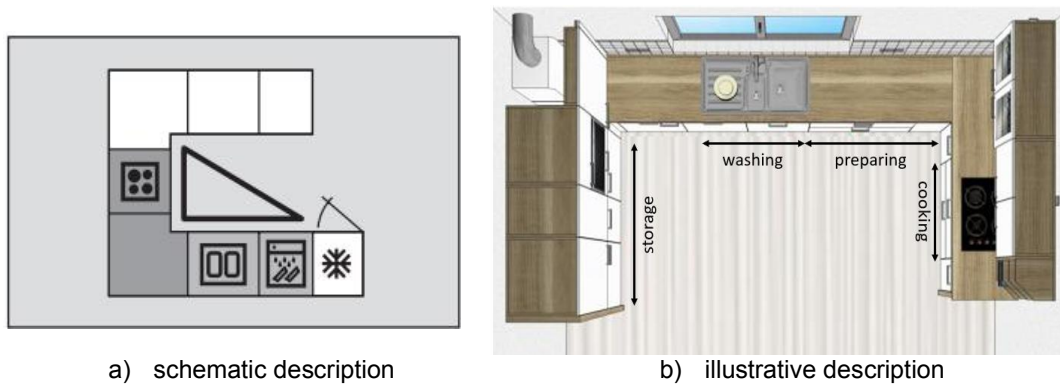


Fig. 11. U-shaped kitchen space configuration [4]

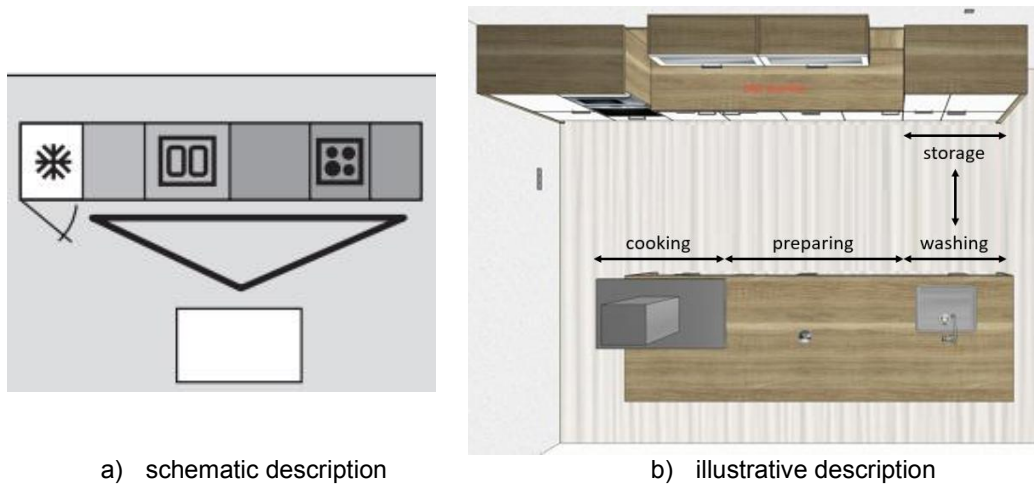


Fig. 12. Configuring the space of kitchen with island [4]

3.1.5 Kitchen with island

The opening of the kitchen to the living room and dining room in a modern vision has led to the emergence of a new type of kitchen - the kitchen with island. Technological development in recent years has introduced the extractor hood and a full range of built-in appliances that allow greater freedom of arrangement because they are more efficient and more compact. The island is an attractive solution that allows communication between spaces, but at the same time delimits the kitchen from the dining area, as shown in Fig. 11.

Advantages: well-adapted configuration for large spaces; open access and traffic; adequate storage space and generous worktop. Disadvantages: ergonomics can be low if the operational flow is not well thought out; its location implies the existence of a large room and the high purchase price.

3.2 The Functionality of Kitchen Space. Other Types of Kitchens

Regarding the kitchen space, rarely limited, it is recommended to make an arrangement that takes into account the following aspects:

- the space between the countertops must be 1.3-1.5 m (room width 2.5-2.8 m); if the length of the room is greater than 3.5 m it is desirable to orient towards an L or U type arrangement.
- an ergonomic production circuit is provided only if the sink, hob and refrigerator are properly placed;

- the dishwasher must not be far from the crockery or the place where the food is served;
- the refrigerator must always be located close to the door, so the configuration can be developed to create a dining area, at the height of the table (75 cm) or the bar (110 cm);
- it is preferable to leave a place as large as possible between the hob and the sink for the worktop, which must be 80-120 cm.
- it is recommended that the sink be placed on the island, and the side with built-in appliances be configured only with high bodies to create enough storage space.

What model (style/design) of the kitchen do we choose? The kitchen model depends mainly on the user's preferences. However, the kitchen furniture must match the other arrangements in the house, so if you like the vivid colors in the kitchen (yellow, red, purple) you should opt for a modern variant. If you want a kitchen that is always fashionable, choose a classic model. According to the style of the kitchen space, there are kitchens in style [7]:

3.2.1 Minimalist

The minimalist kitchen seems the easiest to set up, but this simplicity requires more attention and more care in choosing the furniture and the few details that will be left in sight. For example, it is recommended that the furniture incorporate the refrigerator, stove, washing machine, dishwasher, and trash can. The seats will have the simplest models both in terms of structure

and in terms of prints (which are completely missing or barely detectable).

3.2.2 Ethnic (rustic, traditional)

This style of interior design will be dominated by massive pieces of furniture, mostly made of wood. Of course, any wooden object will have to be in the natural shade of the wood from which it is made, no matter what it is. Besides, it would give the whole room a bohemian and rustic air at the same time a few towels placed here and there, a collection of decorative plates, clay bowls, clay cups, stylized wooden spoons, or decorated eggs, placed on shelves dedicated to them exclusively.

3.2.3 Classic / vintage (comfortable)

The main advantage of classic kitchens is that they never go out of style. However, the style of the furniture does not require a certain configuration. Of course, for a classic piece of furniture, a configuration with a decorative hood and a corner hob will always look good, but also the version with an island or bar suitable for large, modern spaces is attractive.

The main features of a classic kitchen [7,14] include cassette front that can be patinated; warm colors (ivory, beige, white) or natural wood; matte finish in general, but there are also kitchens with glossy cassette front, the fronts can

be made of solid wood; decorative elements: cornice and pilasters, hood; antique handles, porcelain, inserts, possibly even different designs; glass bodies are decorative elements, finely crafted details, and other accessories (woven baskets) that complement the other elements very well.

In addition to a classic kitchen, appliances can be chosen from a classic range for extra charm. Depending on the furniture chosen, the appliances can be modern with a lot of stainless steel without undermining the "classic" image of the furniture.

3.2.4 Modern (contemporary)

Modernism goes beyond minimalism - even if they have common details (simplicity of furniture), the first style will always have more decorations and more colors. A modern kitchen allows you to choose upholstered chairs with a geometric print, or plastic and metal chairs: it is important to fit into the general aesthetics of the kitchen.

Modern furniture is chosen by those who want to compliment a contemporary townhouse. It can draw through the straight lines, the contrast between the materials. Modern kitchens can be made of less expensive materials but with a special effect due to the intelligent combination of elements.



Fig. 13. Configuring the space of classic kitchen [15]



Fig. 14. Configuring the space of modern kitchen [16]

The main features of a modern kitchen:

- the fronts can be glossy, lacquered or wrapped; even covered with glass, but elements that imitate wood or other natural materials can also be used
- forms and materials in bold combinations (floating islands)
- very large color palette on the fronts of doors and countertops
- possibilities to choose the handles incorporated in the front by milling the edge
- modern countertops with special shapes (thermoformable composite)
- stainless steel decorative hoods for a special look
- multiple lighting options, including RGB to change the atmosphere according to the mood of the tenants; all existing technical elements can be installed on the configurations with modern fronts, without limitations.

3.2.5 Industrial (pure utility)

An industrial style kitchen will be dominated by pragmatism: pans and all cooking utensils will be at hand, and the furniture will be as little and as small as possible. A functional island cannot be missing, where some of the cooking tools, some non-perishable food, and other useful objects in the kitchen will be stored. Most furniture products will be made of a lot of metal and dark wood.

3.2.6 High-tech (professional)

The high-tech style appeared in the '70s, gaining more and more space in our homes and is part of

the group of ultramodern and minimalist home decorating styles. Currently, high-tech style kitchens are among the most sought after types of kitchen furniture, are especially sought after by those who want to arrange their kitchen space according to the latest trends in the field.

3.2.7 Combined can include any design combination presented above

According to the configuration and complexity of kitchen furniture, the following relationships are defined: functional vs. beautiful, natural vs. artificial, mass production vs. custom space, grand vs. optimal (harmony of proportions), sophisticated vs. simple, closed vs. open, expensive vs. cheap, etc. In most cases, very small homes do not allow the allocation of a room for kitchen design. In this context, compact rotating kitchens are one of the best options. The very small apartments and studios, as well as the limited spaces in the attics of the houses, force us to choose very practical furnishing and equipment solutions.

This is how the concept of the compact kitchen was developed, which occupies an extremely small area but satisfies the essential requirements of functionality. The compact kitchen can be placed in the living area, in a living hall or on an enclosed balcony, if you want to save space in the room.

In general, compact kitchens have a minimalist design and include a sink, hob, mini-fridge, and storage space for cooking utensils. The compact category includes rotating compact kitchens, which allow the incorporation of crockery and a microwave oven. Older models come with an oven or dishwasher. The compact rotating

Table 1. The trend of arranging the kitchen space - minimum housing requirements

People / family	Rooms / dwelling	Place for table(m ²)	Kitchen (m ²)	Storage spaces(m ²)	Usable area (m ²)	Built area (m ²)
1	1	2.50	5.00	2.00	37.00	58.00
2	2	3.00	5.00	2.00	52.00	81.00
3	3	3.00	5.50	2.50	66.00	102.00
4	3	3.50	5.50	3.50	74.00	115.00
5	4	3.50	6.00	4.00	87.00	135.00
6	4	4.50	6.00	4.50	93.00	144.00
7	5	5.00	6.50	5.00	107.00	166.00
8	5	6.00	6.50	5.50	110.00	171.00

* Minimum areas provided by the Housing Law no. 114/1996 (updated)

kitchen is an excellent solution for bachelor homes, for young families without children, for people who occasionally live in an apartment or studio, or for people who spend very little time at home, therefore they use the kitchen extremely rarely. Such kitchens can be made to order by a design company (to better harmonize with the style and color of the interior) or can be purchased ready-made.

According to the functionality that the kitchen fulfills with the current requirements of the users, we have three types of kitchens: the bachelor kitchen, the family kitchen, and the kitchen of cooking enthusiasts.

3.2.8 The bachelor's kitchen

The simplest and most rudimentary kitchen, equipped with the bare necessities, which usually belong to an unmarried person or a young couple. The owners of this category do not cook much, either due to lack of time or simply because they do not like this occupation. A bachelor or youth kitchen is rather a kitchenette, which does not lack the refrigerator, microwave, sandwich maker, coffee maker, or electric cup. In short, home appliances that help young owners replace cooked cooking with semi-prepared dishes or simple and especially quick menus: a sandwich, an omelet, an envelope soup, a frozen pizza, or a portion of french fries. Of course, the space in which the rudimentary cooking activities take place is often very small, and its furniture is limited to a few bodies.

3.2.9 Family kitchen

This category, as its name suggests, belongs to family members, who value home-cooked food. This reason makes them invest in arranging a comfortable, well-equipped kitchen, where they can prepare all kinds of food for the family. The space in which the activity of preparing home-

made goodies takes place must be quite generous, to allow the design of kitchen furniture provided with many storage spaces, with a comfortable work area, with a comfortable dining area. and with all kinds of modern built-in appliances: hob and oven, refrigerator, and dishwasher. In addition to the built-in appliances, the family kitchen does not lack appliances that facilitate the food preparation process, led by food processors.

3.2.10 The kitchen of cooking enthusiasts

The third category usually belongs to people for whom cooking is more than a necessity. It's a real passion. For these people, no amount is too high when it comes to furnishing, equipping, and equipping the kitchen at home, the process of preparing food being more important than the food itself. Such a kitchen is, as a rule, very spacious, arranged in a modern, industrial style, with the most efficient equipment, almost as efficient as those in professional kitchens. The most important area of kitchens in this category is the worktop, the place where the owners can unhindered their culinary passion.

4. CONCLUSION

How the living space is configured, as well as the kitchen space, which is supposed to be the focus of the study and we perceive as space with the most significant impact on the environment - from the perspective of resource consumption and activities, brings us into the position of rethinking everything concerning environmental protection and conservation of resources. A well-thought-out living space (kitchen in this case), adapted to society's requirements and harmoniously outlined concerning the environment must take into account, as we have shown, a wide range of factors - starting with functional zoning and ending with functional optimization of equipment and workspace.

Through this paper we tried to show that the trend in design, arrangement, and optimization of the very interactive living space - as we consider it to be the kitchen, must take into account both real estate development policies specific to today's consumer society, but, in particular, to adapt to environmental protection strategies, in which the concept of the ecological house has many valences, such as optimizing energy consumption, optimizing the use of water resources, selective waste collection, etc.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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