RELIVING - Rethinking the interior architecture during and after Pandemic situation

Nicolás Ramos González¹, Gabriella Medvey², Ágnes Borsos², Erzsébet Szeréna Zoltán²

¹University of Pécs, Faculty of Engineering and Information Technology, Marcell Breuer Doctoral School, Boszorkány Street 2, 7624 Pécs, Hungary.
²University of Pécs, Faculty of Engineering and Information Technology, Boszorkány Street 2, 7624 Pécs, Hungary.

ramos.gonzalez.nicolas@mik.pte.hu

Abstract. Architects are currently facing the understanding of the transformation of the work practices of people, teams and organizations in response to COVID-19 pandemic. Europe is still in the gloom of this pandemic and it can be seen changes in the office-domestic workplaces. These places have been mutating during the last year, they have been transformed according the new requirements. Individuals have adapted their homes and companies are already thinking the office space according the new reality. This study aims to determine how the interior space could adapt in order to provide comfort and well-being in contemplation of the contemporary and near future situation. The principal objective of this project was to create a tiny piece of space which contributes to create our “existence maximum” in a small space. To test the hypotheses that with the creation of a piece of furniture it can help us in the transformation of the domestic and office interior space is the key to make sure that people feel safe and work comfortably. Contemporary source material was used to examine the evolution of the pandemic and how it affects the individuals’ psychological behavior during this time. The findings provide a solid evidence base for the future will be a hybrid reality, where knowledge employees will continuously be working from home most of the time. It is evidently clear from the findings that as modernist architecture could be understood as a consequence of the result of some diseases of that period. Nowadays, architects have the responsibility to think how the interior architecture could be improved in order to make the people feel safe, comfortable and well connected where individuals could learn to live together confronting of our own homes and our own workspaces. The result is the design of an ergonomic workstation which contemplates the users’ requirements for working, providing adaptation to different working positions, mobility within the space and transformation according to individual needs. In addition, it has been considered the sustainability of the materials and the easy assembly with the possibility of the addition of accessories.
1. Introduction
The aim of this paper is to critically analyse the effects of remote working activity due COVID-19 pandemic within the domestic spaces. The point of this investigation was to explore the transformation of interior architecture according this “New Normal” and propose adaptable furniture which provides comfort, privacy and diversity to the individuals working from home.

The scope of this paper is the workforce that have the choice to work from home, that they have tasks which can be handle remotely. Everything else, such as medical care, requires in person – pandemic or not pandemic - these workers are not in the range of this report.

The benefits of remote working are geographic flexibility location, reduction of actual state costs, hours of commuting in order to access a better work-life balance. Nevertheless, it has been proved that working from home brings a lack of socialisation and fellowship and informal communication and collaboration among the individuals in the office.

Work from home is here to stay; several companies have learned during this crisis that working can be done in more fluid and flexible ways than imagined, giving us a chance to reconsider white-collar life. However, according to some experts, they predict a hybrid physical – remote working world. Which it believes poses a series of design issues for homes and for offices.

Consequently, the Parameterized and Comfort Research Group believes that a healthy workplace prioritises work-life balance and safety. Furthermore, the role of our surroundings plays a fundamental role in our health.

2. Design methods
Various methods have been utilised to determine the piece of furniture which could resolve the problems that people could get when they had to work from home during the first lockdown. Different methods have been employed to capture the physical, social and economic dimension. These are the most commons approaches used in contemporary product design, such as: brainstorming, workshops, and discussions, learning how to analyse information collected to identify the gaps, mind mapping, and the creation of simulations to help to empathize with the colleagues and target individuals.

2.1. Brainstorming
A significant advantage of brainstorming is that allows the Team to generate ideas more effectively and rapidly. Milton and Rogers (2011) [1] argue that it is a highly efficient method for producing concepts rather than orthodox ideas.

2.2. Workshops
In order to evaluate the results during the design process, several workshops and discussions had placed among the members of the Group and with carpenters. The benefit of this approach is that it helped the Group have tightened conversations with the actors involved in the construction industry and are much more familiarized with the recourses. This is an effective way to support the ideas already developed by the designers of the Group. It benefits with understanding how the industry works, which is the availability of the materials, the technology uses, and business approaches. This knowledge-sharing activity is particularly useful in the research during the design process. It involved all the relevant parties, including architects and manufacturers.

2.3. Literature review
It is an effective evaluation of the selection of documents in these particular topics. A significant advantage of this method is that it is advantageous in the early stages and enables the design group to develop a well-versed stage. It included recent articles, surveys and anthropometric data.
2.4. Mind mapping and drawing techniques for product design

Diagrams were used to represent concepts and ideas linked. As architects and designers, this methodology of representation of key ideas connected each other was presented as map of knowledge, as shown in (Figure 1).

![Mind map created by the Parametrized Research Group. The diagram is used to represent ideas and tasks linked.](image)

**Figure 1.** Mind map created by the Parametrized Research Group. The diagram is used to represent ideas and tasks linked.

3. Background

Recognize the needs as Charles Eames stated: “is the primary condition for design”. Charles and Ray Eames identified the need of affordable, high-quality furniture for the average consumer. A piece of furniture that could serve a variety of uses. Prior to commencing the current study, the Parameterized Research Group was working with workspaces. The Team had the chance to work in the interior spaces in Budapest’s office building; the company is specialised in IT services. From one side, this project allowed recognizing the needs and wants of the 21st-century office workers before the COVID-19 pandemic begins. The pie chart bellows (Figure 2), published in a recent paper by Ramos Gonzalez [2] shows the proportion of different opinions that surveyed has about their workplace’s negative and positive aspects. The most interesting aspect of the graph is the high rate of employees complains about the noisy environment and the lack of privacy. Besides, the questionnaire results show that 61% of the individuals claimed the needs of having more space for relaxation and leisure at the office. That would allow to encouraging employee collaboration and creates the opportunity for informal meetings. Following with the graphic analyses almost one-third of participants said that they see as a positive aspect of working for that company the opportunity of remote working that they have. Overall, these results suggest that before pandemic existed already a tendency of the transformation of the working spaces and its activities of white-collar workers. Following this way of thinking in reviewing the literature many recent studies (e. g. Kac Lesido, 2018; Knoll Research 2015) [3; 4] have shown that the pandemic has accelerated the evolution of the office workspaces.
As a consequence of the pandemic crisis, for many of today's knowledge workers over the last twelve months, some homes have become offices, schools, kitchens have transformed into conference rooms, and sofas became workspaces. Several lines of evidence suggest that remote working is dominating our lives. Surveys such as that conducted by Stanford economist Bloom (2020) [5] have shown that working from home will be continuous in within the States. He offers policymakers and business leaders suggestions for making remote work a part of the labour landscape. For instance, some American technology companies and their teams have started to plan how distributed the work according to this new working reality. Due to the nature of their product, working remotely comes more accessible to them than other industries. The giant Google is planning from September 2021 to have flexible workweeks; within a pilot plan, employees are excepting to spend three collaboration days in the office and the rest of the days working from home [6].

Facing the choice of going full remote or having the option of going every day to the office. Companies have to find the compromise with some version of a hybrid work model. A consequence of this working model transformation, the Research Group decided to propose an item of prototype furniture that it was called: the workstation in order to provide flexibility and comfort to the individuals who are working from home.

Figure 2. Negative and positive aspects remarked within a questionnaire (Ramos Gonzalez, 2020)

4. Results and discussions
After synthesising the relevant concepts from contemporary articles and discussions, the creative Group established the analysis of the following areas in order to produce furniture that reflects a true understanding of the actual problem and the needs of the user.

The aspects considered are the performance of the furniture. It must be easy to operate for an average person. In addition, the environmental conditions were considered since the beginning of the design process. The product has to be resistant and created with the materials available in the local market. For that reason, after having meetings with different manufacturers, the Group decided to make it in plywood. Therefore, the design team carefully contemplated the maximum use of the material according to the panel's sizes. Figure 3 presents an overview of the design of the pieces and elements which are included in the workstation. Moreover, how the size of the plywood’s panel determined the dimensions of the components.
Workplaces need to be designed to accommodate a wide range of body sizes and postures and, support task performance. Ergonomic was another point that was considered by the designers. In order to facilitate different working positions for the individual, the furniture proposed is comfortable and allows the user to adapt it according to its own needs. As a result, the user can work seating in a chair or standing up. The furniture it can be transformed from a desktop to a bookshelf, from a wardrobe to a cupboard. The incorporation of wheels, the lightweight and the design of handlers give the possibility to move the furniture within the space, adapting the requirements of the users. Moreover, it is planning that the furniture could be assembled easily with tools that everyone could have at home.

The aesthetics wanted by the designers was to look simpler, honest, and contemporary. Plywood is a typical example of laminate made up of layers of the same material, and the process of lamination enables such materials to be surfaced with coloured polymer sheets. The finish chosen is "wood." Colour mostly, and the coloured touch of the design is giving by the incorporation of "sticks," which lets the transformation and support the shelves, the table, panels, among other accessories.

The research team considered creating a document that sets out what is required for the construction of prototype. The workstation design has been thought of to include different components, parts, and sub-units. Some of the components have been designed from scratch, and the design team has used another existing one to produce an integrated design for the manufacturer successfully. In addition, these assemblies that make up the product were planned for being light and easy to manipulate for the user who has to construct the parts. As shown in Figure 4, the furniture was conceived to have a basic component as a workstation; nonetheless, the individual can access a wide variety of other components in order to adapt the workstation to another type of furniture, according to its necessities. An excellent example of this can be found in the market nowadays.
5. Conclusions

This study has identified the pandemic’s effects in our working life, in the office and at home. The paper has argued that the health crisis has accelerated the working space transformation that the knowledge workers have been living within the last years. The principal theoretical implication of this study is that the white-collar culture is living a switch of a paradigm, and this is affecting the way of living and working. Overall, this study strengthens the idea that as architects, we have the social responsibility to propose solutions in how individuals can work and live comfortably and safely during and after the pandemic. Because of this crisis, it can be seen as an opportunity for changes in the domestic spaces. This project contributes to explore the different layouts that the person could do according to their needs with the working station. As Charlotte Perriand, together with René Herbst and Louis Sognot, proposed in 1935 "La maison du jeune homme" ("The house for the young man") for the Universal Exposition in Brussels. The project planned within sixty-three square meters shows how the design of furniture and interior architecture contributes to well-being, for example, incorporating sport's equipment among other types of furniture [7]. Architects have long been preoccupied with the concept of "existence minimum," as the French architects thought in the previous example, the ideal home. Kisho Kurokawa, from Japanese Metabolist in the nineteen-sixties, did with the tiny capsules from the Nagakin Tower, which provide through both capsules what each person needs. Existence minimum suggests the least the individual needs to feel comfortable in a space. Overall, this study strengthens the idea that it is hardly essential to have a comfortable domestic space where the individual could work, regardless of size. The evidence from this study suggests that as architects, we can provide ideas to improve remote working activity by designing a piece of furniture. Which can provide comfort, diversity, and adaptability to the different needs, always considering agronomical and aesthetical aspects.

Nonetheless, the most important limitation lies in the fact that the Group was not able to build a prototype. The current research has only examined the theoretical design part. The architects are still working on this topic, and it believes that it will be the chance to realise the accurate model shortly. More broadly, research is also needed to determine the evolution of the distributed work. When the pandemic could be controlled, the question raised is how the hybrid model will continue. A vital strength of the present study was the furniture's adaptability and its easy transportation within the space. Consequently, a further study could assess the long-term effects remote working has on the persons' health.

Acknowledgment(s)

My acknowledgements would not be complete without thanking the research project conducted at the University of Pécs in Hungary within the framework of the Biomedical Engineering Project of the Thematic Excellence Programme 2020 (2020-4.1.1-TKP2020) Research Group ‘Parametrized Comfort in Physical Spaces, University of Pécs, 7624 Pécs, Hungary’

References

[1] P. Rodgers, and A. Milton, “Product Design,” Laurence King Publishing Ltd., pp. 95–96, 2011.
[2] N. Ramos González, G. Medvegy, Á. Borsos, E. S. Zoltán, G. Gazdag and P. Noori, “Human Comfort in Artificial Place” 7th Int. International Academic Conference on Places and Technologies. Proceedings, pp. 428–435, 2020.

[3] A. D. Kac Lestido, “Oficina 3.0: El mobiliario de oficina como clave para un nuevo espacio de trabajo flexible, eficiente y conectado,” Thesis of Master. Universidad de la República Uruguay. Facultad de Arquitectura Diseño y Urbanismo, 2018.

[4] Knoll Workplace Research, “The workplace net. work”, 2015.

[5] M. Wong, “Stanford research provides a snapshot of a new working-from-home economy”, [Online] 2020. Retrieved from: https://news.stanford.edu/2020/06/29/snapshot-new-working-home-economy/.

[6] D. Wakabayashi, “Google Delays Return to Office and Eyes ‘Flexible Work Week’”, The New York Times, [Online] 2020. Retrieved from: https://www.nytimes.com/2020/12/14/technology/google-delays-return-to-office-and-eyes-flexible-work-week.html.

[7] M. Garrigou-Lagrange, F. Cauncac, “Charlotte Perriand fut le produit d’un talent, d’un travail, d’une volonté, mais aussi celui d’un monde, le XXe siècle”, (2020, 07, 30). Audio Podcast. Retrieved from: https://podcasts.apple.com/hu/podcast/toute-une-vie/id391294609?i=1000486587122.