Design Research During The Covid-19 Pandemic: Reflections From a Field Study

Gülizar Büşra Kılıç // *21910037@mail.baskent.edu.tr*
Prof. Dr. Şule Taşlı Pektaş // *stpektas@baskent.edu.tr*
Başkent Üniversitesi Faculty of Fine Art, Design and Architecture Department of Architecture

ABSTRACT

The emergence of design research as a field dates back to the "Design Methods" movement of early 1960s due to the increased interest in understanding and improving design processes after the Second World War. Although the legacy of process research has remained to be important, the field has later expanded to include studies on designers, practices and tools i.e. the context of designing in general. The World has been experiencing an unprecedented global pandemic since the last months of 2019 and design education and research have been affected enormously by the new situation. It is observed that although the "new normal" in design education has been discussed in a great extent, the impact of the pandemic on design research is a neglected issue. In an attempt to alleviate the problem, this paper aims to present the challenges and opportunities of undertaking design research during the COVID-19 pandemic according to the observations from a real-life case study. The case study analyzed in this paper focuses on investigating and modeling the design processes of kündekâri craftsmen. Kündekâri is a traditional Turkish craft which deals with creating geometric wooden assemblies with tongue and groove joints. In authentic kündekâri works intermediary elements like nails, screws or glue are not used. The research project discussed in this paper aims to elicit process knowledge from one of the few kündekâri firms in Turkey. In this study, the data was collected through literature review, interviews and observation. Since the research is being done during the pandemic, the authors have already experienced several shortcomings and some opportunities related to the existing conditions. The paper presents these experiences systematically and addresses the areas for further studies for improving the resilience of design research community against such emergencies.

Keywords: Design research, COVID-19, case study.

COVİD-19 PANDEMİ SÜRECİNDE TASARIM ARAŞTIRMALARI:BİR ALAN ÇALIŞMASININ DÜŞÜNDÜRDÜKLERİ

ÖZET

Tasarım araştırmasının bir alan olarak ortaya çıkışı, İkinci Dünya Savaşı'ndan sonra tasarım süreçlerinin anlaşılmasına ve geliştirilmesine ilginin artmasıyla birlikte 1960'ların başındaki "Tasarım Yöntemleri" hareketine dayanmaktadır. Süreç araştırmasının mirası önemli olmaya devam etse de, alan daha sonra tasarımcıların, uygulamaların ve araçların çalışmalarını başka bir ifade ile tasarım bağlamı üzerine çalışmaları kapsayacak şekilde genişlemiştir. Tüm dünya 2019'un son aylarından beri benzeri görülmemiş bir küresel salgın yaşamakta, tasarım eğitimi ve araştırması bu yeni durumdan büyük ölçüde etkilenmiştir. Tasarım eğitiminde "yeni normal"in büyük ölçüde tartışılmasına rağmen pandeminin tasarım araştırmalarına etkisinin ihmal edilen bir konu olduğu gözlemlenmektedir. Yaşanılan bu problemi azaltmak amacıyla, bu makale COVID-19 salgını sırasında tasarım araştırması yapmanın zorluklarını ve fırsatlarını günlük yaşamdaki bir örnek olay çalışmasından gözlemlere dayanarak sunmayı hedeflemektedir. Bu makalede incelenen örnek olay çalışması, kündekâri sanatının tasarım süreçlerinin incelenmesi ve bu süreçlerin modellenmesine odaklanmaktadır. Kündekâri, yivli bağlantılarla ahşap geometrik kompozisyonlar oluşturulan geleneksel bir Türk zanaatıdır. Hakiki kündekâri çalışmalarında çivi, vida, tutkal gibi ara elemanlar kullanılmamaktadır. Bu makalede tartışılan araştırma projesi, Türkiye'de bulunan kündekâri firmalarının birinden toplanılan verilerle kündekâriye ait süreç bilgisini açığa çıkarmayı amaçlamaktadır. Bu çalışmada veriler literatür taraması, görüşme ve gözlem aracılığıyla toplanmıştır. Araştırma salgın sürecinde yapıldığından dolayı, yazarlar mevcut koşulların etkisiyle bazı zorluklar yaşamıştır ve bazı fırsatlar elde etmiştir. Çalışma, bu deneyimleri sistematik bir şekilde sunmakta ve tasarım araştırma topluluğunun ilerideki çalışmalarda bu tür acil durumlara karşı direncini artırmasına yönelik önerilerde bulunmaktadır.

Anahtar Kelimeler: Tasarım araştırması, COVID-19, örnek olay.

1. INTRODUCTION

Design research aims to provide information about composition, structure, and meaning in artefacts and systems. The main purposes of design research are the study and investigation of design related issues using systematic methods. Design research in many disciplines began in early 1920s in the Bauhaus, which was a prominent design school of the period. Bauhaus promoted a hands-on approach to design research based on exploration, interdisciplinary collaboration and learning-by-doing. The pressing problems of the post-Second World War period created interest in the utilization of scientific methods for design research. During this period, new design techniques and creativity methods were developed (Bayazit, 2004). In the 1960s, a series of conferences on design methods were organized and several books and journals published at the same time (Cross, 1993).

The Design Research Society (DRS), which was founded in London in 1966, is an international society for promoting design research. DRS aims to improve design research through events, one-day conferences and publications (Bayazit, 2004). Design Studies, which was launched in 1979, is an international journal focusing on design processes. The journal publishes articles on engineering, architectural and urban design, design computing and systems design (Cross, 1999). As the complexity of design processes and products has increased, the importance of design research has been acknowledged more. The ever-growing body of design-oriented publications is an evidence for this situation.

The COVID-19 pandemic emerged in the last months of 2019 had tremendous effects on daily lives of people. Academic communities were also affected by the pandemic both from education and

research perspectives. The majority of universities have conducted online and/or blended education courses. Although the effects of the pandemic on educational practices have been relatively well-documented in the literature, such issues have been rarely discussed for research practices. There is a lack of studies exploring the impacts of the pandemic on research projects. In a view to alleviate the problem, this paper aims to discuss the advantages and shortcomings of conducting design research during the pandemic focusing on a case study about construction processes of kündekâri.

The paper is structured as follows: the second section presents the methodology of the study. The definition of kündekâri, a brief overview of its historical development and main production processes are discussed in this section. The section also includes a brief description of the research procedures of the case study on kündekâri processes. The third section addresses the advantages and challenges of conducting design research during the pandemic based on the observations made and insights gained during the case study. The fourth section summarizes the findings, points out the limitations and presents suggestions for further research.

2. METHODOLOGY

2.1. Kündekâri as an Architectural Craft

Kündekâri is a traditional Turkish craft which deals with creating geometric wooden assemblies with tongue and groove joints. In authentic kündekâri works intermediary elements like nails, screws or glue are not used. Kündekâri is defined as a construction technique in Turkish-Islamic art consisting of geometrically shaped wooden pieces, such as triangle, square, hexagon etc. that are interlocked through mortises and tenons (Sönmez ve Söğütlü, 2006). For this reason, this craft is used to create geometrical compositions. These compositions are prepared with two distinct techniques; namely, square division and star division (Figure 1). The meaning of the word "kündekâri" is cabinetwork and woodworking (Karabaşa, 2014).

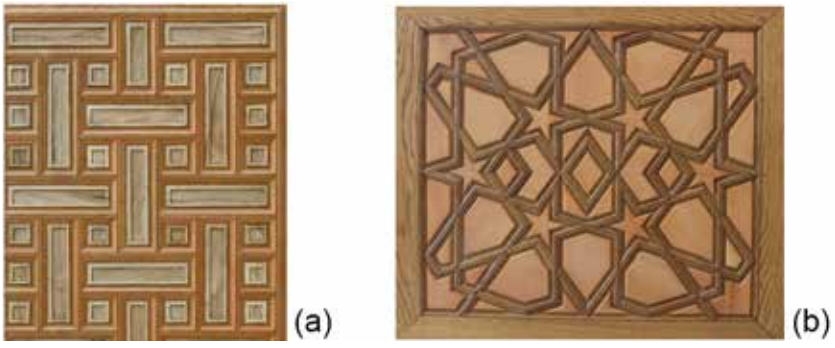

Figure 1: Types of Kündekâri: square division (a) and star division (b)
(a) Çelik, 2013 and (b) https://www.yenihaberden.com/d/other/ciller-kundeari-konya-9.png

This technique was invented in the 12th century, improved by Seljuks and was used during the period of the Ottoman Empire (Yüksel, Kasal, Erdil & Acar, 2013). The first examples of this art were seen in Mısır, Halep and Anatolia during the 12th century. There are some examples from this early period that still exist and have been used even at the present time. This situation demonstrates that the products which are constructed with "kündekâri" technique have a long life-cycle; since the kündekâri technique is effective for preventing deformation and decay of wood. (Söğütlü, İmirzi, Döngel ve Çınar, 2017). Kündekâri is utilized in several architectural details including doors, windows, cabinet doors, mihraps and minbers (Sönmez ve Söğütlü, 2006).

2.1.1.Material of Kündekâri

Wood has been used as a construction material from prehistoric times to the present day, due to its durability, texture and heat performance (Ersoy, 1993). Several different types of wood are used for kündekâri applications. Tree species, like wallnut, boxwood, and pear are preferred for indoor use and ebony, silver, ivory are preferred in surface ornaments for such kündekâri products. Tree species such as oak, mahogany and ash tree are resistant to severe weather conditions, so they are often used for outdoor applications (Karabaşa, 2014).

2.1.2. Construction Technique of Kündekâri

Kündekâri craft is classified according to the production techniques; namely, genuine and imitation kündekâri. In genuine kündekâri products, intermediary elements like nails, screws or glue are not used and geometrically shaped wooden pieces are interlocked only physically (Sönmez ve Söğütlü, 2006). On the other hand, glue and nails can be used in imitation kündekâri and this technique requires less workmanship than genuine one. Imitation kündekâri is commonly preferred due to technical and economical limitations. Imitation kündekâri works can be produced with relief carving technique, gluing-nailing technique or relief-nailing technique (Ersoy, 1993).

Genuine kündekâri products consist of geometrical blocks, structural elements (keel bars and "narlama") and a framework. In the kündekâri skeleton system, geometrical blocks and keel bars are placed side by side and they are interlocked through grooves and tongues (Yüksel et al., 2013). There are nearly two or three mm gap between these structural elements to accommodate dimensional changes due to weather conditions (Yüksel, Diler & Acar, 2016).

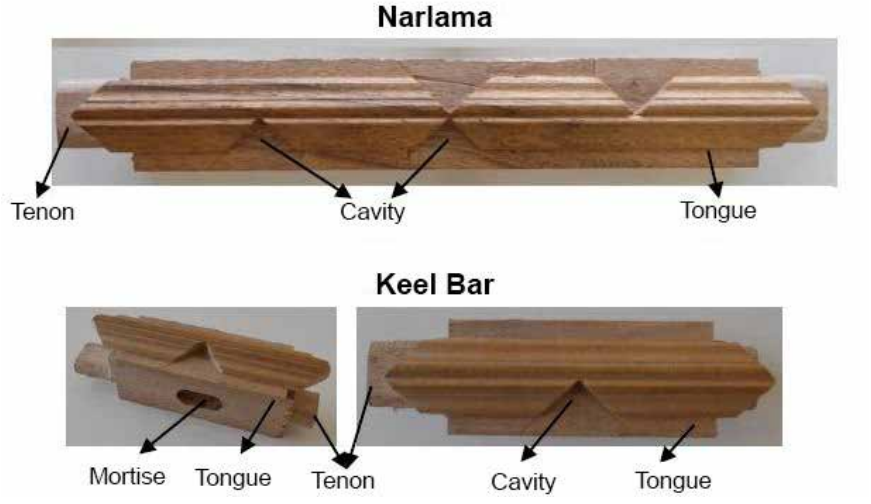

Figure 2: Narlama and Keel Bar (Adapted from Yüksel et al., 2013).

Keel bars are interlocked to each other through mortises and tenons. "Narlama" is the key structural element of the system that transfers the loads vertically, horizontally or in any direction. "Narlama" is the longest element of the structural system of kündekâri. "Narlama" and keel bars are connected to each other for providing resistance to external forces. The frame element is the external element of the composition and used to complete the geometry (Yüksel et al., 2016).

2.1.3. Construction Process of Kündekâri

At the beginning of the construction process, trees are cut from the forest. After cutting, trees must be dried for further processing. Trees are dried with natural methods or through baking at a high temperature. After drying, the wood pieces are cut and straightened with planer machine according to determined dimensions (Soysal, 2007).

The geometric pattern of kündekâri product is drawn with AutoCAD and the drawings are printed in 1/1 scale. Usually the motifs in existing kündekâri works are used in the new drawings. According to the geometric pattern, the lengths and angles of the keel bars are determined. After this step, keel bars and geometrical blocks are prepared according to kündekâri design (Nas, 2005). The angles of the keel bars are trimmed with the CNC machine. Mortises and tenons are created using the morti-se-tenon machine and tongue and groove joints are built with the horizontal milling machine. At the end of these steps, geometry is collected manually. Assembling process starts from the center of the geometry and progresses toward outside. Some hand tools, such as saw, sandpaper, and wood chisel, are also utilized in the assembling process (Yüksel et al., 2013).

2.2. Case Study: Modeling the Kündekâri Design and Production Process

Although kündekâri is a well-established art and craft, there is a limited amount of academic studies on it. Furthermore, the existing studies often took a descriptive approach and the implicit craft knowledge involved has not been revealed, yet. Therefore, our work was designed to elicit tacit knowledge from kündekâri craftsmen. The data was collected through interviews and observations made in the producer's workshop (Figure 3). Semi-structured interviews were carried out with kündekâri craftsmen through video conferencing (Zoom webinar application) (Figure 4). Each meeting was recorded and transcribed by the authors. In the meanwhile, a literature review about this construction technique was conducted. Articles, academic dissertations and books related to kündekâri were examined in detail. After literature review and interviews, a systematic process model of kündekâri was created with IDEF0 process modeling technique. In these models, the steps of the process are visualized to show materials, tools, machines, activities, inputs and outputs. Next chapter discusses the opportunities and challenges of conducting research during the pandemic based on our observations while carrying out these activities.

Figure 3: Data collection in the field under the pandemic measures (Photo by Gülizar Büşra Kılıç)

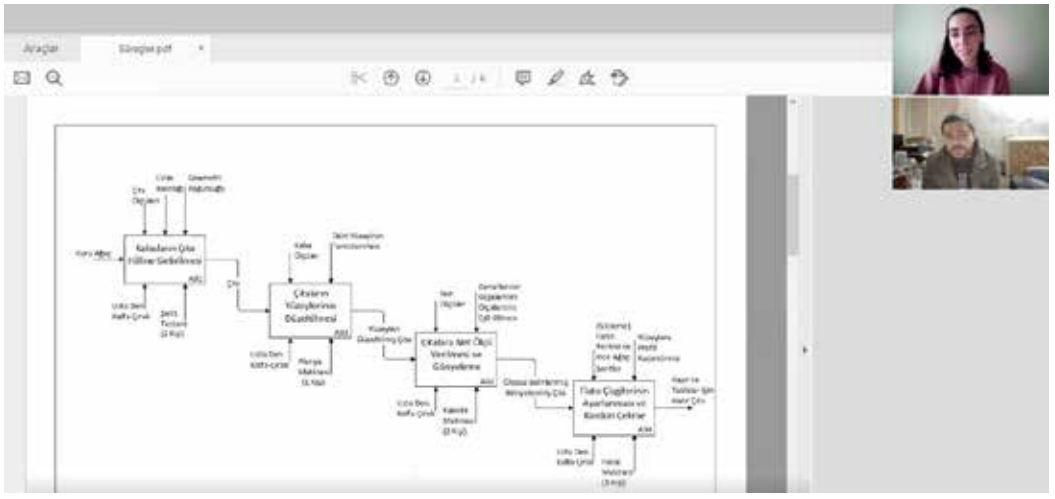

Figure 4: A snapshot from an online interview with a kündekâri craftsman (Photo by Gülizar Büşra Kılıç)

3. DISCUSSION

The COVID-19 pandemic has affected enormously vast geographies because of its "viral" contagion since the last months of 2019. Almost all fields involving human activity, like businesses and trade, health, education and research have had to find alternative working modes during the pandemic (Varma & Jafri, 2020). Many people have become accustomed to the 'new normal' and technological opportunities have supported the workers in this process. Working from home culture has become prevalent all around the world in order to maintain social distancing (Eaton, 2020).

Many research professionals have also forced to work under the pandemic measures. The COVID-19 pandemic restricted most academic and scientific research activities (Eaton, 2020). There are some individual differences among researchers, such as gender, age, geographic location, disability, socio-oeconomic status, career stage and family responsibilities. These differences have affected research activities during the pandemic in many different ways (NSERC, 2020).

Conducting research during the pandemic has presented peculiar opportunities and challenges. There are various phases of research, such as planning experiments, collecting and analyzing data, writing, etc. and different stages present different characteristics. For example, while a researcher may have difficulties in gathering data, he or she can write and publish documents during the COVID-19 pandemic (NSERC, 2020). Some researchers have used the times of curfews to develop research through working from home and time management has raised as an issue during the pandemic. Researchers had to balance personal and work time (Myers et al., 2020).

Some restrictions in travel and personal contacts caused new challenges in scientific research. Many symposiums, conferences and seminars have adapted online formats. Researchers had to manage meetings with online facilities via audio and video conferencing in order to prevent the spread of the infection. Sometimes, slow internet connectivity and inexperience in using videoconferencing tools created problems in online meetings. (Haleem, Javaid, Vaishya, & Deshmukh, 2020).

Within the scope of our study, field research is required to understand the production processes of kündekâri. Taking photos, recording videos and taking notes at the carpentry workshop were necessary to collect data. Since the research was done during the pandemic, the study was interrupted due to unexpected conditions. For example, extensive participant observation couldn't be made, for this reason significant data couldn't be gathered. Videoconferencing (Zoom webinar application) was used as the main tool for data collection. Besides the difficulties mentioned above, some opportunities of the new situation were also experienced. First of all, the distant mode communication was provided a low-cost and time-effective alternative to face-to-face communication; because the participants were geographically dispersed. Since many activities canceled due to isolation and the workload of the participants decreased due to the shrinkage of the kündekâri market, the respondents had more available time in their schedules, making it easier to interview with them. With this additional free time and without a need for travel, we observed that the respondents were more willing to participate.

Furthermore, the online videoconferencing platform enabled convenient recording of the interviews and facilitated the transcription process. During the interviews, the process models and other documentation were easily shared thanks to the screen and file sharing functionality of the tool. Moreover, the annotation module of Zoom enabled participants to mark and amend the documents when needed.

4. CONCLUSION

The COVID-19 pandemic has had an ultimate impact on daily lives of people in the whole world. Almost all research areas, including design research, have been impacted by the pandemic. Research proposals have cancelled, postponed or modified to accommodate the changes brought by the new circumstances. Within this perspective, our paper addressed the opportunities and challenges of conducting design research during the pandemic. Our study was based mainly on field inquiry, so further research is needed to examine the effects of the pandemic on different types of research (survey, laboratory or clinical). Scientists claim that similar pandemics are likely to occur in the future (Tollefson, 2020), thus all parties should get prepared for them. The authors hope that insights and experiences shared in this paper would facilitate for supporting research community in case of future emergencies.

REFERENCES

- Bayazıt, N. (2004). Investigating design: A review of forty years of design research. Design Issues, 20(1), 16-29.
- Cross, N. (1993). A history of design methodology. Design Methodology and Relationships with Science, 15-27.
- Cross, N. (1999). Design research: A disciplined conversation. Design Issues, 15(2), 5-10.
- Eaton, H. (2020). Science in Lockdown: the effects of COVID-19 on research and researchers. Retrieved from https://royalsociety.org/blog/2020/05/science-in-lockdown-part-one/.
- Ersoy, A. (1993). XV. yüzyıl Osmanlı ağaç işçiliği. İstanbul: Marmara Üniversitesi Atatürk Eğitim Fakültesi Yayınları.
- Haleem, A., Javaid, M., Vaishya, R., & Deshmukh, S. G. (2020). Areas of academic research with the impact of COVID-19. The American Journal of Emergency Medicine, 38(7), 1524-1526.
- Karabaşa, S. (2014). Geçmişten geleceğe yaşayan kültür mirasımız Türkiye somut olmayan kültürel miras ulusal envanteri. Ankara: Kültür ve Turizm Bakanlığı Yayınları.
- Myers, K. R., Tham, W. Y., Yin, Y., Cohodes, N., Thursby, J. G., Thursby, M. C., Schiffer, P., Walsh, J. T., Lakhani, K. R. & Wang, D. (2020). Unequal effects of the COVID-19 pandemic on scientists. Nature Human Behaviour, 4(9), 880-883.
- Nas, E. (2005). Günümüz Konya'sında yaşayan bazı sanatlar. (Yayımlanmamış Doktora Tezi). Selçuk Üniversitesi Sosyal Bilimler Enstitüsü, Konya.
- Natural Sciences and Engineering Research Council of Canada (NSERC) (2021). Impacts of the COVID-19 pandemic on research: New guidelines for NSERC's community. Natural Sciences and Engineering Research Council of Canada. Retrieved from https://www.nserc-crsng.gc.ca/NSERC-CRSNG/Policies-Politiques/COVID-COVID_eng.asp
- Söğütlü, C., İmirzi, H. Ö., Döngel, N. ve Çınar, H. (2017). Mühendislik yaklaşımıyla kündekâri tekniğinin gelenekli Türk ahşap sanatındaki yeri ve önemi. 5th International Folk Culture and Art Activities Symposium, Ankara.
- Sönmez, A. ve Söğütlü, C. (2006). Kündekâri Türk ahşap sanatındaki yeri önemi ve yapım tekniği bakımından incelenmesi. Uluslararası Geleneksel El Sanatları Sempozyumu, İzmir.
- Soysal, H. (2007). Geleneksel Türk el sanatlarımızı yaşatan kündekâri ustası Mevlüt Çiller. (Yayımlanmamış Yüksek Lisans Tezi). Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.
- Tollefson, J. (2020). Why deforestation and extinctions make pandemics more likely. Nature, 584(7820), 175-176.
- Varma, A., & Jafri, M. S. (2020). COVID-19 responsive teaching of undergraduate architecture programs in India: learnings for post-pandemic education. Archnet-IJAR: International Journal of Architectural Research.doi: 10.1108/ARCH-10-2020-0234
- Yüksel, M., Diler, H., & Acar, M. (2016). Utilization of kündekâri technique for production of durable furniture. Mugla Journal of Science and Technology, 2(2), 110-115.
- Yüksel, M., Kasal, A., Erdil, Y. Z., & Acar, M. (2013). An old wood decoration/construction technique in Seljuk; real kündekâri. The 9th International Conference ICWSE, Brasov.
- Figure 1(a): Çelik, S. (2013). Selçuklu'nun zamana meydan okuyan mirası: Kündekâri. İstanbul Büyükşehir Belediyesi Sanat ve Meslek Eğitimi Kursları El Sanatları Dergisi, 15, 22-29.
- Figure 1(b): https://www.yenihaberden.com/d/other/ciller-kundeari-konya-9.png. (08.02.2021)
- Figure 2: Yüksel, M., Kasal, A., Erdil, Y. Z., & Acar, M. (2013). An old wood decoration/construction technique in Seljuk; real kündekâri. The 9th International Conference ICWSE, Brasov.