

ARCHITECTURAL



New Dialogues in Architectural Education and Practice

2nd AE International Symposium, IKU Department of Architecture

02

March 24-25, 2022
Istanbul, Turkey

New Dialogues in Architectural Education and Practice
2nd AE International Symposium, IKU Department of Architecture



İSTANBUL
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PROCEEDINGS

ARCHITECTURAL EPISODES 02:

NEW DIALOGUES IN ARCHITECTURAL EDUCATION AND PRACTICE

2nd AE International Symposium, IKU Department of Architecture

March 24-25, 2022

EDITORS

Neslihan Dostoğlu, *Prof. Dr.*

Emel Birir, *Prof. Dr.*

Esin Hasgöl, *Asst. Prof. Dr.*

H. Nur Kızılyaprak, *Asst. Prof. Dr.*

Merve Aksoy Oral, *Res. Asst.*

Dilara Gür, *Res. Asst.*

ARCHITECTURAL EPISODES

New Dialogues in Architectural Education and Practice
2nd AE International Conference, IKU Department of Architecture

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*The Editors do not hold themselves responsible for opinions expressed by authors.

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Merve Aksoy Oral, *Res. Asst.*

Dilara Gür, *Res. Asst.*

Symposium Secretariat

architecturalepisodes@gmail.com

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I. Architecture II. Architectural Education

Focus Theme

Following the first Architectural Episodes Symposium, hosted by Istanbul Kültür University Faculty of Architecture/Department of Architecture, which was held on 15-16 November 2018; the second symposium in the series will be held as an online symposium on 24-25 March 2022 with the theme of “ARCHITECTURAL EPISODES 02: NEW DIALOGUES IN ARCHITECTURAL EDUCATION AND PRACTICE”. The symposium is supported by various institutions and organizations, including the EAAE (European Association for Architectural Education). The international symposium focuses on the concept of “Dialogues in Architecture”, which defines new collaborations in architectural education and practice.

After the breaking point created by the Covid-19 pandemic, the situation of distance has brought up different types of collaborative platforms. New approaches in architectural education and practice have resulted in diverse concepts while increasing the need for dialogue between interdisciplinary actors. Dialogues among architects, engineers, psychologists, educators, researchers, etc. not only enable the sharing of threats, opportunities and responsibilities in education and professional practice, but also identifies influential links in a holistic way of design thinking. Accordingly, new methods and related collaborative approaches in education, collaborative design studies, co-housing and new paradigms in the urban scale, co-reflections on disasters, and co-links between architecture and industry are among the topics to be discussed in the symposium.

In this symposium, participants from various professions related with the field of architecture (architecture, interior architecture, landscape architecture, city and regional planning, industrial design) and representatives of different disciplines (education, health, psychology, law, economy, engineering, etc.) from different parts of the world are expected to share their experiences so that a comparison can be made regarding the processes and results of different approaches.

Themes

Dialogue 1: Co-Education and Related Approaches

- Educational Methods in Architecture
- Co-teaching Approaches
- E-learning Approaches and New Techniques
- New Models for Collaborative Learning
- Transformations in Architectural Education after the Pandemic
- New Paradigms of Design Studio Education
- Design Education and Entrepreneurism
- Architectural Criticism, History and Theory

Dialogue 2: Co-Design in Architectural Practice

- Design Paradigms after the Pandemic
- Design through Creativity and Collaboration
- Participatory Design in Architecture
- Multidisciplinary Design Studies
- Actors in Design Process
- New Media and Design
- Co-design and Research Methodologies
- Co-design in Interior Architecture

Dialogue 3: Co-Housing and the City in New Agenda

- New Design Principles in Housing
- House in Interaction with Outdoor Spaces
- Housing, Health and Pandemic
- Psychology and Dwelling Spaces
- New Preferences in Housing Market and its Future
- Cognitive City in New Conditions
- City, Urban Rules and Legislation
- Smart-city and Tourism

Dialogue 4: Co-Reflections on Disasters

- New Understanding of Sustainability, Resilience and Ecology
- Responsibilities in Architectural Education
- Expectations in Architectural Practice
- Post-Disaster Architecture
- Urban/Rural Area and Landscape
- Culture, Heritage and Transformations
- New Dialectics in Climate Crisis
- Pandemic as a Disaster
-

Dialogue 5: Co-Link of Architecture and Industry

- Collaboration with Industry
- Collaboration with Community
- New Materials and Innovative Technologies
- Collaborative Digital Technologies in Architecture
- Construction Management and Collaboration
- Co-Production Processes
- Interaction between Architecture and other Sectors

Organization Committee

Neslihan Dostođlu, *Prof. Dr.*

Emel Birer, *Prof. Dr.*

Esin Hasgöl, *Asst. Prof. Dr.*

H. Nur Kızılyaprak, *Asst. Prof. Dr.*

Merve Aksoy Oral, *Res. Asst. (Secretariat)*

Dilara Gür, *Res. Asst. (Secretariat)*

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Birgül Çolakoğlu, *Prof. Dr., İstanbul Technical University*

Yüksel Demir, *Prof. Dr., İstanbul Technical University*

Ayşen Ciravoğlu Demirdizen, *Prof. Dr., Yıldız Technical University*

Sedef Doğaner, *Prof. Dr., Wentworth Institute of Technology, School of Architecture and Design*

Neslihan Dostoğlu, *Prof. Dr., İstanbul Kültür University*

Hugo Dworzak, *M. Arch. Senior Lecturer, University of Liechtenstein*

Ivan Cabrera Fausto, *Prof. Dr., Polytechnic University of Valencia, School of Architecture*

Oya Atalay Franck, *Prof. Dr., ZHAW School of Architecture, Design and Civil Engineering*

Orhan Hacıhasanoğlu, *Prof. Dr., Özyeğin University*

Gülay Hasdoğan, *Prof. Dr., Middle East Technical University*

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Ashraf Salama, *Prof. Dr., University of Strathclyde, Department of Architecture*

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Belkıs Uluoğlu, *Prof. Dr., İstanbul Technical University*

Ilaria Valente, *Prof. Dr., Politecnico di Milano, Department of Architecture and Urban Studies*

Johan de Walsche, *Prof. Dr., University of Antwerp, Faculty of Design Sciences*

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PREFACE

AN EVALUATION ON THE “NEW DIALOGUES IN ARCHITECTURAL EDUCATION AND PRACTICE SYMPOSIUM”

Prof. Dr. Neslihan DOSTOĞLU

Istanbul Kultur University Üniversitesi
Dean of Faculty of Architecture

Established in 1998, Istanbul Kultur University Department of Architecture is structured to provide students with the responsibility and ability to think, question, seek answers and interpret. Education at IKU Faculty of Architecture Department of Architecture has been shaped with a multidimensional and interdisciplinary approach, covering different components from design knowledge to technology, from philosophy and art to economy, from social dynamics to urban changes. In this context, the main goal is to train architects who are competent at national and international levels, who are equipped with aesthetic values, and can follow and use the developing technology, who are respectful to historical, environmental and ethical values, inquisitive and dynamic in a contemporary and effective institutional structure.

At IKU Architecture Department, where joint studies are carried out with various international and national institutions, and activities such as symposiums, conferences, excursions, exhibitions and workshops are organized, there is a rich environment that enable students to develop their own perspectives in cultural interaction. National and international symposiums organized by the Faculty of Architecture play an important role in the creation of this rich milieu.

One of the most recent of these symposiums is Architectural Episodes 02. The first Architectural Episodes Symposium hosted by the Faculty of Architecture Department of Architecture at Istanbul Kultur University, was held on November 15-16, 2018. The second one, with the theme “Architectural Episodes 02: New Dialogues in Architectural Education and Practice”, focusing on the concept of “Dialogue in Architecture”, was organized online on March 24-25, 2022. The Organizing Committee consisted of Prof. Dr. Neslihan Dostoglu, Prof. Dr. Emel Birir, Asst. Prof. Dr. Esin Hasgöl, Asst. Prof. Dr. H. Nur Kızılyaprak, Res. Asst. Merve Aksoy Oral and Res. Asst. Dilara Gür, and the symposium was supported by various institutions and organizations, including the European Association for Architectural Education (EAAE) and the Chamber of Architects Headquarters in Turkey.

When the topic was specified as “Dialogue”, the whole process was shaped accordingly. Determination of the themes of the symposium, the diversity of the organizations supporting the symposium, the cooperation of Istanbul Kültür University with Muğla Sıtkı Koçman University, the workshops held in Istanbul and Muğla in this context, the projects produced with the students, the exhibitions opened in different cities and settings have been the factors that strengthened the “Dialogue” theme from the beginning to the end.

The situation of being remote after the breaking point created by the Covid-19 pandemic, which started in China at the end of 2019 and spread all over the world in 2020, has brought to the agenda cooperation between different platforms. This situation, while associating new approaches in architectural education and practice, and different dialogues between interdisciplinary actors, reveals new concepts or introduces familiar concepts for re-evaluation. Accordingly, the following sub-titles were determined within the scope of the main theme of the symposium and presentations were made on these subjects:

Dialogue 1: Co-Education and Related Approaches

Dialogue 2: Co-Design in Architectural Practice

Dialogue 3: Co-Housing and the City in New Agenda

Dialogue 4: Co-Reflections on Disasters

Dialogue 5: Co-Link with Architecture and Industry

In the symposium where Prof. Dr. Oya Atalay Franck, President of EAAE and Dean of ZHAW School of Architecture, Design and Civil Engineering in Switzerland, and Prof. Dr. Ashraf Salama from Strathclyde University in England participated as invited speakers, 22 researchers representing various professional groups from different parts of the world shared their experiences, thus creating an opportunity to evaluate the process and results of different approaches. These opportunities and future prospects were discussed during the Panel at the end of the Symposium. All the papers presented at the symposium have been brought together in this Proceedings Book, and selected papers will be published in indexed journals so that the studies can be easily followed by those who could not attend the symposium.

One of the most important contributions of the symposium to the architectural milieu is the discussion of forest fires which took place in the south and southwest of Turkey during July-August 2021, within the scope of a workshop and subsequent exhibitions, related with the Session “Co-Reflections on Disasters”, one of the five themes of the symposium.

As part of the Symposium program, Istanbul Kultur University Department of Architecture collaborated with Muğla Sıtkı Koçman University Department of Architecture and organized a workshop titled "Muğla Transcripts in/on Disasters:

Forest Fires 2021". This workshop, in which Prof. Dr. Emel Birer and Asst. Prof. Dr. Esin Hasg l from Istanbul Kultur University, and Assoc. Prof. Dr.  nc  Ba doĖan Av ar, Asst. Prof. Dr. İlke Tekin, Dr. Fulya Pelin CengizoĖlu Ba aran, Res. Asst. H seyin Furkan Balc , and Res. Asst. Mihriban Duman from MuĖla Sıtk  Ko man University, served as the coordinators, was held simultaneously in Istanbul and MuĖla on March 5-6, 2022. In the first phase of the workshop, an online panel consisting of presentations related with the theme of the workshop was held on March 5, 2022 and assessments on climate change were made. In line with the information obtained from the panel, a face-to-face workshop process was carried out with the students. This workshop was conducted on March 6, 2022 and infographic productions were prepared on the subject. The MuĖla group approached the forest fires from the inside, while the Istanbul group approached the subject from the outside, and together a meaningful whole was obtained. Workshop results were presented and discussed at the Symposium.

The exhibition, which consists of two panels 5 meters long and 60 cm high, one of them prepared during the workshop by the students of the Department of Architecture at Istanbul K lt r University, and the other at MuĖla Sıtk  Ko man University, was held at MuĖla Sıtk  Ko man University Atat rk Cultural Center between March 28 and April 1, 2022, at Istanbul Kultur University Atak y Campus between April 14 and April 27, 2022, and at Istanbul Metropolitan Branch of the Chamber of Architects between April 28 and May 8, 2022. The exhibition will also be carried to the Annual Conference and General Assembly to be held by EAAE (European Association for Architectural Education) in Madrid from August 31 to September 3, 2022.

As a result, during the "Architectural Episodes 02: New Dialogues in Architectural Education and Practice Symposium" organized by Istanbul Kultur University, Faculty of Architecture, Department of Architecture, the concept of "Dialogue", has been handled from different perspectives, between disciplines, institutions, students and instructors, and an opportunity has been created to open new doors for the future.

On this occasion, I would like to thank my colleagues from Istanbul Kultur University, Faculty of Architecture, Department of Architecture, constituting the Organizing Committee of the "Architectural Episodes 02: New Dialogues in Architectural Education and Practice Symposium", the academicians from Turkey and from various countries in the world, who accepted to participate in the Scientific Committee, for their valuable efforts, and Prof. Dr. Hanife  zt rk  zkartal, the Rector of Istanbul K lt r University for her support in the realization of this event. I would also like to extend my sincere thanks to our invited speakers Prof. Dr. Oya Atalay Franck and Prof. Dr. Ashraf Salama and to the other participants for their qualified papers and to everyone who contributed to the panel and symposium process with their comments.

“MİMARLIK EĞİTİMİ VE PRATIĞİNDE YENİ DİYALOGAR SEMPOZYUMU” ÜZERİNE BİR DEĞERLENDİRME

Prof. Dr. Neslihan DOSTOĞLU

İstanbul Kültür Üniversitesi
Mimarlık Fakültesi Dekanı

1998 yılında kurulan İstanbul Kültür Üniversitesi Mimarlık Bölümü, öğrencilere düşünme, sorgulama, yanıt arama ve yorumlama sorumluluğu ve becerisi kazandırmak amacıyla yapılandırılmıştır. İKÜ Mimarlık Fakültesi Mimarlık Bölümü'nde eğitim, tasarım bilgisinden teknolojiye, felsefe ve sanattan ekonomiye, toplumsal dinamiklerden kentsel değişimlere farklı bileşenleri kapsayacak şekilde çok boyutlu ve disiplinler arası bir anlayışla şekillenmiştir. Bu çerçevede, temel hedef, çağdaş ve etkin bir kurumsal yapı içinde, ulusal ve uluslararası düzeyde yetkin, estetik değerlerle donanmış, gelişen teknolojiyi izleyen ve kullanabilen, tarihsel, çevresel ve etik değerlere saygılı, araştırmacı ve dinamik mimarlar yetiştirmektir.

Uluslararası ve ulusal ölçekte çeşitli kurumlarla ortak çalışmaların yapıldığı, sempozyum, konferans, gezi, sergi ve atölye çalışması gibi etkinliklerin düzenlendiği İKÜ Mimarlık Bölümü'nde, öğrencilerin, kültürel etkileşim içinde kendi bakış açılarını geliştirebilmelerini sağlayabilecek zengin bir ortam bulunmaktadır. Bu zengin ortamın oluşmasında Mimarlık Fakültesi tarafından düzenlenen ulusal ve uluslararası sempozyumlar önemli bir işlev üstlenmektedir.

Bu sempozyumlar arasında en güncel olanlardan biri Architectural Episodes 02'dir. İstanbul Kültür Üniversitesi Mimarlık Fakültesi Mimarlık Bölümü'nün ev sahipliğinde, ilki 15-16 Kasım 2018'de düzenlenen Architectural Episodes Sempozyumlarının ikincisi “Mimarlık Serisi 02: Mimarlık Eğitimi ve Pratiğinde Yeni Diyaloglar” (Architectural Episodes 02: New Dialogues in Architectural Education and Practice) temasıyla 24-25 Mart 2022 tarihlerinde çevrimiçi olarak gerçekleştirilmiştir. Organizasyon Komitesi Prof. Dr. Neslihan Dostoğlu, Prof. Dr. Emel Birer, Dr. Öğr. Üyesi Esin Hasgöl, Dr. Öğr. Üyesi H. Nur Kızılyaprak, Arş. Gör. Merve Aksoy Oral ve Arş. Gör. Dilara Gür'den oluşan ve “Mimarlıkta Diyalog” kavramına odaklanan sempozyum, European Association for Architectural Education (EAAE) ve Mimarlar Odası Genel Merkezi'nin de içinde olduğu çeşitli kurum ve kuruluşlar tarafından desteklenmiştir.

Konu başlığı “Diyalog” olunca tüm süreç buna göre şekillenmiştir. Sempozyumun temalarının belirlenmesi, sempozyumu destekleyen kuruluşların çeşitliliği, İstanbul Kültür Üniversitesi'nin Muğla Sıtkı Koçman Üniversitesi ile işbirliği yapması, bu kapsamda İstanbul ve Muğla'da gerçekleştirilen çalıştaylar, öğrencilerle birlikte üretilen projeler, farklı şehirlerde ve ortamlarda açılan sergiler Diyalog temasını baştan sona güçlendiren unsurlar olmuştur.

2019 yılı sonunda Çin’de başlayan ve 2020 yılında giderek tüm dünyaya yayılan Covid-19 pandemisinin yarattığı kırılma noktasının ardından oluşan uzaktan olma durumu, farklı platformlar arasında iş birliklerini gündeme getirmiştir. Bu durum, mimarlık eğitimi ve uygulamalarında yeni yaklaşımları, disiplinler arası aktörler arasındaki farklı diyalogları birbiriyle ilişkilendirirken, yeni kavramları ortaya çıkarmakta veya bilinen kavramları yeniden değerlendirmeye açmaktadır. Buna bağlı olarak sempozyumda ana tema kapsamında aşağıdaki alt başlıklar belirlenmiş ve bu konularla ilgili bildiri sunumları yapılmıştır:

Diyalog 1: Eğitimde İş Birliği ve İlişkili Yaklaşımlar

Diyalog 2: Mimarlık Pratiğinde Tasarımda İş Birliği

Diyalog 3: Kolektif Konut ve Kentin Yeni Gündemi

Diyalog 4: Afetler Üzerine Ortak Düşünceler

Diyalog 5: Mimarlık ve Sanayi ile İş Birlikli Bağlantılar

EAAE Başkanı ve İsviçre’de ZHAW Mimarlık, Tasarım ve İnşaat Mühendisliği Okulu Dekanı Prof. Dr. Oya Atalay Franck ile İngiltere’de Strathclyde Üniversitesi’nden Prof. Dr. Ashraf Salama’nın davetli konuşmacı olarak katıldığı sempozyumda, dünyanın farklı bölgelerinden çeşitli meslek gruplarını temsilen 22 araştırmacı deneyimlerini paylaşmış ve böylece değişik yaklaşımların süreç ve sonuçlarına ilişkin bir değerlendirme yapılabilmesi için fırsat yaratılmıştır. Bu fırsatlar ve geleceğe yönelik beklentiler Sempozyum sonundaki Panel’de ele alınmıştır. Sempozyumda sunulan tüm bildiriler bu bildiri kitabında bir araya getirilmiş olup, ayrıca seçilen bildiriler indeksli dergilerde yayımlanarak, çalışmalar sempozyuma katılamayan ilgililer tarafından kolaylıkla takip edilebilecektir.

Sempozyumun mimarlık ortamına en önemli katkılarından biri de, sempozyumun beş temasından biri olan “Afetler Üzerine Ortak Düşünceler” kapsamında Temmuz-Ağustos 2021’de Türkiye’nin özellikle güney ve güneybatısında çıkan orman yangınları konusunun bir çalıştay ve bunu takip eden sergiler kapsamında ele alınmasıdır.

İstanbul Kültür Üniversitesi Mimarlık Fakültesi Mimarlık Bölümü, Sempozyum programı kapsamında, Muğla Sıtkı Koçman Üniversitesi Mimarlık Bölümü ile iş birliği yapmış ve “Muğla Transcripts in/on Disasters: Forest Fires 2021” (Afetler İçinde/Üzerine Muğla Suretleri: Orman Yangınları 2021) başlıklı bir çalıştay iki okulun diyalogu ile organize edilmiştir. İstanbul Kültür Üniversitesi’nden Prof. Dr. Emel Birer ve Dr. Öğr. Üyesi Esin Hasgöl’ün; Muğla Sıtkı Koçman Üniversitesi’nden Doç. Dr. Öncü Başdoğan Avşar, Dr. Öğr. Üyesi İlke Tekin, Dr. Fulya Pelin Cengizoğlu Başaran, Arş. Gör. Hüseyin Furkan Balcı, Arş. Gör. Mihriban Duman’ın koordinatör olarak görev aldığı bu çalıştay 5-6 Mart 2022 tarihlerinde İstanbul ve Muğla’da eş zamanlı olarak gerçekleştirilmiştir. Çalıştayın ilk aşamasında, 5 Mart 2022 tarihinde içeriğe ilişkin sunumları kapsayan çevrimiçi bir panel düzenlenmiş ve iklim değişikliği üzerine değerlendirmeler yapılmıştır. Öğrencilerle panelden elde

edilen bilgiler doğrultusunda 6 Mart 2022 günü yüz yüze bir atölye süreci yürütülmüş ve konuya ilişkin infografik üretimler yapılmıştır. Muğla grubu orman yangınlarına içeriden, İstanbul grubu ise dışarıdan bakarak konuya yaklaşmış ve birlikte anlamlı bir bütün elde edilmiştir. Çalıştay sonuçları ise Sempozyum'da sunulmuş ve tartışılmıştır.

Çalıştay sürecinde elde edilen 5 metre uzunluğunda ve 60 cm yüksekliğinde, biri İstanbul Kültür Üniversitesi'nde, biri de Muğla Sıtkı Koçman Üniversitesi'nde Mimarlık Bölümü öğrencilerinin hazırladığı iki çalışmadan oluşan sergi 28 Mart - 1 Nisan 2022 tarihleri arasında Muğla Sıtkı Koçman Üniversitesi Atatürk Kültür Merkezi'nde, 14 -27 Nisan 2022 tarihleri arasında İstanbul Kültür Üniversitesi Ataköy Yerleşkesi'nde ve 28 Nisan-8 Mayıs 2022 tarihleri arasında Mimarlar Odası İstanbul Büyükşehir Şubesi binasında gerçekleştirilmiştir. Sergi, ayrıca, EAAE (European Association for Architectural Education) tarafından Madrid'de 31 Ağustos-3 Eylül 2022 tarihleri arasında düzenlenecek olan Yıllık Konferans ve Genel Kurul'a da taşınacaktır.

Sonuç olarak, İstanbul Kültür Üniversitesi Mimarlık Fakültesi Mimarlık Bölümü tarafından düzenlenen Architectural Episodes 02: New Dialogues in Architectural Education and Practice (Mimarlık Serisi 02: Mimarlık Eğitimi ve Pratiğinde Yeni Diyaloglar) Sempozyumu sürecinde, belirlenen konu başlığı olan "Diyalog" kavramı, disiplinler arası, kurumlar arası, öğrenci ve öğretim elemanları arası gibi farklı açılardan ele alınmış ve geleceğe yönelik yeni kapıların aralanmasına fırsat yaratılmıştır.

Bu vesileyle "Mimarlık Serisi 02: Mimarlık Eğitimi ve Pratiğinde Yeni Diyaloglar Sempozyumu"nın Organizasyon Komitesi'ni oluşturan İstanbul Kültür Üniversitesi Mimarlık Fakültesi Mimarlık Bölümü'nden kıymetli çalışma arkadaşlarıma, Türkiye'den ve dünyanın çeşitli ülkelerinden Bilimsel Kurul'a katılmayı kabul ederek katkıda bulunan değerli akademisyenlere tüm çabaları için ve İstanbul Kültür Üniversitesi Rektörü Prof. Dr. Hanife Öztürk Özkartal'a bu etkinliğin gerçekleştirilmesindeki desteği için teşekkür ederim. Çağrılı konuşmacılarımız Prof. Dr. Oya Atalay Franck ile Prof. Dr. Ashraf Salama'ya ve diğer katılımcılara nitelikli bildirimleri için, panel ve sempozyum sürecine yorumlarıyla katkıda bulunan herkese içten teşekkürlerimi ayrıca iletmek isterim.

Rethinking Architectural Education Through New Dialogues: An Evaluation of Collaborative Methods and Approaches

Emel BİRER, Esin HASGÜL, H. Nur KIZILYAPRAK

Today, the global order and neoliberal policies cause new discussions on the "education of the architect" to start, and to question the relationship between architecture and society from different perspectives. Dialogues with actors over the relationship between society and architecture, which will be discussed in Turkey, efforts to develop multiple architectural policies, the collaborative and social responsibility aimed to be gained during education will shape the (new) role of the architect, the (new) design pedagogy and the future of education. This discussion has become extremely important after the breaking point created by the Covid-19 pandemic. Considering the increasing interest in education activities with information, digital technologies and technological developments in design pedagogy, interdisciplinary approaches, collaborative studies and knowledge acquisition sources have also differentiated. New approaches in architectural education and practice need new tools of knowledge and relationships, while linking different dialogues between interdisciplinary actors. Dialogues between architects, engineers, psychologists, educators, researchers, etc. not only enable the sharing of threats, opportunities and responsibilities in education and professional practice, but also define the effective connections of a holistic design thinking. How should architects and architectural education respond to these changes? Accordingly, in this symposium; new methods in education and their applications including collaboration, dialogue-based design studies, new paradigms in post-pandemic housing, practices of living together in the urban environment, collaborative investigations on disasters, and collaborative connections between architecture and industry were opened for discussion. In this symposium, participants from various professions related to the basic field of architecture in different parts of the world (architecture, interior architecture, landscape architecture, city and regional planning, industrial design) and researchers from different disciplines shared their experiences.

The first keynote speaker on the opening day of the symposium was EAAE President Professor Dr. Oya ATALAY FRANCK, in her speech titled "Going Beyond Disruption: The Future of Architectural Education and Research", mentioned that the pandemic forces everyone and every institution to develop the necessary skills to operate in a strictly virtual environment, and said that these skills are extremely important and useful - even stated that it should be a prerequisite - for the planning and conducting of international collaborations and

projects. On the second day of the symposium, the other keynote speaker Ashraf Salama, in his speech titled “Innovation and Decolonization: Revisiting a Theory for Knowledge in Architectural Design Education”, took into account the situation of the Covid-19 pandemic, which has raised serious questions about the difficulties faced by the two-century-old pedagogical laws established in architecture and urbanism and determined the importance of reconsidering architectural theory for knowledge integration in architectural design education.

The first session, named as “Co-Education and Related Approaches – 1”, is a session that opens the interdisciplinary dialogues in architectural education to discussion and includes applications within this scope. In this session, studies on participatory design practices, sense of belonging in design education, theory and practice in architectural education and use of technology in architectural education were included. As a first study of this session, in their paper, namely “Understanding the Journey of Knowledge in Participatory Design Practices: Mapping the Dialogue in Participation”, Gizem Alataş Temel and Duygu Cankurtaran examine how knowledge-action networks based on participatory design work in the process of developing sustainable strategies for cities. In this context, the study presents the social network analysis and situational analysis of the knowledge-action networks selected as an example after the literature analysis that elaborates on various information and decision-making approaches.

In the second paper “The Importance of a Sense of Belonging in Design Education: A Workshop Experience”, A. Hilal Iavarone and Suzan Sanlı Esin describe their experience in a workshop they organized at İstanbul Kültür University. The approach used in the workshop supports the idea of co-designing a campus garden that is in active use by students. In the paper, they emphasize both considering the opening aspects of learning through workshops and the success of the design problem in which the sense of belonging comes to the fore in design education through a workshop story. According to the writers, the outputs of the workshop show that, when design education is reconsidered from the perspective of the workshop process, it is seen that the sense of belonging supports the students' desire to learn and produce.

In the related session, in their paper “Architectural Education In-Between Theory and Practice: A Critical Evaluation of Architectural Education in Turkey” Nihan Büşra Kezer and Celal Abdi Güzer discussed the historical frame of architectural education by emphasizing breaking points and investigating the current educational models in line with the contextual developments in profession, education and daily life. They provided comparative analyses of existing educational models by presenting literature-based research. The main focus of their research was to introduce the possibilities and limits of an alternative model of architectural education by analyzing the continuities and discontinuities between architectural education and professional practice.

In the last paper of this session; Aktan Acar, Mustafa Koç, Selda Bancı and Günsu Merin Abbas presented their paper titled “Borderline: An Interdisciplinary Spatial

Installation” which examines the first-year basic design course experience in TOBB ETU. The installation was a work created in the context of the relation of architecture and technology in 2017 with the participation of all basic design studio students that is shaped during the semester by students' discussions, interactive work, and exchange of ideas in the studio. The core of the work was that the students aimed to demonstrate changing boundaries of space by using technology.

The second session of the symposium was planned as a continuation of the first session and was named as “Co-Education and Related Approaches – 2”. In this session, the paper “Opportunities and Challenges of Online Education in Architecture: Conservation Studio Experience of Gebze Technical University” by Elif Özlem Aydın Oral and Funda Solmaz Şakar conveyed their experiences in a conservation studio course named Analysis of Historic Buildings in which they had to experience the online education due to the Covid-19 pandemic. In the study, the authors aimed to discuss the positive and negative aspects of online education through the methods used in the Architecture Department of Gebze Technical University. The practice methodology and the scope of the online courses were discussed in the context of students' relation with the historical buildings and cultural heritage.

The second paper is Ahmet Bender Uğurlu's study titled “Effects of Online Education on Interaction in the First-year Architecture Studio”, in which the potential future of the architectural design studio within the framework of technologies is discussed together with the place of the first-year studio in architectural education and its unique pedagogical approaches. In this context, within the scope of the study, it is aimed to reveal the importance of interaction for architectural education, to discuss the effects of online interfaces and the interaction environment formed in the first year studio.

The third paper of this session as “Shaping Sustainability in Architectural Education: The Integrated Design as a Tool” by Khansa Dhaouadi and Pierre Leclercq is focusing on Climate crises and energy transition and their effects on architecture and urban design education. The paper is, an experimental study taking place, during the first semester of the first year of master's degree in civil engineering and architecture at the University of Liège, and within the context of an integrated building design project. The analysis of the data collected via questionnaires and interview surveys reveals that sustainability and environmental quality criteria were developed in a holistic way of design thinking in coherence with all the functional, aesthetic, and technological aspects in the design process while respecting the specific contextual requirements. The findings provide evidence that integrated design plays an important role in shaping sustainability in architectural education.

In the last paper “Architectural Dialogues through Living Buildings: Common Design Strategies and Messages for Public Sustainable Building Education”

Ayşegül Aktürk is calling attention on the idea that sustainable buildings themselves could be used as a teaching tool for sustainable building education. The author is conceptualizing sustainable buildings as communication mediums to inform and educate public about sustainable building education by reviewing existing literature on the pedagogical architecture.

In the third session of the symposium, titled "Co-Design in Architectural Practice", covers researches on interior design processes, the role of the architect in the capitalist production of space, and the today's stereotomic architecture approaches.

This session begins with Eneko Besa's study named "A Pedagogical Method of Interior Design Projects' Method". This paper has been published in its full version in Spanish, and it is based on a report of the subject of Interior Projects Design Studio at IDarte. Author is presenting his work in the studio by summarizing each exercise with an image. The image is also accompanied by a brief report including the approach, the conceptual support, the historical and philosophical references, as well as the pedagogical orientation and the strategy of the exercise within the whole course.

As for Pelin Çetken and Belkıs Uluoğlu's paper titled "Definition of the Architect in Capitalist Production of Space", it is discussed the role of architects in today's world. The paper explores the organization of architectural practices of mass-produced, standardized architectures. It focuses on the design process of mass-produced, standardized architectures to investigate and explore their decision mechanisms and the decision-makers involved in the process. According to the authors the primary purpose of the study is to uncover the definition of the architect within the context of capitalist production of space.

This session ends with the paper of Ali Derya Dostoğlu and Belkıs Uluoğlu. The article named "Stereotomy Reinterpreted" begins with the definition of the term stereotomy and the drawing of its characteristic features. Afterwards, the study presented the stereotomic reinterpretation forms through case studies by referring to the relationship between tectonic architecture and stereotomic architecture.

The fourth session of the symposium, "Co-Housing and The City in New Agenda", there were variety of the approaches and attempts to re-think the scale and content of the related theme. The first paper in this session "From Cabinet in the Forest to the Villas in Nature: A Reading on Human-Nature Relationship and Nostalgia" by the author Merve Eflatun, the nostalgic dimension of human's relationship with nature, pos-industrial evaluation and contemporary is being problematized. The concept of nature within the place's sense of nostalgia; lost nature, new nature and hyperized approaches created an interesting research content that relates to the session theme.

In their paper Ubeydullah Yaşar and Sedef Özçelik titled as “Participatory Design in Affordable Housing, a Guideline for Turkey: The Case of Architect Alejandro Aravena Initiatives, Chile”, the evaluation of daily architectural practice and the basic concepts of architecture are discussed. The aim of the paper is to create a discussion environment through process comparisons and will evaluate the housing production phases such as procedure and preparation, design and implementation, and transformation with use.

In the related session, in their paper “Importance of Urban Design Studios for The Education of Architecture Under Multidisciplinary Perspective” A. Ceren Onur and Jülide Alp discussed emerging technologies, participative and multidisciplinary approaches gain importance in architecture like in most of the sectors and supports developing sustainable designs. The study of Urban Design Studio class experience in the fall semester of 2021 in Maltepe University, Architecture and Design Faculty, Architecture Department is being shared. The research outcomes pointed out that throughout the urban design studio class, developing their knowledge gained from the field with a holistic perspective were encouraged from the students' projects.

As for Pedro Neto's paper, “Visual Spaces of Change: Self-reflection on Architecture and Urban Change through Photography”, the multi-disciplinary topics is being examined within the potential of visual methods for communicating the identity and transformation of architecture and public spaces. The paper synthesizes theoretical aspects of photography related to architecture, city and territory, as well as the case studies coming from the research project Visual Spaces of Change, focusing on the use of photography to investigate the dynamics of architecture and urban change.

The fifth session “Co-Reflection on Disasters”, covers two related research about pandemic related topics in which pandemic can also be re-defined as a disaster and has its unique reflections on architectural education and practice. In their paper “Investigating the Multidisciplinary Design Process in Architectural Design Studio: A Collaborative Digital Studio Context “House During & After Pandemic”, Esin Hasgöl, Berkay Oskay, H. Nur Kızılyaprak, Şeyda Şen ve Gamze Alptekin presented an investigation of re-reading the multidisciplinary design process in architectural design studio within reflections of Covid-19 pandemic concluding as a digital studio education experience. The design problem and changing circumstances of dwelling spaces before and after pandemic is discussed by five sections of second-year architecture students in Architectural Design Studio III which is held in 2020-2021 Fall Semester in İstanbul Kültür University, is given as “House During & After Pandemic”. The findings of the research show that configuring co-structured steps in the design education brought up intensive and collaborative dialogues.

The second paper of this session as “Student with a Movie Camera: The Representation Challenge in the Corona Pandemic of Introductory Architectural

Studio” by Tonguç Akiş, constructs his research on Dziga Vertov, author of the movie *Man with a Movie Camera* (1929), aimed at eliminating the dramatic scenarios, set-up scenes and actors and he paved the way to emerging documentary track of cinematic representation in the film industry with the motto of reflecting life as it is. Research examined that multiple dialogues in the studio between instructor and student, assignment formulations with intentions and responses of student by their collective and individual efforts are the focus of this particular use of digital video apparatus in the studio.

The papers presented in “Co-Link with Architecture and Industry” session, respond to varied and interesting topics discussing link between architecture and industry. Nilsu Altunok with her paper “Discovering New Potentials of Bauhaus-invented: “Vorkurs”, attempts to produce an epistemological investigation based on Bauhaus-invented pedagogic terminology and notions. The investigation aims to make us to question if can there be a coincidence in Bauhaus-invented ‘Vorkurs’s moving, both geographically and pedagogically, since Bauhaus had never isolated itself from Germany’s political, economic and historical background.

Within the paper titled as “The Effect of Interdisciplinary Actors and Related Factors in Material Selection for Architectural Conservation”, Dilara Gür discussed an introduction of a broader conceptualization of actors and factors in conservation that is presented in order to produce new forms of understanding that could lead to different approaches in conservation research. The study aims leading further investigations on holistic models and customized tools to be used for material selection in conservation works when combined with information technology perspective.

Another material-based investigation of this session, Hatice Duran, Aktan Acar, İsmail Öztaş, Cem Aşçı and Öznür Tiftik presented their study titled as “Degradable Polymer Plastic Seed Capsule Production Process for Porous Concrete Structures“. The study is an interdisciplinary and inter-scale collaborative research project of Department of Material Science and Nanotechnology Engineering and Department of Architecture and the main objective of the project is to investigate appropriate methods of developing polymer capsules made of upcycled waste plastics for plant seeds, which are to place in permeable / porous concrete mixture. The experience of the product is being shared in the session and varied comments and recommendations are being made about the development of the research.

The last paper in this session “Investigation of the Collaboration and Communication Parameters of BIM Ecosystem“ by Betül Yazarkan and Aktan Acar, transdisciplinary approaches focusing on the problem and taking the process within a whole system without fixed boundaries between disciplines is being discussed in the study. The study presents the theoretical model for the investigation of the parameters and dynamics of creative communication among the experts of the project within the BIM ecosystem through the case of project that

is called "Fog catcher". The outcome of the project is being discussed through creative collaboration theory.

In the symposium there were two panel sessions, which can be found at the end of the book. The first panel is the "Workshop Panel" in which the final products of the "Muğla Transcripts In/On Disasters: Forest Fires 2021" workshop is being presented by the workshop moderators and the students. In this panel, moderators which are also the workshop coordinators, explained the main aim and scope of the workshop relating with the theme of the symposium. The narrative of the workshop was to create a language of expression in which information and images that are inside and outside the fire zone are being shared by the students of two universities as Istanbul Kültür University and Mugla Sıtkı Kocman University. This narrative language, which include nature, topography, animals, aids and all actors related to fire, consists of looking at the fire zone with a sectional narration from inside / afar and the storytelling of infographics symbolizing sometimes helplessness, sometimes wrongly known truths and sometimes unknown reality of all these actors intertwined. The final works of the workshop is being named as "Transcripts" that will pass into the history as spatial footnotes which are defined by the students. The content of this workshop, which includes a view from inside the fire scene in Muğla and from the outside as an observer on social media in Istanbul, and the display of the related results are important in terms of causing comparative discussions within the scope of the symposium.

The second panel of the symposium is the "Symposium Panel Session" in which the moderators of the all sessions summarized the overall researches and discussed upon the theories and new methods that have been put forward in the studies. The six sessions of the symposium among the topics of new methods and related collaborative approaches in education, collaborative design studies, co-housing and new paradigms in the urban scale, co-reflections on disasters, and co-links between architecture and industry are being discussed in this session. As of the new themes and further theories is being projected in the panel session, the reflections of pandemic and post-pandemic situations, the new and digital methods of collaborative approaches and new paradigms in architectural education were the key topics for future debates within investigating the new dialogues in architectural education and practice.

DEĞERLENDİRME

Yeni Diyaloglar Yoluyla Mimarlık Eğitimini Yeniden Düşünmek: İşbirlikçi Yöntem ve Yaklaşımların Değerlendirilmesi

Emel BİRER, Esin HASGÜL, H. Nur KIZILYAPRAK

Bugün küresel düzen ve neoliberal politikalar “mimarın eğitimi” üzerine yeni tartışmaların başlamasına, mimarlık-toplum ilişkisini farklı açılardan sorgulamamıza neden olmaktadır. Türkiye’de tartışmaya açılacak toplum ve mimarlık ilişkisi üzerinden aktörler ile diyaloglar, çoklu mimarlık politikaları geliştirme çabaları, eğitim sırasında kazanılması hedeflenen işbirlikçi ve toplumsal sorumluluk mimarın (yeni) rolünü, (yeni) tasarım pedagojisini ve eğitimin geleceğini şekillendirecektir. Bu tartışma Covid-19 pandemisinin yarattığı kırılma noktasının ardından son derece önem kazanmıştır. Tasarım pedagojisindeki bilgi, dijital teknolojiler ve teknolojik gelişmelerle eğitim faaliyetlerine giderek artan ilgi de göz önüne alındığında, disiplinlerarası yaklaşımlar, işbirlikli çalışmalar ve bilgi edinim kaynaklarını da farklılaştırmıştır. Mimarlık eğitimi ve uygulamalarında yeni yaklaşımlar, disiplinler arası aktörler arasındaki farklı diyalogları birbiriyle ilişkilendirirken, yeni bilgi edinme araçlarına ve ilişkilere ihtiyaç duymaktadır. Mimarlar, mühendisler, psikologlar, eğitimciler, araştırmacılar vb. arasındaki diyaloglar yalnızca eğitim ve profesyonel uygulamalardaki tehdit, fırsat ve sorumlulukların paylaşımını sağlamakla kalmaz, aynı zamanda bütünsel bir tasarım düşüncesinin etkili bağlantılarını da tanımlar. Mimarlar ve mimarlık eğitimi bu değişimlere nasıl cevap vermelidir? Buna bağlı olarak bu sempozyumda; eğitimde yeni yöntemler ve iş birliğini içeren uygulamaları, diyaloga dayalı tasarım çalışmaları, pandemi sonrası konutta yeni paradigmlar, kentsel çevrede birlikte yaşama pratikleri, afetler üzerine ortak arayışlar, mimarlık ve endüstri arasındaki ortak bağlantılar tartışmaya açılmıştır. Bu sempozyumda, dünyanın farklı bölgelerindeki mimarlık temel alanı ile ilişkili çeşitli meslek gruplarına ait katılımcılar (mimarlık, iç mimarlık, peyzaj mimarlığı, şehir ve bölge planlama, endüstriyel tasarım) ile farklı disiplinlerden araştırmacılar deneyimlerini paylaşmıştır.

Sempozyumun açılış gününde ilk davetli konuşmacısı EAAE Başkanı Professor Dr. Oya ATALAY FRANCK, “Going Beyond Disruption: The Future of Architectural Education and Research” başlıklı konuşmasında pandeminin herkesi ve her kurumu kesinlikle sanal bir ortamda faaliyet göstermek için gerekli becerileri geliştirmeye zorlamasından bahsederek, bu becerilerin, uluslararası işbirliklerinin ve projelerin planlanması ve yürütülmesi için son derece faydalı - hatta bir ön koşul olması gerektiğini belirtti. Sempozyumun ikinci gününde diğer davetli konuşmacısı Ashraf Salama ise, “Innovation and Decolonization: Revisiting a

Theory for Knowledge in Architectural Design Education” başlıklı konuşmasında, mimari ve şehircilikte yerleşik iki asırlık pedagoji kanunlarının karşılaştığı zorluklar hakkında ciddi soruları kışkırtan Covid-19 pandemisi durumunu göz önünde bulundurarak mimari tasarım eğitiminde bilgi entegrasyonu için mimarlık teorisini yeniden gözden geçirmenin önemini vurguladı.

Birinci oturum, “Co-Education and Related Approaches – 1” (Eğitimde İş birliği ve İlişkili Yaklaşımlar-1) olarak adlandırılmış olup mimarlık eğitimindeki disiplinler arası diyalogları tartışmaya açan, bu kapsamdaki uygulamaları içeren bir oturumdur. Bu oturum kapsamında katılımcı tasarım uygulamaları, tasarım eğitiminde aidiyet duygusu, mimarlık eğitiminde teori ve uygulama ve teknolojinin mimarlık eğitiminde kullanımı konularını ele alan çalışmalara yer verilmiştir. Bu oturumun ilk bildirisi olarak Gizem Alataş Temel ve Duygu Cankurtaran, “Understanding the Journey of Knowledge in Participatory Design Practices: Mapping the Dialogue in Participation” başlıklı makalelerinde, şehirler için sürdürülebilir stratejiler geliştirme sürecinde katılımcı tasarıma dayalı bilgi-eylem ağlarının nasıl çalıştığını incelemektedirler. Bu bağlamda çalışma, çeşitli bilgi ve karar verme yaklaşımlarını detaylandıran literatür analizinden sonra örnek olarak seçilen bilgi-eylem ağlarının sosyal ağ analizini ve durumsal analizini sunmaktadır.

“The Importance of a Sense of Belonging in Design Education: A Workshop Experience” adlı ikinci bildiride A. Hilal Iavarone ve Suzan Şanlı Esin, İstanbul Kültür Üniversitesi'nde düzenledikleri bir çalıştayda yaşadıklarını anlatmaktadırlar. Çalıştayda kullanılan yaklaşım, öğrenciler tarafından aktif olarak kullanılan bir kampüs bahçesinin birlikte tasarlanması fikrini desteklemektedir. Bildiride, hem atölye çalışmaları yoluyla öğrenmenin açıcı yönlerini göz önünde bulundurarak hem de tasarım eğitiminde aidiyet duygusunun ön plana çıktığı tasarım probleminin başarısını bir atölye öyküsü üzerinden vurgulamaktadırlar. Yazarlara göre atölye çıktıları, tasarım eğitiminin atölye süreci perspektifinden yeniden ele alındığında, aidiyet duygusunun öğrencilerin öğrenme ve üretme isteklerini desteklediğini göstermektedir.

İlgili oturumda Nihan Büşra Kezer ve Celal Abdi Güzer, “Architectural Education In-Between Theory and Practice: A Critical Evaluation of Architectural Education in Turkey” başlıklı bildirilerinde kırılma noktalarına vurgu yaparak ve meslek, eğitim ve günlük yaşamdaki bağlamsal gelişmelere uygun modeller doğrultusunda yürütülen güncel eğitim anlayışını inceleyerek mimarlık eğitiminin tarihsel çerçevesini tartışmışlardır. Bu çalışma kapsamında literatür temelli bir araştırma sunarak mevcut eğitim modellerinin karşılaştırmalı analizlerini sağlamışlardır. Araştırmalarının ana odak noktası, mimarlık eğitimi ile mesleki uygulama arasındaki süreklilik ve süreksizlikleri analiz ederek alternatif bir mimarlık eğitimi modelinin olanaklarını ve sınırlarını ortaya koymaktır.

Bu oturumun son bildirisi olan Aktan Acar, Mustafa Koç, Selda Banci ve Günsu Merin Abbas'ın “Borderline: An Interdisciplinary Spatial Installation” başlıklı çalışmada TOBB ETÜ'de ilk yıl temel tasarım kursu deneyimi olan ‘Borderline’

sunuldu. Bildiride sunulan çalışma, 2017 yılında mimarlık ve teknoloji ilişkisi bağlamında tüm temel tasarım stüdyosu öğrencilerinin katılımıyla oluşturulmuş, dönem boyunca öğrencilerin tartışmaları, interaktif çalışmaları ve stüdyoda fikir alışverişi ile şekillenmiştir. Çalışmanın özü yazarlar tarafından öğrencilerin teknolojiyi kullanarak uzayın değişen sınırlarını göstermeyi amaçlaması olarak açıklanmıştır.

Sempozyumun ikinci oturumu ilk oturumun devamı niteliğinde planlanmış olup, Co-Education and Related Approaches- 2 (Eğitimde İş birliği ve İlişkili Yaklaşımlar-2) olarak adlandırılmıştır. Bu oturumda Elif Özlem Aydın Oral ve Funda Solmaz Şakar'ın "Opportunities and Challenges of Online Education in Architecture: Conservation Studio Experience of Gebze Technical University" başlıklı bildirisi, araştırmacıların Covid-19 pandemisi nedeniyle deneyimledikleri çevrimiçi eğitim süreçlerini "Analysis of Historic Buildings" adlı koruma stüdyosu dersi kapsamında aktarmaktadır. Çalışmada yazarlar, Gebze Teknik Üniversitesi Mimarlık Bölümü'nde kullanılan yöntemlerle çevrimiçi eğitimin olumlu ve olumsuz yönlerini tartışmayı amaçlamışlardır. Bu doğrultuda öğrencilerin tarihi yapılar ve kültürel mirasla ilişkisi bağlamında uygulama metodolojisi ve çevrimiçi derslerin kapsamı tartışılmıştır.

İkinci bildiri, Ahmet Bender Uğurlu'nun "Effects of Online Education on Interaction in the First-year Architecture Studio" adlı çalışması olup, makale içerisinde mimari tasarım stüdyonun teknolojiler çerçevesinde potansiyel geleceği tartışılmakta ve mimarlık eğitiminde birinci sınıf stüdyosunun yeri ve bu atölyenin kendine özgü pedagojik sisteminin bir araştırmasını ortaya koyulmaktadır. Bu bağlamda çalışma kapsamında etkileşimin mimarlık eğitimi için önemini ortaya koyulması, çevrimiçi ara yüzlerin etkileri ile ilk yıl stüdyosunda oluşan etkileşim ortamını tartışılması amaçlanmıştır.

Khansa Dhaouadi ve Pierre Leclercq tarafından kaleme alınan "Shaping Sustainability in Architectural Education. The Integrated Design as a Tool" başlıklı bu oturumun üçüncü bildirisi, İklim krizleri ve enerji geçişi ile bunların mimarlık ve kentsel tasarım eğitimi üzerindeki etkilerine odaklanmaktadır. Bu yazı kapsamında, Liège Üniversitesi'nde inşaat mühendisliği ve mimarlık alanında yüksek lisans derecesinin ilk yılının ilk döneminde ve bütünsel bir bina tasarımı projesi bağlamında yer alan deneysel bir çalışma aktarılmaktadır. Anket ve görüşme yoluyla toplanan verilerin analizi, sürdürülebilirlik ve çevresel kalite kriterlerinin, belirli bağlamsal gereksinimlere saygı duyulurken, tasarım sürecindeki tüm işlevsel, estetik ve teknolojik yönlerle uyumlu, bütünsel bir tasarım düşüncesi biçiminde geliştirildiğini ortaya koymaktadır. Bulgular, entegre tasarımın mimarlık eğitiminde sürdürülebilirliği şekillendirmede önemli bir rol oynadığına dair kanıtlar sunmaktadır.

Ayşegül Aktürk, "Architectural Dialogues through Living Buildings: Common Design Strategies and Messages for Public Sustainable Building Education" başlıklı makalesinde, sürdürülebilir binaların sürdürülebilir bina eğitimi için bir

öğretim aracı olarak kullanılabileceği fikrine dikkat çekmektedir. Bu oturumun son yazısı olan bu bildiride yazar, mimarlık pedagojisi üzerine mevcut literatürü gözden geçirerek, sürdürülebilir bina eğitimi hakkında halkı bilgilendirmek ve eğitmek için iletişim araçları olarak sürdürülebilir binaları kavramsallaştırmaktadır. Sempozyumun “Co-Design in Architectural Practice” (Mimarlık Pratiğinde Tasarımda İş birliği) başlıklı üçüncü oturumunda, iç mekan tasarım süreçleri, mimarın kapitalist mekan üretimindeki rolü ve günümüzün stereomik mimari yaklaşımları üzerine araştırmalar yer almaktadır. Bu oturum Eneko Besa'nın “A Pedagogical Method of Interior Design Projects' Method” adlı çalışmasıyla başlamaktadır. Bu makale tam sürümü İspanyolca olarak yayınlanmıştır ve IDarte'deki İç Mekan Projeleri Tasarım Stüdyosunun (Interior Projects Design Studio) bir raporuna dayanmaktadır. Yazar, her bir alıştırmayı bir görüntü ile özetleyerek stüdyoda çalışmalarını sunmaktadır. Görsellere aynı zamanda yaklaşımı, kavramsal desteği, tarihsel ve felsefi referansları ve ayrıca pedagojik yönelimi ve tüm kurstaki alıştırmaların stratejisini içeren kısa bir raporlar eşlik etmektedir.

Pelin Çetken ve Belkıs Uluoğlu'nun “Definition of the Architect in Capitalist Production of Space” başlıklı makalesinde ise mimarların günümüz dünyasındaki rolü tartışılıyor. Makale, seri üretilen, standartlaştırılmış mimarilerin mimari uygulamalarının organizasyonunu araştırıyor. Karar mekanizmalarını ve sürece dahil olan karar vericileri araştırmak ve keşfetmek için seri üretilen, standartlaştırılmış mimarilerin tasarım sürecine odaklanır. Yazarlara göre çalışmanın temel amacı, kapitalist mekan üretimi bağlamında mimarın tanımını ortaya çıkarmaktır.

Bu oturum Ali Derya Dostoğlu ve Belkıs Uluoğlu'nun bildirisi ile sona ermektedir. “Stereotomy Reinterpreted” adlı makale, stereotomi teriminin tanımı ve karakteristik özelliklerinin çizilmesi ile başlamaktadır. Daha sonra çalışma, tektonik mimari ile stereotomik mimari arasındaki ilişkiye atıfta bulunarak, örnek olay incelemeleri üzerinden stereotomik yeniden yorumlama formlarını ortaya koymuştur.

Sempozyumun dördüncü oturumunda, “Co-Housing and the City in New Agenda” (Kolektif Konut ve Kentin Yeni Gündemi), ilgili temanın kapsamını ve içeriğini yeniden düşünmeye yönelik çeşitli yaklaşımlar ve girişimler üzerine tartışmalar yürütülmüştür.

Yazar Merve Eflatun'un “From Cabinet in the Forest to the Villas in Nature: A Reading on Human-Nature Relationship and Nostalgia” başlıklı bu oturumdaki ilk bildirisi, insanın doğa ile ilişkisinin nostaljik boyutu, endüstri sonrası değerlendirme ve çağdaş mimari ile bağlantısını sorunsallaştırmaktadır. Mekanın nostalji anlayışı içinde doğa kavramı; kayıp doğa, yeni doğa ve hiperleştirilmiş yaklaşımlar, oturum temasıyla ilgili ilginç bir araştırma içeriği oluşturmuştur.

Ubeydullah Yaşar ve Sedef Özçelik'in "Participatory Design in Affordable Housing, a Guideline for Turkey: The Case of Architect Alejandro Aravena Initiatives, Chile", başlıklı bildirilerinde, gündelik mimarlık pratiğinin değerlendirilmesi ve mimarlığın temel kavramları tartışılmıştır. Bildirinin amacı, süreç karşılaştırmaları yoluyla bir tartışma ortamı oluşturmak ve konut üretim aşamalarını prosedür ve hazırlık, tasarım ve uygulama ve kullanımla dönüşüm gibi değerlendirmektir.

İlgili oturumda A. Ceren Onur ve Jülide Alp, "Importance of Urban Design Studios for The Education Of Architecture Under Multidisciplinary Perspective" başlıklı bildirilerinde, birçok sektörde olduğu gibi mimarlıkta da gelişen teknolojileri, katılımcı ve multidisipliner yaklaşımları ve destekleri tartışmaktadır. Maltepe Üniversitesi Mimarlık ve Tasarım Fakültesi Mimarlık Bölümü 2021 Güz Dönemi "Urban Design Studio" dersi deneyiminin çalışmasının araştırma sonuçları, kentsel tasarım stüdyosu dersi boyunca, öğrencilerin projelerinden, alandan edindikleri bilgileri bütüncül bir bakış açısıyla geliştirmelerinin teşvik edildiği sonucunu ortaya koymuştur.

Pedro Neto'nun "Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography" başlıklı bildirisinde, çok disiplinli konular vurgulanarak mimari ve kamusal alanların kimliği ve dönüşümündeki görsel yöntemlerin potansiyelleri incelenmektedir. Makale, fotoğrafın mimarlık, şehir ve bölge ile ilgili teorik yönlerinin yanı sıra, "Visual Spaces of Change" araştırma projesinden gelen vaka çalışmalarını sentezleyerek, mimarinin ve kentsel değişimin dinamiklerini araştırmak için fotoğrafın kullanımına odaklanmaktadır.

Beşinci oturum olan "Co-Reflection on Disasters" (Afetler Üzerine Ortak Düşünceler) oturumunda pandeminin de bir afet olarak tanımlanabileceği ve mimari eğitim ve pratiğe yansımalarının olduğu noktasında pandemi ile ilgili konuları içeren ilgili iki araştırmayı kapsamaktadır. Esin Hasgöl, Berkay Oskay, H. Nur Kızılyaprak, Şeyda Şen ve Gamze Alptekin, "Investigating the Multidisciplinary Design Process in Architectural Design Studio: A Collaborative Digital Studio Context "House During & After Pandemic", başlıklı makalelerinde, mimari tasarım stüdyosunda multidisipliner tasarım sürecinin Covid-19 yansımaları içinde yeniden okunduğu bir araştırmayı sunmuştur. Araştırma kapsamında, İstanbul Kültür Üniversitesi'nde 2020-2021 Güz Dönemi'nde gerçekleştirilen Mimari Tasarım Stüdyosu III'te mimarlık ikinci sınıf öğrencileri tarafından pandemi öncesi ve sonrası tasarım sorunu ve konut alanlarının değişen koşulları tartışılmaktadır. Araştırmanın bulguları, tasarım eğitiminde ortak yapılandırılmış adımların yoğun ve iş birlikçi diyalogları beraberinde getirdiğini göstermektedir.

Tonguç Akış'ın "Student with a Movie Camera: The Representation Challenge in the Corona Pandemic of Introductory Architectural Studio" başlıklı bu oturumun ikinci makalesi, araştırma strüktürünü Man with a Movie Camera (1929) filminin yazarı Dziga Vertov üzerine kurgulamaktadır ve film; dramatik senaryoları, kurgu sahneleri ve oyuncularını ortadan kaldırmayı amaçlamış ve hayatı olduğu gibi

yansıtma mottosu ile film endüstrisinde sinemasal temsilin ortaya çıkan belgesel izinin yolunu açmıştır. Araştırma, stüdyoda eğitmen ve öğrenci arasındaki çoklu diyalogların, öğrencilerin toplu ve bireysel çabalarıyla niyetleri ve tepkileri ile ödev formülasyonlarının stüdyoda dijital video aparatının bu özel kullanımının odak noktası olduğunu incelemektedir.

“Co-Link with Architecture and Industry” (Mimarlık ve Sanayi ile İş birliği Bağılantılar) oturumunda sunulan bildiriler, mimarlık ve endüstri arasındaki bağlantıyı tartışan çeşitli ve ilginç konulara yanıt vermiştir. Nilsu Altunok, “Discovering New Potentials of Bauhaus-invented: “Vorkurs” başlıklı bildirisi ile, Bauhaus'un ortaya koyduğu pedagojik terminoloji ve kavramlara dayalı epistemolojik bir araştırma sunmuştur. Araştırma, Bauhaus'un kendisini Almanya'nın siyasi, ekonomik ve tarihsel arka planından asla soyutlamadığı için, Bauhaus'un ortaya koyduğu Vorkurs'un hem coğrafi hem de pedagojik olarak hareket etmesinde bir tesadüf olup olmadığını sorgulamamızı amaçlamaktadır.

Dilara Gür, “The Effect of Interdisciplinary Actors and Related Factors in Material Selection for Architectural Conservation” başlıklı bildirisinde, yeni anlayış biçimleri üretmek için sunulan korumadaki aktörlerin ve faktörlerin daha geniş bir kavramsallaştırması üzerine bir tartışma açmaktadır. Çalışma, bilgi teknolojisi perspektifi ile birleştirildiğinde, koruma çalışmalarında malzeme seçimi için kullanılacak bütünsel modeller ve özelleştirilmiş araçlar hakkında daha fazla araştırma yapmayı amaçlamaktadır.

Bu oturumun malzeme bazlı bir diğer araştırması, Hatice Duran, Aktan Acar, İsmail Öztaş, Cem Aşçı ve Öznür Tiftik'in “Degradable Polymer Plastic Seed Capsule Production Process for Porous Concrete Structures” başlıklı bildiri sunum şeklinde gerçekleşmiştir. Çalışma, Malzeme Bilimi ve Nanoteknoloji Mühendisliği Bölümü ile Mimarlık Bölümü'nün disiplinler arası ve ölçekler arası ortak bir araştırma projesidir ve projenin temel amacı, bitki tohumları için geri dönüştürülmüş atık plastiklerden yapılmış polimer kapsüller geliştirmenin uygun yöntemlerini araştırmaktır. Oturumda sunulan ürünün deneyimi paylaşılmış ve araştırmanın gelişimi ile ilgili çeşitli yorumlar ve öneriler yapılmıştır.

Bu oturumun son bildirisi olan Betül Yazarkan ve Aktan Acar'ın “Investigation of the Collaboration and Communication Parameters of BIM Ecosystem” başlıklı araştırması, problem odaklı ve disiplinler arası kesin sınırlar olmaksızın süreci bütünsel bir sistem içinde ele alan disiplinler arası yaklaşımları üzerine odaklanmaktadır. Çalışma, BIM ekosistemindeki projenin uzmanları arasındaki yaratıcı iletişimin parametrelerinin ve dinamiklerinin “Sis yakalayıcı” olarak adlandırılan proje örneği üzerinden araştırılması için teorik bir model sunmaktadır. Projenin sonucu, yaratıcı iş birliği teorisi aracılığıyla tartışılmıştır.

Sempozyumda kitap bölümlerinin sonunda yer alan ayrıca iki adet panel oturumu gerçekleştirilmiştir. İlk panel, atölye moderatörleri ve öğrenciler tarafından “Muğla Transcripts In/On Disasters: Forest Fires 2021” (Afet Üzerine/İçinde Muğla

Suretleri: Orman Yangınları 2021) atölyesinin sonuç ürünlerinin sunulduğu “Atölye Paneli”dir. Bu panelde aynı zamanda atölye yürütücüleri olan moderatörler, konferansın temasıyla ilgili atölyenin ana amacını ve kapsamını açıklamıştır. Atölyenin temel ifade ve amacı, yangın bölgesi içindeki ve dışındaki bilgi ve görüntülerin öğrenciler tarafından paylaşıldığı bir ifade dili oluşturmak üzerine kurgulanmıştır. İstanbul Kültür Üniversitesi ve Muğla Sıtkı Koçman Üniversitesi olmak üzere iki üniversiteden öğrencilerin katılım sağladığı bu atölyede doğayı, topografyayı, hayvanları, alandaki yardımcıları ve yangınla ilgili tüm aktörleri içeren bir anlatım dili, yangın bölgesine içinden / uzaktan kesitsel bir anlatımla bakmak ve yangının hikâyesini anlatmak üzerinedir. Tüm bu aktörlerin bazen çaresizliği, bazen yanlış bilinen gerçekleri bazen de bilinmeyen gerçekleri simgeleyen infografikleri iç içe geçmiştir. Öğrenciler bu suretleri (transkriptleri) tarihe geçecek olan mekânsal dipnotlar olarak adlandırmaktadır. Muğla'daki yangın mahallinin içinden ve İstanbul'da sosyal medya üzerinden bir gözlemci olarak dışından bir bakış içeren bu atölye içeriği ve ilgili sonuçların sergilenmesi sempozyum kapsamında karşılaştırmalı tartışmalara yol açması açısından önem taşımaktadır.

Sempozyumun ikinci paneli, tüm oturumların moderatörlerinin genel araştırmaları özetlediği ve çalışmalarda ortaya atılan teoriler ve yeni yöntemler üzerine tartışıldığı “Sempozyum Panel Oturumu”dur. Eğitimde yeni yöntemler ve ilgili iş birlikçi yaklaşımlar, iş birlikçi tasarım çalışmaları, kentsel ölçekte kolektif konut ve yeni paradigmlar, afetler üzerine ortak yansımalar ve mimarlık - sanayi arasındaki iş birlikçi bağlantılar konularını içeren sempozyumun altı oturumu bu bölümde tartışılmıştır. Yeni temalar ve geleceğe dönük teorilerin gündeme geldiği bu oturumdaki pandemi ve pandemi sonrası durumların yansımaları, güncel ve dijital iş birlikçi yaklaşım/ yöntemler ve mimarlık eğitiminde yeni paradigmlar, mimarlık eğitimi ve pratiğindeki yeni diyalogların araştırılmasında gelecekteki tartışmaların ana konularını oluşturmuştur.

Going Beyond Disruption: The Future of Architectural Education and Research

Oya ATALAY FRANCK

Professor Dr., President EAAE, Dean ZHAW School of Architecture, Design and Civil Engineering

Whether the Corona pandemic will prove to be of lastingly disruptive influence on architectural education and research remains to be seen. The situation in those countries where the restrictions concerning public life are being substantially reduced or even entirely abandoned shows basically a return to the previous lifestyle. Consequently, the “New Normal” predicted by some may indeed not be so much different from the “Old Normal”.

Independent of these yet unclear developments, there has been a strong overarching trend both in architectural education and practice for the last 50 years: that towards internationalization of both activities and institutions. What once began as loose collaborations between institutions – usually based on personal relationships amongst key members of these institutions – has turned into true alliances with much stronger organizational and processual structures than the loose collaborations of a few decades ago.

This is to a considerable degree the result of the continuing international pooling of research funds. For programs such as the European Union’s Horizon 2020, alliances amongst institutions have de facto become mandatory. Another phenomenon observed more and more often are international exchange and joint degree programs. If we extend the vector of past and present developments into the future, we see the emergence of truly international, even global educational institutions, quite like the big international architectural firms that we already have for quite some time.

This overarching trend has undoubtedly received a further “technological boost” because of the Corona pandemic, in that the pandemic has forced everybody and every institution to develop of the necessary skills for operating in a strictly virtual setting. These skills are extremely helpful – even a prerequisite – for the planning and execution of international cooperations and projects.

While we still may be returning for the most part to the pre-pandemic face-to-face modes of operation – be it in professional practice, be it in educational settings, be it in other activities of daily life – the seed has been sown by which the described overarching trend may even accelerate.

If we think positive, this ongoing trend may help us in effectively addressing the tremendous problems our societies were facing already before the pandemic and which have not gone away in the meantime: climate change, of course, but also migration and – as the situation in Ukraine shows – the threats that authoritarian regimes pose to democracy and our open and free societies.

The pandemic: deepening the gap between classes also in higher education?

But this tendency is not without problems for actors in both the building industry and the academic environment, i.e., in teaching and in research. For one, there is the risk segregation, of a further widening of the gap between the leading purveyors of academic educational services and research and the tier-2 and tier-3 actors. Here as elsewhere, those who have – knowledge, capacity, prestige, funds – tend to receive even more. The internationalization of activities described above requires substantial investments in networking, in technology, and in administrative knowledge and capacity, investments which often are beyond the possibilities of less-established institutions.

Nevertheless, there is and always will be opportunities for academic service providers that are smart and agile and make intelligent use of the possibilities of today's information technology. To see these possibilities, we must understand what digitalization has done – and promises to do – to academia and academic education, especially regarding the promotion of remote education and distance learning, its potentials, and shortcomings, in the field of architecture.

Whether we like it or not, the Corona pandemic has proven that architectural design – the central element of educating future architects – can be taught “virtually”. This is a somewhat unsettling learning, as it puts into question the centuries-old, universal practice of design teaching in studios, in the master class. Let's be clear, however: Even though it has substituted established practice during the pandemic, virtual design studio is clearly not (yet) “on a par” with physical teaching. Nevertheless, in design education, the paradigm that the teacher meets the student in the halls and rooms of the academic institution has obviously been put in doubt.

For disciplines other than architecture, this is not really groundbreaking news. In fact, since the appearance of distance learning institutions in the 1960s and 1970s such as the Open University in England or the Fernuniversität Hagen in Germany, there has been a market for such modes of teaching. But architecture and design teaching have proven to be quite resistant to remote education.

A university is traditionally a place for meeting physically, face-to-face. In its simplest form, this meeting place is a courtyard or a lecture hall where people can gather and talk. It is an institution where academic education takes place by exchanging factual knowledge and debating on truth. Such meeting places not only have a functional role but also symbolic significance: Universities are the temples of science, of wisdom, of the ability to discern truth from mere belief, of understanding the world.

Thus, going to a university in order to gain knowledge is also a form of pilgrimage, a passage from one state to another, from ignorance to erudition.

This fundamental principle of the university as a place of both factual and symbolic importance was valid for hundreds of years and was never really challenged, even by the most important technological developments, such as printing, the steam engine and telecommunication. What changed through technology were mostly just the travel modes of pilgrimage and the ways and means in which information was passed from teacher to pupil. Technology thus facilitated the traditional *modus operandi* of universities.

Nevertheless, because the process of education is influenced – and changed – by technological developments, it is inevitable that these technological developments also influence and change the nature of the location where education takes place. The question is, however, if the changes take place within a given paradigm, or whether they lead to a paradigm shift.

This principle must also apply to digitalization – to the technological shift away from analog (“continuous”) to digital (“binary”) information management – and to all the “side effects” of this change: the speed with which information can be disseminated, and the ability to provide the same information to everybody at the same instant.

The university and digitalization: just “more of the same” – or a true paradigm shift?

The essential question that arises in the context of digitalization is not whether academic teaching and academia are changing as a result of digitalization - that is inevitable - but how they are changing and to what degree.

If we take a closer look at academic teaching and research and the changes that have taken place in the last decades, there are arguments for both views: that the paradigm is retained, or that it is shifting:

- In favor of retaining the paradigm, it could be argued that digitalization primarily provides more of the same: more available knowledge, better accessibility and faster dissemination of information, a stronger network of actors and institutions, more automation and thus more efficiency and lower costs for knowledge production, provision, and dissemination. What happened thousands of years ago with the invention of writing and much later of printing and again somewhat later of electronic telecommunication also applies to digitalization. Furthermore, other technological developments have also transformed the modes of academic knowledge production and management without fundamentally revising them, for example faster and safer means of travel or analog duplication techniques. They, too, contributed to the expansion and acceleration of knowledge generation, storage and transmission but did not change the paradigm of academia and of the university as a place to go to for erudition.

- On the other hand, it could be argued that there are cultural, economic and social tipping points in higher education, too, where a process, such as the creation and management of scientific knowledge, breaks out of its usual channels and

undergoes a fundamental and irreversible change. This happens when a certain mode can no longer be maintained or when other modes, despite their disadvantages, prove more powerful and displace the previously leading operational modes. Such a tipping point where – in our case – the traditional university may become obsolete – may not yet be fully reached, but the way to this point seems to be predetermined.

The university as a place: an obsolete model?

In an influential and at the time intensely discussed and widely disseminated article entitled "Electronics and the Dim Future of the University," published about 25 years ago in the prestigious journal "Science", American economist Eli M. Noam, longtime director of the Institute for Tele-Information at Columbia University, New York, painted a bleak picture of the future of our universities: According to Noam, their business model was essentially about to be economically ruined. This prediction was based on changing information flows due to electronic communications resulting in services of new, not place-bound institutions such as distance and online universities with their Massive Open Online Courses (MOOCs). The offerings of these new "virtual universities", Noam prophesied, would sooner or later displace large segments of academic teaching, especially undergraduate courses, due to the enormous economies of scale of these educational products and to the ubiquity of access to these services. This would – as Noam asserted – rob traditional universities of their financial underpinnings.

Two of the factors that so far have guaranteed the success of universities and spurred their growth are interdisciplinarity on one hand and specialization on the other. Universities were attractive for teachers and students alike because they bundled different scientific knowledge and views in a single place. And the growth of universities was a direct consequence of the growth of knowledge and the associated structural and processual requirements for places of knowledge production and dissemination.

Universities also grew because knowledge – producing it, acquiring it, guarding it, selling it – is power. Universities grew over time both in absolute terms and in the number of the fields of knowledge they covered. Still, even the largest and best-resourced universities are facing limits to their growth, and even institutions such as Harvard, Sorbonne, Oxford or ETH will have reached the point where they have to limit themselves, where they have to restrict the number of fields of study and possibly even abandon entire disciplines, where they have to close libraries and laboratories and other physical repositories and manufacturing sites of knowledge in order not to dissipate valuable resources.

This does not apply in the same way to digital universities. There hardly seems to be a boundary to binary knowledge management, and even if there is a physical limit to the miniaturization of processors and to human administration of systems, new technologies such as quantum computing and artificial intelligence promise gigantic leaps again in information management power.

Architectural education: yearning for “the analog”?

Digitalization as a continuing trend is a given - also in academic teaching and research. A cataclysmic “doomsday event” excluded, we will never return to a pre-digital era of typewriters and carbon paper and the predominantly physical storage of knowledge in the form of books and libraries. Today, digitalization is a prerequisite of progress and of a positivist development, of reaching a higher level of technical and perhaps also civilizational development – even if digitalization has lately also proven harmful to open and democratic societies.

But not all academic disciplines are equally open to digitalization. Although I am not familiar with the exact requirements of knowledge production, storage and dissemination in other academic disciplines, it is probably not very far-fetched to claim that digitalization and its modes of scientific knowledge management are less challenging and “problematic” for mathematics or philosophy, for example, than they are for architecture: mathematics and philosophy are both by their very nature dealing with the non-material, ideas-based aspects of human existence, whereas architecture is and always will be tied to the material, the physical world.

This may be one of the reasons why architects, in my observation, have a rather ambivalent relationship to digitalization: Because digitalization is inevitably virtualization and dematerialization and as such the loss of the singular character of that which is analog. The analog is always unique, as no two physical things will ever be completely identical. That which is digital, however, can be copied unlimited times without loss of information and without mutation – and thus ceases to be unique. While embracing the possibilities of digitalization and of digital tools such as geometric modelling and computer-based rendering, architects also do not want to abandon the analog tools of their trade – paper, pencil, cardboard, and clay. Architects are strongly haptic by nature. They want to be able to touch and hold things, feel their texture and their weight.

Furthermore, that which is digital is opposed to the essence of architecture in another respect: it runs counter not only to the “physical” quality of architecture but also to the “mystical”: to that which is mysterious and ultimately unfathomable. For digitalization does not only rob things of their physicality, it also objectifies them in a sequence of zero’s (0) and one’s (1) which leaves no space for ambiguity and diffuseness. This runs counter to the nature of the architect as a profoundly social creature – and architecture as a social endeavor.

Seen in this light, in architecture, the virtual world can at most be a “surrogate”, a “laboratory” for the development of ideas and concepts that in the end must always find an analog expression.

But does this also apply to architectural teaching and researching? Can we really say that the exchange of information and knowledge by digital means is at best a substitute for the real, the genuine: for the immediate and direct conversation in physical presence, where a collective mind can unfold? For that is what truly matters in teaching and researching architecture: the sort of idea-based dialogic flow

between teacher and pupil or amongst researchers Isn't therefore the conversation among physically present people something like the gold standard of teaching and researching?

Teaching architecture, at least in its core component “architectural design”, is still very much characterized by the physical dialogue between teacher and student. This is in evidence right now, at all architecture schools, in the midst of the second year of the Corona pandemic. Teachers and students alike lament the loss of “depth” that digital teaching and distance learning imposed by the pandemic situation have brought about. Everyone wants to return to the design studio.

Progress - also in teaching?

Still, as open-minded teachers of architecture, we should ask ourselves not only what is lost but also what can be gained from remote learning. Is it objectively disadvantageous when master and pupil meet – at least some of the time – only in digital space?

Architectural education is of course not static; it too must evolve. What may have been the appropriate educational paradigm for three centuries – since the establishment of the first modern academias – need not be true for the 21st century. But change does not come about easily.

During a conference at Sabanci University in Istanbul in the spring of 2021, Eli Noam, author of the beforementioned paper on the dim future of the university, commented on his “prophecies” of a quarter of a century ago. He did so under the particular impression of the changes in academic practice made necessary by the pandemic. Noam was quite self-critical, admitting that some things had developed differently than what he had assumed at the time. He also acknowledged that he had clearly underestimated the influence of “brand” – that is: the importance of the name and standing of universities. Students not only want to learn as much and as efficiently as possible, but they also wanted, above all, a diploma from a “valuable institution”, an institution with a reputation for quality, that would open the doors to successful professional practice for them.

But Noam also noted that, in general, the universities had not been able to keep up with the dynamics of technological development. Noam attributed this to the inherent conservatism of the university system: structurally, universities had always been slow to respond to trends because of their bureaucracies, their system of peers and of many small “principalities”, and their de facto “unsinkability” which in general make changes less imperative.

Then came Corona. Noam assumes that the pandemic is a tipping point in the sense of inducing a paradigm shift as it forced everyone and everything online rapidly, including those academic fields (such as architecture) that under normal circumstances would not have gone online in their entirety for a long while. This development will not be completely reversible, nor should it be, Noam remarked.

For where online learning is possible, meaningful, and all in all useful, it will be practiced even after the pandemic.

The second reason why, according to Noam, today's conditions are very much in favor of far-reaching digitalization and virtualization of teaching is technological development itself. This includes broadly applicable 3-D and Augmented Reality technologies, Big Data analysis, real-time simulations and modeling, and above all the possibilities of Artificial Intelligence and Machine Learning, which have made and will continue to make enormous progress, for example in the individualization of learning programs and the provision of virtual teaching assistants and – ultimately – teachers.

Architecture, too, cannot ignore these promises of a “new learning”. Nevertheless, it is probably also true that the possibilities of computer-based academic teaching can be applied only to a limited extent to those areas where, rather than fact-based knowledge, empirics or logic, skills are being taught. The education of architects of course relies on both: on the transfer from master to pupil of factual knowledge quite easily transported through digital means of communications as well as of skills which will always require “skills labs” of one form or another. The foreseeable future will therefore bring a mix of both – with the emphasis likely to shift increasingly toward digital forms of teaching and learning. As education managers and as teachers, we have to be prepared for this.

Whether digitalization with all its possibilities in the making will eventually be able to fully substitute the teacher-student exchange from a real-world environment (the design studio being the architectural equivalent of a “skills lab”) to a completely virtualized one – or rather “when” – remains to be seen. It should be obvious that not all processes in everyday life of an architect can be transferred to the digital space, at least not without losing essential physical – visual, acoustical, haptic, space-sensing – quality. Many ideas and their further development will still be generated in intensive discussions at the desk with a role of sketching paper or standing around a physical model, which are in specific ways coarser, less determined, and altogether “richer” in content than digital models, no matter how sophisticated. Built architecture, after all, always manifests itself in real space.

The pandemic was – still is, one should probably say, as the threat does not seem entirely over – a time of existential anxiety, but this has its benefits, as it accelerates many necessary but for various reasons dragging and lagging developments. In the swift process of change brought about by the pandemic, we gained exciting methodological experiences and insights that are likely to have a lasting impact on academic life. We were forced to question and, in some cases, rethink and restructure how we teach and conduct research. Through this process, new and improved ways have emerged and are still emerging. What has not changed despite all these dynamics? It is that at the heart of what we do lies the commitment to the built environment and its best suitability for society and its activities.

Note: The references to the statements of Eli Noam at Sabanci University, 2021, are from the author's own transcript of the lecture and discussions.

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DIALOGUE 1: CO-EDUCATION AND RELATED APPROACHES
SESSION I

Understanding the journey of knowledge in participatory design practices: Mapping the dialogue in participation

Gizem ALATAŞ TEMEL¹, Duygu CANKURTARAN²

1st Author's e-mail: atemelg@gmail.com

2nd Author's e-mail: duygucankurtaran@gmail.com

Abstract

Multi-actor processes and dynamics, which are increasingly coming to the fore in line with the conditions and tendencies of today's world, encourage cooperation and participation between different disciplines. This situation, which includes the practice of architecture, also requires a production environment that requires overcoming the negativities arising from the differences between disciplines and actors. Therefore, for the development of a common understanding of multidisciplinary design processes, it may be possible to trace the dialogues established for the unique data and needs of each discipline involved in this co-productive, participatory environment. Co-production, which is mentioned in participatory design processes, is related to the macro-social processes and dialogues between actors that shape knowledge and ensure its management, as well as the knowledge pool it creates as a result. Therefore, it becomes important to examine the dialogues that produce knowledge in participatory design practices; because this type of a research lens prioritizes the methods and stages of information accumulation of different actors. In this way, it will be possible to reveal more clearly how information is created, transmitted and why it is used in decision systems or why it is eliminated. At the same time, it will be possible through the lens of participatory dialogue to focus on which actor's information claims are more important than the others, according to which criteria this selection is made, and how each selection can differ from the others in its unique presence, in the studies that examine the co-production processes.

Beyond the situational analysis of which actors are knowledge producers and information users at what point, examining the dialogue that produces knowledge in participatory design practices has been seen as an appropriate tool to explore the cyclical process that leads to a solution to the design problem. This study examines how knowledge-action networks based on participatory design work in the process of developing sustainable strategies for cities. The study presents the social network analysis and situational analysis of the knowledge-action networks selected as an example after the literature analysis that elaborates on various information and decision-making approaches. The study introduces a way of framing a knowledge ecosystem mapping derived from interaction mechanisms adopted for participatory processes. A comprehensive case was analyzed in detail by producing the

proposed mapping strategy and results provided a base evaluation for the case in hand by giving insights. This study can deepen the perspectives of designers, planners and practitioners towards the participatory design approach by presenting how knowledge-action systems that emerge with the production and management of knowledge in participatory design practices work in different situations and examples of knowledge-action systems as a network.

Keywords: Architectural knowledge; Participatory design; Knowledge production; Knowledge management

1. Introduction

Participatory design, as a pragmatic and democratic value, is method of involving people in the design and development of a product or service (Langley, 2016). The difference between collaborative design and participatory design, where former's purpose is to combine and use the unique knowledge and resources of more than one institution or department under a single roof, is that while the collaborative design process is owned and managed by the designers; in participatory design, the designer serves the process as a facilitator and consultant. The international conference titled 'Design Participation' in 1971 was the first attempt to define participatory design as a specific field of study and to involve everyone in this field of study (Lee, 2006). Participatory design defines an area of interaction more than the gathering and mutual dialogue of everyone involved in the design process. Social responsibility in participatory design begins with the communication process between designers and potential users (Novick & Wynn, 1992). According to Lee (2006), there are categories for design participation. Design practices that operate in an abstract mode with limited contact with users are called design participation for innovation. At the other pole, people work as designers for their own projects, and these practices are called design participation for motivation. More complex design participation is taking place in the collaborative side. Common ones are design participation practices for collaboration that aim to foster collaborative design processes. By comparison, design participation for emancipation requires more time and effort to execute, but its effects are more long-term. These four types of design participation prompted a rethinking of the relationship to the larger social system (Lee, 2006). In addition, while the team members involved in participatory design may belong to the same general culture, they also bring with them subcultures such as changing professional and social contexts, status and authority expectations, different communication skills and knowledge bases (Novick & Wynn, 1992). Therefore, it is a process that is prone to possible miscommunications that may occur between people from different working environments, as in intercultural dialogues. Besides, in order to provide a design-based solution in cooperation for a perceived problem in the community, there is a tendency to see the community in question as deprived of certain things. This tendency may lead to the persistence of a longstanding problem in working with minority communities that primarily portrays these communities in a negative way, rather than focusing on and developing existing practices, resources and norms in these communities. (Pierre, Crooks, Currie, Paris & Pasquetto, 2021). It is thought that looking at the participatory design method from a dialog-based lens in order to create the balance between

communication, expectations and potentials in a meaningful way and to minimize the negative effects of communication will have a positive effect on future participatory design research.

Participatory design is a design practice involving different stakeholders in various co-design activities throughout the design process (Sanders & Binder, 2010). In order to fully encourage participatory design activities, it is of great importance to evaluate the detailed content of the information brought from the participants (Chen, Riedel, Bojko, Tawalbeh, & Müller, 2018). In this way, great progress can be made in revealing how information interactions will be triggered in participatory design practices and in democratizing participation. In order to carry out a study in this context, first of all, it is necessary to distinguish between data and information. Data is a collection of facts that require interpretation in order to be transformed into information, and information is obtained as a result of the interpretation of data. It is claimed that knowledge has replaced basic economic resources like natural resources, capital and labor today (Drucker, 1995). The high degree of complexity makes architectural design an intrinsically information-rich activity from that point of view (Lawson, 1994). Combining all these knowledge structures produces technical, judgmental and professional conflicts (Rechtin, 1991). Resolving these conflicts through one or more concepts requires a second kind of knowledge, more specifically 'knowledge about how the components are integrated and linked to a coherent whole' (Henderson and Clark, 1990). The richness in the discipline of architecture lies not only in the different types of information required, but also in the different ways of knowing them (Heylighen and Neuckermans, 2000). While one of the ways of knowing about architectural knowledge, which is a multi-layered, social structure, is to have an idea about any structure or unit with a deconstructive point of view, the other requires reasoning the way structures or units come together and the resulting unified structure (system) within the framework of the constructivist point of view. Considering the diversity and prevalence of knowledge sharing environments and tools, it can be said that knowledge networks established for architectural knowledge production and relations between individuals or institutions have become a common phenomenon. This is because most of the time, institutions do not internally have all the necessary knowledge, resources and capabilities (Carlsson, 2003). The spread of the production of knowledge and its getting out of the monopoly of universities indicate the transition to a knowledge community. This change produces system transformations that require all social actors to use entirely new artifacts, organizational forms and design networks, and also new ways of thinking and acting (Manzini, 2009).

In the 21st century, event based knowledge, that is, the ideas and perspectives used by social actors to interpret their experiences in daily life, has become easily accessible and valued more than in the past (Joyce, 2015). According to David Gauntlett (2013), there is a clear progression from a 'sit back and be told' culture to a 'making and doing' culture in society. Considering the knowledge networks and knowledge community created by architecture and design knowledge, there is an increasing tendency that design processes are distributed among a large number of actors that differ in terms of culture, motivation and professional development, as is the case with participatory design practices (Manzini, 2009).

It is also important to focus on the concept of knowledge ecology, which has an analogy from the science of biology, in order to examine the operational processes of architectural knowledge, which is a socially created, multi-disciplinary and multi-part structure, within its own system. Information ecology is defined as a field of theory and practice that focuses on discovering the social, organizational, behavioral and technical conditions that will increase the effectiveness of information operations such as the creation and use of it. It advocates the principle that natural 'learning organizations' are the best models we have for designing systems that create, sustain and foster organizational learning and development (Por & Molloy, 2000). As with the species diversity-solidity relationship in a natural ecosystem, the knowledge community is robust and sustainable with the diversity of knowledge it has. The increase in the diversity of knowledge can be increased by the fact that the knowledge community includes members from different disciplines, as well as the interaction of different knowledge networks with each other and the correct functioning of its management in a particular network.

In order to map knowledge operations in participatory design, it is important to determine the perspective towards the concept of knowledge as well as concepts such as knowledge ecology and knowledge community. When examining processes related to knowledge, there is one side an approach that focuses on knowledge directly and advocates the idea that knowledge is a resource that can be transferred, recombined, coded, stored in a knowledge repository and used to create value for a firm. On another side, there is a second view that argues that the focus is not knowledge but to know, emphasizing the context in which knowledge is created, shared, integrated and made available (Carlsson, 2003).

In this study, since it is aimed to decipher the paths followed by knowledge in participatory design studies and to reveal the dialogues that produce, transfer and share knowledge between the actors in the examined system, a process and flow-oriented perspective that converges to the second view on knowledge is dominant. The process of systematically conducting various knowledge operations to develop an understanding of how a particular system works is defined as knowledge management (Antazena, Kuiper, & Mironov, 2009). Knowledge operations have been studied in many studies and generally include 1) knowledge creation; (2) knowledge sharing; (3) knowledge storage/retrieval; (4) evaluating and improving knowledge; (5) knowledge transfer; and (6) information application (Pentland, 1995; Davenport & Prusak, 1998; Boisot, 1998; Plessis, 2007; Grant & Dumay, 2011; Chen et al. 2018).

2. Methodology

The knowledge ecosystem in participatory design examples can be considered as a social network because it expresses a knowledge network in which people interact directly or indirectly with each other. Following Laumann et al. (1978), the social network has been defined by Carlsson (2003) as: 'a set of nodes (e.g. people, organizations) connected by a set of social relationships of a particular type (e.g. friendship, transfer of funds, overlapping membership). In the context of this study, knowledge operations create connections between nodes (knowledge community

members). These links can be directional links where there is a transfer/sharing between nodes or non-directional links that only describe common features that nodes have. From a sociological point of view, compatibility, togetherness, solidarity and belonging in the network are measured by the level of interconnectedness between nodes. A harmonious knowledge ecosystem creates a productive dialogue environment that will pave the way for a democratic participation process and new knowledge production. We create, share and use knowledge through our interactions with others; knowledge emerges through productive dialogues. Maturana, Varela and Beer (1980) have proposed a new phrase that defines living systems from the perspective of radical constructivism, autopoiesis, meaning "self-generating". Here are a few features that a system must have for it to be an autopoietic system:

- The system should have definable boundaries.
- The system is made of constituent components.
- The properties and characteristics of the system emerge from the interaction of its components.
- The interaction and relationships of its components create the boundaries of the system,

Participatory design practices, which are formed as a result of interpersonal interaction within the framework of information exchange between various experts, investors, community members, etc., can also be defined as a kind of autopoietic system. All operations performed on knowledge in the process, are socially structured. The creation of knowledge is considered to be a linguistic project essentially dependent on establishing a common language, identity and purpose. (Pinch, 2009). Knowledge is therefore context-dependent and socially embedded. Mutual understanding occurs when communicators use a common language for shared knowledge and share a common perception. Ogden and Richards' (1960) semiotic triangle points to divergent knowledge that may arise regarding different interpretations of data (Figure 1). While exchanging information during communication, misunderstandings or disagreements may arise due to differences in interpretation of data. The origin of these lies in matching the background (referent) to the term/word (symbol) in question by which it is identified (Valtolina, Barricelli, & Dittrich, 2011).

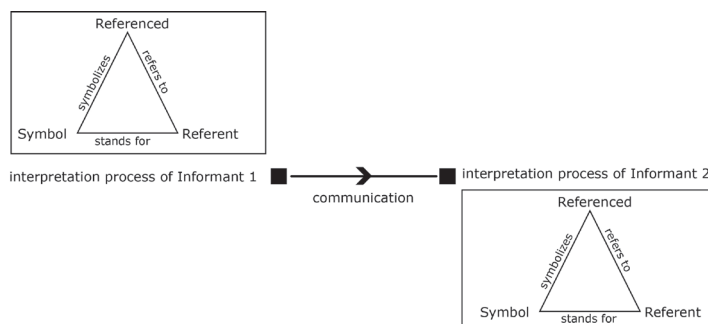


Figure 1: Determining factors of a mutual understanding in the process of knowledge operations, adapted from Ogden and Richards (1960).

Interaction is a way of framing the relationships between people and objects and thus design activity. First-order and second-order loops are the basic concepts of cybernetics, which in essence examines the management of knowledge processes in a system, the transmission mechanism and self-regulating systems. These loops were examined in terms of knowledge transfer communication potentials that include feedback and interaction processes (Figure 2), and six basic relationship categories were defined in terms of interaction (Table 1).

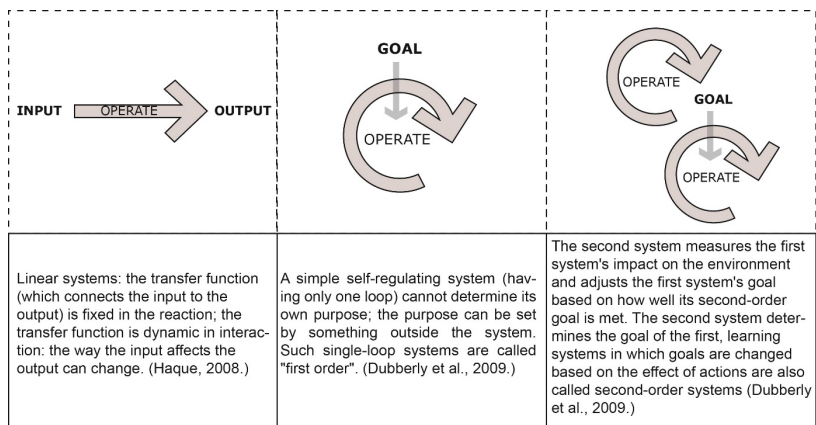
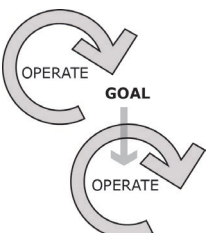
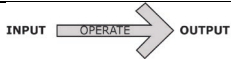
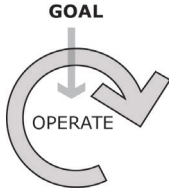
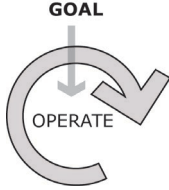


Figure 2: First-order and second-order loops and processes, adapted from Dubberly et al (2009) and Haque (2008), as cited by in Dubberly et al. (2009).

In order to find the equivalents of the concepts above in participatory design practices, in-disciplinary examples can be given. Since linear systems require that a certain directive is followed and the application is made in a certain way, the zoning, earthquake, and fire regulations prepared by local governments and distributed to architects and engineers define a linear information transfer.

An example of a self-regulating information refinement is when architects and engineers revise the relevant area in their current project based on this information from local authorities. The possible major changes that architects and engineers will make in the program or design concept of the building according to this information from local governments will mean that they will evaluate the design they have put forward and reshape it in line with a new target, indicating that a learning-oriented knowledge has been acquired. Various operations such as the production, distribution and storage of knowledge are not decisive on the structure of the dialogue established between the parties. While the knowledge transferred from the local governments to the experts defines a linear interaction in this example, since the transfer of the knowledge about the revised project to the investors may cause various cost changes, the investors should increase their resources (self-regulated interaction) or, in cases where resource increase is not possible, review the investment and request certain changes in the project (learning interaction).

Interaction	1.System function	2.System function	Descriptions	Disciplinary examples
0-0	<i>Linear</i> 	<i>Linear</i> 	The output of one linear system provides input for another. Actions cause reaction. The first system pushes the second. The second system has no choice but to respond. Such interaction is limited. We can call this transferring or reacting.	0-0: Local governments update the regulations within certain norms due to changing urban/regional conditions(0) → architectural offices prepare their future implementation projects in accordance with the changing regulations (0)
0-1	<i>Linear</i> 	<i>Self-regulating</i> 	A linear system feeds the processes operating in the self-regulating system. 1-0 is the same as 0-1 The output from a self-regulating system can also be an input to a linear system. 1-0 is no different from 0-0 if the output of the linear system is not detected by the self-regulating system.	0-1: Local governments update the regulations within certain norms due to changing urban/regional conditions(0) → Architectural offices revise their existing implementation projects in accordance with the changing regulations (1)
0-2	<i>Linear</i>	<i>Learning</i> 	The output of a linear system provides input for a learning system. If the learning system also provides input to the linear system by closing the loop, the learning system can measure and	0-2: Local governments update the regulations within certain norms due to the changing urban/regional conditions (0) → Architectural offices return back to decision making process due to major

			learn the impact of its actions. On the other hand, 0-2 can be reduced to 0-0 if the loop is not closed, i.e. the learning system receives input from the linear system but cannot operate on it.	revision requirements, in order to comply with the changing regulations (1)
1-1	<i>Self-regulating</i> 	<i>Self-regulating</i> 	The output of one self-regulating system is the input of another. If the output of the second system is measured by the first system, there are two situations: reinforcement systems or competing systems. Reinforcing systems share similar goals (with actuators that may or may not work alike), competing systems share conflicting goals.	1-1: Local community giving feedback to local governments regarding a problem arising from changing urban/regional conditions(1) → Local governments assign tasks to take action towards the identified problem (1)
1-2	<i>Self-regulating</i> 	<i>Learning</i>	The output of a self-regulating system becomes the input for a learning system. If the output of the learning system also becomes the input for the self-regulating system, two situations arise. The first case is to manage	1-2: Local community gives feedback to local governments about a problem arising from changing urban/regional conditions(1) → Local governments organize various activities to have in-depth information about the identified

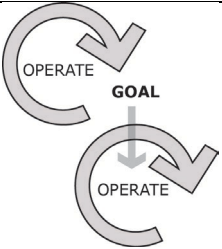
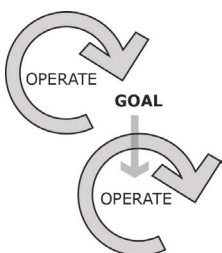
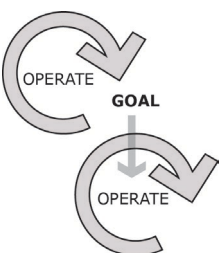
			automated systems. The second variation is to act at different levels to maintain communication with the other system. This type of interaction sustains the participation of a learning system.	problem and to generate ideas through discussion (2)
2-2	<i>Learning</i> 	<i>Learning</i> 	The output of one learning system becomes the input for another. The second system not only get output of the first system. Systems learn from each other not only by discovering which actions can pursue their purpose under certain conditions, but also by exchanging information of common interest. It can be said that they have the ability to agree on goals and the means of achieving them. This type of interaction is chat. It is based on understanding to reach agreement and take action.	2-2: Local community obtaining scientific information from the experts about the problem discussed at the participatory events and presenting the solution proposals according to this information (2) → Local governments prepare implementation plans for the new solution proposals created together at the participatory events (2)

Table 1: Interaction combinations (adapted from Dubberly et. al., 2009).

In operations such as the production, sharing, restructuring, transfer, storage, distribution or use of knowledge, the above-mentioned table with the concept of interaction can be used as a tool to determine the direction of the transfer between the parties, the participation forms of the parties and the effectiveness of these

participations in the formation of design knowledge. In short, to explore productive dialogues in participatory design. Analyzing examples from participatory design practices in this context, mapping the nodes (people, institutions, etc.) that make up the knowledge ecosystem and the connections between the nodes (knowledge paths) in the light of the concept of interaction constitutes the method of the study (Figure 3).

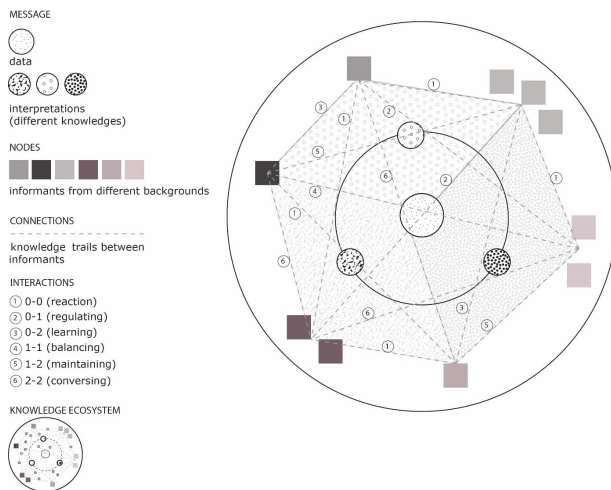


Figure 3: Mapping methodology, produced by authors.

3. Results and Discussion

Due to the provided framework, a comprehensive case study was analyzed in order to present an implementation of the framework proposal and emphasize the key concepts with concrete examples. The selected case study is provided by the extensive work of Frantzeskaki and Bush (2021) about the participatory processes during the development of Living Melbourne Strategy (1). According to the interaction levels between participants, the trials in which knowledge operations took place have been identified and evaluated according to the individual processes about produced, transferred, shared knowledge (Figure 4). Some of the interactions derived from the analysis will better express the point. For example, looking at the interaction between Project manager and Resilient Melbourne organization, a task assignment between them which they both had no chance but to complete can be seen. Therefore, this kind of operation can be identified as 0-0. Also, looking at the interaction between Resilient Melbourne organization and the nation conservancy, it is seen that resilient Melbourne assisted the other organization throughout the process of design and implementation. Therefore, their overtime produced knowledge becomes a learning environment for nature conservancy and the interaction between them becomes 1-2. In this Project at most times there were interaction types 1-2 and 2-2 which indicated a conversatory relationship and resembles a high participation ratio for most of the parties.

The interaction combinations are provided close to the first informant that took place in the combination. Regarding this map, as authors already highlighted in the main

text, community members and non-profit groups' contribution to the knowledge operations through interaction variations was found insufficient. Also as can be seen, there are several connection clusters around the most interacted organizations and people, which points out the need to transfer knowledge from distant participants as another knowledge operation added to the production, evaluation and dissemination practices. In order to ensure a more productive dialogue within this knowledge environment, peer-to-peer interactions would have been increased. There are plenty of knowledge production practices among different organizations and people from different disciplines, however the direct participation of urban planners and open space planners during the drafting and implementation phases are neglected. For this type of potential negligence during a participatory design process, it is important to keep in track the knowledge operations, trails and interactions among participants. With the framework proposed here, it is aimed to be able to create an effective evaluation mechanism of the process within the complex structure of the participatory processes and to be able to reflect and act upon the given interaction mechanisms.

Figure 4: Interaction map of the analyzed case's knowledge ecosystem, produced according to the methodology of the study.

5. Endnotes

(1) "Resilient Melbourne, which has directly experienced a series of 'shock and stress' in recent years, including the 10-year 'Millennium drought', followed by a severe and deadly heat wave and forest fires that spread to the metropolitan area, launched a coordinated and collaborative strategy among 32 metropolitan local people. Under the leadership of The Nature Conservancy, one of 100 Resilient Cities' Platform Partners, preparation of the metropolitan urban forest strategy began in 2016. Nature Conservancy and Resilient Melbourne jointly presented staff, property developers and strategy from local and water services in a series of workshops and smaller meetings. brought researchers together to consult, discuss and outline the vision, goals and broader actions. The strategy was endorsed by 30 of 32 local communities. Following launch, The Nature Conservancy and Resilient Melbourne used a similar approach to developing the strategy, both locally and online. began developing an implementation plan that included workshops with government staff and researchers." (Frantzeskaki, N. ve Bush, J. 2021)

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The Importance of a Sense of Belonging in Design Education: A Workshop Experience

A. Hilal IAVARONE¹, Suzan SANLI ESİN²

^{1st} Author's e-mail: aysenurhilal@gmail.com

^{2nd} Author's e-mail: suzansanliesin@gmail.com

Abstract

The dynamics of the 21st-century support alternative approaches in design education rather than standard forms of seminars and studios. The fact that learning by being active and working in collaboration with others is a more effective way of learning has led to new searches. The educational aspect of the workshops does not only cover the components such as learning by doing, teamwork, and the encounter of a real design problem, but it also changes the learner-teacher relationship. The learning and production process of the workshops proposes the potential for dynamic learning relations, which is an accepted pedagogy in design education. These assumptions have been an inspiration to organize a workshop to generate a design with the Istanbul Kultur University Faculty of Architecture students for the Atakoy campus backyard, which is already actively used, by the students. The process of this workshop reveals the importance of exploring the relationship between design and the creation of a sense of place. This study emphasizes both the consideration of the inspiring aspects of learning through workshops and the success of the design problem in which the sense of belonging comes to the fore in design education through a workshop story. Through this workshop story, it has aimed to highlight the positive effect of a "sense of belonging" for an effective and successful informal learning process.

Keywords: *Learning by doing; Informal design education; Sense of belonging; Design workshop; Collaborative design.*

Introduction

Learning through workshops in design education comes to the fore as a method supported and adapted to education within the scope of contemporary learning theory. The educational support aspect of the workshops does not only cover the components such as learning by doing, teamwork, and encountering the real design problem; it also changes the learner-teacher relationship. The learning and production potentials of the workshops, which have the potential to reverse the master-apprentice relationship, which is an accepted pedagogy in design education, differed and were highlighted in this context in recent literature.

This approach supported the idea of co-designing a campus garden that is in active use by students. The backyard of Istanbul Kultur University Atakoy Campus constitutes an essential and prominent area of the campus as a space where students and employees spend time, meet and share. To renew and use the garden

more actively, Dr. Architect Suzan Sanlı Esin aimed to both support the informal education of the students and “learn from the students” experience in solving the design problem by including the students of the Faculty of Architecture in the design process with the workshop setup. In addition to the formation process of the project, which was shaped by the outputs of the workshop and whose implementation was completed, this paper especially reveals the importance of consideration of the intersection of belonging and design problem.

This study emphasizes both considering the opening aspects of learning through workshops and the success of the design problem in which the sense of belonging comes to the fore in design education through a workshop story. When design education is reconsidered from the perspective of the workshop process, it is seen that the sense of belonging supports the students' desire to learn and produce. This workshop story associates the effective and successful process of informal learning with "belonging".

1. Conceptual Background

1.1. Architectural Design Education

Architectural design education, which differs from other undergraduate programs in its specialized form, is referred to as an "art of thinking" and "pedagogical expertise" (Paker Kahvecioğlu, 2019) that brings together different ideas and areas of expertise in a unique systematic. The design studio, which is the focus of architectural design education, aims to provide "the ability to develop original strategies and tools" (Yürekli & Yürekli, 2004). Architectural design studios contribute to the students with the simulation of design process methods to prepare them for real-life architectural projects that they will encounter in the future (Tokman and Yamacli, 2007) Simultaneously, another goal is to motivate architecture students to think, question, explore, observe, and research. An educational approach that supports imagination in architecture strongly should structure itself accordingly. As Aydınli (2015) states, education in which learning is learned is indispensable for architectural design education. In the words of Paker Kahvecioğlu (2019), this education is "shaped by a constructivist approach, which sees the student in the position of finding, bringing together and constructing the related ones from the endless knowledge space".

As can be understood from the current studies in literature, architectural design education, and design studios, which need new, innovative approaches, open up an important research area. The main discussions on this subject focus on the question of whether the primary objective of architectural education is to promote the whole-person development of students or only to educate them to become professional architects (Yorgancioğlu, 2016). According to the comments of architect Alberto Perez-Gomez (2007), on the subject, one of the main problems of architectural education is the development of academic skills of graduates such as critical thinking, research, questioning, and design thinking are behind expectations of skills required for employment. For this reason, contemporary architectural design studios are expected to encourage not only practicing real-life architecture but also critical thinking and questioning.

Among the ongoing discussions on the design studio, the "traditional master-apprentice learning process" is another topic frequently discussed and focused on. Proponents of the "Black Box" view in creativity studies (for example, Simon) advocate master-apprentice learning based on the doctrine that there is only one correct design in the design problem and the entire creative process is based on finding this correct design solution. However, as Sönmez and Şenel (2020) mentioned in their critical article titled "Make a very nice project", the hierarchical structure in the master-apprentice relationship is itself problematic, fatalistic, and closed to development; and its relationship with contemporary architectural thought is contradictory. Karamaz and Ciravoğlu (2017) state that these structures have no place in contemporary architectural education anymore and experimental approaches come to the fore, such as experience-based architectural studios. All these approaches can be defined as attempts to overcome problematic hierarchical structures within architectural design studios.

Another significant aspect of the architectural design studio is the environment in which design education takes place. This component does not only include the physical features of the space, but also the potential to provide an environment for interaction and communication among participants. Therefore, it should be evaluated in two basic frameworks: First, according to the establishment of the studio (for example, internet-based studios, hybrid studios (Iavarone, 2021)) and secondly, according to communication opportunities (for example, informal studios, student workshops, experience-based studios, etc. (Karamaz and Ciravoğlu, 2017)). In this context, it is important to create studio environments where learning is taught (Aydınlı, 2015), with a focus on experience, supporting different learning styles, and peer learning.

There are also criticisms of the current state of the architectural design studios, which offer specialized educational environments as stated above. The lack of communication and teamwork in design studios, designs that are not produced by one-on-one communication with users, technical issues, cost and budget not being taken into account, the tendency of students to focus on the resulting product rather than the process, and the lack of one-to-one application in the studio stand out among these criticisms (Salama, 1995; Şahin, 2013). According to Şen et al. (2021), the basis of these deficiencies lies in the fact that the traces of the traditional design studio, which was built on a didactic and hierarchical teaching environment, are out of date in terms of today's conditions.

In line with these approaches, the importance of informal education for architectural design studios has been the subject. The rest of the text focuses on the support of architectural design studios, which form the undisputed backbone for architectural education, with workshops.

1.2. Learning Through Workshops

The dynamics of the 21st century support alternative approaches in design education. Relatively new understandings such as the fact that learning is not only

the relationship between the stimulus and the stimulated, but also everyone learns differently, and the existence of affective dimensions of learning has led to new searches for the realization of learning. Leaving the information to the learner's own production and initiative through "exploration" rather than being transmitted by a direct stimulus (Aydınlı, 2015), forms the basis of alternative learning models.

The search for a new pedagogical approach, aiming to overcome the problems in design education and to implement the educational approach required by the 21st century, focuses especially on the concept of workshop, which defines a learning area that is easy to integrate into formal education, fast and effective. Workshops are defined as a special learning area as problem-oriented activities that offer quick solutions, support versatility, and polyphony, address different segments and design problems (Büyükmihçi, 2016).

The structure of the workshops, which rapidly gathers students from different disciplines and levels around a design problem, involves different actors who carry out design and production in a multi-stakeholder environment, allowing students to realize the learning environment informally. This informal education is essential since the current formal education curriculums do not/cannot allow such learning environments due to the heavy theoretical and practical content required by the discipline. On the other hand, this learning style is a mechanism that teachers also learn from the process and experience. The workshop environment transforms the hierarchical balances present in design studios, allowing learning to take place horizontally and homogeneously. Considering these aspects, it can be seen that the learning-designing-production potential of the workshop environment offers important expansions for both designer and student identities.

1.3. Design with a Sense of Being

The sense of belonging has an important place in human psychology as one of the natural needs (Maslow, 1943). The sense of belonging, which is a part of the identity formation process, is handled especially with the dimensions of the human-space relationship (Antonsich, 2010). Belonging is related to the space in the material and spiritual sense; therefore, it means that the individual establishes an emotional and physical connection with the place. Space design at different scales (city, neighborhood, residence, etc.) accompanied by the sense of belonging (urban, neighborhood, homeowner, etc) is effective in the formation of spatial identity.

Spatial belonging is seen as a positive factor in people's lives (Çakı, 2017). This relationship between spatial satisfaction and a sense of belonging is an important component of space design problems. These design problems do not only involve personalized spaces such as residences, but they also include public buildings such as educational institutions where users spend most of their time. The design of educational spaces also has the obligation of ensuring the sustainability of the educational environment by being suitable for different user-profiles and meeting the wide range of functional needs (Eti Proto, et al., 2019). Within the dynamics specific to educational structures, the sense of belonging to the place is associated with both the spatial satisfaction of the users and success in education.

In line with the references mentioned above, it was decided to include the students, as the primary users of the educational complex, in the design process of a real

project to be applied on the university campus. The decision to ask the opinions of the active users of the campus and include the architecture students actively in the design process was based on the assumption that the above-mentioned didactic components of the workshop environment and the increased level of sense of belonging with participatory design are very significant parameters of a successful project design. In addition to the contribution to the success of the finalized project, the reinforcing effect of place attachment with the inclusion in the design of a project also supported the idea that it would increase the effectiveness of learning by doing in search of a solution to an assigned designed problem. It is suggested that ensuring the active participation of users in the design of a shared space on the campus, such as the garden, with a workshop can be a method in the context of developing design solutions suitable for the multi-stakeholder environment of educational spaces.

2. Case Study: A Workshop Story

The backyard of Istanbul Kultur University Ataköy Campus constitutes a prominent area of the campus as a space where students, academicians, and employees spend time, meet, and interact. For the garden to be renewed and used more actively, with the above-mentioned considerations, Dr. Architect Suzan Sanlı Esin aimed to include the students of the Faculty of Architecture in the design process in a workshop set up, both to support the informal education of the students and to enable them to have something to say about the space they use (Figure 1).

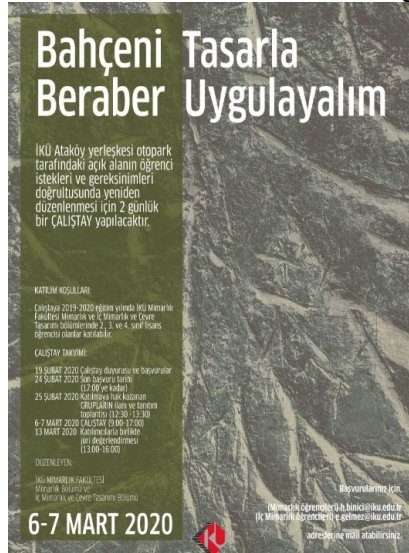


Figure 1: Workshop Poster

Within the framework of the project, the search for an outdoor design that will positively affect the lives of all the users of the campus, strengthen the social bond between them, and offer a pleasant time after leaving the studios, classrooms, and offices where they spend most of their time, has been the major goal. Choosing the designers from among the users, instead of directly receiving professional service for the project, formed the backbone of the workshop setup. This idea strongly

supported the idea of co-designing a campus garden that is in active use by all participants.

Although it had been announced that a limited number of students would be accepted to the workshop from the Faculty of Architecture of Istanbul Kultur University, due to the high demand from the students, it was decided to increase the number and form 7 groups with 56 students accompanied by 7 group coordinators, 1 consultant architect, and 1 consultant landscape architect. A 2-phased workshop process (Figure 2) was planned: research and design. The research phase took place before the 2-day workshop. The second phase took place on campus with direct access to the project site.

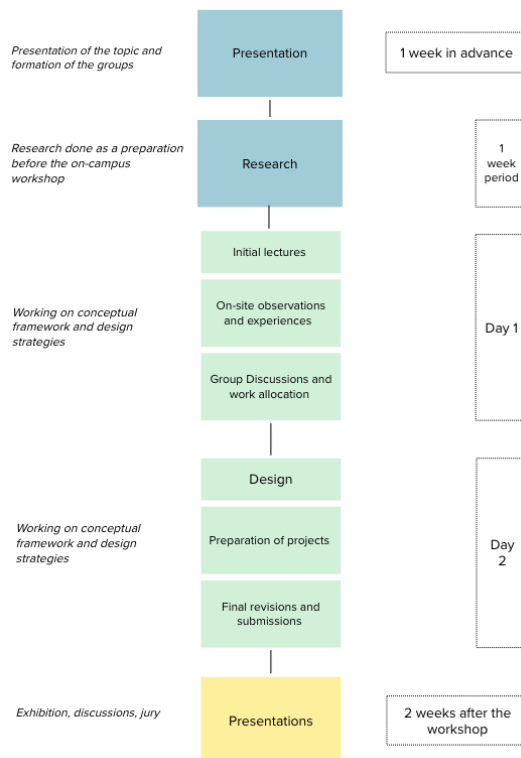


Figure 2: Workshop Phases

2.1. Research Phase

This phase consisted of a survey, observation, and conceptual understanding of the problem. First of all, an 8-question survey form was prepared to collect the wishes, thoughts, and suggestions of the users for the open area at the back of the campus. The survey questions were aimed at understanding the user profile, the opinions about the current situation of the area, the frequency and forms of use, the positive and negative aspects of the space, and the activities preferred by the users.

In the next stage, the participants were asked to collect all available data related to the project site. They were asked to study the site in terms of its natural physical features such as the existing trees, topography, drainage patterns; man-made

features such as the surrounding buildings, walls, materials, landscaping; and circulation issues such as the vehicular, pedestrian movements in and through the site, building, and service entrances. In addition, they were also asked to record the climatic data such as the wind direction, sun path as well as the visual, audible aspects of the area such as views and noise. The participants were also asked to make observations in the area at different times of the day on different days to study the behavioral and sociological aspects of the site.

In the last stage of the research phase, besides the analysis and evaluation of physical, spatial, and social characteristics, sample research on the content of the targeted project was requested from the participants. Landscape projects that can set an example for design, open space designs of university campuses, sustainable and barrier-free design concepts were listed as some of the research topics. In addition to this research, landscape elements such as plants, trees, and urban furniture were also examined, and it was questioned how to intervene in the area with creative urban furniture. Ecological and economic sustainability, supported by concepts such as durability, easy maintenance, reuse, recycling, have been determined as important design parameters. Participants were motivated to explore the creative possibilities for the campus backyard by integrating landscape elements and furniture that are used for diverse purposes and create a sense of place for the users.

2.2. Design Phase

Following the data collection and analysis stages to study the site and the program, the participating groups started a 2-day design workshop with a deeper understanding of existing conditions and problems of the project area. On the first day of the workshop, the participants, the coordinators, and the organizers of the workshop came together, and various open lectures, presentations, and discussions took place to view the project topic from different perspectives as a preparation to develop the proposals in the following two days.

Following the group discussions and presentations of the pre-design phase, the following design principles and guidelines were defined:

- Writing a project manifest that would represent the design approach in the best way in harmony with the preliminary preparations
- Projecting an architectural scenario and a functional program according to the determined design goals and strategies,
- Working on design proposals that would provide outdoor spaces which can host a variety of activities with unique landscape elements, such as flexible urban furniture and tensile structures to promote social interaction, social gathering, and active user involvement,
- Developing a unique landscape project with a system of pathways, green spaces, paved areas, semi-enclosed structures that support full use of the outdoors to study, relax, socialize and have fun.
- Creating inclusive designs with solutions that fit everyone
- Selecting forms, colors, materials, and elements that would complement the campus atmosphere

The participative design process continued as group members and coordinators exchanged ideas and worked both individually and in collaboration. This unique

student-centered atmosphere enabled participants to have fun and work with interest and enthusiasm. The motivation of the participants was displayed on the common boards of the studio with diverse drawing and presentation mediums throughout the workshop process. (Figure 3).



Figure 3: Images from the boards showing the design process of the participating students

One of the most important advantages of this workshop process was the proximity of the project site to the workshop studio. Since the participating students and coordinators had the chance to observe and experience the “place” of the design problem at all times throughout the process, they could perceive and evaluate the actual conditions of the site easily and effectively. Accordingly, the awareness of working on a real architectural project was highly supported.

It was observed that the participants were extremely stimulated to question, explore, and learn throughout the workshop process. The motivation of making their own decisions regarding a space they used also contributed to this interest and excitement. (Figure 4). In addition, the aspects of the workshop environment, such as active involvement in design activity, collaboration, interaction with each other as well as with experts from different fields, opportunity to experiment and work with a range of innovative ideas, working on a real-life scenario allowed a multi-disciplinary experience rather than a one-way knowledge transfer between the coordinator and the participant. The design environment was much different than the strict master-apprentice relationship of formal architectural education in the design studios. All these acquisitions mentioned here stimulated the students and supported their creativity in the workshop.



Figure 4: Images from the studios where participating students and coordinators worked together during the workshop

2.3. Evaluations Of Design Proposals

As a result of the intensive research-design-criticism-presentation process of the workshop, which lasted for two days, the participating students did not only produce successful projects but also had a chance to struggle with a real-life design problem with actual users and experience a multi-disciplinary design environment involving multi-stakeholders.

Undoubtedly, workshops provide a process-oriented learning experience in which the process and product are both important. In this particular workshop experience, the design activity was more than just finding a solution to a hypothetical design problem. The participants were highly motivated by facing problems of a real outdoor space which they also actively used in their lives. The output of this collaborative and participatory process provided the inclusion of the opinions, demands, and ideas of the actual users of the space. At the end of the workshop, all groups finalized their design processes and submitted their projects. The final products were presented in an exhibition on the campus. (Figure 5). Afterward, the projects were evaluated by the 7-member jury, and awarded in various categories (Figure 6, 7, 8).



Figure 5: Exhibition of workshop products.

Project evaluations were made according to the following criteria:

- The success of the site plan within the framework of spatial organization and circulation network;
- Providing easy access to the main building and other units around the garden by a well-defined system of pedestrian /vehicular routes
- Supporting the outdoor use under different time and weather conditions;
- Suitability to facilitate individual and collective activities
- Creating a flexible spatial lay-out that provides different forms of use
- A rational approach in terms of initial investment, outdoor maintenance cost, material selection, and applicability
- Strength of the sustainability aspect
- Success in terms of barrier-free design

Although according to the evaluation criteria one of the proposals was selected to be developed into an application project to be constructed, it was concluded that all the submitted projects produced as a result of intense studies in a short time came to the fore with their different aspects. In this context, features such as originality and creativity in terms of detail production, the success of a strong design-concept relationship, the success of project presentation, the success of the architectural scenario, and the success of the use of green space were evaluated and projects that exhibited these features were also awarded by the jury members.



Figure 6: Workshop products (Project: Visibility)



Figure 7: Workshop products (Project: Flexibility)

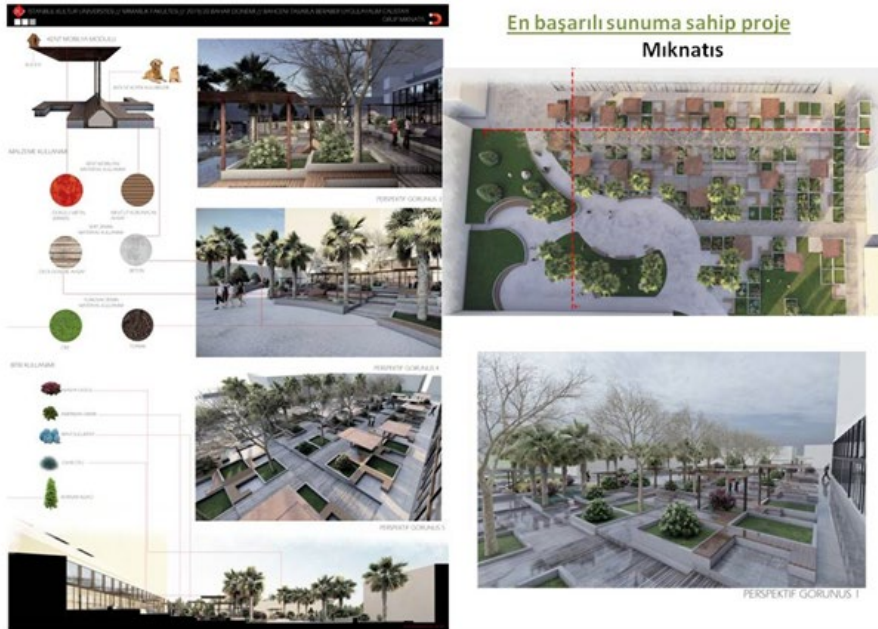


Figure 8: Workshop products (Project: Magnet)

3. Conclusion

"The sense of belonging" was defined as a key concept for this workshop. IKU campus backyard being actively used by the students lacked the potential to facilitate social engagements and events. A workshop was organized to produce a project with identity-enhancing quality open to the students of the School of Architecture of Istanbul Kultur University.

For students, this experience provided an environment for working and designing as a team with their friends and people specialized in different disciplines. The fact that the interdisciplinary working atmosphere, which may be defined as one of the weakest aspects of conventional design education, is strongly supported by these short-term collaborative activities and workshops. Thus, it can be concluded that this informal design activity contributed to the students' individual and collective learning skills and provided them an opportunity to experience practice with real-life outcomes.

Another positive outcome of the workshop is the chance given to the real users of the campus outdoor space to discuss their own place in terms of sociability, uses, activities, access, and connections. This participatory design activity provided them the opportunity to create their own space with a sense of belonging. The students identified the points that needed to be changed with the questionnaires and developed personalized garden designs based on the activities they used individually and collectively. The workshop scenario did not only provide a participatory practice for the backyard design but also provided a learning-by-doing experience that caused the problem to be internalized by the participants. When evaluated from this aspect, it is seen that the confrontation of the students with a real design problem that concerned a place they know and feel a belonging to, reinforces the learning action.

When the workshop process is evaluated as a whole, it is seen that the "workshop concept" as an informal education environment and the workshop theme focused on an "in-campus design problem" come together as a multi-component achievement for both design production and design education. The importance of the concept of belonging in educational structures was emphasized once again in this design experience conducted with students. Since it is seen that the sense of belonging also supports the design and production processes, it is thought that the design problems established around this concept will motivate the students in future design activities and workshops. Evaluating the ideas produced in the workshop with professionals and investors, and the possibility of putting them into practice was a source of strong motivation for the students, while at the same time, it offered fast and effective solutions in practical terms.

The possibilities of the workshops offer important opportunities for the students to discuss architectural problems on many issues, but it should be noted that they also create an effective and functional process for professionals to carry out real-life design tasks. The design problem presented directly to the users allowed both the correct determination of the design focus and the production of targeted solutions in a short time. By doing so, it wouldn't be wrong to state that the targeted designer-user agreement in the design of the IKU campus garden was achieved to a large extent.

4. Acknowledgements

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ARCHITECTURAL EDUCATION IN-BETWEEN THEORY AND PRACTICE: A CRITICAL EVALUATION OF ARCHITECTURAL EDUCATION IN TURKEY

Nihan Büşra KEZER¹, Prof. Dr. Celâl Abdi GÜZER²

^{1st} Author's e-mail: anihan@metu.edu.tr

^{2nd} Author's e-mail: guzer@metu.edu.tr

Abstract

The duality between the theoretical background and the practice-based nature of architecture has caused radical paradigmatic changes in architectural education throughout history. Starting from Vitruvius, many architects, theoreticians and educators like Blondel, Viollet-le-Duc, Gropius and others, have questioned the relationship between theory and practice in educating architects. Architectural education, which started with apprenticeship, was carried to architecture schools and gained a formal structure by integrating theoretical background to practical knowledge. In line with the emergence of different architecture schools, the theory-practice relation has represented different priorities that resulted in various approaches in educational systems. In recent years, some programs, courses, and activities such as summer practices, internships, workshops, competitions and other informal structures form a basis for interaction between academy and profession. However, due to some legal and operational limitations in the educational system, the integration of theory and practice became a problematic issue in Turkey.

On the other hand, contextual transformations in architectural practice and rapid technological developments in both production and communication necessitate the re-evaluation of interactive relation between profession and architectural education. In addition to these changing circumstances, the Covid-19 pandemic also crucially affected architectural education all over the world, as well as other parts of daily life. The educational models undergo a set of compulsory transformations which have both positive and negative aspects. While traditional methods started to be questioned, new mediums such as distance learning programs, interactive tools, workshops, online conferences as well as multiple reference systems were utilized. All of these obstacles and developments indicate a potential to re-evaluate the future possibilities of the interactive relationship between theory and practice. As a result, re-evaluation of architectural education and searching for the potentials became an inevitable subject.

The present study aims to explain the historical frame of architectural education by emphasizing breaking points, and investigate the current educational models in line with the contextual developments in profession, education and daily life. As well as presenting a literature-based research, the study also contains comparative analyses of existing educational models. The main focus of this research is to introduce the possibilities and limits of an alternative model of architectural education by analyzing the continuities and discontinuities between architectural education and professional practice.

Keywords: *Architectural education; Professional practice; Architecture schools; Theory-practice dichotomy; Architectural education models*

Introduction

The distinction between theory and practice dates back to the philosophy of Plato, who divides the act of knowing into two parts as theoretical and practical knowledge in Ancient Greece, considering the political and everyday life of the society. In Plato's distinction, it is not possible to produce the theory of the practice because they are separate branches, and the unity of them could be possible only with the alienation of the theory (Marquez, 2007). However, Aristotle defends the possibility of the co-existence of both theory and practice in political life by confirming the alien position of theory. According to him, while theoretical knowledge deals with the "objects that have in themselves a principle of movement", the non-theoretical ones are interested in things that the principle of movement is not in them but in the producer (Anagnostopoulos, 1994).

As well as the philosophical and scientific research, the relation between the theoretical doctrine and professional practice has been a controversial issue in architecture. Architectural education, which was being held as apprenticeship, moved to architecture schools after the institutionalization attempts. As a result, the integration of theory and practice became an important issue affecting not only the methods of educating architects but also the practicing mechanisms, which means the architecture itself. Many well-known architects and instructors like Blondel, Viollet-le-Duc, Wright, Kahn, Le Corbusier, Gropius, and others studied the definition, scope, and methods of architecture, and they questioned the relation between theory and practice. They not only studied educational models but via this relation various ecoles concerning design approaches emerged.

The paper is structured in four parts. The first part of the study aims to provide a brief historical framework on the relation between theory and practice and its influence on architectural education. The institutionalization of architectural education, which started with the apprenticeship, and the emergence of today's education systems are mentioned. In the second part, architectural education in Turkey is re-visited with a critical view in the context of theory and practice. The current situation of the education system is evaluated in the light of discussions, and some attempts for improvement are mentioned. The third part concerns the transformative impacts caused by the Covid-19 pandemic in architectural education. The future of the relationship between architecture schools and practice is discussed by considering the current and possible effects of developing technology on both education and practice. In conclusion, the methods that can be applied to reconstruct the relationship between theory and practice in the educational system are suggested by considering the present conditions in Turkey.

1. The Duality of Theory and Practice in Architectural Education

As being one of the oldest professions in the world, architecture has been a practice-based discipline due to its nature. The word "architect" originated from the Greek

term “architektōn” which means “master-carpenter” or “master builder” referring to the “stone-mason” who was in charge of construction in ancient periods (Kostof, 1977). Besides being a practice-based discipline, it is also possible to mention the existence of architectural theory revealed itself in built architecture since the beginning of the profession, although it is not recorded in a written form (Kruft, 1994).

By emphasizing the necessity of both theoretical and practical knowledge in the education of the architect, Vitruvius (1960) indicates this existing duality between theory and practice. At the beginning of ‘Ten Books of Architecture’, as well as being educated in many other disciplines, Vitruvius defends the importance of acquiring both manual skills and scholarship in architecture. According to him, knowledge is the child of both theory and practice. Vitruvius states that architects who aim to acquire manual skills without theoretical knowledge can never succeed, while those who rely only upon theories and scholarship are obviously hunting the shadow.

Beginning with the apprenticeship alongside a master, by observing the construction process and being assigned physical tasks within the practical knowledge (Kostof, 1977), architectural education has moved to schools with systematic teaching, which is mostly based on theoretical knowledge. In 1671, The Académie Royale d'Architecture was founded as a part of a system of the Académies in France. The Académie d'Architecture aimed to establish a binding architectural doctrine by discussing and evaluating architectural themes by reading aloud the treatises of earlier architectural theorists. This practice made the Académie Royale d'Architecture the first institution to practice systematic architectural teaching and thus the forerunner of faculties of architecture (Kruft, 1994). The cumulative knowledge guiding the practice started to be learned from libraries, and theoretical knowledge gained importance in architectural education.

While Ecole des Beaux-Arts had been maintaining the theoretical treatises based on the classical buildings after the Académie d'Architecture, École Polytechnique was founded with the goal of bringing scientific knowledge to practical life. Especially in its earlier decades, the school was a focal point of the formulation and transmission of scientific and technological knowledge (Picon, 2000). Durand, who is one of the instructors of the school, emphasizes the importance of exercise and application of architecture in accordance with the rationalized design theories (2000).

Bauhaus, which represents a turning point after the industrialization period, was established in 1919 with the aim of bringing together both aesthetic sensibility and technical knowledge. In the studio courses, a student was regarded as an apprentice to an updated version of a guild master and was expected to learn weaving and other crafts which might be useful in the decoration or articulation of living spaces (Curtis, 1982). Gropius (1956) defends that students were taking both academic and practical education from different groups of masters in this way. Although Bauhaus had operational similarities with the Beaux-Arts by maintaining the atelier culture, it has reformer approaches towards the integration of practice into education.

Along with the educational institutions, the apprenticeship system was still a valid form of architectural education in the 19th century. Bletter (1996) notes that the modernists of the 1920s like Le Corbusier, Mies van der Rohe, Walter Gropius, were all educated before 1918, which means when these various educational systems were all in place. Le Corbusier is one of the examples who preferred to study as an apprentice rather than enrolling in an academy. He preferred to learn by doing, and his flexible self-education included much reading, extensive travel, and experience in various architectural ateliers. By the time he was 24, he had managed to work in the offices of two of Pevsner's 'Pioneers' of modern architecture: Auguste Perret in Paris and Peter Behrens in Berlin (Curtis, 1982).

During the 19th century, the number of architecture schools increased in both Europe and the US. In the 1890s, the number of architects who attended an educational institution constituted more than sixty percent of the members of Maison Européenne de l'architecture (European House of Architecture) in France (Stevens, 1998). According to Stevens, architecture schools became the center of the tension between the profession and the universities. He states that the graduates of the architecture schools were not being seen as sufficient by practicing architects, and architecture was failing to perform like other academic disciplines in knowledge production. As a result, the disconnection between the profession and the academy became one of the main concerns in architecture.

As well as the establishment of educational institutions, the evolutions in scientific thought affected the theory-practice relationship in the 1960s. After the recognition of architecture as a scientific research area, the scope, design methods, and education of architecture started to be mentioned in academic studies (Loosen, Heynickx, & Heynen, 2020). The increasing influence of the "critical theory" and the 'interdisciplinarity' concept that sprang out with the paradigm shift radically changed the approaches toward architectural research (Mennan, 2006). Especially with the contributions of different disciplines such as psychology, sociology, pedagogy, and others, architectural theory became a respectable branch of philosophy in its own right rather than being just a supplement to the architectural practice. As a result of these transformations, the gap between theory and practice continued to increase in the 1980s (Davies, 2011). Consequently, studies on knowledge production and architectural education gained more importance with the discussions arising from the contrast between the theoretical background of architectural research and the practice-based nature of the discipline.

Although it is one of the oldest dilemmas, the dichotomy of theory and practice is still a generative context for the recent discussions. According to some opinions, the gap between theory and practice supports creative activity in architecture schools, and it must be conserved. On the other hand, the elitist position of theory, which excludes professional practice, has been criticized by another approach. However, there is a consensus on the idea that the interrelation between architectural theory and professional practice is necessary to improve the built environment (Habraken, 2001).

While the discussions continue, the educational systems have been modified in order to re-establish the connection between academy and profession. Hiring practicing architects as instructors, integrating internships into curricula, and setting requirements for achieving architectural title are some procedures to maintain the relationship. Professional associations like RIBA, AIA, ACE, and others play an essential role in this interrelation by conducting some processes such as accreditation of architecture schools, lifelong learning projects, acceptance into the profession, and so forth. Also, some informal activities are being used to integrate hands-on practices into education.

At present, within the changing nature of technology, the global establishment of knowledge, and digital technologies, it is possible to mention the existence of a variety of approaches and methods in architectural education. Among all of those existing architecture schools, it is not possible to decide which educational system is superior to another. However, discussions on the relation between theory and practice have been an essential issue on how to educate architects as well as its impacts on the methods of architectural production.

2. A Critical Evaluation of Architectural Education in Turkey

Architectural education in Turkey has evolved under the influence of all mentioned systems of thought and educational models. Still, it is possible to note some legal and operational differences in integrating theory and practice in architecture schools compared with other geographies. One of the main issues behind these differentiations is the duration of architectural education in Turkey. While most architecture schools provide five years of teaching, including an internship period, architectural education in Turkey lasts four years; and the graduates acquire the license immediately without an exam or internship (e-FIADE, 2018).

The issues and deficiencies in architectural education in the context of the relation between theory and practice have been studied by many academicians and practitioners in Turkey. Some of the problems observed by Kural (2001) can be compiled as; the necessity of doing a Ph.D. in the field of architecture in order to be a faculty member, the restriction of the instructors who want to practice their profession, the inadequacy of the undergraduate education period, the insufficiency of the time devoted to the design within the curriculum, the lack of investments to technology in the educational environments, and as a result, being not open to change and transformation.

Another significant issue is the rapid increase in both the number of architecture schools and the student capacities of the departments. In relation to this problem, Tuna (2017) emphasizes that the pressure of quantity started to prevent seeking quality in the present day. He criticizes the establishment of new architecture departments without providing the necessary conditions to begin educating students. He also mentions that the substructure of architecture schools remains insufficient due to the uncontrolled increase in the student capacities in recent years.

Dostoğlu (2001) indicates that in the developed countries where architectural theories surfaced, academicians and professional architects are in continuous collaboration. She states that, in contrast to the developed countries, where

instructors are in contact with well-known practitioners, they are entirely separate in Turkey. Güzer (2015) also points out the necessity of the contribution to academic studies by practicing architects. He gives the example of Fuksas, who continued to share his knowledge by writing essays and associating with architectural schools, as well as practicing architecture. According to Güzer, this is a critical gap in Turkey's architectural environment compared with the Western societies.

Boyacıoğlu and Sağlam (2001) criticize the legal regulations restricting academicians from contributing to architectural practice. A full-time instructor in Turkey is only allowed to conduct limited professional activities. Similarly, hiring a practicing architect as an instructor is also restricted to part-time employment, mainly to the design studios in architecture departments. They also mention the inefficiency of this attempt to provide similar conditions to architecture students in different schools. They imply the lack of opportunity to invite practitioners to the newer faculties of architecture, which are primarily established in rural areas compared to the older faculties or architecture schools located in urban areas.

Çağlar (2019) points out that educational institutions do not have flexible attitudes toward the dynamic changes, and most of them are unable to guide students in shaping their professional life for the outside world containing many possible employment opportunities. She states that architecture schools have to adopt innovative and flexible educational models to achieve uniqueness in both architectural discourse and profession.

Regarding all of the discussions above, searching for alternative systems in architectural education is a vital issue. The problems and necessities in the existing educational system indicate a potential to re-evaluate the future possibilities of the interactive relationship between theory and practice. Especially the developments in both production and communication technologies must play an essential role in assessing these alternative pathways. In a similar way, the existing building stock and problems of current architectural production represent a gap between education and practice where architectural concerns that come front in the educational medium are not sustainable in the physical environment.

3. Changing and Transforming Conditions After Pandemic

The emergence of the COVID-19 outbreak required some crucial regulations affecting every phase of life. Social distancing, quarantine, and isolation became necessary precautions because of the rapid spread of the disease. As a result, daily habits such as working, shopping, eating, socializing, and many others, including education, have undergone some radical changes through online possibilities. Social activities like visiting museums or listening to concerts gained a different dimension. Besides these transformations in daily life, pandemic conditions created a context of critical consciousness which accelerated the way we live, work, produce and consume. The concept of urban space, public space, outdoor space, transportation, house, and other building typologies gained new meanings that altered the relationship between function and building programs.

Especially with the enhanced use of digital tools, the meaning of economy, art, and architecture went through radical transformations. The demand for cryptocurrencies reached the highest level during the pandemic. Digital assets helped to change the

understanding of the economic system and trading processes. Parallel with the increasing use of 3D modeling programs and other software, *hybrid reality* became a popular concept. Designers studied on projects for the alternative reality, which represents the desire of people to escape from the physical world through digital instruments of well-being (Ghislani, 2021).

As well as other activities, education is also deeply affected by these transformations. During the COVID-19, the term *distance education* became an inseparable part of the curricula. The digital tools made it possible to maintain educational activities via virtual classes. The departments giving practice-based education faced some additional difficulties because of the absence of required physical conditions. In the studio classes in architecture schools, the necessary communication started to be held through limited opportunities of computer screens.

Besides the negative impacts of this compulsory digitalization, the studies related to the benefits of educational technologies drew significant interest in recent years. Space and time restrictions are eliminated with the help of online education. Mitchel (2020) emphasizes that the disappearance of time and space restrictions is an opportunity to be freed from the conventional understanding of education, which prioritizes the academic calendar, and sees university buildings as sacred spaces.

On the other hand, virtual reality, which was already being used in some of the architecture schools, also started to be seen as a potential medium to conduct some of the courses in the curriculum. For example, virtual reality could be used to experience the buildings and structures made by students. They can go inside the place, feel the scale of the building and share the experience instead of trying to imagine what they are doing by watching a 3D model on their monitors. Similarly, the VR technology provides the opportunity to hold the theoretical courses in the related buildings by taking a virtual tour inside. As a result, the virtual reality technologies may help to gain more improvements in the spatial perception of the students compared with traditional education.

When it comes to the practice, this hybrid technology might open new possibilities in the profession. It could be possible to try different materials on the virtual model on 1:1 scale and see the finished work immediately. As well as the presentation techniques, these technologies might also be adapted to the construction sites to facilitate the production processes. It could be inferred that all these new possibilities might lead to the emergence of new fields in practice. Consequently, it could be possible to guide students in these fields by suggesting specialized programs regarding their interests and abilities.

Besides its limitations, the pandemic conditions created a context that accelerated online interaction and communication, blurring the physical boundaries between different educational sources, which established an open, global educational medium and experience. In a similar way, this medium became a melting pot where it became possible to integrate a more significant number of practicing architects

into the educational process. Such an experience became a foundation for a more flexible and inclusive educational model.

4. Conclusion

In line with these intense discussions and transforming developments, there are many studies that have been carried out in both theoretical and practical fields in Turkey. In addition to theoretical studies conducted by academicians, alternative educational programs have been created in some architecture schools in order to re-establish the practice-education relationship. For example, the department of architecture at Bilgi University, which was founded by both academicians and practicing architects, aims to provide a design education that is intertwined with production by integrating practice into education. TOBB ETU is also another example that represents a different approach to combining theoretical and professional education by introducing internship semesters in the curriculum.

There are also some organizational studies aiming to detect problems in architectural education and discuss possible solutions. Chamber of Architects, MIDEKON, MOBBIG are some of these organizations and associations discussing the current topics and forming study groups to prepare action plans and projects. MIAK, MiMeKK, and SMGM are some of these study groups targeting the issues in both architectural education and professional practice.

In recent years, the mentioned issues such as increasing the duration of architectural education to five years, supervising the accreditation process of architectural schools, forming a mechanism for entitlement, and providing life-long education programs for practitioners are on the agenda of these organizations.

Different alternatives for educational models, in line with the variety of missions and objectives, could be achieved by specialization in the educational system. Especially regarding the number of architecture schools in Turkey, it is possible to mention the potential for the specialization of architecture schools according to their specific conditions and tendencies. In this way, it could be possible to lead high school graduates to the universities according to their interests and help architecture students to shape their professional lives by introducing many possible pathways during their education. This kind of specialization in education that is also integrated with different branches of practice could also be beneficial for demarcating the scope of the education for each school. As a result, it can be aimed that instructors specialize in specific fields, and the quality of architectural education could be increased in a purposive way.

The process that has been adapted due to the pandemic conditions shows the necessity to re-evaluate traditional education through technological developments. It is essential to discover future possibilities to transform architectural education by integrating alternative mechanisms, such as distance education programs, interactive mediums like virtual reality, tutorials and workshops, and other informal activities, which have become preferred manners to learn design methods and drawing or visualization techniques in architecture. In a similar way, the development

of online education facilities is open to inserting alternative educational models, which will accelerate significant feedback from practicing architects and site experiences. In Turkey, such an advantage of online contribution may be utilized as a tool to transform traditional architectural education to re-unite theory with practice. Future studies might reveal the potential of these technologies in bridging theory and practice in architecture schools.

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Borderline: An Interdisciplinary Spatial Installation

Aktan ACAR¹, Mustafa KOÇ², Selda BANCİ³, Günsu Merin ABBAS⁴

1st Author's e-mail: aktanacar@etu.edu.tr

2nd Author's e-mail: kocm21@itu.edu.tr

3rd Author's e-mail: sbanci@etu.edu.tr

4th Author's e-mail: gmabbas@etu.edu.tr

Abstract

The relation of architecture and technology has always been a necessity and dependent on each other. The advancements in technology and understanding of both fields made this relation inseparable. Technology has always shaped the design parameters in history and continues to with increasing effect. Architectural education should embrace such a relation to adapt to the changes. The first-year basic design studio at TOBB ETU, considers that ways of thinking and producing together with technology should be a part of architectural design education. This paper is motivated by and the coupling of technology and architecture at the first-year basic design studio. In this respect, the content of the course challenges the students to question the relationship between technology and design, space, and technology. In this context, the collective working within the scope of assignments is accentuated during the course. The "BORDERLINE" installation is a work created in this context in 2017 with the participation of all basic design studio students that is shaped during the semester by students' discussions, interactive work, and exchange of ideas in the studio. The core of the work was that the students aimed to demonstrate changing boundaries of space by using technology. To this end, the spaces are designed to physically change with human interaction by using Arduino programmable boards, sensors, and DC motors. Six 1x2 m modules consisting of 8x0.15 m fabric strips are assembled. The length of the fabric strips changes by Arduino boards and DC motors according to feedback from the sensors. Borderline is not only a spatial installation but also a study on the impact of technology on space and the results of interdisciplinary education. Borderline, as an interdisciplinary work, aimed to couple the methods of different disciplines. At a time when technology shapes design parameters, Borderline was designed and realized by thinking about architecture together with technology. First-year architecture education is the period in which space, the tools that make space possible, and design as a form of research and learning are explored. In this sense, such a period should embrace an interdisciplinary approach to develop fundamental infrastructure for unexplored practices.

Keywords: Interdisciplinary Education; Basic Design Studio; Architecture; Engineering

Introduction

Real-world problems are so complex that no single discipline can adequately describe and resolve these issues. Similarly, education following a standard, isolated curriculum cannot be expected to raise individuals who can generate solutions to complex problems. In this age where knowledge is so intertwined and the boundaries separating disciplines are gradually disappearing, it does not seem possible to teach a single discipline with very "clear" boundaries. Specifically, architecture, a field having an inseparable connection with almost every discipline, it is nothing but an illusion that "only" architecture can be taught. In this context, as a first-year basic design studio at TOBB ETU, rather than isolating architectural education from other disciplines, we emphasize its connection to other disciplines aiming at providing architectural education to acquire the necessary equipment to use interdisciplinary relationship. For this purpose, we challenge our students to question the relationship between technology and design, space and technology, and in this context, we highlight collective work with assignments. Students are expected to be able to assess complex information to develop their own thoughts and viewpoints when they graduate, which we refer as critical thinking. Interdisciplinary learning promotes critical thinking by assisting students in recognizing different viewpoints, consider opposing aspects, and develop structural knowledge. Repko (2008), an interdisciplinary education expert, used "structural knowledge" as a term for the amount of knowledge required for students to develop their own ideas and solutions to a problem. At this point, we try to avoid a standard curriculum so that the student can create their own idea world rather than a copy of the educator's ideas, tastes, and views. Due to the importance of benefits of the interdisciplinary approach to the students in architectural education, we aim to include various disciplines in assignments and in-studio discussions.

The Borderline project is an idea that students jointly come up with during these discussions and assignments. The students created this project by using their own and the collective knowledge and perspective that emerged as a result of the discussions. Regarding the inseparable connection of technology and architecture, one of the main factors that motivated the studio was the process in which technology was considered along with architecture: to accentuate the role of technology in architectural education and to experience how technology can change the design process rather than using it as a tool. First-year architecture education is the period in which space, the tools that make space possible, and design as a form of research and learning are explored. In this respect, we consider that it is critical for such period to embrace an interdisciplinary approach to develop fundamental infrastructure for unexplored practices.

1. Basic Design Studio

Contemporary development and learning theories argue learning as an individual process based on readiness, previous knowledge, and motivation, which are supported and occurred within a social context (Miller, 1993; Shaffer, 1999). The learner needs to be ready physically, cognitively, and emotionally, where the learning is a construction and articulation of the previous knowledge, to sustain

autonomous and resilient learning, and the learner should have internal motivation. Therefore, it is important to have a perspective on students' individual differences; each student is unique and would progress accordingly. The supportive acts of the tutor motivate the student to internalize and take over the responsibility of its own learning process. It may seem that such an individualized learning atmosphere would increase the responsibility on the tutor's shoulders. However, the high rates of initial investment cost would be compensated very fast, as long as the students develop their autonomy in learning and self-appraisal skills. The appraisal of individual differences and experiences would initiate an inclusive and participatory learning environment. It can be expected that the students would concern about the issue of diversity and inclusion in their team works as well. We aimed to ensure that students' perspectives based on their past learning and biases find a place for themselves in studio discussions, and that these discussions will contribute to students being open to different perspectives and creating structural knowledge.

One of the many important issues is to have a common language. This is also directly related to the appraisal of previous learnings. The most common mistake of the first year in architecture education is "to forget what we already know". Students bring previous learnings, predispositions, and biases into the studio and it is not possible to learn without articulating with the previous life experiences and knowledge. Therefore, for healthy communication and collaboration in the first-year studio, the previous learning, and experiences of the students are tried to be recognized and appreciated in our basic design studio. We aimed at challenging these inclinations and lead students think about numerous points of view and, in doing as such, train students to contemplate their own personalities.

It is important to support the students within their zone of proximal development through their activities in becoming independent in thinking, designing, and transforming the tools of thought and design to their own purposes in the studio. Students are encouraged to discover their own styles, view, methods, and tools. In this sense, it is tried to provide as much opportunity and freedom as possible for students to discover their own styles, tools, and ideas. At this point, they are allowed to suggest/choose the tools they use, the media, the method, and even the assignment itself.

Interdisciplinary studies are also supported in the studio. In this context, we encourage students to follow and research the developments of other disciplines and use them in their designs. For this reason, we encourage our students to investigate and consider the relationship between technology and design, as well as the interaction between space and technology, and we attempt to emphasize collaborative work through assignments.

2. Interdisciplinary Approach

At a time when technology shapes design parameters, designing with it becomes a necessity. The standard curriculum is too segregated or isolated, along with the discipline. In an increasingly complex world, students struggle to understand the relationships between different forms of knowledge and research (Bear & Skorton, 2019). This struggle makes students confused and outdated when they face the real world. Another major effect of this standard curriculum is that the fields of knowledge are isolated within themselves, and the number of studies that can remain relevant

to the contemporary world at universities is gradually decreasing. In such a period when knowledge does not belong to a single discipline, isolating disciplines from each other contradicts real-life problems and paves the way for raising individuals who are not ready for these problems. At this point, an interdisciplinary approach plays a major role in raising individuals who find more realistic solutions to real-life problems and have the opportunity to evaluate their knowledge from a wider perspective. Inevitably, this approach will also make a great contribution to the development of disciplines. An education that communicates and interacts with other disciplines lays the groundwork for students studying in these disciplines to consider their education from different perspectives and create new areas to explore. Repko argues that interdisciplinary instruction promotes cognitive progress, and other educational researchers (Kavaloski 1979, Newell 1990, Field et al. 1994, Vess 2009) have found many benefits of interdisciplinary learning such as recognizing prejudice, thinking critically, tolerating ambiguity, and acknowledging and evaluating ethical concerns (Repko, 2008).

In common, students bring previous thoughts, predispositions, and biases into the studio. These can influence what students realize, how they learn, and how they apply what they realize in school to their lives. Interdisciplinary learning challenges these inclinations. It encourages students to think about numerous points of views and, in doing as such, trains students to contemplate their own personalities. This approach engages students, since it constrains them to save assumptions, empowering them to learn even more promptly, get a more profound comprehension of the material, be receptive to innovative thoughts, ideas, and approaches to getting things done (Sudderth, 2022).

The interdisciplinary approach assists the development of students' cognitive talents, the brain-based skills, and mental processes required to complete tasks. According to Repko (2009), interdisciplinary learning fosters a number of cognitive qualities, which assist students to develop:

- Perspective-taking techniques, which is the ability to comprehend many perspectives on a particular topic (Baloche, Hynes, & Berger, 1996). Students gain an understanding of the distinctions between disciplines in terms of how to approach an issue and the standards that apply to viable evidence in their area. As a result, they have a better knowledge of the problem they are looking into.
- Develop structural knowledge, which includes both declarative (factual) and procedural knowledge (process-based information) that helps in answering difficult problems that require each of these types of knowledge (SERC, 2021). As students' potential for knowledge development grows, instructors can engage them in discussions about more difficult problems.
- Combine opposing viewpoints from several disciplines. A variety of disciplines tries to comprehend the same or similar problems, but each uses distinct processes of analysis and techniques to assess the viability of their findings. Obtaining a thorough knowledge of problems having roots in various disciplines necessitates the ability to integrate ideas, and interdisciplinary learning enhances this ability (Repko, 2008).

The interdisciplinary approach supports students to tolerate or embrace ambiguity that helps students to understand why disagreements occur in the first place, the origins, and repercussions of a problem, and the best method for policy to handle the problem (SERC, 2021). When learning is limited to a particular disciplinary

perspective, ambiguity is frequently regarded as either a flaw in the analytical framework or an indication that assumptions must be made in order to make a clear forecast. Interdisciplinary training promotes the idea that uncertainty arises from many disciplines' differing viewpoints on topics, rather than being a flaw in one subject. As a result, students gain a deeper appreciation of the complexity of their chosen problems and the obstacles that come with tackling them.

Interdisciplinary instruction also teaches students that most subjects of interest have ethical dimensions. Moral concerns are included in ethical considerations, which include accounting for right vs. wrong, good vs. bad, and the supply of justice. In order to be scientific, several fields avoid such subjective occurrences and limit their investigation to more objective factors. Interdisciplinary training encourages the integration of concepts from several disciplines, including moral philosophy, while investigating a problem, hence ethical considerations are frequently included in interdisciplinary investigations. This is beneficial since ethical aspects are likely to be discussed and valued as a part of or viewpoints on a question and policy considerations.

Howard Gardner (1983) stated that students bring a variety of intelligence to the learning process. Rather than defining intelligence as a single, generic capacity, Gardner's the theory of many intelligences proposes that human intelligence be divided into various modalities (Gardner, 1983). As a result, he argues that relying on a broader range of frameworks and techniques will boost student engagement and hence learning, given that students have diverse learning styles and backgrounds, interests, experiences, abilities, and beliefs (Gardner, 1983). Interdisciplinary education exposes students to the ideas from a variety of fields, allowing them to relate to and participate to the conversation. Interdisciplinary learning increases the probability of connecting with a diverse group of students in the studio.

Real-world problems are complex; therefore, no single discipline can adequately describe and resolve these issues. When curriculum mirrors actual life, which is multi-faceted rather than being segmented into neat subject-matter packages, educational experiences are more authentic and valuable to students. Interdisciplinary learning encourages students to be innovative in their learning and to apply their knowledge across fields. Students go on a path to more satisfying lives and employment options when they can comprehend and connect a wide range of knowledge and abilities. Higher education can and should do a better job of bridging disciplinary boundaries. For this reason, we believe that adopting an interdisciplinary approach in the first-year basic design studio is a necessity for the development of students and disciplines.

3. Borderline

The "BORDERLINE" installation is a work created in this context in 2017 with the participation of all basic design studio students that is shaped during the semester by students' discussions, interactive work, and exchange of ideas in the studio. The core of the work was that the students aimed to demonstrate changing boundaries of space and body by using technology. During these discussions, students studied different disciplines and discussed different solutions. They contributed to these discussions and the design process with the integrated perspectives they developed

through in-studio discussions and group works, starting from their own perspectives. Students did not consider disciplines separately, on the contrary, they combine their knowledge and think together to solve the problems they face while working on their design. The discussion between the students about the topic revealed itself as the installation that changes its spaces. For this, they wanted to create changing spaces with human interaction using Arduino programmable boards, sensors, and DC motors (1). To this end, the spaces are designed to physically change with human interaction by using Arduino programmable boards, sensors, and DC motors. Six 1x2 m modules consisting of 8x0.15 m fabric strips are assembled.



Figure 1: Preparation of strips

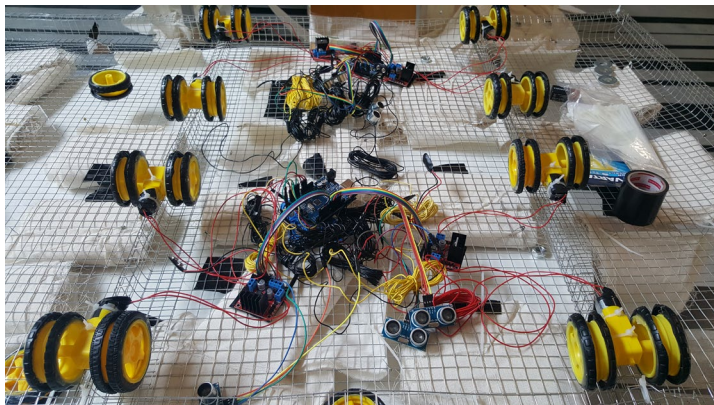


Figure 2: DC motors and Arduino boards

The length of the fabric strips changes by Arduino boards and DC motors according to feedback from the sensors. They preferred an easily programmable system to enable the movement of the fabric strips and they suggested Arduino as a result of their research. The design of the project was studied and experimented repeatedly as the circuit setups and mechanism for movement of the fabric strips emerged. First, they started to design a grid system where Arduino motors and boards would stand. Then they researched a power system to run Arduino boards and DC motors and included it in the grid system. They then developed a pulley system using toy car wheels to move the fabric strips. When this pulley system was included, they redesigned and finalized the grid system. For the movement of fabric strips, they needed to detect human motion, and they decided to solve this by using sensors

that measure distance via sound waves. They placed sensors on the ends of 8-meter fabric strips and connected them to the reel system they created with the fishing line.

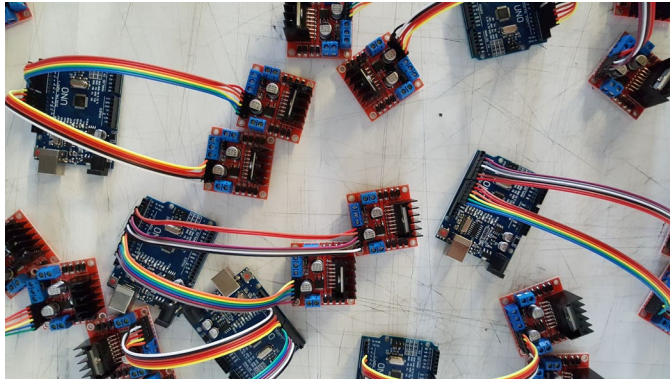


Figure 3: Sensors



Figure 4: Stripes

They performed numerous trials and calculations to find the right winding speed and distance setting. After preparing 6 of the 1x2 meter grid systems, they worked on how to combine modules and finalized the project. Working as a team, they set up the six 1x2 meter grids on their own where they would be displayed. While approaching the problem from the point of view that they were responsible for the problems that arise at every stage, they produced solutions by considering the problem from different aspects, since they were in constant communication with other teams.



Figure 5: Final work

4. Conclusion

In this work, first-year basic design studio students not only made a spatial installation, but they also produced a study on what effect technology can have on space and the results of interdisciplinary education. During this study, they researched on programming and circuit building and gained knowledge on these issues. They discussed how to use this knowledge in their designs and came to a conclusion. While working as a team, they distributed tasks among themselves and ensured that each student took part in each task by changing the teams at certain intervals. While distributing the tasks, each student found a way to use their own knowledge and experience in their designs by working in the areas they thought were strong individually. While the students were looking for solutions to the problems, they encountered from their own perspectives, they also experienced different perspectives thanks to working as a team and researching other disciplines and produced integrated solutions by working together. In the process, from the emergence of this study as an idea to its final form, the students started to work using their own perspectives. The discussions in the studio and the design process gave opportunity to students to expand and create their perspectives and build a structured knowledge, as well as developing their own views and styles and testing these new perspectives.

5. Acknowledgements

We thank the first-year basic design studio students of 2017.

1.Arduino is an open-source electronics platform based on easy-to-use hardware and software.

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DIALOGUE 1: CO-EDUCATION AND RELATED APPROACHES

SESSION II

Opportunities and Challenges of Online Education in Architecture: Conservation Studio Experience

Elif Özlem AYDIN ORAL¹, Funda SOLMAZ ŞAKAR²

^{1st} Author's e-mail: ozlemoral@gtu.edu.tr

^{2nd} Author's e-mail: solmazfunda@gtu.edu.tr

Abstract

Covid 19 pandemic has caused to suspend the classical education system which has been constituted and used from the 19th century and brought along the growth in online education methods in 2020. As similar with the other countries, Council of Higher Education in Turkey has decided to use digital education equipment and put into action the online education in the spring term of 2020.

In this study, it was aimed to discuss the positive and negative aspects of the online education through the methods used in the Architecture Department of Gebze Technical University. Conservation studio course named Analysis of Historic Buildings was selected for this purpose. The practice methodology and the scope of the online courses were discussed in the context of students' relation with the historical buildings and cultural heritage.

Before the pandemic Analysis of Historic Buildings course itself has both theoretical and practical aspects which the students have worked with the group and carried out a field trip and survey of a historic building. Starting with the pandemic the method of the course was discusses and regarding the pandemic conditions and health issues, it was decided to modify the course to the distance education model.

Online model of conservation studio has generated both some challenges and opportunities. Restrictions and limitations of getting in touch with historic buildings, technological tools and equipment, instructing about technical drawings were considered as main challenges of the online education experience.

Raising awareness about historic buildings in nearby environment, seeing diversified amount of historic building type, developing analytic research skills of the students were the significant opportunities of the teaching model. Along with revealing difficulties of the process by experience, it is a fact that the same process has some advantages and opportunities for future periods. In the conclusion of the study, some suggestions related with the process was made in order to establish a proper correlation between online education and conservation courses. These suggestions were listed as titles of teaching-related, learning-related and content-related. Furthermore, an overall evaluation was carried out about the methods and the content of the course by using a questionnaire which was done with students.

Besides the national and international social and economic aspects, online education system certainly has some physical and psychological effects. In this sense, it is important to examine the opportunities and threats of the system thoroughly in order to manage and carry out the online education model in an efficient way.

Keywords: *Online Education, Online Architectural Education, Conservation Course, Online Conservation Studio.*

1. Introduction

The classical education system that was established in the 19th century could not be sustained in many countries due to the global epidemic of COVID-19, which started worldwide in 2020. This situation necessitated the worldwide expansion of the distance education system, which is the first alternative that comes to mind in primary, secondary, high school and higher education institutions since the first months of 2020. In Turkey, the Council of Higher Education, with the decision of the Education and Training Department dated March 27, 2020, decided to continue the education only with distance education, open education and digital education opportunities, initially limited to the Spring semester of the 2019-2020 Academic Year. (YÖK, 2020a). Regarding applied courses, it is left to the decision of the senates of Higher Education Institutions about which courses can be applied by distance education method with digital opportunities (YÖK, 2020b).

In accordance with the decisions taken, at Gebze Technical University, to which the authors belong, education was interrupted between March 16 and April 2, 2020, due to the global epidemic, and all courses were conducted with distance education due to the continuation of the epidemic in the following period.

2. Distance Education Period of Conservation Courses

Starting from the 7th semester, there are two compulsory courses focused on conservation and restoration in the undergraduate program of the Department of Architecture at GTU. In the Historical Building Analysis and Conservation Studio courses, which are held in studio environments, it is aimed to give the awareness of conservation by explaining the main framework of the concept of conservation theoretically. In the practices carried out in the Historical Building Analysis course given in the 7th semester, historical research about a building selected from the historical settlement, documentation studies are carried out with on-site measurement and analysis methods. In the "Conservation Studio" applications, which is given as the 8th semester course in which the Historical Building Analysis course is a prerequisite, restitution and restoration projects related to historical buildings are prepared (Aydın et al., 2014).

4.1. First Experience of the Distance Education Period: ARCH472 Conservation Studio Course as of March 2019-2020 Spring Semester

When the pandemic had not yet begun, related documentation studies were carried out during the fall term of the 2019-2020 academic year and survey drawings, material, deterioration, and period analyzes were completed at the beginning of the spring term. According to the prepared curriculum, it is foreseen that the restitution and restoration projects and intervention analyzes of these structures will be completed in the spring term. In the spring semester, which started in February 2020, the applications continued on the subjects of fieldwork in the fall semester.

In line with the general decisions taken by YÖK, Arch 472 course has been started to be given simultaneously with distance education. At this stage, the "Microsoft 365" software used by the University before the epidemic continued to be used and the interfaces of the program that can be used in distance education were activated. It has been ensured that students and course instructors gather on a common platform without any problems.

In the 2020 spring semester, in which distance education started in the first quarter, students and faculty members had no difficulty in recognizing, understanding, and analyzing the subject and the structure, as they worked in the structures where they completed their documentation work in the Fall semester. In this process, students were asked to complete their weekly drawings step by step and upload them on the relevant online file. The biggest difficulty experienced in this process is that the interfaces, tools and equipment used for distance education are not yet used efficiently. It can be said that throughout the process, the instructors had to allocate twice as much time as the normal process both before and during the lesson, even just for the practical part of the lesson.

4.2. The Second Experience of the Distance Education Period: ARCH471 Historical Building Analysis Course During the Fall Semester 2020-2021

With the final decision that the 2020-2021 fall semester will be given in the form of distance education, the curricula and partially some content in the Department of Architecture at GTU have been revised according to this online model. In this context, how to conduct Analysis of Historical Buildings course in which various drawings and projects are produced as a group with the data collected in the field, has been the subject of discussion. Not opening the course was also considered as an alternative however, considering that this prerequisite course is a fourth-year course, it was preferred to open the course with some revisions in the course content in order to prevent the students who may graduate from suffering unjustly. With the revisions made, the course has been tried to be adapted to the distance education model as much as the current technological possibilities allow it in terms of content and method.

In this context, it was decided that the students, who had worked as a group before, would work individually this term, and they were asked to find a small-scale historical building that they could easily access from their immediate surroundings.

In the first week of the course, the data and possibilities offered by the selected historical buildings were discussed. Whether the buildings are suitable for survey and analytical survey studies; whether an undergraduate student can study the building alone; and the risk of the structural condition of the buildings during the study of the students was examined. Then, it was decided in which structures and in what context the students would work.

In this direction, considering the epidemic measures, it was preferred that the students be solely responsible for the buildings they will work in. Due to the risk of Covid-19, the operation was designed to allow working in open areas and focused on building facades. Two or four facades according to the size of the building was decided to study.

An application video was taken by the instructors for the measurement techniques and documentation studies, which are normally shown to the students in the field or in the faculty building during the face-to-face education. In this video, determining the zero line with a transparent water hose, taking sequential and diagonal measurements, facade and cross-section measurement techniques in the selected sample space were demonstrated by the instructors themselves. Thus, the measurement techniques that the students experienced in the field before were tried to be made understandable through the video for online education. Sharing this video as an open source that can be watched again later also enabled the student to watch the points they did not understand again (Figure 1).

After watching the sample application video and transferring the details during the theoretical lesson, the students were asked to perform a small-scale trial of the measurement process they learned through this video in their own homes. In this way, it is aimed that the students experience the measurement process before moving on to the historical buildings that they will work on during the term, be prepared for the problems that may arise, and reach the capacity to produce solutions to these problems (Figure 2).

As a continuation of this stage, a sample drawing was made during the lesson on how to transfer the measurements to the digital tools, and also a short video was taken for students using the Autocad program on how to perform digital drawing.

While this study, which the students carried out in their own homes, was continuing, volunteer students were determined to carry out another study in the selected historical buildings. These selected volunteer students were asked to go to the building where they will work and start the surveying process in the building. During the measurement process, they were requested to shoot videos that will show how they carry out this work, and to show the problems they will encounter during the measurement directly in the video.

In line with these directions, the volunteer students shot short 15-minute videos that would show the measurement and documentation processes they carried out in the buildings they chose. These videos were watched during the lesson and corrections were made through the videos. In these videos, discussions were conducted on the techniques used by the students while measuring, the problems they experienced, the points they had difficulty with, the tools, equipment and other equipment needed (Figure 3).

Thus, the students went through a learning process for the documentation of historical buildings not only through the practice videos taken by the instructors and the theoretical transfer, but also through the personal experiences of their classmates. They also discussed the solutions to the problems their friends encountered during the measurement.

After this stage, the students were directed to field work to work on the historical buildings they chose at the beginning of the semester, and they were asked to draw sketches of their buildings and prepare a photo album. The lecturers had only the opportunity to better understand these historical structures, which they could not visit, through detailed visuals. The zero line was determined in the buildings based on the sketches drawn and the measurement processes were started. In the next process, the students started to transfer the scaled drawings of the buildings they took the survey to the computer environment, and after completing the survey drawings, they prepared the material, deterioration and period analyzes,

respectively, and took criticism every week. These analyzes were also criticized on the visuals presented by the students (Figure 4).

Undoubtedly, the most challenging point of this process for both the lecturers and the students was the ability to criticize the drawings and show the technical drawing mistakes directly to the student on the drawing. This problem, which is one of the most important problems of distance education in the field of architecture, has been tried to be solved by using an online "whiteboard" application called "miro". The students uploaded the building photos and the drawings they made every week to an empty online board through this application, and the lecturers made corrections by drawing during the online meeting by using the application. Simultaneous viewing and comparison of building photographs and drawings in the distance education environment has been one of the most important points that increase the efficiency of the process. At the same time, it provided the opportunity for all students to watch each other's projects and listen to the critics at the same time.

At the end of the semester, a survey study was conducted in order to evaluate the extent to which the knowledge and professional achievements that the course aims to provide to the students can be transferred by the distance education method. In this study, a general evaluation was made about the operation and method of the course by asking some questions about the content of the course and the problems they encountered during the course with this method.

4.3. Evaluation of the Process with Student Questionnaires

Since distance education teaching methods had to be experienced for the first time, this process was wanted to be analyzed better by the executives. For this purpose, a survey study was organized in which the students who took the course would participate anonymously. Within the scope of the survey, the students were asked questions about the course content, the method of distance education and the documentation process. Some of the prominent questions and student answers in the survey, answered by 45 participants, are as follows:

The most difficult step about the course is defined as to make measurements (50%); to understand how to measure (26.7%); to draw the measured structure (17.8%). The question of how much competence you have gained in measuring and documenting historical buildings is 38% medium; good with 43%; 16% was defined as very good. It is seen that the students have an above-average level of self-confidence in analyzing historical structures.

In the questions asked about the analysis, it is seen that 69% of the students gave "good" and "very good" answers to the question of how much competence you have gained in material analysis. In the deterioration analysis, the answers to the same question were "good" and "very good" at a rate of 78%. Here, it can be said that students have more difficulty in recognizing the historical building material. This situation is essentially a result of the student's inability to work with the instructors in the fieldwork. It draws attention as one of the most important issues regarding distance education.

In the questions about the distance education method and operation of the course, it is seen that 20% is very good, 33% good, 30% moderate and 20% poor. It is very important that 80% of the participating students find the method and operation at an upper-intermediate level. In the section related to this question and asking for

suggestions on improving the distance education method of the course, many students stated that the examples shown in the course were very helpful in understanding the content and scope of the subject and wanted the course to be supported with more examples.

Among the positive points listed by the students for the course method and operation, the criticisms can be given by comparing the drawings one-to-one in the digital environment and putting them side by side; theoretical explanation and then sample project demonstrations. The points that were evaluated negatively by the students were stated as having to analyze individually during the survey phase.

However, a significant part of the students stated that they were more worried about the lesson at the beginning of the term, but as the term progressed, the approach of the instructors and the spread of the productions that should be done within the scope of the lesson over time, reduced their worries.

5. Challenges and Opportunities of Distance Education

Conducting the Historical Building Analysis course online brought with it some difficulties. The most prominent of these difficulties can be grouped under the heading of contact and communication. The most important change that affected the efficiency of the lesson was that the field studies, which are normally the most instructive part of the lesson, are carried out by the students individually in this period. One of the challenging stages of this process for both students and course instructors is not being able to experience the historical structure by contacting them together. The fact that the students were deprived of the process that they would experience with the coordinator in the field affected their development of a more attentive and careful approach to the historical structure. On the other hand, in some cases, the inadequacy of the building photographs taken by the students or the incomplete/wrong information, and the limited information presented about the building made it difficult for the lecturer to perceive the building fully and accurately. Another difficulty of the process is the limitation of technological tools and equipment. As it is known, even in the simplest traditional documentation techniques, there is a need to use some basic tools and equipment. Each of the students was asked to provide tools such as a 5, 10 or 20 steel tape measure, water hose, but some tools that are difficult to obtain individually, such as a *mira*, water balance, were unfortunately missing. Although students working in locations close to the university such as Istanbul and Kocaeli are given the opportunity to use the tools in the school; such an opportunity was not offered for those residing in distant provinces. Therefore, the students had some difficulties in the documentation process due to the lack of tools and equipment that were difficult to obtain individually.

Teaching drawing techniques to students is another challenge encountered in the distance education process. Drawing and analyzing a historical building, which he has never experienced before in distance education, in the context of architectural expression techniques has been one of the most challenging stages of the process. Although it was explained by the lecturers in the theoretical lectures and weekly criticisms were given, the students had to go through individual processes in determining the material and deterioration.

It is certain that the process offers some opportunities as well as these difficulties. The first of these opportunities is on awareness. In order to apply the distance education method determined by the administrators, the students were asked to find a historical building from their immediate surroundings, which led the students to look at the area they live in from a different perspective. The students tried to find various archival documents related to the historical buildings in their vicinity and to do verbal research. Thus, the process prompted students to think and research on the cultural heritage potential of these areas in their immediate surroundings. It helped to raise awareness among students about the heritage values in their immediate surroundings.

Another advantage of this method has been on diversity. Students who returned to their families living in different regions of Turkey due to the global epidemic created a variety of topics and structures with the buildings they chose from their close circles. Different historical structures, from a wooden masonry mosque without nails to a masonry tomb, have become the subject of the course. The students who took the course had the opportunity to see and get to know the historical structures unique to different geographies of the country and were able to have an idea about the preservation status of these structures (GTU, 2021).

Another important opportunity offered by the process is related to the development of students' ability to conduct research and analysis on their own. In the distance education method, the documentation of the historical structure and the analysis of the historical structure by the students on their own was initially considered as a difficult process by both the administrators and the students. However, the fact that the historical building was chosen by the student, and that this building is a structure that the student can personally experience and frequently encounter in his daily life, enabled the student to adopt both the subject and the historical building he chose more. In addition, at the end of the semester, it was observed that the students were more inquisitive about the historical buildings and their surroundings. Through this situation, it can be said that the student's ability to conduct research and analysis on his own develops, and he gains a critical view by asking more questions.

In the distance education process, the method of teaching has also had some advantages. Presenting the works done online enabled the comparison of weekly drawings and analyzes by bringing them side by side; errors and omissions are shown more easily and effectively.

4. Recommendations

The epidemic, which requires unprecedented rapid action in the field of education, has undoubtedly brought with it some impossibilities and insurmountable difficulties. Along with revealing difficulties of the process by experience, it is a fact that the same process has some advantages and opportunities for future periods. At this point, the important thing is to make good use of the difficulties and opportunities and to manage and direct the process for a better educational environment. The suggestions presented for this are listed under three headings, related to teaching skills, learning skills and course method.

4.1. Recommendations Related to Teaching Skills

The rapid transition to the distance education in all universities necessitated the teaching staff to develop some new skills. These skills are especially related to the use of digital and technological equipment and the development of lecture techniques in a virtual environment where there is no mutual interaction.

In case the distance education process is prolonged or the distance and face-to-face education is applied in a hybrid way, some facilities should be provided to the course instructors by the universities. Especially in faculties of architecture, lecturers should be given the opportunity to use appropriate computer programs (whiteboard, video shooting application, 3D virtual reality, etc.), many of which can be used effectively with the purchase of special licenses to improve their teaching skills. It has been understood that universities currently have licenses for programs that allow face-to-face communication, but only these programs will not be sufficient for effective teaching. In addition, the use of auxiliary software and educational applications should be encouraged and facilitated, which will enable the efficient use of these software, facilitate the course transfer of the lecturer, improve the interest of the students in the course, their concentration in online education, and their comprehension skills.

Considering the fact that drawing and three-dimensional production are a direct part of the knowledge and skill transfer of the lecturer, especially in faculties of architecture, methods and tools should be developed to keep all these components of the process active in distance education. For this purpose, when necessary, trainings and seminars should be organized for the lecturers on related applications and similar tools to inform and introduce them.

4.2. Recommendations Related to Learning Skills

Especially considering the distance education system, some arrangements can be made in the curriculum and course contents of the department to improve the course concentration and learning skills of the students. Although the current student profile is known to be prone to digital and technological equipment as a general trend, it is thought that they need support on how to access online information, how to choose the right information from the online sources they reach, and how to use this information.

For this purpose, from the first year, students should be trained in research methods at the undergraduate level. It should be ensured that the student can do research on his own and access accurate information from reliable online sources. Revisions should be made in the content of homework, projects and presentations that they will prepare within the scope of the course so that students gain a perspective that can analyze the data they have reached. In this way, it can be ensured that students can analyze and present the data they have reached in a systematic way and transfer them to the course participants and lecturers. Students can be trained in media literacy and encouraged to use new media tools correctly and effectively.

Considering the predisposition of students to digital equipment as a requirement of the age they live in, it is clear that with the right guidance, there will be significant positive changes in their learning skills in a short time. However, first of all, it is a prerequisite to provide students with the technical infrastructure to conduct online

research beyond an individual approach. Without this, the recommendations presented here or in other studies cannot be realized.

4.3. Suggestions Related to Course Work

It is very difficult to get the desired efficiency in the Historical Building Analysis course without seeing or touching the historical building. For this reason, it is inevitable to make some innovations in the course operation in order to carry out the course with distance education or hybrid education system.

Documenting the historical structure, which the students learned by experience with the instructors, recognizing the materials and types of deterioration, and distinguishing the period suffixes are among the greatest achievements of this course for the students. For this reason, it is more appropriate to switch to the distance education model after the student and the lecturer spend 3-4 weeks together in the courses related to historical buildings.

In case distance education becomes permanent or is applied for a long time, some preparations should be made so that students can do documentation work on their own. At this point, some solutions should be suggested for instruments such as mira and laser meters that are difficult for students to obtain on their own. It can be ensured that students can temporarily obtain these tools through the universities in their cities. As another method, with the method applied in various schools in Europe, each university can prepare educational kits in various scopes for their students and deliver them to the students. It is thought that these small-scale kits prepared for students in departments such as architecture where the number of tools and equipment are quite high will be very useful.

Another method related to coursework can be the use of virtual reality applications in historical building documentation. Virtual reality (VR) systems, which are increasingly used in daily life, can be used as course teaching material. Similarly, a method that can be re-measured with laser scanners can be created by using virtual reality applications on previously documented historical buildings. Thus, during the epidemic, students will be able to partially experience the documenting and analyzing historical structures without going to the field.

5. Conclusion

It is certain that the distance education process has some physical and psychological effects on the individual, as well as the social and economic problems that it causes nationally and internationally. In order to properly manage the distance education method, which is compulsory at one point, it is necessary to comprehensively examine and understand the gains of the process and the threats it will pose. With this study, the distance education method, which had to be applied since March 2020, was tried to be analyzed through the Historical Building Analysis and Conservation Studio courses given in the Department of Architecture at GTU. The way this method is applied, the scope and progress of online courses, and the students' relations with the historical structure have been tried to be discussed in all aspects.

During the period when the course was conducted face to face, the students had the opportunity to learn about the historical building by making observations, taking

measurements and touching all the details one-to-one with the lecturers. This created the opportunity to take part in a different stage of the architectural education environment they have been in until today. Thus, when the documentation and analysis of a historical building were carried out within the scope of conservation lessons, learning was more effective and permanent with the tools of interaction, vision and perception.

In the experimental process carried out during the global epidemic, the Interaction, Environment, Looking, Seeing, Perception tools were experienced by the students, but the lecturers had to evaluate the studied structures only on the basis of the photographs taken by the students and the data they presented. The fact that the lecturer had to evaluate the course products by understanding the structure only through the visuals presented by the student created a significant disadvantage for the lecturer.

However, some question marks about the distance education process still exist. The copyrights of the faculty members related to the course content, the lack of technological opportunities for each faculty member and student; psychological difficulties experienced by students and faculty members due to the pandemic; especially the fact that female faculty members have to carry out lessons together with home life and child care due to longer than normal course hours in Architecture Faculties stand in front of us as problems that must be overcome.

Along with all this, online operation may also present some opportunities. In the case that this method continues to be used, it can be turned into an important advantage in the following stages, that the student can participate in the lesson simultaneously from the structure that he/she worked during the lesson, and that he/she will be able to convey his/her comments and determinations about the structure online to all students and coordinators during the lesson. Thus, each student will have the chance to get more detailed information about historical buildings from different regions by seeing and interpreting the structure of other students besides the building they are studying.

This experimental process, which had to be experienced urgently and necessarily in the last few academic years, should be developed with constructive criticism. By creating a digital environment where national and international schools of architecture can communicate with each other on online platforms, everyone should be informed about the experiences.

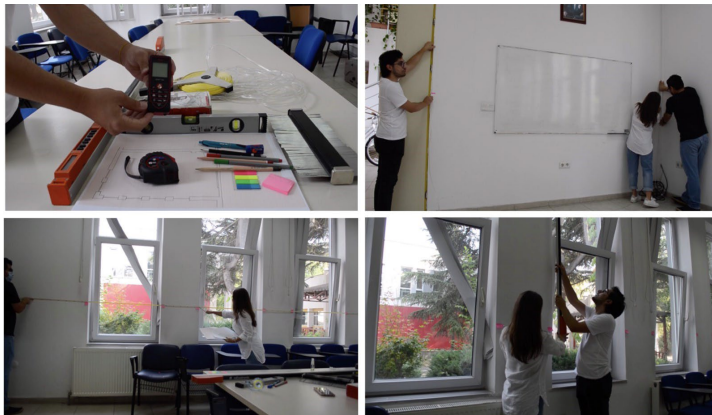


Figure 1: Images from the practice video taken by the instructors (Funda Solmaz Şakar).



Figure 2 Measurement experience in conservation lessons: Face-to-face training (top: Orhaneli, 2016) and online education (middle: Bilecik, 2020; bottom: İstanbul, 2020).



Figure 3: Images from students' measurement videos.

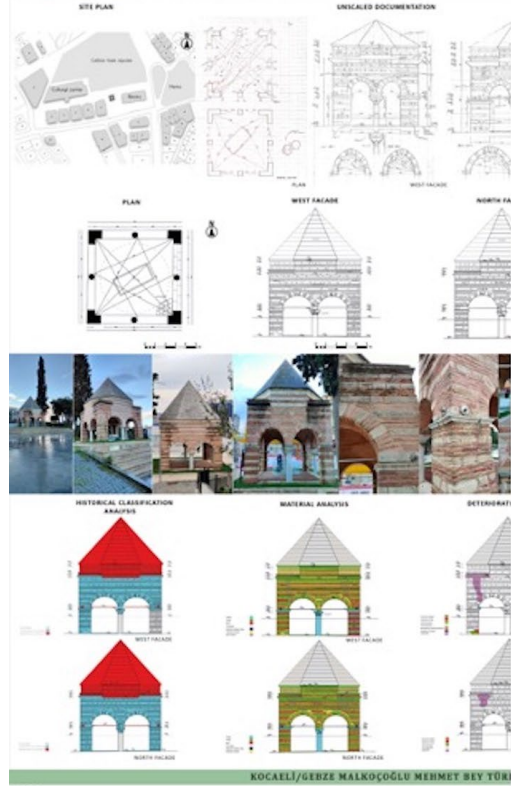


Figure 4: Examples of posters prepared by students at the end of the term.

6. Acknowledgements

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The Effects of Online Education on Interaction in First Year Architecture Studio

Ahmet Bender UĞURLU¹

1st Author's e-mail: benderugurlu1@gmail.com

Abstract

With the pandemic which has affected the whole world; crucial transformations occurred in architectural education; both theoretical courses and design studios moved directly to the virtual environments. However, the studio has its own dynamics related to physical spatiality, and interaction is one of those. The new spatial experience created by the online studio in video conference software makes it difficult for students to interact. While the existence of interaction is critical for all levels; this study focuses on the first year studio. The reason for this is that the first year studio has a distinct role; students encounter the complexities of design for the first time here. The experiences and the values gained in the first year affect the entire architectural education of the students and shape their identity. In this study, interaction is associated with Polanyi's concept of tacit knowledge; and it is stated that the sharing and dialogues between actors in the studio support development of this knowledge.

This study aims to reveal the significance of the interaction for architectural education, to discuss occurred interaction environment in the first year studio with the effects of online interfaces. For this purpose, 5-point likert scale questions were asked to students who spent their first year in the virtual environment and continued their education in the physical studio in the third semester. In the first part of the survey, experiences in the online studio were examined in the context of interaction; the questions mainly focus on the difficulties faced by the students, their dialogue with other students, and the limitations of the online studio. In the second part, questions about the physical studio experience were asked; and how the spatial relationships presented by this studio affect the interaction and the new situations faced by the students were compared with the online studio.

The study consists of three main sections. In the first, the potential future of the studio within the framework of technologies is discussed. In the second section, the position of the first year studio in architectural education and the unique pedagogical system of this studio are investigated and the difference between the first year studio and the non-interactive education that students come from is revealed. Then, the opportunities offered by the interaction especially to the first year studio are discussed; and the results of the survey, which formed the basis of the study, are evaluated.

The results show that the defined interfaces of video conference software limit interaction in the first year studio. According to the survey, the online studio is more individual environment than the traditional physical studio. In the online studio, students generally focus on their own projects and the comments of the tutors; rather than talking to each other and sharing knowledge.

Keywords: *Tacit knowledge; Physical studio; Informal learning; Studio culture*

Introduction

With the pandemic that affected the whole world; crucial changes came into existence in many aspects of life and these changes brought about different conditions that had not been experienced before. World Health Organization drew attention to the importance of social distance to prevent the spread of the virus. Thus, considering that workplaces, schools, and universities which are used jointly by many people, make it difficult to comply with the social distance rules; traditional spatial relations moved to virtual environments. This condition which is called a new normal; constituted vital reflections and problems, especially in education. Instead of developing separate strategies from primary education to universities and even different departments in the university, the dynamics of face-to-face education were tried to be applied directly in online.

In many architecture faculties, following a method parallel to the general approach that emerged; both theoretical courses and design studios which are the cornerstone of architectural education, started to be carried out through video conference software. Nevertheless; the dynamics of the design studio differ greatly from the theoretical courses; the studio defines a complex learning environment rather than a traditional one-way education. Moreover, the studio varies in importance at different levels of architectural education; especially the first year studio has a major significance in the whole of the system. In this studio, students not only comprehend how to produce a design, but also the role of the various dynamics behind that production. Interaction, which is a multifaceted relationship form occurred through mutual sharing between students and tutors, it is one of the most crucial elements of the first year studio. Interactions are part of the learning process. In the studio, students learn from the tutors and each other. Lots of visual and auditory stimuli in the physical studio and social relations between different actors, cause an interaction network here. However; the new spatial experience created by the online studio reduces the character of the traditional studio to the digital interface of a computer, making it hard for students to interact.

Online education at the universities did not start during the pandemic; before that, online methods were preferred due to political disruptions or disasters such as floods and earthquakes in various countries of the world, and some of them were supported by blended learning models. However, the pandemic caused universities to shift online on an unprecedented scale (Czerniewicz, 2020). Thus, there is a different context from previous online education experiences for both students and tutors. By eliminating the need for space, online tools provide a learning environment independent of space and sometimes even time; but speed is a key

part of online education in the pandemic. Well-planned online experience needs a wide background and development process (Hodges et al., 2020). Czerniewicz (2020) states that under extraordinary conditions like a pandemic, it is difficult to design an effective and meaningful online education system. In this context; it is necessary to be aware that the transformation of the interaction in the online studio is associated with these extraordinary conditions. Reaching different results on the axis of interaction through a different online education method developed is possible.

In this study, video conference software is considered as the main backbone that defines the online studio. Although there are online collaboration platforms like Miro, Mural, etc. that aim to increase interaction among students and allow them to work together; their usage also depends on video conference software in some manner. Students have to use these so that they can hear each other's voices and see their faces. On the other hand, the central role of the video conference is the result of technological infrastructure. Even though drawing pads, VR glasses, 360-degree cameras, or motion-sensing devices can be integrated into the online studio; providing this infrastructure requires both budget and time. But, video conference software is one of the most accessible digital tools. Using what students have and simplifying them as much as possible is critical to online education (Czerniewicz, 2020).

1. Methodology, Aim and Structure of the Study

In Turkey for the 2020/2021 academic year, online education methods were implemented in almost all first year architectural studios; the students were introduced to architecture through the online interfaces. In the fall semester of 2021/2022, most of the universities returned to face-to-face education, after necessary precautions were taken and vaccinations. In this context, a survey containing 30 questions was prepared in order to understand how the online first year architecture studio creates an environment of interaction, to examine whether there is sufficient interaction here, and to investigate the role of interaction in architectural education. 27 students answered the survey and all of these students attended the online studio for the first two semesters and physical studio for the third semester. Although the participants are educated at the same university, they are students of different tutors. Therefore, it can be said that there is diversity among the students as well as among the tutors. The results are a general reflection of how the online education approaches of different studios affect interaction, not just a single studio.

Questions were constructed using a 5-point likert scale and the survey was evaluated by taking the averages of the answers. The survey consists of two main parts; in the first part, students were asked questions about their first year online education experience, mainly in the axis of the interaction. And considering the general trends in the answers to these questions, the role of interaction in the first year studio was interpreted from different perspectives. The second part includes

questions about face-to-face studio; by comparing the physical studio and the online studio, the different experiences of the students in the context of interaction were tried to be understood.

The main aim of this study is to manifest the importance of interaction in architectural education and to discuss how it and other related concepts have changed in the online studio. While interaction is critical for all levels of architectural education; within the scope of this study, primarily the first year studio was focused. The reason for this is that the first year studio is actually the most crucial step of architectural education, the first ideas about architecture and the design process were developed here and these ideas formed a source for the next years. Therefore the effects of any change in the first year studio can be seen throughout whole architectural education.

Online studio experience, which is new in many aspects, although it seems peculiar to extraordinary conditions, digital technologies accelerating day by day create some scenarios for the future of architectural education. At this point; it is possible to express that the pandemic acts as a catalyst that reveals the potential future scenarios that are waiting on the side and the two years of experience left behind is a short fragment of them. In this context, another aim of this study is to enlighten the potential future of the first year studio and to reveal the position of the interaction in this future.

The structure of this study consists of three main sections. In the first section, by examining the origin of the architectural studio; the current position and the future of the studio are discussed. In the second section, the significance of the first year studio in architectural education is expressed by associating it with the literature and the dynamics that generated its unique pedagogical character are emphasized. Then, by discussing the role of interaction in architectural education and especially in the first year studio; the results of the survey which is the basis of the study, were evaluated. After these three main sections, the major outcomes are summarized in the last section.

2. Architectural Education in the Threshold of the Future

Although the future first portrays the end of a linear process in the mind; as Chesneaux (2015) stated, time contains discontinuities, hence the past, the future, and the present are shaped by many different relations. There is no single future; it is possible to talk about separate futures for every system and structure. All these make sense with complexity (Urry, 2016). The fact that time is running on the calendar, is not sufficient to talk about the future. In this context, Elias (1993) drew attention to the difference between social time and physical time; even though the physical time can be measured, the social time has no clear boundaries. Breakthroughs, innovations, and different conditions determine the temporal character of each phenomenon.

The future of architectural education can be discussed within this framework; although many years have passed, the architectural education experienced until recently is not the future of architectural education historically located in the past. Because there has not been a radical change in design studios, which is the core course of architectural education, for many years. The foundation of today's design studios spans Beaux-Arts. Furthermore, Bauhaus which is a German design school took it one step further by developing the system established by Beaux-Arts and was a role model for many architecture schools around the world (Broadfoot & Bennett, 2003).

Especially in the last 30 years with technological developments, the computer first entered architectural offices and then universities and brought different dimensions to architectural education (Allen, 2012). Nonetheless, computers did not directly interfere with the pedagogical functioning of the design studio itself and the communication between the actors in the studio until before the pandemic. The innovations and opportunities provided by technology are mostly related to the representation of architecture. In terms of its general characteristics, the studio shows similarities with its predecessors almost 150 years ago.

On the other hand, technology had an enormous impact on the pedagogy of the studio during the pandemic period. Though video conference software has been used in architectural education in some way; it was never the main component of the studio. However, nowadays online education is considered as an alternative to face-to-face education and it is thought that even if the pandemic ends, online education will last to exist to some extent in architecture. Hence, contrary to its continuity that spans long years, architectural education is on the threshold of a future. How this threshold will affect the first year studio is also critical; while first year studio has commonalities with other years, this includes its own dynamics. The first year studio which shapes the design thinking of students is related to the whole of education. Reflections of the pedagogical transformation brought about by digitalization can be perceived in the next semesters.

3. The Pedagogy and Importance of First Year Studio

The first year studio, where every architecture student is shocked by the ambiguities and plurality of architecture, contains unique phenomena (Şenel & Sönmez, 2017). Unlike many other practices, the architectural design studio defines an educational environment in which students are actively involved in the production and learning processes; in this environment, students are not just passive listeners. As Yürekli (2007) stated, there are no masters and trainees in the studio; the studio is an area for interaction, sharing, and communication.

Therefore, there is a challenge for first year architecture students; the first year studio cannot be compared to the education that they have experienced before. In some countries like Turkey; students come from a definite, authoritarian education that does not enable them to express their own thoughts and gain self-confidence. This system, which depends on memorizing aims to make the student find the right

option from multiple choices instead of thinking; however, this is an important problem for architectural education, students are required to define problems and produce solutions to them in this education (Farivarsadri, 2001).

According to Sönmez (2017), one of the essential factors of the studio is freedom; being an open and non-intrusive environment, the studio creates a space for able. While students are producing in the studio, they also shape their own designer identities by internalizing the dynamics and thoughts behind the production. Thus, the first year studio has a role to transform the student. Even though the projects and the drawings expressing them seem to be the focal point of the studio; all these are tools for transforming students in this process. The major purpose of the first year studio is to bring design thinking and to develop an insight into the design problems student will face in the coming years. Accordingly, the most fundamental design issue is how the studio is designed (Ozorhon, Tokay, & Hacıhasanoglu, 2016). While the first year studio has a curriculum; there are dynamics in the background of this curriculum; the interaction is one of the most crucial of those. Interaction; enables first year students to comprehend design and architecture not only from their own perspective, but also from the perspectives of others. Knowledge is formed by the intersection of different points of view. Therefore; it is significant that the first year studio is designed as an environment which allows interaction.

4. Role of the Interaction in the First Year Studio and Evaluation of Survey Results

Interaction is one of the most essential features of the studio. Architectural design is a multi-dimensional process with its various dynamics; moreover, this process has a fluid character where answers and questions are always shifting. Hence, the studio is an interaction area where there are no certain boundaries between actors.

Students progress their design thinking by participating in the collective environment of the studio; in this context, the studio is not only the place where knowledge is produced, but also a platform where it is shared (Casakin & Davidovitch, 2013). In contrast with linearity; the studio contains networks of interaction that are constantly intertwining, changing, transforming, and re-establishing. The studio, which is the source of different activity sets of the students and shapes their way of thinking, presents a unique pedagogical environment (Dutton, 1987).

Besides the existence of interaction being critical for each year of architectural education; it can be depicted that interaction has a more significant role in the first year than in the next years. In the studio, which is an intense interaction environment with long working hours, values are transferred (Çil & Demirel Özer, 2021). Students, who are faced with new experiences in their first year studio, learn from other students by interacting with them; furthermore, they comprehend the importance of interaction for the studio and internalize it.

The first year studio, where both intellectual and tangible productions come to life, is one of the prominent centers of tacit knowledge. Tacit knowledge, which was brought to the literature by Polanyi (1966), refers to the knowledge that cannot be transmitted directly verbal or in writing and has no definite limit. Interaction in the first year studio allows this knowledge to be developed and indirectly used by students. Design thinking and the knowledge that creates this thinking cannot

progress only through a single-channel dialogue. With this kind of dialogue, instead of tacit knowledge; solely defined knowledge of architecture can be conveyed. Each student and tutor has their own thought systems, experiences, and values; therefore, the content of tacit knowledge which has a personal character, varies. The interaction in the first year studio defines a collective production environment formed by these personalities. Nonetheless, online first year studio in digital interfaces has undoubtedly created a different interaction environment than the physical studio. With a survey, it was investigated how the online first year studio affects the interaction. Furthermore, the students' previous experiences were compared with the physical studio environment they have been involved in this year.

As it can be seen from the survey results; most of the students had difficulties in adapting to the online first year studio. Even in a face-to-face first year studio, students are likely to have adaptation problems. Interaction has an important role in ensuring adaptation; in fact, there is a similar condition of ambiguity for all first year students. But just as knowledge is shared, this ambiguity is also shared by students; thus, they adapt more easily to the first year studio in time. However, in online education, first year students become lonely; opportunities to communicate with other students are highly limited. According to the survey, it was found that none of the students came together physically during the online first year architectural education to work. One of the important causes of this is that most of the students are in different cities. Hence, the syllabus of the studio has to focus on the works that are usually carried out individually. Parallel to this, also the frequency of online meetings in the software out of the studio hours, is quite low. Additionally, the survey shows that students also encountered adaptation problems when they start architectural education in the physical studio. Although the students have been in the online design studio for a year; the dynamics of the physical studio vary and these dynamics offer a new experience to the students.

The existence of social relations in the studio is necessary for the establishment of interactions and the creation of a peer-learning environment. The studio where informal dialogue is an undeniable part; provides students distinct perspectives (McClean & Hourigan, 2015). Therefore it is important to have a social climate in the studio; in such a climate, students develop a motivation to interact (Casakin & Davidovitch, 2013). According to the survey, students in the online first year studio did not have adequate social relations with others. It is thought that this is related to the individualization of the students' project processes; in the likert scale, very close averages were obtained. The frequency of students getting ideas from other students about their own projects and commenting on others by taking a critical position is extremely low, in the online studio. It can be expressed that the interactions that should have in first year studio, disappeared and a process in which the project was generally shaped by the dialogues between the tutor and the student have occurred. As can be seen from the results; the increase in the social relations between the students in the physical studio also supported the discussions between the students on their projects. But still, there is not enough frequency of interaction on projects, parallel to the social relations in the studio. The habits and the studio

culture that were gained in the online have affected the project process in the next year somewhat.

Group discussions involving the tutors and students, which touch on various design issues and decipher the design process, are also a major dynamic of the studio. In this way, students learn both from their own projects and others. Therefore, designs are not just consequences, they are tools that feed the studio's operation. In the studio, which is a space for interaction, participants are constantly exposed to the works and ideas of others. The ideas in discussions break away from individuality and become a fraction of the studio. In fact, most of the discussions are not directly with the design itself; it's about the background of the design (Wendler & Rogers, 1995). Particularly in the first year studio, group discussions have much more potential than individual critiques; examining many projects and expressing thoughts about them progress the designer identities.

Results from the survey reflect that group discussions in the first year studio are fewer compared to the next year. For the first year, the average result according to the likert scale is 2.89, while for the next year it is 3.85. In normal circumstances, the collective atmosphere in the first year studio is expected to be greater than in other years. Yet, the survey shows that students often do not know about others' projects in the online studio, this is thought to be directly related to the lack of group discussions. Moreover, the average of the answers given to the two questions about group discussions and tracing others in the online studio are very close to each other. The lack of discussion in the online first year studio, is thought to be a result of the limited interaction presented by the software. As the survey demonstrates, students often don't turn on their cameras. Additionally, students keep their microphones off to prevent the sounds from overlapping with each other in the studio and solely open their microphones when they are going to speak. These two conditions, limit the development of an organic dialogue between the students and the tutors.

While the physical studio provides interaction between the tutors and the students, it also interacts directly with the students. Unlike a single surface of the online studio, the traditional physical studio includes so many various surfaces and perspectives. Formality is not one of the characteristics of the physical studio; the physical elements contained in the studio have no particular setup; the studio offers a flexible framework (Crowther, 2013). In this context; it can be said that the physical studio is the place of peripheral vision. According to Pallasmaa (2005), peripheral vision has wider possibilities than focused vision. But online education presents a focused vision; in this model, all documents or photos take place on the screen only. Although various collaborative working platforms are used in parallel with video conference software, the interfaces that they offer are also extremely limited. According to the survey results, the online studio usually makes it difficult to perceive the productions.

The traditional studio has a great material character; walls and different surfaces are occupied with various representations of design ideas; besides, there are also

physical models on the tables (Vays, Veer, & Nijholt, 2013). The students develop themselves by interacting with their surroundings. In an architecture school, the studio exceeds its limits. Distinct interactions emerge through exhibitions established in common areas or groups sharing the same space; projects that are in different contexts can be seen. It is understood from the survey that students also examine the works of other groups than their own in face-to-face education. However, such an opportunity cannot be mentioned for the online studio.

Questions(1-17)	Averages of Answers
1- Did you experience an adaptation problem to the online first year studio? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	4,04
2- Do you consider that you developed social relations with other students in the online first year studio? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	2,48
3- How often did you discuss with other students and criticized them about their projects in the online first year studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	2,26
4- How often did you discuss with other students and be criticized by them about your projects in the online first year studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	2,07
5- How often did you gather physically with other students to work on the project out of studio hours during the first year? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	1,00
6- How often did you gather through video conference software with other students to work on the project out of studio hours? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	2,30
7- How often did you turn on your camera in the online first year studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	2,62
8- How often were two or more students' microphones on at the same time, in the first year studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	2,16
9- Do you consider that the first year studio which maintains through video conference software, creates focusing difficulties? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	3,63
10- During the online studio hours, how often did you stop following the course and deal with something else? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	3,50
11- How often did group discussions involving the tutors and students occur in the online first year studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	2,89
12- Do you consider that the online studio makes posters and drawings difficult to perceive? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	3,48
13- Do you consider that the online studio makes physical models difficult to perceive? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	4,15
14-How much did you follow the projects in your group other than your own projects, in the online first year studio? (1-none, 2-few, 3-almost half, 4-mostly, 5-all)	2,93
15- How often did you produce something about your projects during studio hours, in the online first year studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	2,48
16- Do you consider that online education facilitates collaborative working? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	2,41
17- Do you consider that online education is suitable for the first year architectural design studio? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	2,35

Table 1: Survey questions about the online studio experience

Questions(18-30)	Averages of Answers
18- Did you experience an adaptation problem to the new studio dynamics after moving from an online studio to a physical studio? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	3,52
19- Do you consider that you developed social relations with other students in the third semester studio? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	4,41
20- How often did you discuss with other students and criticized them about their projects in the third semester studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	3,70
21- How often did you discuss with other students and be criticized by them about your projects in the third semester studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	3,63
22- How often did you gather physically with other students to work on a project out of studio hours during the third semester studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	3,41
23- How often did group discussions involving the tutors and students occur in the third semester studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	3,85
24- How often did you produce something about your projects during studio hours, in the third semester studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	3,74
25- How often did you make any changes in your project based on the comments you received from other students, in the third semester studio? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	3,12
26-How much did you follow the projects in your group other than your own projects, in the third semester studio? (1-none, 2-few, 3-almost half, 4-mostly, 5-all)	3,33
27- Do you consider that the physical studio makes it easier to see the works produced by different students together, compared to the studio in online education? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	3,59
28- How often do you examine the projects produced by the other studios, exhibited in the common areas of the faculty? (1-never, 2-rarely, 3-sometimes, 4-very often, 5-always)	3,96
29- Do you consider you can communicate more efficiently with the tutor, in the physical studio compared to the online studio? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	4,26
30- Do you consider that you need to get approval from the tutor to develop your project? (1-definitely not, 2- probably not, 3-uncertain, 4-probably yes, 5-definitely yes)	3,93

Table 2: Survey questions about the physical studio experience

5. Conclusion

This study, which investigates the effects of online education on interaction in the first year architectural studio and compares the interaction environment in this studio with the physical studio experience, demonstrates that the defined interfaces and limitations presented by video conference software, reduce interaction. The interaction which is one of the most crucial elements of the first year studio enables students to learn from each other; creates a collective sharing environment. Compared to the physical studio, the online studio is a more individual process; group discussions and informal knowledge sharing between students are limited in the online studio. At this point, the comments of the tutors have great importance for the students. As a matter of fact, the last question of the survey reveals that the vast majority of students need tutors' approval to develop their projects.

On the other hand, despite the crucial transformations that online studio has caused in the pedagogy of architectural education, it is foreseen that this studio method will maintain its existence to some extent in the future. However, this new pedagogical system eliminates interaction and creates some problems, especially in the first year studio, as this study shows. In this context, different tools and methods that will increase the interaction between students and tutors need to be included in the online first year studio. Even, the online studio should be considered together with hybrid solutions that allow the use of physical space. Examining the possibilities and limitations of online education in depth and considering how interaction can be provided within the framework of these are necessary to construct an interactive online first year studio.

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Shaping Sustainability in Architectural Education: The Integrated Design as a tool.

Khansa DHAOUADI¹, Pierre LECLERCQ²

1st Author's e-mail: khansa.dhaouadi@doct.uliege.be

2nd Author's e-mail: pierre.leclercq@uliege.be

Abstract

Climate crises and energy transition are bringing new challenges and responsibilities for architectural education and call for a new paradigm in the way we teach architecture and urban design. Therefore, a shift in pedagogical methodologies has become a crucial and urgent need to enhance the implementation of sustainability within university programs.

Different pedagogical methods and new teaching and learning models have emerged to introduce sustainability in the university curriculum. This will result in a new way of thinking and producing that will, in turn, lead to a better understanding of the complexity of these environmental issues such as the integrated design approach.

This paper is, an experimental study taking place, during the first semester of the first year of master's degree in civil engineering and architecture at the University of Liège, and within the context of an integrated building design project.

The interconnection between the design studio and theoretical course on sustainable architecture and urban planning allows 21 students to develop in-depth knowledge and understanding of sustainability issues through integrating the environmental quality of the building into their design reflections.

The challenge is to work together in several teams through a collaborative learning process and to be able to design a sustainable contemporary building while respecting a complex architectural program.

During this studio, and to respond to their architectural intentions and choices, several tools are applied within the design process to help students develop their building designs, such as interdisciplinary contributions provided by different experts from several fields in architecture, building envelope, and environmental quality, structure, fire safety, accessibility standards, fluids, and HVAC, etc...

Our exploratory study is constituted of data collected via questionnaires and interview surveys and is based mainly on examining learning activities, teaching

methods, and pedagogical strategies as well as the students' outcomes and their interactions with their instructors.

The analysis reveals that sustainability and environmental quality criteria were developed in a holistic way of design thinking in coherence with all the functional, aesthetic, and technological aspects in the design process while respecting the specific contextual requirements.

The findings provide evidence that integrated design plays an important role in shaping sustainability in architectural education. This can be achieved through an interdisciplinary design process and a collaborative approach that calls for much more involvement from students, and that puts into practice their theoretical bases within the design studio.

This paper argues for a more environmental responsibility that provides students with the ability to develop creative architectural solutions and technical environmental skills necessary for a new generation of conscious architects and aware of environmental challenges and issues.

Keywords: *Sustainability, integrated design, collaborative learning.*

Introduction: The challenge of integrating sustainability in architectural education

When debating the challenges facing the environment, integrating sustainability in architectural education has become a crucial and urgent requirement.

According to Altomonte (2012), although it faces several pedagogical and professional barriers, the role of higher education as a means of introducing new generations of building practitioners to the principles and practices of sustainable environmental design is becoming highly significant.

Morin (2004) considers that teaching sustainability issues allow apprehending the contemporary world in its complexity, by considering the interactions that exist between the environment, society, economy, and culture. For him, it is time to think about "educating for the planetary era".

Salama insists on the urgency to think about this paradigmatic shift, a new paradigm of reflection not only in the knowledge taught but also in the way of teaching and learning architecture.

It is, in a way, a transition toward a systemic pedagogy where teaching is treated as a whole and conceived as an integral part of a process (Salama, 2005).

Therefore, a paradigm shift in policies and pedagogical methodologies is needed to facilitate the transfer of knowledge between sustainable sciences and building applications, and to enhance the implementation of environmental sustainability criteria within the creative design process (Altomonte, Cadima, et al., 2012).

Many studies have been conducted to integrate sustainable development into education at undergraduate or graduate levels since sustainability is a concept that should become the focus and the aim of architectural education worldwide.

Different experiences introducing new teaching methods have emerged to bridge the gap between environmental-related building sciences and architectural design.

According to research conducted by the group of reflections on sustainability at the University of Montreal, the association University Leaders for a Sustainable Future states that since 1990, more than 300 universities have signed the Talloires Declaration, which commits them to the pursuit of a sustainable future. In Quebec and Canadian universities, the Sustainable Campus Project at the School of Architecture and the Faculty of Design is part of a movement to integrate the principles of sustainability into university activities, not to mention the "Greening the Diploma of Architecture in Canada" initiative that took place in 2002.

It is a national transdisciplinary academic forum that is the result of an initiative launched and then extended by colloquia in Quebec in 2004 and in Winnipeg in 2007 to identify the disciplinary transformation necessary to engage the academic community in the transdisciplinary process of the sustainable project.

In this context, the European academic project EDUCATE (Environmental Design in University Curricula and Architectural Training) aims to deconstruct the pedagogical barriers to the integration of environmental design and energy efficiency in university curricula and the practice of architecture.

Thus, it proposes harmonization of educational systems, course structures, accreditation, and qualification prescriptions.

EDUCATE highlights an integrated pedagogical framework *"for curriculum development featuring a roadmap for the integration of sustainable environmental design at the different levels and stages of architectural education and post-professional training... Multi/inter/transdisciplinary contributions to program innovation have been explored, together with the appraisal of applied and experiential learning techniques, new analytic visualization and simulation tools, and the analysis of advanced insights from educational research..."* (Altomonte, Yannas, et al., 2012)

The integrated design process responds to this multi-disciplinary approach through a collaborative process, starting from the beginning of a project to provide integrated, optimized, innovative, and sustainable solutions to reduce cost, time, and complexity.

This paper proposes to analyze a similar integrated design approach that considers the implementation of sustainability within the whole design decision-making process. It will be based on collaborative work, and the contribution of different interdisciplinary experts, and it will lead to the concept of the integrated design process adapted to the pedagogical context.

1. Method of the Study

1.1. Case study: Integrated design studio of master's program in civil engineering and architecture at the University of Liège.

Our observation is conducted in the four months of the first year of the master's program in civil engineering and architecture within the design studio at the University of Liège and its connection with the course on Sustainable Environmental Design.

In a context similar to an architectural design competition, 21 students are challenged to work together in several teams through a collaborative learning process. They are called to design a contemporary building while respecting complex programmatic requirements, form, function, structural systems, technical constraints, spatial qualities, etc....

It is an interdisciplinary collaboration between students in civil engineering architecture from the University of Liege and students in civil engineering construction from the Ecole des Mines d'Alès in France. Some of the projects developed at ULiège in the first semester will be pursued by the Ales students in the second semester.

Through this architectural design process, the design studio is related to the Sustainable Architecture and Urban Design (SAUD) course that combines theoretical teaching and practice.

It consists in developing an architectural project following an integrated approach, and that combines architectural aspects and sustainability through the development of several environmental criteria in the design process. This course aims to provide students with the necessary skills to understand the principles of sustainable development, applied to architecture and urban design.

It includes the analysis of some existing methods and tools of sustainability assessment of buildings and neighborhoods and more specifically the High Environmental Quality initiative for building (HEQ).

Moreover, students benefit from the collaboration with several experts from different fields in architecture, building envelope and environmental quality, structure, fire safety, accessibility standards, fluids, and HVAC... to best respond to their architectural intentions and choices.

These contributions will lead us to the concept of the integrated design adapted to the pedagogical context; it is defined as an interdisciplinary conceptual approach based on collaborative work.



Figure 1: Students' meeting with their instructors and an Architect.

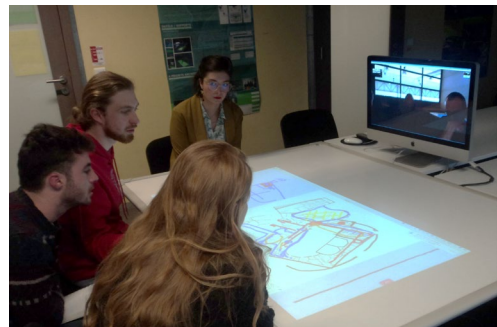


Figure 2: Students' online meeting with Engineers.

1.2. Observation of the Case study

Our exploratory study, as shown in Figure 3, consists of observing project reviews to identify how the environmental criteria were considered in the design process. Also, it is mostly meant to recognize students' capacity to develop projects that combine architectural aspects and environmental quality related to the context, program, and technical requirements.

Through the whole design process, the methodology involves examining the learning activities, teaching methods, and pedagogical strategies as well as the students' outcomes.

From 16 September (the start of the design process) to 18 December (jury and end of the process), the study lasts 14 weeks. Both the design studio and SAUD courses take place simultaneously. The design studio has two instructors who share, during

reviews of projects, discussions, and exchange ideas with different groups of students, each on Monday and Thursday mornings (8 hours a day). SAUD lectures are held each Tuesday afternoon before practice (4 hours per week).

Depending on how quickly the process evolves, experts from different fields review the design once or twice a month. For instance, the first expert intervention is with an architect to assist students in the preliminary design phase.

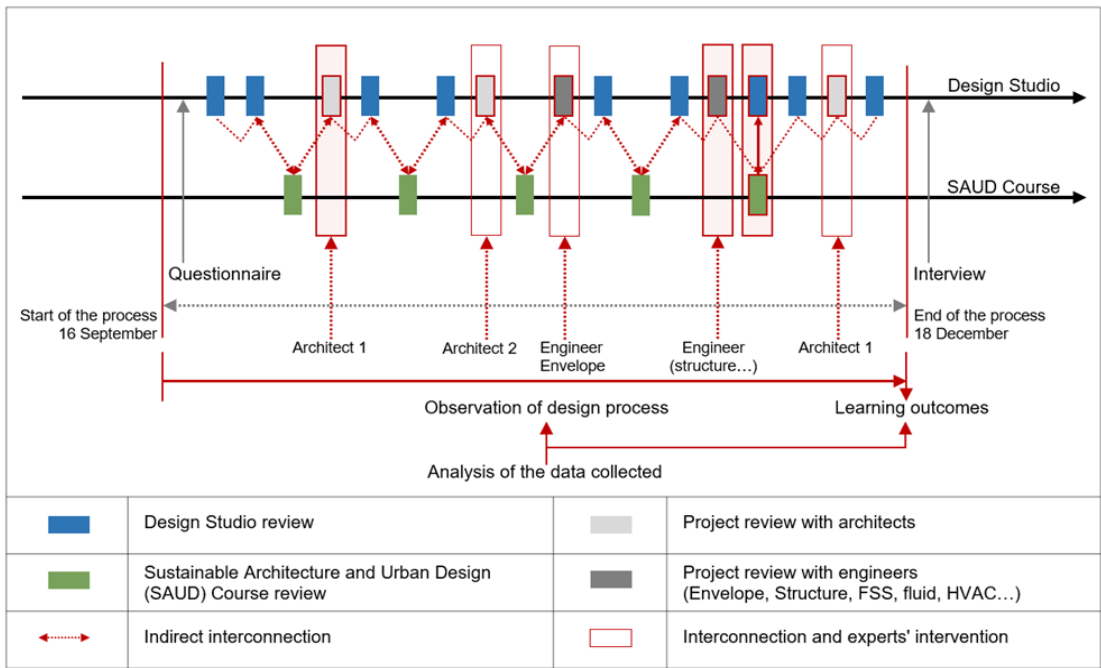


Figure 3: Observation scheme

The methodology for understanding students' experiences also includes a data collection technique, a questionnaire, and an interview survey with different groups of students, instructors, and some experts.

The questions are mostly focused on the curriculum and its role in promoting sustainability, the connection between the design studio and SAUD course, and the integrated design approach.

Instead of a numerical value, the data collection method is considered qualitative. Students are interested in answering the questionnaire, and the feedback shows a positive attitude towards the integrated design experience.

The first question attempts to identify the focus of the current university curriculum on environmental issues. Most students agree that "... these statements are increasingly asking us to go beyond just choosing a material because we like it but to justify its environmental sustainability... In this project, we realized that making a choice that is thoughtful and that it would take us some time to decide will facilitate the steps that follow."

As an answer to a question about the interconnection between the design studio and SAUD course, a respondent comments that: "It was an enriching learning experience in terms of environmental quality. There was a completely different way

of thinking about the design project. We had all the HEQ targets to reach, which we integrated entirely all along with the project and not just at the end of the process...". A group of students also notes that "...It was quite easily integrated... we paid attention to how to establish ourselves about the city. The interaction with the (SAUD) Course was more encouraging and I think it fed our project a lot (...). The site analysis phase (...) was the leading principle: a major part of our project was based on target 1".

Regarding the HEQ targets, respondents comment that "certainly, they are complex to manage, and they push the thinking further, but it was very exciting because the project is more viable than a classic architectural object... Not only do we get a beautiful architectural design, that functions with the environmental quality targets... and is beyond the bioclimatic design... but it is also an entire consideration of the use and origin of the materials".

1.3. Focus on the interconnection between the design studio and theoretical course

The SOLO classification (taxonomy of the Structure of the Observed Learning Outcomes), proposed by Biggs and Collis (1982), identifies five stages for students to reach a complex level of understanding, moving towards multi-structural, relational, and extended abstract knowledge levels.

Table 1 below presents an operational matrix where instructors' input in each module is mapped to expected levels of students' understanding:

Understanding Level		Design Studio	Sustainable Architecture and Urban Design (SAUD) Course	
			Theory	Practice
Hierarchical levels of understanding Simple Complex	Pre-structural Level Introduction of basic SD principals	Site analysis and understanding of the urban and architectural context ↓	Introduction to Sustainable design knowledge	
	Uni-structural Level Setting up connections of principals	Research phase of the architectural choice Formal concept, structure Functional programming ↓	Case studies on sustainability assessment methods: HEQ approach Targets 1, 2, 4, 5, 6, 8 ↓	Understanding and integrating Target 1
	Multi-structural Level Identifying how to apply principals	Mastery phase of the technical structural system and regulations ↓	Introducing theoretical basis: Targets 2, 5, 6 ↓	Integrating Targets 2, 5, 6 in design Project
	Relational Level Integrating and application	Sustainable design considering functional, aesthetic, structural, and environmental aspects. ↓	Introducing theoretical basis: Targets 4 and 8 ↓	Integrating Targets 4 and 8 in design Project
	Extended abstract Generalization, Production	Final Project		

Table 1: Integration of the observed Design Studio and Course, depending on SOLO Classification

This taxonomy is explicitly used by Ozer and Turan (2015) to analyze the data obtained from the behavioral pattern of students as a result of their integrated system model. It is also mentioned before by Hamza and Horne (2007) in their study conducted at Northumbria University.

Architectural design studio forms a whole with theoretical courses as a holistic system. Kolb (1984) proposed a model of “learning by doing” in a cycle that connects practice and theory on the one hand and reflection and action on the other.

In our case study, we believe that “learning by doing” is exercised in this pedagogical experience.

As shown in figure 4, the articulation of the design studio and the theoretical course integrating sustainability criteria fosters experiential learning focused on student involvement and further encourages their creative critical thinking where knowledge is applied in the architectural design project.

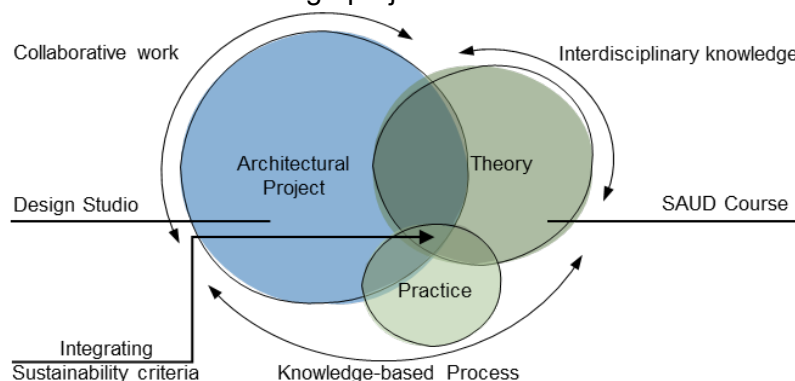


Figure 4: Modelization of the observed Integrated approach

2. Results

The outcomes of the applied method in the design studio are illustrated graphically in figure 5. It shows the evolution of integration of the environmental quality targets (HEQ) alongside the architectural aspects through the design conceptual process.

The High Environmental Quality initiative for building (HEQ) is based on 14 targets divided into 4 themes: energy, environment, health, and comfort.

Only 6 targets are considered in this project as follows:

- Target 1 entitled "Physical relationship of the buildings with their immediate environment",
- Target 2 incorporates an "Integrated choice of construction processes and products",
- Target 4 "Energy Management",
- Target 5 "Water Management",
- Target 6 "Waste Management",
- Target 8 incorporates "Hydrothermal comfort" with its various parameters.

It can be seen that, from the early phases of the design process and following the analysis of the urban context, target 1, which addresses the relationship of the building with its immediate environment, is coherently present with the various functional, formal, structural, and technical aspects of the design. This is the phase

of initiation to environmental awareness, which deepens as it moves towards the understanding and finally the use of environmental knowledge in the architectural design process. Indeed, throughout the entire design process, the course and design studio create a direct connection between the different targets of environmental quality and their applications.

The intervention of different experts and the contribution of analytically debated knowledge further encourage creative critical thinking among the students.

As shown in Figure 5, with each of their interventions new HEQ targets are validated and the project is increasingly part of complex holistic systems approach, as in the case of target 4 (Energy management) and target 2 (Integrated Choice of Construction Products, Systems, and Processes) following the intervention of the building envelope and environmental quality expert. Also, in target 5 (Water management) and 8 (Hydrothermal comfort) following the intervention of engineers (structural, fire safety, accessibility standards, fluids, and HVAC).

In this pedagogical context, the architectural design is considered as a whole building design that leads us to the concept of "holism".

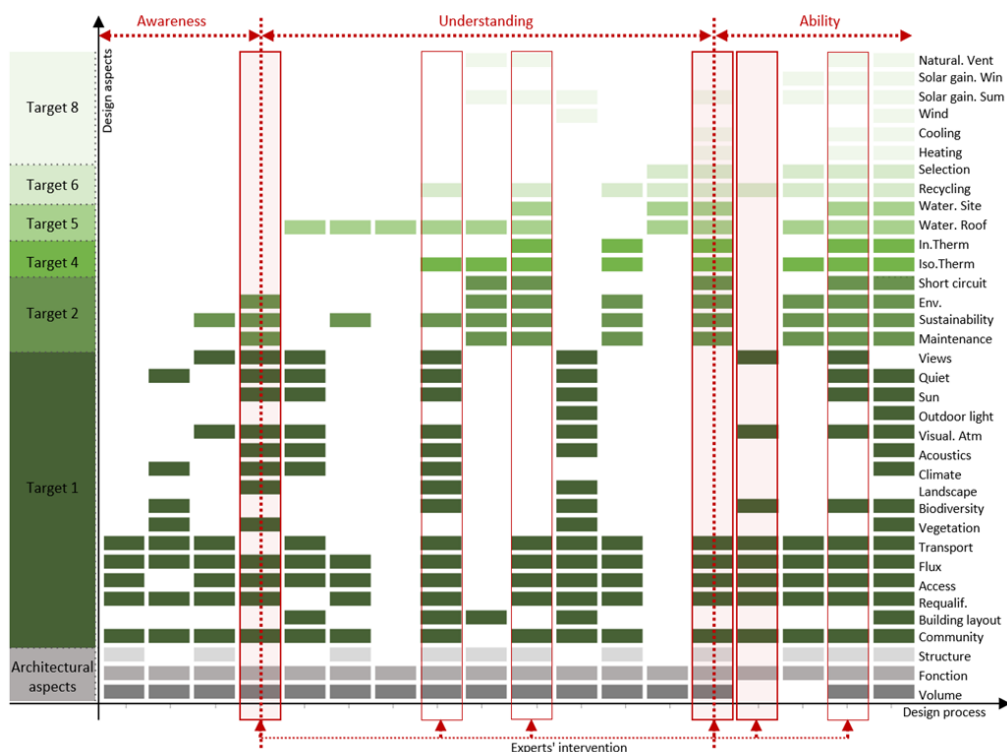


Figure 5: Track of environmental quality criteria HEQ targets within the design process

The Whole Building design requires an integrated process in which the design teams work together throughout the project phases to evaluate the design for cost, quality of life, future flexibility, efficiency, overall environmental impact, productivity, creativity, and how the occupants will be enlivened (Fathi, 2007). At the end of this integrated approach, students can propose a coherent solution that combines architectural aspects and environmental quality in a creative and critical manner.

The students' outcomes provide different solutions to the sustainability issues in a holistic approach that aims, at the same time, to acquire awareness, understanding, and ability as shown in table 2:

Level 1, Environmental Awareness: since the preliminary design phase, students have used site analysis to define design solutions that can both optimize natural conditions and create spatial design challenges and opportunities.

Level 2, Understanding Environmental aspects: students used compositional aspects and volumetric design to propose an architectural language that can represent a design language for sustainability.

Level 3, Ability to Design Sustainable Building: students developed construction details that became essential for the overall design and architectural language definition and displaying technological solutions that could contribute to the technological sustainability of the project.

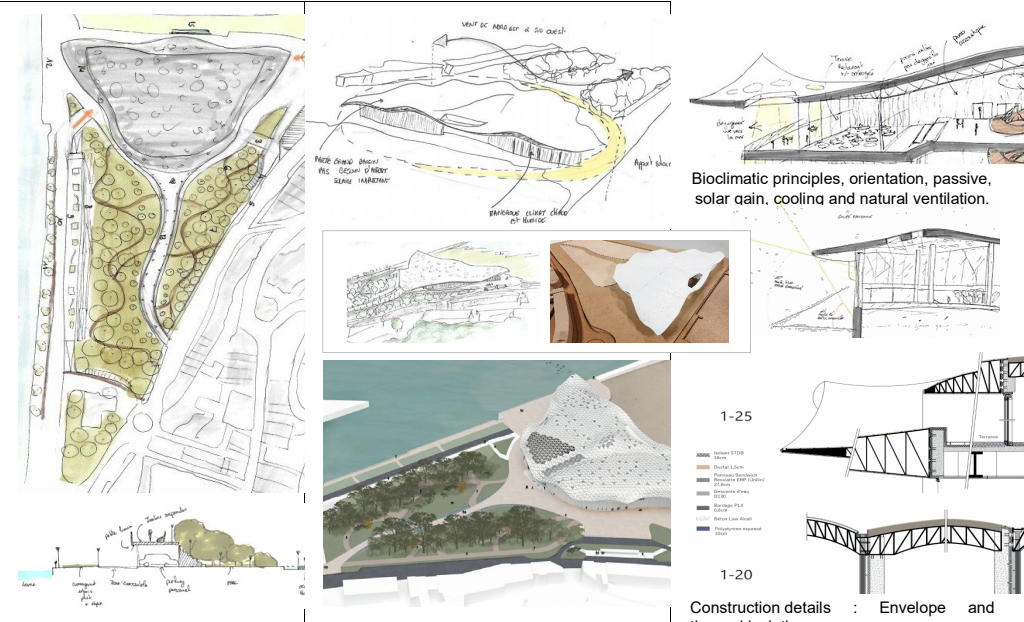
Design Process	 Observation of Students' Outcomes, learning activities and teaching methods		
	Preliminary design and sketches	Design development	Construction drawings
	Level 1 : Environmental awareness	Level 2: Understanding environmental aspects	Level 3: Ability to design a sustainable building
	Site analysis defining environmental solutions	The architectural concept, function, and volume choices depend on environmental aspects.	Technological solutions deepen environmental aspects as different details show.

Table 2: Sample of students' outcomes that show the design evolution and knowledge-based process.

3. Discussion and Conclusion

Based on the analysis of the data collected during the observation, and on learning outcomes within the integrated design approach, our study demonstrates the ability of students to propose design alternatives that respect architectural aspects as well as the ability to develop sustainable projects.

Following a complex, holistic, and systemic process, this approach makes it possible to articulate the parameters of sustainability in coherence with the various aspects of the architectural project while ensuring its integration in its context, limiting its impact on the environment, and promoting the comfort of the occupants. Through the connection between the theoretical course and the design studio, as well as the intervention of different experts, the students acquire and put into practice an interdisciplinary conceptual approach that favors collaboration and a more involving experiential learning, and which opts to encourage their critical vision.

SOLO taxonomy indicates that the design process and learning outcomes differ from one group of students to another due to the chosen strategy and the complexity of the project.

This complexity results basically from the interdisciplinarity in the pedagogical framework put in place, and the dual training of engineers-architects.

Indeed, the sustainable issue should neither be considered as a specialist field nor taught in a module of the academic program.

Rather, it should be an integral part of the curriculum and be considered as a source of inspiration for conceptual design.

In this context, learning is acquired in phases that integrate the necessary knowledge, understanding, and the necessary ability to promote in-depth learning for an integrated architectural pedagogy.

4. Acknowledgements

We would like to address our deepest thanks and gratitude to the professors and students within the master's program in civil engineering and architecture at the University of Liège for their contributions.

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Architectural Dialogues through Living Buildings: Common Design Strategies and Messages for Public Sustainable Building Education

Ayşegül AKTÜRK¹

^{1st} Author's e-mail: aysegulakturk@mail.missouri.edu

Abstract

Sustainable buildings with their tasks such as energy production, water treatment, and providing a healthy indoor air quality are complex technical structures and 'it is important for them to be understood, correctly used and operated'. However, the broader public still has very limited opportunity to learn about sustainability and how to engage with these new buildings. At this point, the idea that sustainable buildings themselves could be used as a teaching tool for sustainable building education (SBE) has gained attention in both research and practice. Increasing evidence base for these pedagogical buildings fortifies the idea that buildings might communicate to their user in an educational way.

In this paper, existing literature on the pedagogical architecture were reviewed and sustainable buildings were conceptualized as communication mediums to inform and educate public about SBE. Dialogues that are constructed through sustainable buildings were considered as an intervention to engage users to enhance their sustainable building knowledge. Therefore, this study investigated the informative architectural dialogues in sixteen Living Certified buildings located in U.S. with the qualitative content analysis method. Living buildings were selected due to their educational and inspirational intent. The case study descriptions of the sixteen building were downloaded from the official website of Living Building Challenge for analysis in Dedoose, a web-based qualitative analysis software. The research questions were: 1) What building features did the design teams commonly employ in the living buildings to explain SBE themes? 2) What type of interpretive strategies do living buildings apply to communicate their features?

The results were summarized visually in numerous tables and figures. Overall, the data represents that the living buildings has a strong potential to educate public about sustainable architecture. The analysis revealed that dialogues about i) energy theme with features like daylighting; natural ventilation; solar panels; ii) water theme with the rainwater harvesting systems; iii) materials theme with using local, repurposed, and Red-list chemical free materials; iv) health as healthy air and biophilic environments were the common topics covered in all sixteen case study documents. Window to wall ratio; wind turbine; collecting and reusing condensation; green roof; less car-parking areas; electric vehicles charging station were the least applied or communicated features for the case living buildings. The types of

strategies used to communicate sustainable building themes are grouped into four main categories: architectural (e.g., exposed elements, building systems, and natural processes), interpretational (e.g., signage, exhibits, dashboard, educational programs), interactive and engaging (e.g., hands-on learning activities on site), and inspirational (e.g., advocacy and being a physical model and demonstration field). This study concludes by sharing multiple remaining and emergent questions that reveals a worthy future research agenda.

Keywords: Sustainable building education; Living buildings; Informal education; Buildings as teaching tools; Architectural communication.

Introduction

The sustainability discussion has three dimensions, called triple bottom line: environmental, economic, and social (e.g., Stirling, 1999; Lehtonen, 2004; Moir and Carter, 2012). The field of architecture, the way in which we build and maintain the built environment, has a significant impact on each of these interconnected dimensions of the sustainability (e.g., UNEP, 2009; IPCC, 2007). For example, in the United States, buildings use about 70% of all electricity produced and they flush 5 billion gallons of potable water through toilets daily (IPCC, 2007). Globally, at least 30% of global greenhouse gas emissions come from building construction and operation (UNEP, 2007). From a social perspective, Americans spend about 90% of their time indoors (EPA, 2008), and many different parameters of building design impact the health and wellbeing of occupants and various social phenomena such as productivity in workplace (Brill et al., 1984; Peponis et al., 2007) and academic performance (National Academies Press, 2006; Matsuoka, 2008).

Moving towards a sustainable future requires fundamental changes in human behavior, attitudes, and lifestyles. For the last three decades, the contemporary sustainable building movement advocates to reduce the overall negative impacts of buildings on the triple bottom line. Alongside better architectural design and construction, the use and behavior of the occupants are also very essential for a successful performance (e.g., Gill, Tierney, Pegg, & Allan, 2010; Lorenzen, 2012; S. R. Wu et al., 2017). Sustainable buildings with their tasks such as resource saving, energy production, and water treatment are “increasingly complex technical structures” and “it is important for them to be understood, correctly used and operated” (Kuczia, 2016, p.154). Knowledgeable building users can both positively influence the performance and advocate for better building practices. Despite all, besides building industry, few understand how sustainable buildings work (Cole, 2018). The broader public still has very limited opportunity to learn about sustainability and how to engage with these new buildings and culture (Cole, 2013; Kuczia, 2016).

At this point, the idea that sustainable buildings themselves could be used as a medium for environmental education (EE) and sustainable building education (SBE) has gained attention in both research and practice (Barr, 2011; Orr, 2002; Taylor, 1993; USGBC, 2008; Cole 2018). Recent studies use many different terms

to describe these pedagogical buildings such as “teaching tool” (USGBC, 2008); “3-dimensional textbook” (e.g., Nair and Fielding, 2005; Kong, Rao, Abdul-Rahman, & Wang, 2014; Taylor, 1993); “third teachers” (O’Donnell Wicklund Pigozzi Peterson Architect Inc et. al, 2010); “teaching green building” (Cole, 2013; 2014; 2015); “educating buildings” (Kuczia, 2016; Speedie and Mulville, 2017), “buildings or structure that teach” (Barr, Leigh, Dunbar, & Tremblay, 2011; Schiller, 2012; Shapiro, 2015), and “living laboratory” (König, 2013).

In this paper, sustainable buildings are conceptualized as communication mediums to inform and educate public about SBE. In the long-term research agenda, assessing the effectiveness of this communication (designers’ intended messages vs. users’ gained information) is significant to test the described conceptualization which is the goal of the author in her in-progress doctoral dissertation study. As a part of this broader research study, this paper aims to determine common informative dialogues that are constructed through sustainable buildings. Building upon the literature on teaching green buildings, this study calls attention to living building types as good case studies for the topic. Living buildings, a type of sustainable buildings, with their high goals like net-positive impacts, comprehensive performance areas, and intent of being educational represent a great potential for future studies. This paper strives to contribute to the field by analyzing the architectural dialogues in the selected sixteen Living buildings located in U.S. with the qualitative content analysis method. The objectives are to explore living buildings’ potential as an educational/communication tool, discover their common SBE dialogues, and determine the employed sustainable building features and strategies to communicate the intended dialogues (messages).

1. Literature Review

The idea of thinking architecture as informative, communicative, or persuasive is not new. Architecture has been claimed as communication (Hollein, 2009), language (Vasilski, 2012), metaphor (Agrest, 1998), or symbol to evoke emotions, connote, convey information, and influence behavior. Architectural semiotics, a sub-field within architectural theory, investigates non-verbal communications and views architecture as “a readable text of culture” (Stamatović-Vučković, 2013, p.69). In this perspective, architecture is considered as signs and signifiers for signified meanings (e.g., Broadbent, 1996; Cuthbert, 2006; Venturi, Izenour, & Scott Brown, 1977). This study is not a semiotics study. It is located at the intersection of the sustainable architecture and sustainable building education literature, referred as pedagogical architecture and will be reviewed below.

1.1. Pedagogical Architecture

Foundational for this study, Orr (1992, 1997)’s influential writing on ‘Architecture as Pedagogy’ notes that buildings and their surrounding landscape “reflect a hidden curriculum that powerfully influences the learning process” and convey a pedagogical value (p.597). He asserts that buildings tacitly communicate to their users, and the problem of the most conventional buildings today is their failure to communicate about biology, ecology, sense of aesthetic, and buildings’ connection

to nature. Like Orr, Taylor and her colleagues mention that elements in built environment and surrounding nature maintain various messages and if the buildings are designed to turn these elements into thoughts for users (Taylor, 1993; Taylor and Engass, 2009).

Several scholars in the literature, who get inspired by these ideas, connect architecture and environmental education (EE) by theorizing the physical environment of schools as a “3-dimensional textbook” (e.g., Taylor, 1993; Kong et al., 2014; Nair and Fielding, 2005). In their study, Kong et al., (2014) qualitatively analyze a green school in Bali to understand “what attributes characterize a 3-D Textbook from the children’s point of view” (p.2). Their data analysis reveals four main themes: transparency, one with nature, creativity and imagination, and active learning. They highlight the need of practitioners to receive feedback from the users to better formulate effective design models and offer a model for 3-D Textbook approach to visually represent the design features and elements for each theme. Their study was the first attempt to explore the architectural features of green schools perceived by students. Following that, multiple studies also attempted to explore the strategies applied in different types of green buildings for environmental and green building education (Schiller, 2012; Wu et al., 2017; Cranz et al., 2014, Hamilton, 2018; Anderson, 2007; Sanders, 2014; Cole & Altenburger, 2017; Cole et al., 2020). Comparison of the dialogues in green and living buildings, a possible future research area, can enlighten to field to understand the expected SBE learning outcomes to raise awareness.

When the topic is about education and buildings, school buildings are the most common environment with their potential to serve as tool for teaching. With the impact of the Leadership in Energy and Environmental Design (LEED), which offers a credit for projects that utilize their school building as a ‘teaching tool’ for sustainability (USGBC, 2008), the number of green school buildings increased in the practice alongside with an enlarging number of studies that investigate their educational outcomes (e.g., Cole, 2014, 2015; Cole & Altenburger, 2017; Higgs & McMillan, 2006; Izadpanahi et al., 2017). For example, Cole (2015) examines the educational outcomes of green schools by comparing them with non-green school buildings. Her survey research with 399 students from five US schools reveals that the knowledge gain about EE was lower in non-green buildings. Similarly, Izadpanahi et al. (2017) found that green middle school students demonstrate significantly higher levels of pro-environmental attitudes and behaviors compared to non-green schools in Australia.

Museums (Falk, Dierking and Foutz, 2007; Sutton and Wylie, 2013; Cole et al., 2020), libraries (Aulisio, 2013; Barnes, 2012), zoos, and nature centers (Bell et al., 2009) are the following types studied. These building types provide ‘free-choice learning environments’ where learning happens without following a systematic and organized curriculum, called informal learning. Museum studies lead the literature on informal learning and acknowledge the significant role of the *physical context* (Falk and Dierking, 2000). Many scholars examine green museum strategies

broadly (e.g., Abbey, 2012; Fenn, 2012; Madan, 2011) and how museums communicate their green building features to the public (Anderson, 2007; Sanders, 2014; Cole et al., 2020; Lindsay et al., 2021). From the methodological perspective, Lindsay et al. (2021) was unique with their analysis of press coverage for their selected green museum buildings. This current study also analyzes web-documentations.

Existing studies that investigate informal learning environments are increasing. For instance, Cranz et al. (2014) examine how a single mixed used (office and gallery) sustainable building's interior and exterior sustainability features are communicated to and read by users. Their mixed method study shows that some features such as photovoltaic panels, tall windows, bike racks, recycling and water fixture signs successfully communicate sustainability to public. According to them, features like dashboard, material selection, and energy use did not draw attention because they are less obvious. Most currently, Hamilton (2018) examines green residence halls in her doctoral dissertation. Her research found that features about waste reduction and recycling, attention restoration (e.g., windows, views to nature, daylighting, and shadow), and sustainable ethos of the environment (e.g., natural materials) contribute occupants' environmentally responsible behaviors.

In summary, the body of knowledge about possible informative dialogues (messaging and learning outcomes) in sustainable buildings and related design strategies are expanding. Scholars mostly examine case studies that are similar in terms of their functions like schools or museums. Due to the dominance and availability of LEED certified buildings as case studies, the literature also focuses on the sustainable building approaches which are categorized as 'green' building. However, there are other approaches worth exploring such as 'living buildings' that have higher sustainability goals, performance, and intention for education and inspiration. In addition, this paper covers as many building types as possible including office, school, environmental centers etc. to explore the common SBE dialogues independent from the function.

1.2. Sustainable Building Approaches: Defining Living Building

The term sustainable building is not very easy to describe. This paper uses the term *sustainable building* as an overarching general term that describe all different building approaches that employ sustainable design principles (See Akturk, 2016 for deeper literature review). The assessment on being a sustainable building is generally evaluated by performance analysis and certification achievements (Sartori et al., 2014). Knowing the design approach, certification type, and underlying philosophy is essential because it gives cues about possible messages might be conveyed through the architecture. As stated in the previous section, the main sustainable building approach studied in the pedagogical architecture literature is *green building* that is typically defined as buildings that have achieved the LEED. A green building refers to a higher environmental performance building compared with a typical one and strives to reduce the degenerative consequences of human

activity on ecological systems by reducing resource use, emission, and waste and improving the health and comfort of occupants (Cole, R., 2012; Reed, 2007).

Each new sustainable building is an attempt to ‘visualize sustainability’ (Seibold-Bultmann, 2007). They have the power of turning abstract concepts of sustainability into a tangible physical model that people can see, touch, and experience (Baines, 2008). They represent a potential of being an exemplar or role model to foster learning about sustainability and sustainable building practices. Among many sustainable building approaches and certification programs, Living Building Challenge (LBC) is gaining prominence with its very rigorous performance goals for the built environment. It is developed to be a philosophy, an advocacy, and a certification tool for envisioning “a future that is Socially Just, Culturally Rich and Ecologically Restorative” (ILFI, 2019, p.6). LBC refers natural systems by using a flower/petals metaphor: a building designed and constructed as efficiently and elegantly as a flower, generates all of its own energy, captures all of its water, operates for maximum good (ILFI, 2019).

The term *living building* is used for a building that earned full certification from LBC, means fulfilled all the goals. The LBC 3.1, the current version, consists of seven performance categories, or ‘Petals’: Place, Water, Energy, Health & Happiness, Materials, Equity, and Beauty (Figure 1). Petals are subdivided into twenty Imperatives and each of them focuses on a specific ‘sphere of influence.’ There are three options for the certification: Full Living Certification (achieves all imperatives), Petal Certification (achieves at least three petals), and Net Zero Energy Certification (only for energy).

LBC is unique because the certification is based on an actual performance rather than a modeled one. In addition, it does not prescribe methodologies for achieving its Imperatives; it sets high performance goals and allows local and innovative solutions. One of the mandatory Imperatives of the LBC is ‘Inspiration and Education’, under the Beauty Petal (Figure 1). All living certified buildings should be designed to educate its users and inspire them to live and behave sustainably. Some requirements like providing interpretive signages and having an annual open day for the public are listed but, as typical for LBC, the specific strategies to achieve the goal of being “teaching tools and sources of inspiration” are left the consideration of the design team.

SUMMARY MATRIX

The 20 Imperatives of the Living Building Challenge: Follow down the column associated with each Typology to see which Imperatives apply.

Imperative omitted from Typology Solutions beyond project footprint are permissible

	LIVING BUILDING CHALLENGE 3.1			
	BUILDINGS	RENOVATIONS	LANDSCAPE + INFRASTRUCTURE	
PLACE	SCALE JUMPING		SCALE JUMPING	01. LIMITS TO GROWTH
			SCALE JUMPING	02. URBAN AGRICULTURE
			SCALE JUMPING	03. HABITAT EXCHANGE
				04. HUMAN-POWERED LIVING
WATER			SCALE JUMPING	05. NET POSITIVE WATER
ENERGY			SCALE JUMPING	06. NET POSITIVE ENERGY
HEALTH + HAPPINESS				07. CIVILIZED ENVIRONMENT
				08. HEALTHY INTERIOR ENVIRONMENT
				09. BIOPHILIC ENVIRONMENT
MATERIALS				10. RED LIST
			SCALE JUMPING	11. EMBODIED CARBON FOOTPRINT
				12. RESPONSIBLE INDUSTRY
				13. LIVING ECONOMY SOURCING
EQUITY				14. NET POSITIVE WASTE
				15. HUMAN SCALE + HUMANE PLACES
			SCALE JUMPING	16. UNIVERSAL ACCESS TO NATURE + PLACE
				17. EQUITABLE INVESTMENT
BEAUTY				18. JUST ORGANIZATIONS
				19. BEAUTY + SPIRIT
				20. INSPIRATION + EDUCATION

Figure 1: Petals and imperatives of Living Building Challenge (ILFI, 2019)

Living building type appears to be a good fit for research on pedagogical architecture because of the intent to support sustainable building education as part of the certification requirements. Moreover, this group of buildings have not been well examined in the field compared to green buildings. There found only two studies conceptualize ‘living buildings’ from the environmental communication perspective. Coleman’s mixed method dissertation study (2016) analyzes the Centre for Interactive Research on Sustainability located in Vancouver, Canada, and characterizes living buildings as “a meaning-creator and symbol”, “a passive object” that people interact with, and “an active agent that structures inhabitant activity, and helps or hinders productivity, health, well-being, and engagement” (p.7). More currently, Homchick Crowe (2020) analyzes the Bullitt Center, a living office building in Seattle, U.S., and argues that the building changes our “understanding of the persuasive power of architecture and the role of advocacy in campaigns for sustainability” by “encouraging behavior-change in tenants, shaping industry practices and standards, persuading manufacturers to reformulate products, and challenging existing municipal policies” (p.236).

These two studies are significant with their effort to examine the sustainability features of living buildings that might enhance users understanding and perception. However, the common patterns and messages of living buildings still remain unclear, a gap this project seeks to fill.

1.3. The Content of the Dialogues: Sustainable Building Knowledge Types

The content of the dialogues which are constructed by living buildings (in other words, information gathered resultant from a living building experience) might be in wide variety. For example, the simplest, a building might communicate its function and send messages about its internal structure through wayfinding strategies. Since the underlying assumption is that living buildings can be used as communication and teaching tools to inform users about themselves (sustainable building practices broadly), dialogues regarding SBE to build awareness and enhance knowledge will be the focus in this study.

On the area of defining the learning outcomes of SBE, Cole (2019) made a great effort to develop the Green Building Literacy (GBL) framework. In her framework, she defined green building knowledge (GBK) in three groups: factual, conceptual, and procedural by using the revised version of Bloom's Taxonomy offered by Krathwohl (2002) (Table 1). According to her, *factual knowledge* refers knowing various components of green building design where the *conceptual knowledge* is about the relationship between the elements within the green buildings and/or natural systems. For example, recognizing wind turbine can be considered as factual knowledge while knowing the wind turbine as a renewable energy source and understanding its benefits for planet Earth is conceptual. Skills like operating a green building are considered as *procedural knowledge*. Cole (2019)'s defined GBK types and categories will be utilized as a guide in this current research to distinguish Sustainable Building Knowledge (SBK) from any other messages.

Dimension	Description	
Green Building Knowledge & Skills	Factual knowledge	Knowledge of the various components of green building design (e.g., wind turbines, recycled content materials, or dual-flush toilets)
	Conceptual knowledge	Knowledge of the relationships between elements within green buildings (e.g, how operating windows affects cooling systems) and between buildings and other built and natural systems (e.g., the dangers of glass facades for birds)
	Procedural knowledge (Skills)	Skills such as making design choices (e.g., picking eco-friendly furniture), analyzing the performance of the design (e.g., monitoring solar panels), or properly operating green buildings (e.g., knowing how to operate the window shades to reduce solar gain in the afternoon sun)

Table 1: Green Building Knowledge Types (Cole, 2019, p.5)

2. Methods

Sixteen living buildings were selected as case studies in this study with a qualitative content analysis method. The web-documents describing each building in detail for the LBC certification were used as the data source. The details of the methodology were explained below. The broad research questions guiding this paper are:

- 1) What building features did the design teams commonly employ in the living buildings to explain SBE themes?

- 2) What type of interpretive strategies do living buildings apply to communicate their features?

2.1. Case Study Selection

The researcher used criterion sampling, selecting cases that meet predetermined criterion of importance, to determine the case studies (Patton, 2002). The initial criterion was LBC full Living Certification achieved (See Section 1.2. for the reasons of selecting living buildings). The official website of the International Living Future Institute (ILFI), which manages the LBC program, is the main source to check the number of certified buildings, their certification type, and descriptive information. At the time of the data collection process of this paper, there was 24 full Living Certified buildings in U.S. The second criterion of selection was being publicly available since private buildings' effort for education was very limited (e.g., having an open day for public visits). So, the twenty-four buildings were listed by their function to finalize selection. There were one certified park and one outside pavilion which cannot be categorized as buildings. Out of 22 possible, five private houses and one private vineyard building are eliminated. The rest 16 full living certified buildings which are open to public were selected as cases of this research (Figure 2). All-possible buildings were included to achieve maximum variation to explore common patterns (Patton, 2002). Table 2 represents the name of the selected case study buildings, their short names will be used in the paper, locations, and functions.

	LIVING BUILDING NAME	SHORT NAME	LOCATION	FUNCTION
1	Arch Nexus SAC	Arch- Nexus	Sacramento, CA	Architectural office
2	Bertschi Living Building Science Wing	Bertschi	Seattle, WA	Elementary school
3	Bullitt Center	Bullitt Center	Seattle, WA	Office building
4	Chesapeake Bay Brock Environmental Center	Chesapeake	Virginia Beach, VA	Environmental center
5	Frick Environmental Center	Frick	Pittsburgh, PA	Environmental center
6	Hawai'i Prep Academy Energy Lab	Hawai'i Prep	Kamuela, HI	High school
7	Hitchcock Center for the Environment	Hitchcock	Amherst, MA	Environmental center
8	Morris & Gwendolyn Cafritz Foundation Environmental Center	Morris	Accokeek, MD	Environmental center
9	Omega Center for Sustainable Living	Omega	Rhinebeck, NY	Waste-water facility
10	Perkins SEED Classroom	Perkins	Seattle, WA	Modular classroom building
11	Phipps Center for Sustainable Landscapes	Phipps	Pittsburgh, PA	Environmental center
12	R. W. Kern Center	R. W. Kern	Amherst, MA	College facility
13	Smith College Bechtel Environmental Classroom	Bechtel	Northampton, MA	College classroom
14	The Health, Wellness and Nutrition Center at the Willow School	Willow	Gladstone, NJ	School building
15	The Kendeda Building for Innovative Sustainable Design	Kendeda	Atlanta, GA	College facility
16	Tyson Living Learning Center	Tyson	Eureka, MO	College classroom

Table 2: Case study building information

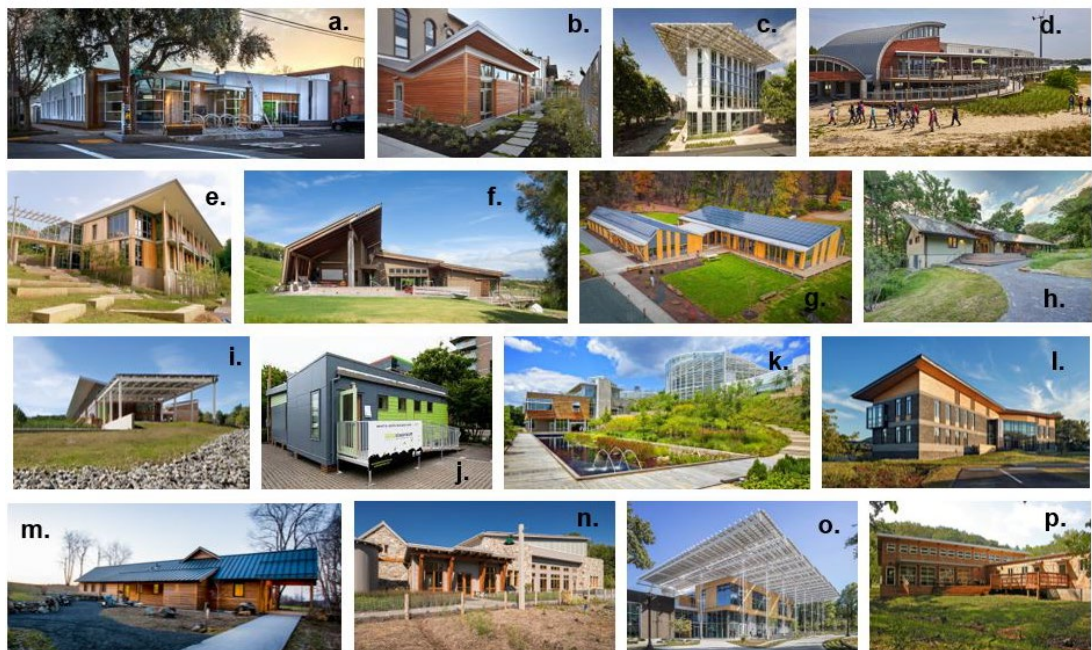


Figure 2: Images of the case study living buildings: (a) Arch- Nexus, (b) Bertschi, (c) Bullitt Center, (d) Chesapeake, (e) Frick, (f) Hawai'i Prep, (g) Hitchcock, (h) Morris, (i) Omega, (j) Perkins, (k) Phipps, (l) R. W. Kern, (m) Bechtel, (n) Willow, (o) Kendeda, (p) Tyson.

2.2. Data Collection

The LBC case study descriptions were the primary data source in this study. For the data collection, the researcher approached to the long list of the featured case studies in the official website of the ILFI. The website (ILFI, 2021) provides some options like typology and certification types to filter them. Once the certification category was selected, it was possible to choose only “full living certified” ones. The researcher saved the descriptive documentations for the selected sixteen living buildings digitally to analyze. The LBC case study descriptions had a similar structure and format to explain the buildings for each Petal and Imperative of the certification. Each document started with a short summary, project vitals such as location, gross building area, certification status, and the project team. Then, they included explanatory text with supporting pictures from the actual buildings. The gathered data provides dependable information and reflect the educational intent since it was written by the architectural team and approved by the institution.

2.3. Data Analysis

The sixteen LBC descriptions were uploaded into Dedoose, a web-based qualitative analysis software program for data analysis. The conventional content analysis was used at first to identify the sustainable building features, strategies, and themes (Hsieh & Shannon, 2005; Elo & Kyngas, 2008). Each LBC case study document, excluding images, was the unit of analysis. Thus, each code was counted only one

time, meaning that the analysis does not represent the repetition within documents. After the first round, the researcher utilized a summative approach to qualitative content analysis, which goes beyond the quantification of the previously identified key words to include latent content analysis (Elo & Kyngas, 2008). Latent content analysis deals with the process of interpretation of content (Elo & Kyngas, 2008; Holsti, 1969). It does not only search for the key words to count, but it also requires interpreting meanings for appropriate coding. For example, the term 'inclusive' and 'accessible' does not need to appear exactly in the data for "inclusiveness & accessibility" code. When a document, like Kendeda Building, explains that "the ADA ramp is situated, front and center, of the open atrium inside of the building... as opposed to hiding or diminishing the ramp" in the equity section of the document, the researcher coded this excerpt by interpreting the meaning behind. As the result of the grounded analysis described above, a wide range of topics were identified as open codes. A second researcher (who was new to the data) coded excerpts to examine interrater reliability scores using Cohen's kappa coefficient. The kappa coefficient for the final codes was .80, indicating a good level of agreement (Landis & Koch, 1977). Next, the codes were refined to the focused codes with consideration of research questions.

3. Findings

Overall, the data represents that the living buildings has a strong potential to generate informative and inspiring dialogues to educate public about sustainable architecture. The analysis revealed that SBE dialogues cover a broad range of topics. Daylighting; natural ventilation; solar panels; rainwater harvesting systems; using local and Red-list chemical free materials; reused/recycled/salvaged material use; healthy air; and biophilia were the common topics discussed in all sixteen case study documents. The results show that the living buildings may play an essential role to transfer knowledge about sustainable building practices and advocate for better industry, market, and regulations by being a physical model and demonstration field. Their visible architectural features and systems; exposed natural processes; interpretation strategies like signages and exhibits; monitoring systems to give feedback via dashboards and websites; and educational programming such as docent-led building tours are some channels noted in the data to describe the ways they can construct dialogues in living buildings possibly. The details about findings were explained below for each research questions with the code counts.

3.1. Coded Dialogues: Discussed Sustainable Building Features and SBK Themes

Compatible with the LBC petals, the coded dialogues for the sixteen living buildings can be grouped under six main topics: energy, water, materials, place, health, and equity. Under these main themes, sixteen sub-themes were determined. The employed sustainable building features to explain these sub-themes are listed in the Table 3. For example, energy theme has three sub-themes (energy conservation, efficiency, and production) and one of them is energy production. Solar panels (PV), wind turbine, and geothermal well were the main three building features mentioned

in the documentations to produce energy on site. Each feature and element appeared at least two times in the coding were included into the study.

Some of the sustainable building features were broad in terms of their meaning and were addressed by numerous building elements. In these cases, the discussed elements were listed in parenthesis (See Table 3). For instance, the daylighting feature was communicated in all, sixteen, case studies. However, each of them highlighted different elements to achieve it such as well positioned windows, skylights, light shelves, light tubes, and reflective surfaces. If a case study description included the term daylighting and mentioned at least one of these elements, it is marked as communicated. Some case studies like Willow employed more than one element as part of their daylighting feature such as “windows”, “glazed doors”, “skylights”, and “solatubes” (light tubes).

In the Table 3, the rows list the sixteen case studies in the alphabetic order. If the case study building covers the SBK themes and features described above, the dots in the table display the presence of the dialogue. The bottom row shows the total number of case studies mentioning each feature. The most common features were highlighted with the orange color. Interpreting the table, the analysis revealed that i) energy theme with features like daylighting; natural ventilation; solar panels; ii) water theme with the rainwater harvesting systems; iii) materials theme with using local, repurposed, and Red-list chemical free materials; iv) health as healthy air and biophilic environments were the common topics covered in all sixteen case study documents. Window to wall ratio; wind turbine; collecting and reusing condensation; green roof; less car-parking areas; electric vehicles charging station were the least applied or communicated features for the case living buildings. For instance, only two living buildings (Hawai'i Prep and Kendeda) noted that their buildings collect condensation for reusing. In addition, 3 living buildings (Chesapeake, Hawai'i Prep, and Phipps) applied wind turbine to generate on-site renewable energy.

In addition, the columns in the Table 3 list the sustainable building features addressed in the data. Overall, there exist 40 different features coded in this study. The right column, at the end, shows the number of features covered by each case studies. The case studies which covered more than 30 features out of 40 were highlighted with grey color. From that perspective, Chesapeake and Kendeda (35 features), Hitchcock (32 features), and Frick and R.W. Kern (30 features) were the five most comprehensive cases. At this point, it is essential to remind that the analysis depends on the LBC documentation of each case study. Case study buildings might cover more features in the actual building through time and ongoing efforts. The goal of this study is not to compare the case studies; the aim is to understand the common patterns and dialogues covered overall.

Lastly, it is necessary to mention the interconnectedness of these features and elements. The data analysis revealed that some elements were communicated more than one time to explain diverse features or sub-themes. This led the researcher to analyze the code co-occurrence and determine the common elements which carry the potential to educate or inspire people about the whole system

thinking. Figure 3 presents the most commonly co-occurring elements within data and visualizes their relationship with coded features and themes. As one example, in Perkins SEED classroom building, green wall was connected to: 1) urban agriculture, 2) water systems by exposing “all systems and components necessary to understand and view the flow of water from point of collection to storage use to treatment, including a direct visual connection to a living wall of plants”, 3) biophilic and inspirational features. In addition to that, in Bertschi building, “the inclusion of the green wall of tropical plants to treat grey water has the added benefit of helping to purify the air”.

Figure 3 builds a foundation to develop a design guideline for practitioners to identify what kind of elements can be applied for targeted themes. Moreover, referring to the Cole (2019), understanding the elements or features can be considered as factual SBK while learning the relationship between the features and themes are conceptual. This study demonstrated the capacity of living buildings to generate dialogue (or hopefully teach) about conceptual SBK which reveals a broader research agenda.

THEMES	Sub-themes	ENERGY										WATER					MATERIALS			PLACE/SITE				HEALTH				EQUITY	Total (out of 40)											
		energy conservation					energy efficiency					energy production		managing water on-site					appropriate sourcing			urban agriculture		transportation		biophilia														
		daylighting (e.g., windows, skylights, light shelves, light tubes, reflective surfaces.)	shading (e.g., overhangs, louvers, awnings, blinds, deciduous trees, green roof)	natural ventilation (e.g., ceiling fans, operable windows, negative pressure)	efficient envelope (high R-value wall and roofs, efficient windows)	efficient HVAC (e.g., radiant cooling, ground source heat pump, VRF)	efficient lighting fixtures (e.g., LEDs, vacancy sensors, dimmable fixtures)	wind turbine	geothermal well or heat pump	low-flow fixtures (e.g., low-flow sinks, showerheads, toilets, drip irrigation)	waterless fixtures (composting toilet)	rainwater harvesting (collects via roof and gutters, stores in rain barrels and/or cistern)	rainwater as potable water	gray water treatment (e.g., constructed wetland, rain garden, planters, ecomachine)	black-water treatment (e.g., composting toilet, ecomachine)	stormwater management (e.g., rain garden, bioswale, permeable pavement)	collecting and reusing condensation	local materials	FSC certified wood	RED list chemical free materials	reused/recycled/salvaged material use	waste management	green roof	green wall (or vine wall, vegetated wall)	gardens or green house for food	less car-parking areas	electric vehicles charging station	access to public transportation & bicycle	site selection: greyfield or brownfield restoration	sustainable & native landscaping	healthy air (natural ventilation, toxic free materials, mechanical systems-HVAC)	green cleaning	connection to nature + daylighting + views	nature inside (green walls, plants, animals)	natural materials + patterns	promoting healthy behaviors (e.g., irresistible stairs, walking paths and trails)	inclusiveness & accessibility	universal access to nature		
1	Arch- Nexus	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	28	
2	Bertschi	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	23		
3	Bullitt Center	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	23		
4	Chesapeake	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	35		
5	Frick	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	30		
6	Hawaii Prep	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	22		
7	Hitchcock	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	32		
8	Morris & Gwendolyn	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	27		
9	Omega	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	18		
10	Perkins	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	24		
11	Phipps	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	29		
12	R. W. Kern	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	30		
13	Bechtel	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	23		
14	Willow	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	25		
15	Keneda	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	35		
16	Tyson	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	27		
Total (out of 16)		7	3	16	11	16	12	15	12	16	3	5	8	10	16	5	14	13	2	16	15	16	16	13	3	5	12	4	2	10	14	14	14	9	16	6	16	9	11	11

Table 3: Covered sustainable building features and knowledge themes by living buildings.

* The bottom row shows the total number of case studies mentioning each feature. The most common features (addressed by all 16 case studies) were highlighted with the dark orange color; features covered by 10-15 case studies colored as mild orange; features covered by 5-10 cases are light orange; and the rest were colored as white.

** The right column, at the end, shows the number of features covered by each case studies. The case studies which covered more than 30 features out of 40 were highlighted with grey color.

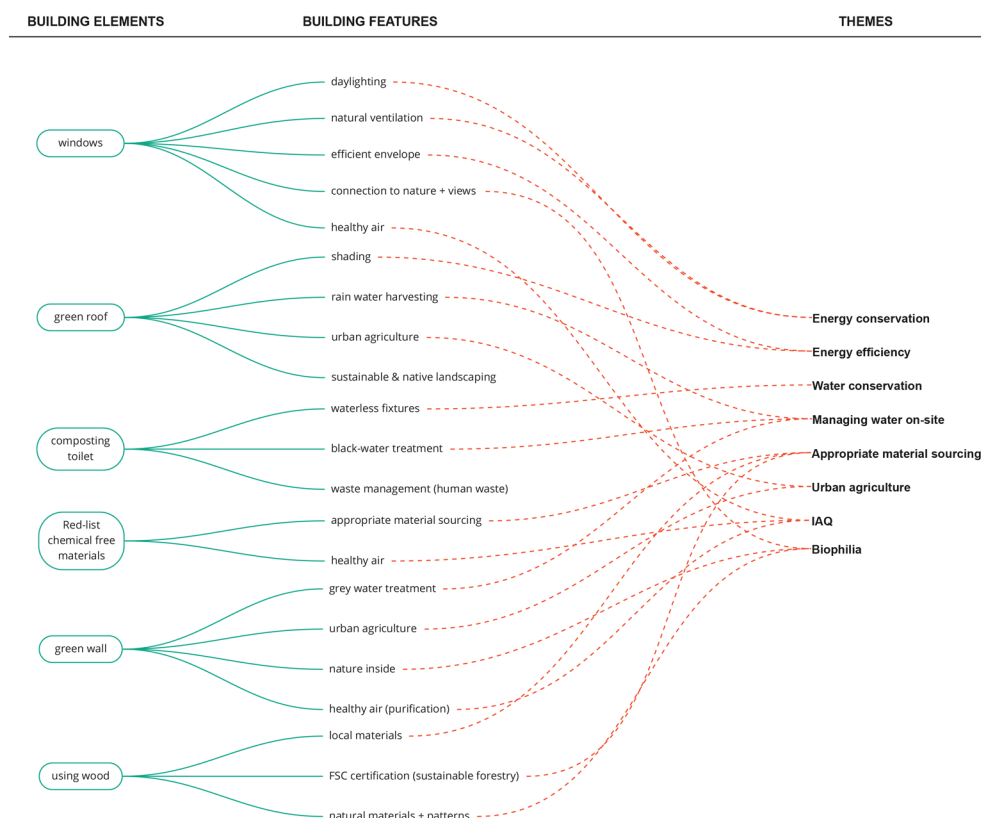


Figure 3: Code co-occurrence: the interconnectedness of elements, features, and themes.

3.2. Covered Strategies to Communicate Sustainability Features:

The data were additionally coded for the type of strategies used to communicate sustainable building themes. These strategies were about both living building experience (via various mediating mediums) and advocacy. Overall strategies to transfer knowledge were grouped into four main categories: architectural, interpretational, interactive and engaging, and inspirational (Table 4). For each main category, the types of strategies were listed. The Table 4 shows the number of case studies discussed these types of strategies in their documents.

KNOWLEDGE TRANSMISSION STRATEGIES	mediating mediums		architectural	exposed architectural elements (solar panels, cistern, rainbarrel, wind turbine etc.)	14	
				exposed building systems (HVAC, exposed ceiling with labeled pipes etc.)	12	
				exposed natural process: biomimetic features [<i>uniquely designed, symbolic/iconic, multi-sensory</i>]; (e.g., pebble-lined runnel in the floor to mimic the natural patterns of rivers)	10	
				visible programming spaces for SBE (e.g., outdoor pavilion, dedicated learning area/room)	9	
	interpretational		physical agents	signage (wall signages, wall-hung, free-standing etc.)	12	
				exhibit (e.g., permanent, temporary, dedicated to an area)	7	
				mural (wall or floor murals)	3	
				public art pieces (e.g., sculptures of Biophilia Enhanced Through Art project at Phipps)	2	
			virtual agents	dashboard (monitored building performance & feedback)	11	
				website	7	
				social agents	docent (docent led tours or free talk with staff)	11
					educational programs, outreach, events	15
	interactive & engaging		active role for occupants in operation (non-automated systems, red-light green-light, email to occupants, occupant training & engagement platform)	8		
			hands-on learning activities on site (taking care of gardens, testing water quality)	7		
			nature play & learn area (inside/outside)	6		
	advocacy		inspirational	describing living building as a teaching tool and/or living laboratory	16	
				pushing market, industry, authorities for sustainable materials, practice, and regulations	16	
				being a physical model and demonstration field	10	
				supporting research & providing data	9	

Table 4: Knowledge transmission strategies and total numbers of case studies applied.

Architectural strategies: Fourteen case study explained their attempt to expose architectural elements out of sixteen living buildings. R. W. Kern, for example noted that “the rainwater reservoirs are partially above grade to make it clear that rainwater is being captured” (See Figure 4a). Arc-Nexus purposely designed some elements as visible to raise curiosity to learn more about the building. It is noted in the data that “the unobstructed view of the green wall from the street has literally coaxed people on the street to come into the building to learn more” (Figure 4b). Chesapeake’s wind turbines were located with consideration of visibility (Figure 4c). Willow school also noted their intent as “the approach to ecological water flow at Willow combines goals of water infiltration into the aquifer with the aesthetic intent of making the water cycle visible – and ‘teachable’”. In addition to visible elements, twelve living buildings discussed their exposed building systems such as locating the HVAC systems in a visible place and demonstrating an exposed ceiling with labeled pipes to show systems.





Figure 4: Exposed building element examples: (a) R. W. Kern's rainwater reservoirs, (b) Arch-Nexus's green wall visible from street, (c) Chesapeake's wind turbine.

Another architectural strategy, applied in ten case studies, was exposing the natural processes through designed features to educate users about broader sustainability concepts like nature's cycles. Water cycle was the main natural process addressed among cases. One great example to this category is Bertschi school building's exposed river system. The LBC document noted that in the early phase of the design, the team asked students "how would they wish to see nature expressed?" Their response, "a stream that could be running under the classroom," was "inspiring". Later, "the stream became a pebble-lined runnel in the classroom floor that weaves its way through the building mimicking the natural patterns of rivers. Part of the rainwater collection system, the runnel and other pipes bring the beauty of the hydrologic cycle right inside the classroom" (Figure 5a). Another example to this strategy is Hitchcock center's first flush system called Ecotone that mimics watershed ecology (Figure 5b):

The pitched roof is engineered to act as a watershed... Within this space, color-coded pipes show the water's pathway through the system... Beneath the tanks, a depiction of the Connecticut River watershed is stained into the Ecotone's concrete floor, reinforcing the importance of place on the built and natural systems... [the] system was designed to increase appreciation and understanding of rain as a necessary and captivating part of the water cycle... The First Flush System also creates a moment of fascinating whimsy and observation for children, making rainfall exciting rather than disappointing. With each rainstorm, students rush to ecotone to see the first flush tanks fill with water, and observe the dirtiness of the collected water change firsthand as the first flush system performs its role.

Similarly, Frick center showcases "natural systems in an interactive and abbreviated fashion such as the water veil that falls from [the] roof and meanders through the 'Rain Ravine'" (Figure 5c). The team notes that "by purposely displaying natural processes in condensed, simplified, and accessible ways, people are inspired to take the next step and seek out this beauty in nature".

Among others, exposed natural process strategy includes unique design ideas and iconic or symbolic features that the researcher of this study thinks as, probably, the most memorable features. The memos of the researcher pointed out that the

researcher was using these features to distinguish the buildings from each other since they were unique. In addition, this strategy was the main area where the teams covered the consideration of biomimicry, biophilia, and beauty. Lastly, nine building discussed their effort to create apparent programming spaces for SBE such as outdoor pavilion of Chesapeake and dedicated exhibition area in Bullitt Center.



Figure 5: Exposed natural process examples: (a) Bertschi's river system, (b) Hitchcock's Ecotone, (c) Frick's rain ravine.

Interpretational strategies: Addition to architectural strategies, there were interpretational strategies described in the data which were collected under three groups: 1) physical agents like signages, exhibits, murals, and public art pieces; 2) virtual agents such as dashboards and websites; 3) social agents which are docent and educational programs. Among those, educational programs, signages, and dashboards were addressed the most with their educational impact.

Interactive and engaging strategies: Interactive and engaging strategies covered in data can be grouped as active role for occupants in operation, hands-on learning activities on site, and nature play & learn areas. Eight living buildings purposely chose non-automated systems for some operations to give active role to the occupants to engage. Referring to Cole (2019) again, these given active role can help occupants to gain procedural SBK. When describing their approach, Hitchcock and Frick centers mentioned an applied device called “red light-green light” to architecturally communicate their users. Hitchcock explains their system and its benefits as:

The Center's approach to energy consumption emphasizes their focus on humans as an active part of the natural system. They chose to automate as little of the system as possible, opting for manual light switches, ceiling fans, and operable windows. The design team created a simple device to assist the Center with the passive ventilation of the building: the mechanical system shuts off when conditions fall within the specified comfort zone, notifying building users of the shut-down through a series of lights that change from red to green. Green lights indicate that the Center's staff can fine-tune the comfort through the building's operable windows. When temperatures fall outside the outside ventilation zone, the lights change back to red and staff need to shut the windows to maintain comfort. While this risks energy loss

to operational error, it also engages staff and visitors in the diurnal temperature cycles. Many of the visitors have been able to modify their behavior at home based on lessons learned at the center.

Likewise, in some living buildings like Phipps, some windows designed as “manually operable” to reinforce “the human connection to nature” and “occupants receive email messages from the building, letting them know when conditions are right to open and close the windows”. In addition to occupant’s active roles, in 7 living buildings, visitors were offered hands-on learning activities on-site. For example, in Frick, visitors take care of agricultural gardens while in Hitchcock, they can test water quality in the first-flush systems.

Inspirational strategies: Alongside the dialogue constructed by living buildings, there exist a second type of dialogue between the practitioners, authorities etc. about sustainable building practices. Inspirational strategies coded in data represents this group of knowledge share and advocacy. All cases used either the teaching tool or living laboratory to describe their building. They all discussed how they pushed the market and industry, especially for finding the local and toxic-free materials. All of them described how the team worked with authorities to get permission for water regulations. Moreover, ten buildings pointed out their goal of being a physical model and demonstration field for a built example of what’s possible when it comes to truly sustainable buildings, and their important role in the health of our planet. Lastly, nine building highlighted their effort to support research in their facility and providing data for researcher to investigate.

4. Conclusion

In this paper, the living buildings are considered as a communication medium where the design teams intentionally (sometimes unintentionally) send messages about sustainable building practices. These informative dialogues that are constructed by building architecture via various features, strategies, and activities can help public to enhance their knowledge about sustainable buildings to contribute to the successful performance and advocate for a responsive industry.

This research examines how living buildings are covered in the LBC documentations in terms of the common SBE dialogues and applied strategies. The study assesses the educational potential of living buildings to communicate sustainable building themes to enhance public awareness and knowledge. The findings represent that living buildings cover wide range of sustainable building themes with detailed sub-themes, concepts, and features. Their exposed features, building systems, and natural processes are purposely designed to inform and connect their users to nature to remind they are connected. With the impact of the LBC certification, living buildings strive to showcase how buildings can be designed with positive impact on environment, social systems, and health of both humans and natural ecosystems.

Although the findings demonstrate a powerful effort from the design teams (together with the owners and institutions) to communicate such SBE concepts, there exist

some emergent questions remained unclear that represents a worthy future research agenda such as: How much can people learn through building experience (in different ways: occupying, visiting, reading about it etc.)? What themes or concepts are the most memorable by users? What strategy does work better to engage and inform people? Is it possible to find a way to measure the effectiveness of this communication? The author's dissertation research objectives to answer some of these questions but the field needs more empirical studies to ground an architectural communication theory.

This research did not specifically search for the communication of the broader sustainability concepts in the data but some terms like global warming, climate change, ecosystems, biomimicry, system thinking, and sense of place caught the researcher's attention. Moreover, living buildings has a capacity to generate dialogues about social dimensions of sustainability such as equity, inclusiveness, and health. Investigating the living buildings from these perspectives could provide better insights to the field about the role that architecture can play to positively contribute to these global and social issues.

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DIALOGUE 2: CO-DESIGN IN ARCHITECTURAL PRACTICE

A Path towards Restorative Community Design

Ignacio CARDONA¹

^{1st} Author's e-mail: iac@ignaciocardona.com

Abstract

More than fifty years have passed since Sherry Arnstein wrote her paradigmatic essay "A Ladder of Citizen Participation" (1969) as a manifesto promoting people's empowerment in a society. In the decades since then, the disciplines of architecture, planning, and urban design have progressively evolved from relying on top-down technocratic strategies to developing processes to include a diverse spectrum of stakeholders in decisions. However, in recent years, the expected transition to more inclusive planning and design has seemed to slow. Citizen protests have erupted around the world as the historical processes creating structural inequality have become ever more apparent; according to the Global Protest Tracker, over 230 significant anti-government protests have taken place in 110 countries worldwide since 2017. Ironically, the demand for social distancing imposed by the coronavirus has itself fueled increased encounters between street protesters. Thus, it seems imperative that the architecture and other design disciplines seek mechanisms to integrate the needs of historically isolated groups strongly demanding a voice in governance and planning processes today.

As a counterweight to historical spatial inequalities, this research introduces the framework of Restorative Community Design as a set of tools and techniques for improving spatial opportunities in underprivileged communities frequently imbued in social conflict. Participatory Design in Architecture includes the possibility of enhancing the urban built environment, but at the same participation as tyranny, emerges when the co-optation of community dialogues, which can contribute to social conflict. In order to reduce this last negative effect of participatory design, Restorative Community Design proposes addressing transdisciplinary processes as a strategy to improve community empowerment.

Restorative Community Design works with a gameboard called PATH (Participatory Architecture Towards Humanity), which has been applied in Caracas (Petare, 2015) and New York City (Flushing, 2018). The first implementation of this PATH towards Restorative Community Design took place in the Petare denser self-produced settlement -commonly called the informal city - in Latin America, located in Caracas. The second one happened in Flushing (Queens), the most diverse borough in New York City. Integrating different racial groups -especially the Asian community- has been relevant to achieving social justice. In Caracas and New York City, game

techniques served as a strategy to produce transversalities between disciplines and community groups to facilitate agreements towards the architectural project.

From this experience, we can draw three main takeaways to be considered in a participatory design process. First, the importance of generating community engagement while carrying out urban transformations through participatory design. Second, the integration of different social needs in the field of design. Third, the translation of participatory methodologies into agreements that oblige tangible action towards transforming structural inequalities.

Keywords: *Restorative Community Participation Design Justice*

Introduction

In 1968, several citizen protests erupted around the world. After decades of top-down government decisions guided by the technocratic approach of the modern movement, thousands of citizens took to the streets to demand more active participation in decision-making. 1968 was the year of the protests in Mexico City that led to the terrible massacre of Tlatelolco. The Black Panther movement and the protests against the Vietnam War converged in the United States in the same year. 1968 is also the year of the French May. These were just a few examples of a year when the need for more participatory decision-making emerged. The impact of this phenomenon in architectural design and urban planning was inevitable.

A year later, the academic field responded with publications that put citizens at the center of architecture and urban planning. In *Personal Space*, Robert Sommer (1969) discusses the influence of space on human behavior, which is considered one of the essential books of environmental psychology (Gärling et al., 1996). Within the same disciplinary field, Edward T. Hall (1969) writes the *Hidden Dimension* about the relevance of cultural perspective in characterizing the space surrounding people. Additionally, in 1969, the Dalandhui University of Strathclyde held the first conference on Architectural Psychology hosted by David Canter (1970), pleading for an architecture interwoven with participatory design.

These examples characterize a period when scholars strongly claimed a close relationship between physical space and community needs. Among all of them, we consider the essay *A Ladder of Citizen Participation*, written by Sherry Arnstein (1969), a fundamental document -perhaps the most influential of the time- that has become a manifesto on participatory planning. The text navigates between academia and activism -an attitude that has ended up marking the mindset of architects, planners, and urban designers related to participatory design- calling for complete and progressive citizen empowerment in architectural decision-making.

After almost 15 years of working in participatory processes, what encourages me to write this paper about participatory design is the eruption of citizen protests in recent years amid a global pandemic that -supposedly- calls us to a social distancing away from the street. According to the Global Protest Tracker (2021), over 230 significant

anti-government protests have occurred in 110 countries worldwide since 2017. It is not unreasonable to think of a parallel between the 1968's protests and the present time, which invites us to reimagine the best way to integrate the needs of different stakeholders into planning and design processes. I write this essay hoping that the framework of Restorative Community Design will help generate a peaceful but intensely active integration of people's voices into architecture and other design processes.

Theoretical Framework

At the urban level, the main concern that promotes this research comes from studying forms of citizenship fragmented in spatial enclaves (Alsayyad & Roy, 2006; Bolay et al., 2005; Rosas Meza, Iris, 2018). Nezar Alsayyad and Ananya Roy (2006) define this phenomenon as *medieval modernity*, a transhistorical analytical category that helps to determine the isolation of specific citizens in the contemporary urban world. The study of urban fragmentation and isolated communities is a broad topic that has been explored from different perspectives and geographies. These include the social consequences of urban fragmentation, including social segregation and urban violence (D. Davis, 2010; Holston & Caldeira, 2008; Weinstein, 2008), the role of governance systems to address urban fragmentation (Arias, 2004; Moser, 2004); or the spatial inequalities produced by fragmentary planning (Cardona, 2021; Gouverneur, 2015).

By applying participatory planning methodologies in two different cases -Petare in Caracas and Flushing in New York City-, this paper focuses on the political disenfranchised resulting from the isolation of communities in fragmented urban developments. We have found similarities between these dissimilar cases, which lead us to define medieval modernity not only as a transhistorical but also as a transnational category.

We study participatory design from a critical perspective, understanding that the inclusion of communities in the design process is not automatically a panacea. Participatory design can also imply shortcomings such as people's coercive persuasion in decision-making to authoritatively impose certain outcomes (Cardona, Mijares, et al., 2020; Cooke, 2001). This awareness of the possible weaknesses of participatory design arises from our first interventions in Caracas (Venezuela), a territory that for more than 20 years has been dominated by an authoritarian regime that uses participation as a means of social co-optation.

In this context, we propose the framework of Restorative Community Design (RCD) which implies a set of participatory design practices that seek to deepen the relationships between different urban stakeholders in architecture and other design disciplines to reduce the negative effects of urban fragmentation. This approach overlaps participatory design with two theoretical bodies: Restorative Justice and the Right to the City.

Restorative Justice

Restorative justice is a branch of criminal righteousness that seeks to bring together different stakeholders affected by wrongdoing (F. Davis, 2019; Marshall, 2021; Zehr, 2015). The main purpose of restorative justice is to provide both concrete and symbolic restoration, especially to those affected by delinquency but to understand that the offense involves the victim, the perpetrator, and the whole community where a crime occurs. In this sense, we understand restorative justice not as a substitute but as a complement to criminal justice. In addition to actions that allow delinquency to be penalized, restorative justice seeks to reunite those affected by wrongdoing to address needs and responsibilities and heal damage through the close relationships between different community members to the extent possible (F. Davis, 2019).

But spatial inequalities generated by fragmented urban territories are not wrongdoing that occurs once. Instead, they appear to result from structural inequalities generated progressively and persistently over the years (Boccaletti et al., 2014; Mahutga, 2006). In this sense, our research comprehends justice beyond the reparation of specific crimes framed in the current regulatory legal system but in the understanding of -sometimes hidden- rules of societies that end up generating processes of social and spatial inequality. RCD seeks to provide methodologies to enhance the integration of different community members concretely and symbolically to address the spatial manifestations of these inequalities.

The Right to the City

Restorative Community Design (RCD) is also hinged on the Right to the City discourse, which posits that cities are environments that either allow or limit the development of the capabilities of their citizens, in which the networked access to the opportunities offered by the city is a fundamental variable (Cardona, 2021).

For Henri Lefebvre, "*[le droit a la ville] ne peut se formuler que comme droit a la vie urbaine, trasnfromee, renoiuelee*" (The right to the city can only be formulated as a right to urban, transformed, renewed life) (Lefebvre, 1968, p. 35). This has been a very influential statement for those researchers who propose that improving access to urban spatial resources is a strategy for enhancing the Right to the City (Harvey, 2003; Isin & Wood, 1999; Mitchell, 2003; Schwab, 2018) through an equitable allocation and connection of spatial resources across the city.

Spatial access to spatial resources is one of the many variables to promote the Right to the City, implying equitable and planned distribution of urban amenities such as public space. However, architects and policymakers can improve spatial access from a technocratic approach allowing a concrete spatial allocation of public resources but without the participation of the people to incorporate symbolic restoration. On the contrary, despite incorporating technical considerations into the design process being important, RCD understands that integrating people in the design processes is a fundamental variable in reducing political disenfranchisement.

Consequently, RCD presents strategies to produce an overlapping between the normative needs that arise from architecture and other design disciplines and the daily needs expressed by community members translated into the field of design. This idea is strongly supported by Community Psychologist studies, which establish the importance of an expanded encounter between different social needs to denaturalize social inequalities (Montero, 1994, 2003). The Right to the City appears when participation is a vehicle to spatially improve the urban built environment, considering that both community and designers have strong voices in the participatory processes.

Restorative Community Design

As stated above, Restorative Community Design (RCD) is a participatory design strategy that emerges from the overlap between Restorative Justice and the Right to the City discourse. In this sense, RCD is a consensus decision-making methodology that promotes the bringing together of different stakeholders for the collaborative design of an urban architectural infrastructure that maximizes access to the spatial opportunities offered by the city.

The main objective of the RCD is the creation of networks within networks, with the idea of promoting integration strategies that break the isolation generated, in this case, by political disenfranchisement. In this sense, we can summarize two types of networks that RCD seeks to promote: community and spatial ones.

Regarding community networks, the inclusion of a variety and sometimes in conflict stakeholders help to create a dense set of associations to promote cooperative behavior (Loury, 1977). Then, through cooperation, participatory methodologies enable shared expectations that facilitate common actions (Portes & Sensenbrenner, 1993; Sampson, 2004; Sampson et al., 2002), in this case, towards the urban architectural project. The collaborative design transforms design projects into gestures to symbolically repair inequalities by participation, breaking isolation barriers and political disenfranchisement.

The second network is spatial, i.e., the physical transformation of the urban environment through the design of the public space system. RCD seeks to transform inequalities structurally, so the participatory process is insufficient without an outcome of public space systems to achieve the concrete manifestation of stakeholders' needs. Moreover, the transformation of the public space by itself is a vehicle to promote the integration of different community members (Cardona, Izquier, et al., 2020; Izquier et al., 2019), especially if the public space becomes a symbol of social encounter. Creating public spaces that include the community's cultural values achieved from the participatory process is a powerful strategy to repair structural inequalities (Magruder et al., 2017; Weisner, 2020).

Restorative Community Design: The gameboard

But building spatial and community networks is a difficult task. The experience developing participatory design projects showed us several barriers to breaking

historical processes of political disenfranchisement. These difficulties emerge in the promotion of both community and spatial networks.

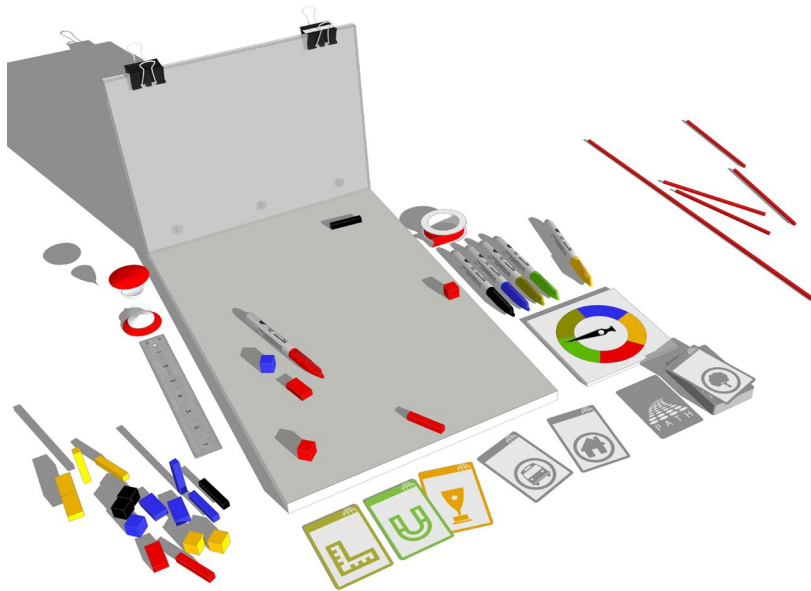


Figure 1: The gameboard for Restorative Community Design

Participation can have structural weaknesses to promote community networking, issues like the diffusion of responsibilities, the stereotyping of actors that makes it difficult for them to contribute differently from what they have done historically, and so on (Cooke et al., 2001). Additionally, we have found relevant the appearance of conflicting needs between different actors that makes it difficult to reach a consensus. This limitation is extremely relevant because Restorative Community Design prefers outcomes from the consensus of collaborative and inclusive decision-making.

Regarding the design of public space networks, we have found it difficult for communities not trained in architecture or urban design techniques to contribute ideas about design proposals. Commonly, the high-skilled technical capacity of architects and other design specialists becomes an imposition into design decisions because their voice carries a weight that easily overshadows any other opinion. In this sense, traditional techniques in the design of plans, maps, and even physical models by themselves are insufficient if we envision a restorative participatory design, that is, that goes beyond consulting the needs of different stakeholders and includes their voices into the design variables.

Seeking to blur the barriers described above, RCD uses game techniques as a simulation tool that stimulates creative capacities across different stakeholders (Huizinga, 1949). A game can allow dialogue and consensus through clear rules and common objectives. Consequently, the application of RCD is through a

gameboard that uses a role-playing model to simulate the design of urban architecture, urban design, or planning projects (See Figure 1).

The gameboard has several specificities, and explaining them all goes beyond the scope of this paper, but we can highlight two of them to exemplify the mindset of participation proposed to promote Restorative Community Design. First, the methodology offers to assign characters that invite certain stakeholders to assume the role of another one. So, for example, an architect can play at being the Mayor, or the Mayor at being a community member. This simple strategy has been profoundly effective in resolving conflicting needs as different characters begin to understand the demands of others. Second, the gameboard includes design actions

by adding tokens representing buildable actions, such as treeing or street pedestrianization. Through the game, all participants begin to break the barrier imposed by traditional design tools. Surprisingly, the participation of community members has allowed the integration of their voices, but without overshadowing the relevance of high-skilled opinions by architects and other design specialists, who also remain as fundamental actors across the design process.

Project Framework

Medieval modernity occurred because of a splintered territorialization of isolated domains (Alsayyad & Roy, 2006). This results from the fragmentation of the interests of different communities, which often end up disenfranchised from political and planning decision-making.

This research seeks to apply participatory design methodologies in the design of public spaces in two different communities -Petare in Caracas and Flushing in New York City- as a design test to narrow down the variables of Restorative Community Design. Despite their differences, both places enclose communities that have been politically disenfranchised over the years, which justifies the strategy to integrate them into the planning process. Both projects culminated with design and planning documents for the transformation of public space; however, in the following lines, we will focus only on psychosocial conditions and their implications in the characterization of the RCD.

La Redoma (Petare) in Caracas

The embryonic beginning of Restorative Community Design occurred in 2008 when the community of Petare called us as professors of the Simon Bolivar University in Caracas to support them in the design of some sports spaces through participatory design techniques. After that, different actors met for several years through participatory budgeting meetings under the coordination of the local government (López Noriega, 2014). This process helped strengthen community associations and build trust between different actors, facilitating the overlap between normative and community daily needs around public architectural projects.

In 2013, different communities invited us to conduct an urban study on the Redoma de Petare, a multi-problematic place of this city sector. The proposal was led and designed by the firm *Arepa Architecture Ecology y Participación*, the support of the Mayor's Office of Sucre, and the active participation of different community leaders that had emerged from the participatory budgeting meetings mentioned above (AREPA, 2015).

The word Redoma means Roundabout in Spanish. However, today the Redoma de Petare area is more than that; it is a conflictive sector adjacent to different neighborhoods with different socioeconomic conditions. Summarizing, La Redoma de Petare has around: 1) one of the oldest historical settlements in Caracas -Petare- founded in 1621, 2) the densest self-produced neighborhood -often called informal settlements- in Latin America emerged at the beginning of the twentieth century, and 3) the middle-income La Urbina neighborhood built in the 1970s by urbanizing traditional cane farmlands. Living alongside other socioeconomic groups provides the opportunity for synergistic social contact but also creates potential tensions.

La Redoma de Petare is a makeshift and open-air transportation hub east of Caracas. In addition to the Subway station of Metro Line 1, the most important of the city, 168 out of 211 routes that run around the Municipality passes through La Redoma de Petare, which forces the transit of a significant number of people through this place. More than 12,000 people at peak hours in both directions walk around an area of fewer than 2 hectares (Oficina del Plan & AREPA, 2016).

The large number of people who walk around the Redoma de Petare ignites informal commercial activities. The informal trade economically benefits many people who do not find jobs in the formal labor market. However, many peddlers that occupy the public space also hinder those who want to transit from one place to another. Amid the tumult, the area is haphazardly occupied by all the stakeholders but does not belong to anyone; the initial studies showed a political disenfranchisement of different socioeconomic groups that have no engagement with an area shared with others (Oficina del Plan & AREPA, 2016).

La Redoma de Petare required urban actions to reorganize pedestrian, public transportation, and trade flows. In this context, Restorative Community Design became a useful framework to promote agreements between different actors who did not have a consensual vision about the possibilities of the urban transformation. In an environment of relative social tension between different stakeholders and socioeconomic groups, the participatory design project sought an overlapping between their various needs. That is why the case of the Petare Redoma taught us that one of the most important participation strategies is overlapping.



Figure 2: The gameboard for Restorative Community Design in Petare (Caracas).

The gameboard included transparent acrylic sheets to overlap interventions between different stakeholders - such as peddlers or residents - and different social groups from different neighborhoods surrounding the area (See Figure 2). The various ideas were drawn one on top of the other to discover agreements and discuss differences to reach a consensus on the public space as a shared opportunity.

Flushing (Queens) in New York City

Three years later, in 2018, some of the strategies for a Restorative Community Design were applied through the proposal *PATH project: Participatory Architecture Tool for Humanity*. The project occurred within the 2018 Summer Fellowship organized by the New York's Institute of Public Architecture - IPA. In this field research, I had the opportunity to apply participatory research methodologies about Spatial Opportunities in Underprivileged Environments at Harvard Graduate School of Design. The proposal was developed in partnership with Alexandra Paty -Urban Designer at the NYC Department of City Planning-, and Andrew Lassiter -Urban Planner at Localize.city-, both are urban planners from Columbia University.

PATH project sought to activate participatory design techniques to engage both designers and community members actively. Although applied in four different Queens communities in New York City - Jackson Heights, North Corona, Forest Hills, and Flushing- the latter was the one that signifies the most to our research since it presented a community of immigrants of Asian origin that showed signs of political disenfranchisement.

Flushing is the largest Chinese community in New York City by population size (Chen, 2018; Yu, 2016). In 1965, the United States Congress passed a new immigration law to promote the migration of skilled workers (Lin & Zhou, 2005; Smith, 1995). Rapidly, Flushing became a thriving Asian neighborhood, whose economic boom occurred due to local private investment in the retail and commercial sectors (Smith, 1995). In this context, Flushing became an important transportation hub in Queens. Several transportation systems, including the Interborough Rapid Transit Subway No.7 and 19 MTA bus lines, connect Flushing to Manhattan and other NYC areas (Flushing BID, 2021). As in the case of Petare, the proximity of migrants in what has become one of the most important connectivity centers in the city goes hand in hand with economic development through commercial activity.

But this economic progress has its side effects. In Flushing, high-rise apartment buildings are often overcrowded into dormitories packed with multiple workers (Yu, 2016). Furthermore, the enormous work capacity of the Asian community is accompanied by a certain deprivation of political rights. Asian immigrants tend to be isolated from the local and national political system (Chen, 2018; Smith, 1995). In *The psychological experience of immigration*, Cynthia Garcia Coll and Katherine Magnuson (2014) describe several factors that produce vulnerability among immigrants, highlighting the community isolation that creates political disenfranchisement.

But already in the 1990s, Flushing's Chinese community began to be more actively involved in local politics (Lin & Zhou, 2005). So that was what we felt in our call for participatory design processes in the PATH project where we have the participation of an active multi-ethnic group, with significant involvement of the Asian community.



Figure 3: The gameboard for Restorative Community Design in Flushing (New York City).

The gameboard for Restorative Community Design in Flushing (New York City).

Multiculturalism within participatory meetings made it necessary to maximize legibility design methods to facilitate agreements among people with different cultural backgrounds. In this context, tokens emerged as an effective design tool. So, in Flushing, we discovered the importance of generating more sophisticated strategies to integrate different voices into the design processes to politically integrate all voices into the design process. Therefore, the gameboard included little wooden cubes, acrylic rods, flashcards signifying specific design actions, which participants placed on a map to exemplify a need for spatial transformation (See Figure 3). Like the child who plays, placing a wooden cube in a map to discuss the need for a public facility is easier than taking the pencil or the mouse to design it. Afterward, it would be the architect's responsibility to translate that little wooden cube into a built form.

Working Takeaways

Howard Zehr, a pioneer of Restorative Justice, explains three pillars to provide concrete and symbolic restoration through community participation: engagements, needs, and obligations (Zehr, 2015). Working with the experience of Petare and Flushing, these three concepts are useful to define some working thoughts that will allow us to continue contributing to the definition of Restorative Community Design.

The first pillar is engagement; without the clear and voluntary participation of different stakeholders, the RCD is not possible. First of all, we must understand that, after years of political disenfranchisement across isolated communities, the creation of trust between the different stakeholders to promote spaces for participation does not happen automatically. In the case of the Redoma de Petare, it took five years of meetings to achieve full active participation (López Noriega, 2014). In Flushing, it took almost 30 years since the surge of migration from Asia to the United States in 1965 for this community to begin to have more significant involvement in political decision-making (Lin & Zhou, 2005). Working with participatory projects within the framework of RCD we can argue that architecture can contribute to the political integration of disenfranchised communities. In this process, the active convening by project promoters and an understanding of expanding the stakeholder map are fundamental strategies for promoting community engagement.

Second, the RCD certainly focuses on needs. But the experience of applying the gameboard demonstrated the importance of looking for transdisciplinary strategies that allow us to cross the needs between different stakeholders. A transdisciplinary approach requires that various stakeholders, including architects and other design professionals, put themselves in the place of others and go beyond their own areas of expertise (Cardona, 2008; de Toro, 2000). Architects, and other designers, face the project with the need to improve the built environment; it is what we call the normative needs of the project. At the same time, community members have perceived needs associated with the daily use of the place. But in conditions of social conflict, as in Petare, or when addressing multiculturalism as in Flushing,

community needs are even more complex because different community members may have conflicting demands. Working with RCD demonstrates that crossing needs between various participants is essential to reduce political disenfranchisement. It is not just about my voice being heard but understanding when that voice overlaps with others. When we say crossing needs, we mean using the gameboard as a platform to generate dialogue between different stakeholders to achieve a sense of togetherness between their demands.

Finally, Restorative Community Design understands the participatory process beyond the cathartic listening between different stakeholders; that is to say, we are all obliged to transform ideas into planning documents that make the participatory process a form of structural restoration at the spatial level. Promoting ideas that require the transformation of physical space is also a way of promoting the Right to the City, ensuring that the participatory process goes beyond people's sporadic meetings in participatory methods and becomes a vehicle to maximize access to spatial opportunities as public space. In this context, the possibility of overlapping physical space and community needs (Canter, 1970; Hall, 1969; Sommer, 1969) must generate a set of obligations for structural transformations. In fact, Sherry Arnstein calls for participatory processes that go beyond the therapeutic meeting to achieve higher levels of community empowerment (Arnstein, 1969).

But, what is the role of design disciplines such as architecture, planning, and urban design in these community empowerment processes through participatory methodologies? In his studies on Circles Processes for peacemaking process, Kay Pranis (2005) states that the role of the facilitator is not the neutral attitude, which is common in the Western conflict resolution model. Restorative Community Design concurs with this idea; participation is not a mechanism to diffuse responsibilities. Designers are also responsible for generating proposals that translate all the needs expressed in the meetings into planning and design forms. In this sense, RCD seeks to understand the architect's role both as a designer and as an activist, promoting his agency for the integration of disenfranchised communities.

But integration processes cannot be carried on the shoulders of a single stakeholder. Therefore, Restorative Community Design seeks to generate collaborative approaches to achieve proposals born from shared expectations. But understanding the complexity of these social processes, we do not assume that RCD is a silver bullet that, by itself, will eradicate political disenfranchisement and community isolation. Instead, this methodology proposes to offer choice amid the overwhelming complexity of structural inequalities that are evident in the contemporary urban built environment.

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#eindakoa (what we've done)

A pedagogical method of Interior Design Studio method.

Eneko BESA

1st Author's e-mail: enekobesa@idarte.eus

Abstract

This paper has been published in its full version in Spanish (Besa, 2019), and it is based on a report of the subject of Interior Projects Design Studio at IDarte.

Each exercise of the course is summarized by an image. The image is accompanied by a brief report including the approach, the conceptual support, the historical and philosophical references, as well as the pedagogical orientation and the strategy of the exercise within the whole course.

The originality of this pedagogical method is based on offering the maximum freedom to the student in terms of personal creativity, while always working within a framework and within defined limits for each exercise. This framework is designed in such a way that, in itself, it offers a complete methodological palette through which students assimilate the content of a subject such as Interior Design Projects that is so difficult to define and specify.

It does so in such a way that each exercise of this framework recreates the constitutive qualities of the architectural project: form, space, function, place, program, etc. In fact, each exercise is singled out based on some of these intrinsic qualities, enhancing the learning of these concepts, which most of the time would remain inaccessible. Thus, we stretch the conditions of each exercise to disparate and opposite extremes, to broaden the creative possibilities of the students.

The conclusion represents a tapestry which interweaves all the exercises. The exercises are justified not only by the mutual difference by which they are compared, but mainly by the substantial methodological originality which characterizes each exercise so that it forms a 'network' along with the rest. Hence the value of the framework of this paper, since it already constitutes what could be defined as 'the design of the design'.

Insisting on its peculiarity, it is also necessary to point out how at times the writing of this text takes a narrative aspect which affectionately describes the experience of a specific course (2015-2016). The text discourses through this narrative description believing that the paper does not lose its necessary investigative rigor. In fact, this narrative development is the framework in which the methodological approach is inserted, in a way that the specific experience of that course acquires a paradigmatic character.

In addition, the text seeks rigor in the multiple bibliographic supports and in the references that accompanied the course. In this sense, one fundamental reference of the theoretical classes, also of the whole approach, is the thesis developed by the teacher. This thesis investigates the difficult question concerning design methodology (Besa, 2015).

Precisely, this endeavor tries to offer a methodological approach, a common thread, to a subject that has traditionally been exclusively based on workshop-type practice or design studio development. However, we try to find this ground not only by providing theoretical or historical references, but rather the intention is to unravel design method. We make explicit the disciplinary tools that are necessary to undertake the difficult task of devising and creating an interior design.

Keywords: Pedagogy; Interior; Design Studio; Projects; Methodology.

Introduction

The abstract of this article constitutes an introduction to it. Once the clarifications of the abstract have been made and without further ado, the text begins here, through the description of each of the exercises of the course.

1. Exercises



Figure 1: Aula-Studio Exercise.

We start with the closest space: the classroom. Thus, we learn interior design from within. We imagine that our school becomes a seedbed for new companies for former students. Each student is offered a classroom so that they can condition it and install their own home-studio.

Phase 1: It is obligatory to carry out the distribution by forming volumes. It is not possible to design the partitions in a distributive way. Le Corbusier Composition Mode 3 is mandatory. Also, the following concepts: form/space, full/empty, figure/background, etc. (Caragonne, 1994). These conditions of the exercise break the innate tendency towards the most common and immediate distributive solution, and force the students to reconsider stereotypes and fixations.

Phase 2: Experimental and conceptual collage on the floor plan and the section of the classroom.

Phase 3: Collage of the collage. In this case it will be obligatory to carry out a distributive project, not volumetric. Once we have broken the stereotype, in the third phase we try to return to it, but getting the most out of it.

Theoretical classes during this exercise are about the first chapter of the teacher’s thesis (Besa, 2015, pp.20-77; 2021, pp.15-97) which is on the House in a Plum Grove by Kazuyo Sejima: Synthesis between a distribution/aggregation of volumes, between the whole and the parts, between the unity of the whole and the autonomy of each room. Introduction to the language of modernity: Le Corbusier, Mies, Wright, Kahn, etc., through the comparisons that this chapter makes with the House in a Plum Grove.

LO.1	Designing synthetically, starting by limited, known and immediate conditioning factors in the first exercise, which will increase progressively during the course, encouraging the ability to synthesize.
LO.2	Conceiving spatial projects with coherence, using tested conditions and models, extracted from historical and current references
LO.3	Assimilating historical and critical references, interpreting the disciplinary concepts related to composition and distribution via the experience of designing with them.
LO.3	Solving the same project from different approaches, contrasting the possibilities of each of the strategies and phases experienced, to learn how to escape conventionalism and stagnation in the creative process.
LO.5	Representing projects assuming disciplinary codes, starting the course with traditional manual drawing representation in this project.

Timing: September 9th – October 5th

Table 1: *Aula-Studio Objectives*



Figure 2: *Krisi-dwelling Exercise.*

‘The house of the Real Estate Crisis’ = creating a crisis with your own home.

We challenge our current way of thinking about the dwelling. To do this, we analysed each student’s own home, their own lifelong home, compared to two mythical houses from the history of architecture.

A1 format. Students cannot write anything, it is mandatory to express themselves analytically only through drawing.

Theoretical lectures during this exercise: The book 'Commentary on Drawings by 20 Current Architects' (Cortés and Moneo, 1976). In the first exercise we forced ourselves to 'jump through hoops', we were forced to learn a single disciplinary way of drawing. On the contrary, in this second exercise we realize how each architect has designed and created his/her own graphic expression. Thus, unlearning what has been learned, we move towards the analytical drawing that will be necessary to carry out this exercise.

LO.1	Recreating and recasting our unconscious conditionings thanks to the contrast offered by
LO.3	certain recognized historical references.
LO.3	Conceptualizing ideas graphically, without the help of any text, delving into the representation of the conceptual and synthetic thinking which is inherent to any project.
LO.2	Recreating schematically this relationship: form / conceptual structure / functional diagram / image / meaning. (The last two to a lesser extent in this exercise).
LO.3	Deepening and extending historical understanding through drawn graphical analysis.
LO.5	Integrating the rules and disciplinary norms (in this case, norms of representation) in a creative and original way by means of a personal interpretative subjectivity that nevertheless differs from the extremes: subjective-relative/objective-scientific.

Timing: October 5th – October 21th.

Table 2: *Krisi-dweling Objectives*



Figure 3: *Moving-mobile Exercise.*

Each student chooses a social situation he/she worries about: refugees, prostitution, poverty, corruption, etc. In addition, students will choose a location that is meaningful to them.

Based on the place and social situation, based on the place and programme, students will develop an ephemeral habitable alternative: shelter, habitable bicycle, cave, habitable storage room, habitable container, etc.

By ephemeral alternative we understand that students must think of alternatives for the construction of housing that are different from the traditional model. Ephemeral, then, is not understood so much as something short-lived or unstable, but rather as

something that transgresses fixation, stability, rigidity, immutability of traditional or conventional architecture.

Delivery: first, a file with the idea. Next, as a final delivery, a prototype model of 40x40x40cm max.

To carry out this exercise, we offer students multiple examples of habitable alternatives, interventions, exhibitions, examples of the work of architects such as Andrés Jaque, Santiago Cirugeda, etc. (Blasco 2017) (Cirugeda, 2018).

LO.1	Exceeding ones own creative limit by means of conceiving a project based on a partial reduction of the conditioning factors, assimilating this strategy as a possible tactical phase of design.
LO.2	Creating spatial imagery, symbolic and powerful, capable of projecting new social forms.
LO.4	
LO.4	Empathizing with extreme social situations, widening student's own origins, thus overcoming the recurrence of dominant stereotype.
LO.4	Projecting the ultra-type (future) as an extreme option that tries to overcome the mere stereotype.
LO.5	Instrumentalizing representation as a methodological tool, contrasting with the conceptual conceptions we already worked on during the course. In this case, we use modelling in its figurative sense, without resorting to drawing in the design process.

Timing: 21 October – 11 November

Table 3: *Moving-mobile Objectives.*



Figure 4: *Ametsetan Exercise. Ametsetan (= dreaming) proposed that students captured the home of their dreams.*

The previous year (during the 2014-2015 course), we proposed an alternative to the previous exercise ('moving mobile'), we did not go to the 'moving' future, but rather we went back to the most archetypal past.

First, we try to capture, through a drawing, a daydream suggested by the reading of 'The Poetics of Space' (Bachelard, 1965).

Next, we were inspired by a Zumthor lecture (2013) at RIBA, and we tried to express his 'phenomenology of presence' in a model. The work led us to project without

form, to project perceptually, to project the atmosphere, to project looking for the archetypal epitome, the type that goes beyond the mere stereotype.

The theoretical classes deepened the methodological position of Zumthor. First, we began the exercise by unquestioningly assimilating his method, and next moved toward a more critical understanding that unravelled and deconstructed the ultimate concerns of his position. Is it possible to design without form or was this form in fact an apriorism? (Besa, 2015, pp. 240-305; 2021, pp.323-407).

LO.1	Same as point LO.1 in the previous exercise.
LO.2	Creating projects phenomenologically (Zumthor 2013), overcoming formal/objective conceptions in favour of a spatial/conceptual intuition.
LO.3	Unravelling the contradiction that is inherent to all artistic creation, and to all design methods, with the intention of delving into the immeasurable depth that is inherent to every creative process.
LO.2	Exploring the poetic and symbolic depths of spatial creation, accessing the most personal intimacy, led by great poets of history.
LO.4	Recalling and remembering until evoking the (past) archetype as an extreme option that tries to overcome the mere stereotype.
LO.5	(the same consideration as in LO.5 in the previous exercise)
Timing: analogous to the previous exercise, however this exercise was carried out during the 2014-2015 course.	

Table 4: *Ametsetan Objectives.*



Figure 5: *Re-inventing Mies Exercise.*

RE-inVENTING Mies/ REinVENTANDO (reventando = detonating Mies / reinventando=reinterpreting Mies)

Each student makes a psychological description of a family unit: father, mother, uncle, son and two dogs, etc. Theoretical classes in this phase: Film ‘Kiss Whoever You Want’ (Blanc 2002), a promiscuous mess to ‘warm up’ and inspire a subversive ideation of family units.

Then, we make groups of two. The two families are forced to join together in one of the ‘three courtyard houses’ by Mies van der Rohe. If Mies’ house has been considered as representative of the current solipsism of the Nietzschean Superman

(Ábalos, 2000), we ‘detonate’ it by forcing two families to live together within it. Like the invented families, the two students have to ‘live together’ to do the work. A job that is precisely confined within a single floor space.

Theoretical classes in this second phase: ‘Persona’, film by Ingmar Bergman (1966). A conflicting fusion-identification of Bibi Andersson and Liv Ullmann, a psychological interaction which is similar to the one that occurs in the processes of design group work or in work with clients, a process that otherwise is impossible to simulate in a design studio.

CAD drawing mandatory. We set a very tight deadline; we force the situation and lead the project towards certain failure. Failure is also required when learning. Students will need to compensate for this failure in the last exercise of the first part of the course, ‘Basection’.

LO.1	Increasingly integrating a greater number of constraints, urging the resolution of a complex
LO.2	functional problem, while we confine the project to a single floor.
LO.4	Interpreting the programmatic needs of a hypothetical client simulated through the inescapable interaction with the group partner, as well as the inevitable integration of his/her programmatic proposal.
LO.4	Exploring the inherent conflict of any personal relationship (oneself, colleagues, group, client), with the intention of shaking up supposedly naive ideological assumptions and integrating the possibility that arises from said process.
LO.5	Assuming disciplinary codes when representing projects; moving towards CAD representation.

Timing: November 11th – November 25th.

Table 5: *Re-inventing Mies Objectives.*

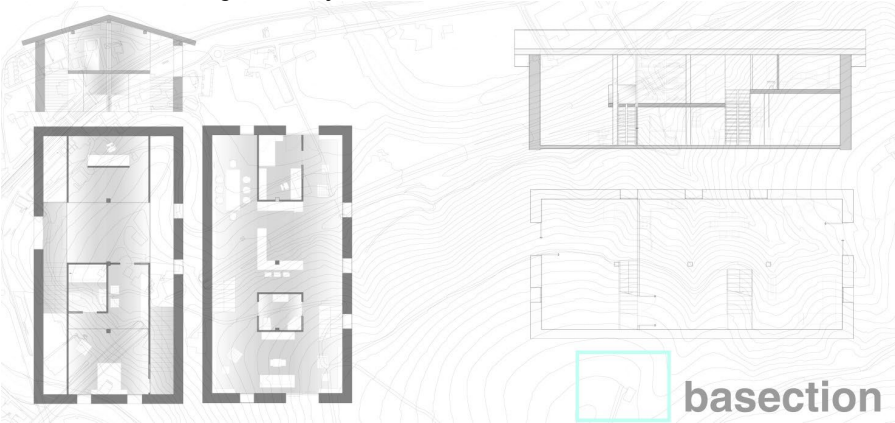


Figure 6: *Basection Exercise.*

(bas- = Basque root which means forest, wild, natural, farmhouse, Basque, etc. + section) (vasection has other connotations)

Each student chooses a contemporary living artist and develops a programme for their family. (In later years, not only did we work with the personality of the artist, but we even started from the analysis of their spatial conceptions.)

We give students some plans of a Basque farmhouse (bas-herri), with a sloping roof and different levels. They have to design an artist's home and their studio. If the previous group work was confined to a single floor space and students were forced to understand each other while working on a single floor plan, in this exercise, on the contrary, it is necessary to think in section and visualize in 3D.

We carry out this exercise through a plant + section + 'txurrimaketa' (=shabby model). Both the 'txurrimaketa', or working model, and the final model must be made using a single material: cardboard. In this phase of the course, taking into account that this is one of the first models that students do in their studies, we acquire a certain abstract capacity by forcing it to be constructed in only one material.

The last project of Projects 1 course. A very disciplinary project. Delineation by CAD is mandatory. It must be perfect, neat and very delicate, to be able to move on to projects 2.

Theoretical classes: Coronation Church. Fisac, 'the method' of the discipline (Besa, 2007-2008). Explanation of a 'check list' made from Fisac's questions 'what, when, where, etc.'. Beginning of the project: analytical memory, only written, using that check list model, drawing is forbidden.

LO.1	Increasing the number of conditioning factors by expanding the spatial limits that confine our conception to mere flatness.
LO.1 LO.5	Conceiving projects in 3 dimensions to increase the spatial view of those projects through the combined plan/section/model work, avoiding for the moment the axonometric constructions and avoiding computer programmes that, in most situations, far from drawing us closer, distance us from the required projective introspection (Besa 2015, pp. 210-213; 2021, pp.281-283).
LO.3	Exploring cyclical, divergent and convergent processes, typical of any creative process through disciplinary references (Fisac).
LO.3	Approaching projects divergently (through an initial analytical phase in which drawing is not allowed, compared to other projects in which it was not possible to write), with the intention of learning to integrate most of the conditions and determining factors of the project into the final convergent solution.
LO.4	Exploring the definition of the programme of the project (the briefing) via the identification of a possible client with the creative idiosyncrasy of the artistic world.
LO.5	Instrumentalizing representation as a methodological tool, completing the concepts we already worked on before this project. However in this case, we are moving towards a working model that is conditioned: this model has to be homogeneous and abstract, making it possible to conceive the project in its spatial essentiality.

Timing: November 25th – January 16th.

Table 6: *Basection Objectives.*

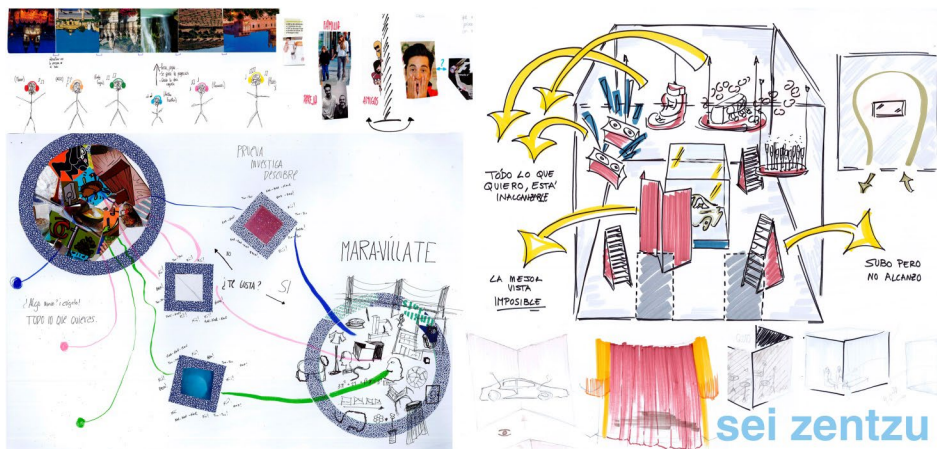


Figure 7: Sei Zentzu Exercise.

Sei zentzu (six senses): taste, touch, sight, hearing, smell... + Seven deadly sins: lust, greed, anger, laziness, envy, pride, gluttony. + We propose a generic building, that is, we do not provide a place or a venue as such. + Students have to sell a luxury car, inspired by one of the sins, creating a moving experience, including necessarily the five (six) senses. (The exercise of selling a car was experienced in the 'Event Design' course tutored by Merle Hensel and Gerogina Shorter in August 2010 at Central Saint Martins) =

Students have to create an experience, an event. It is not about creating a project, a decoration or a design. This time, and from now on, people –people and their action– will constitute our project. The difficulty of projecting a credible action becomes manifest; and moreover, drawing and expressing and making the action understandable with minimal textual reference.

Short project: two hour challenge.

We could not finish the project in a negative way, i.e. 'sinning'. Instead, trying to 'redeem' ourselves, we carry out a second complementary challenge, with a new theme: the 7 virtues.

As a more up-to-date and less 'retro' alternative, we present Baketik's IZAN proposal (Fernández, 2010): the maximizing of the dialogue, the maximizing of the empathy, the learning of human limitation, conscience, love, etc. How do we create a happening or an event that teaches these values in a real and experiential way?

LO.3	Extrapolating one of the constituent elements of the project, experience, focusing exclusively on it as a methodological strategy to break the limits with which we tend to initially approach projects.
LO.4	Integrating user experience into projects, until one understands the user participation as a fundamental element of interior design.
LO.4	Experiencing in ones' own project the fundamental transversal educational values of the human experience.

LO.5 Representing what is un-representable, expanding traditional limits of project communication, pushing its presentation towards subjective and experiential issues of action.

Timing: approximately one teaching week, in the month of February.

Table 7: Sei Zentzu Objectives.



Figure 8: Anteprojecting Exercise.

We define an exercise with different commercial premises: named A, B, C, D, etc. Each with a problem to solve: narrow premises, premises with more than one level, premises in the middle of a park, premises divided by a commercial passage, premises on the top floor of a tower, old premises with an entrance shared with the access to other houses, among other examples.

We develop several two-hour challenges. First day we raffle the different types of premises among the students, assigning one type to each student. They have to design a boutique.

The next day each student corrects the design of a partner. They make the correction that the teacher would make, marking the rubric and marking a copy of the work of the partner. The following day the 'challenge' continues: each student reinterprets and redesigns the project that they corrected the day before. The day after that, together with their partner, they make a group and they solve a new project in new premises.

Before this last step, we perform the following dynamic:

- Each student makes an A6 format booklet with several white sheets.
- Each student begins to solve the project in one of the premises.
- After 5 minutes, each student passes a picture of their work to the student next to them.

Each time we pass the notebook we reduce the time: first 5 minutes, then 2 minutes... finally 1 minute. Increasingly less and less time and, curiously, the less time we have, the better we do.

Theoretical classes prepare the next exercises: we work on the relationship between construction/projects and form/matter to prepare the ‘txiringito’ exercise. Related to the form/matter relationship and reflecting on the constructive complexity, we return to the teacher’s thesis, we explain the chapter on Scharoun and Gehry (Besa, 2015, pp.78-97; 2021, pp.101-129).

LO.1	Going through a complex framework of disparate conditions in order to arrive at a spatial
LO.2	and a synthetic conception that provides an original solution to the stated problems.
LO.3	Collaborating crosswise by sharing and assimilating the methodological strategies and skills of peers of different levels.
LO.3	Taking on board criticism and self-criticism as something normal, integrating evaluation and co-evaluation as key elements in the project process.
LO.4	Elaborating a programmatic proposition in a reciprocal process: the programme evokes ideas that resolve the place, and vice versa, the place constitutes a limit that forces us to re-elaborate our preconception of the programme. (In this case, we maintain the same programme and we pass it around different types of premises)
LO.5	Instrumentalizing representation as a methodological tool, speeding up the representative process to unsuspected extremes with the intention of reaching what would be unexpected and impossible solutions in a conventional logical-rational process.

Timing: approximately one teaching week, in the month of February.

Table 8: *Anteprojcting Objectives.*



Figure 9: *Txiringito Exercise.*

We assign each student a construction product or system: plasterboard, wood, aluminium composite, phenolic panel, etc.

In Judizmendi Park we carry out a summer expansion, a txiringito, of the Zabaltegi bar, managed by the institute for social integration IRSE.

In that way, we work on the constructive relationship between form and matter, placing ourselves in a specific site, with a strong symbolic-historical weight and, in

our case, also social significance. Besides, and although we study interior design, we sensitize ourselves to the problems of an urban location: the positioning, the scale, the routes, access. We echo the ‘Arrive, Cross, Stay’ by Javier Carvajal (‘llegar, cruzar, estar’ quoted in: Espinosa, 2017).

Afterwards, we held an exhibition at the Zabaltegi and its subsequent inauguration lunch.

The theoretical classes continue to delve into methodologies, we explain Siza, a very unique and singular example of our disciplinary wisdom (Besa 2015, pp. 98-163; 2021 pp.133-221). In addition, the method of hats, by Edward De Bono (1986), is explained to learn how to think about a project from different methodological positions, in a diversified way. This is also useful for the next exercise.

LO.1	Expanding the limits of interior design to the exterior, working on the function/meaning
LO.2	relationship in relation to basic issues such as architectural promenade, access, venue integration-assimilation, scale, etc.
LO.2	Integrating the function/form/meaning conjunction, in this case starting from the form/matter relationship, via the cooperation of both the Construction and the Projects subjects of the course (this cooperation has been carried out in subsequent courses).
LO.3	Transforming the constitutive ambiguity of every element into a strategic opportunity to achieve the coherent identity of opposites that initially were irreconcilable (Siza, in Besa 2015, 2021).
LO.3	Being able to extrapolate, be flexible with and use different design methods, in order to break deadlocks and stagnation in the project process.
LO.4	Collaborating with non-profit entities thus enabling an integration of transversal values and the participation of the school in society.
LO.5	Communicating one's own project directly, allowing different levels of access to it: idea/detail, professional/non-professional approach.

Timing: March 13th – May 5th.

Table 9: *Txiringito Objectives.*



Figure 10: *Ayunta-chunta Exercise.*



The students from the 3rd year construction course had collaborated with the Vitoria-Gasteiz City Council Senior Centres, suggesting ideas for the Zaramaga centre. We continued with and completed the collaboration, orienting our work towards more experimental positions. Then we held a common exhibition. The challenge even leads us to spend a morning with the elderly users, sketching ideas based on their experiences.

Cultural exchanges between immigrants and the elderly and between children and the elderly, to solve demographic problems. Exchange of tasks to face the financial crisis. Self-management to break institutional paternalism. Autonomy against dependent filiation. Self-decorative workshops and DIY to encourage involvement in renovating the centre. Collaboration with artists to participate in art-performances which could transform the city.

These are some of the ideas that we thought of, always with total empathy and sensitivity towards the elderly. We have drawn close to their daily life, to their problems, to their dreams and disappointments, to their yearnings and desires.

The theory classes explain Koolhaas’ strategies. Disregarding the subversive burden of the Dutch architect, we are interested in the social programmatic alternative of some of his proposals, as well as the communicative and populist content of his projects beyond his mainstream media interest. (Besa, 2015, pp. 164-239; 2021, pp.225-319).

LO.3	Interpreting the program as a method, the social potential as a project tool. (Besa 2015, pp. 222-231; 2021, 297-308).
LO.1 LO.4	Orienting the conditions of the project, in this case social conditions, towards experimental positions.
LO.4	Collaborating with public entities, integrating transversal values and thus participating in society.
LO.4	Interviewing a real client in a direct and open relationship, which enhances sociability against prevailing individualistic trends.
LO.5	Recreating the technique and tools of representation from the idea and originality of the solution of the project.

Timing: May 5th – June 8th.

Table 10: *Ayunta-chunta Objectives.*

2. everything, we have done

pencil outlines (aula-studio), cad outlines (basection, reventando a mies, txiringito)

floor plan project thinking (reventando a mies), section project thinking (basection)

projects designed emerging from the model (basection), projects built via the model (txiringito), projects defined only by the model (moving mobile)

figurative models (moving mobile), abstract models (basection), constructive models (txiringito)

analytical projects (krisi dwelling), 'projective' projects (the rest)

projects in which nothing can be written (krisi dwelling), analytical phases in which nothing can be drawn (basection)

projects without a written report (moving mobile), well worked out reports (basection, moving mobile, mies)

interior design projects (almost all), exterior design projects (txiringito, ayunta-chunta), graphic design projects (eskologo in Spanish version of the paper)

projects for 'elitists-artists' (basection), projects for ordinary people (ayunta-chunta)

projects in constrained sites (anteprojecting), projects without a site or in generic locations (sei zentzu)

purely disciplinary projects (basection, txiringito), experimental projects (moving mobile, ayuntachuta)

analytical techniques ('what, when, where' check list by Fisac), intuitive techniques (tear-out), techniques of methodological rigour (hats)

convergent processes (Mies, Fisac method), divergent processes (collage aulastudio, ayunta-chunta: interview with the elderly)

projects designed emerging from photomontage (ayunta-chunta, aula-studio), photomontaged projects (txiringito)

projects without any written or oral explanation (sei zentzu), public speaking work (seminars)

theoretical classes (all), theoretical classes on the construction/projects relation (txiringito), architectural theory classes (thesis), music classes (interspersed), cinema (reventando a mies), artistic movements, sculpture, painting, philosophy (all), theoretical classes about drawing (krisi dwelling), about graphic design (eskologo), about brand identity (commercial space, Projects 2), notes about typography (typographical ductus)

A1 format (krisi dwelling), A2 format (mies), A3 format (ayunta-chunta, basection), A4 format (pre-deliveries), A6 format (anteprojecting), circular format (txiringito)

projects in groups (neighbourhood premises, mies), individual projects (the rest), rotating projects (anteprojecting)

long projects, 6 weeks (txiringito), medium length projects, 3 weeks (various), short projects, 1 week (eskologo), very short projects, two hours (sei zentzu), extremely short projects, 2 minutes (anteprojecting)

projects conditioned by the location (txiringito, basection), projects without location (sei zentzu), projects conditioned by the location-programme (ayunta-chunta), projects conditioned by the programme (mies)

projects that design the programme (ayunta-chunta), projects with little programmatic charge (txiringito) defined programme (aula-studio, anteprojecting), programme to develop (moving mobile, basection, mies), variable programme (ibídem), variable location and programme (ayunta-chunta), variable location with fixed programme (anteprojecting)

3. Results and critical assessment

Results are represented in the images that accompany the exercises. Although they have been collected with the intention of making the activities explicit, in turn, these images demonstrate why the result is interesting. However, what is important is not so much the merit that some chosen images deserve due to their visual power, but rather the large number of images and, what is more important, the variety of students that are represented thanks to these images. Thus, in the list of the images, a large number of the students participate, avoiding the undesired situation of compiling projects that are exclusively the work of one or two students.

The diversity and variety of the result is also evident if we consider the distinctiveness of each one of the exercises and, more importantly, the substantive heterogeneity of the result achieved by each student. This avoids the typical Design Studio situation in which all the exercises seem similar in their solution, strategy and even in their form and style. In this case, the exercises respect an approach, a framework, some conditions and a common format that are all scrupulously accepted and demanded, while at the same time the variety and plural orientation of the solutions is clear.

However, this framework is not only meticulous in terms of its format, but rather the demands of each exercise have been designed in such a way that, just through their definition, they introduce students into the disciplinary method, while at the same time they enhance personal freedom, interest and creative subjectivity.

In this case, freedom at no time means taking liberties. The fact that we enhance the creative subjectivity of the student does not mean that we define it as a relativistic subjectivity. The creative subjectivity would be, in turn, enhanced by all the reading, artistic suggestions, films and so on; thus seeking to ignite interest and creative passion.

Furthermore, this position that chooses to divide the exercises into sequences and short steps is correct. In this way, we avoid apathy and stagnation in design processes. In this second year, in which logically the students still do not have enough resources, they acquire them through different steps and stages that must be overcome. This strategy avoids those rushed deliveries caused by the dreaded

end of project deadlines that upset the development of the course and the curriculum.

This strategy is enhanced by challenges and short exercises, such as those defined in Anteprojecting and Sei Zentzu, through which students acquire agility, immediacy and spontaneity in regards to the use and application of different tools and methodologies, as well as regarding the basic representation of preliminary projects.

However, and as a critical point, bearing in mind the future of the course, these short exercises must acquire more weight and a determining range in their evaluative consideration throughout the course. The reason being that the students will not be able to avoid the basic contents of the subject, that they will not be able to hide deficiencies that can be disguised based on extra dedication on their own or based on the insistent corrections with the teacher. These types of situations are more prone in longer exercises, even if they are designed in stages. That is why we consider posing small challenges or evaluative exams as very appropriate, precisely because in these short-term challenges we compensate another of the critical issues explained below.

In this pedagogy, the students pass through the methodologies that are given by the framework that they take on board in each exercise. They complete this tour not without some difficulty, of course. However, and although we always explain the meaning and objectives of each proposal, it is inevitable that the student at times will exclusively guess in a semi-unconscious way the deepest, the most purely methodological part of all that is taught.

A further and more complex step will be for students to take on board and integrate these tools to the extent that they are able to choose them and discern a differentiated use in a broader and more specific approach. Something that supposedly corresponds to the higher courses or to the final project. But nevertheless, this fact can also be encouraged and intensified, as far as possible, in the second year.

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Capitalist Production of Space and the Changing Role of the Architect

Pelin ÇETKEN¹, Belkıs ULUOĞLU²

¹ st Author's e-mail: pelincetken@gmail.com

² nd Author's e-mail: uluoglub@itu.edu.tr

Abstract

Capitalism has transformed objects of use-value that are in fact meaningful and useful things for individuals and societies into commodities defined with an exchange-value. The system is based on homogenization, which prepares the ground for commodifying subjects, places, and cities. Studying architecture as conditioned by the capitalist mode of production brings to question architectural objects to be considered as ordinary commodities and it calls for the redefinition of the architect.

Representation of the architect as a creative genius, an artist who produces unique architectural objects, dominates the medium in architectural history, architectural institutions (architecture schools, competitions, etc.), and architectural publications. Current state of affairs of the star architect establishes the exact equivalent of this artist-architect image with the way they present themselves, their designs, and their branding. However, the everyday life of contemporary, global, and capitalist urban environment consists of architectures defined by concepts and tools of industry such as speed, repetition, standardization, mass production, capital accumulation, large-scale construction, rather than unique architectural objects. These standardized, mass-produced architectures are often presented as part of the real estate business. They are not considered as "architecture" in conventional means, the architectural agenda is not involved in the representation of these other architectures and the kind of architect it involves as well.

This paper explores the organization of architectural practices of mass-produced, standardized architectures. It focuses on the design process of mass-produced, standardized architectures to investigate and explore their decision mechanisms and the decision-makers involved in the process. The primary purpose here is to uncover the definition of the architect within the context of capitalist production of space. The methodology of this study depends on the depiction of the decision-making process of large-scale construction companies by analyzing, through an interview, a typical role undertaken by a company's assistant manager who controls the design and production processes of large-scale mass housing projects in Istanbul. The principal aim of the interview is to question the decision-making mechanism of these projects and the decision-makers, to be able to define what role does the architect has in this process. In line with this problematic this research relates to the topic "Actors in Design Process" under "Dialogue 2: Co-Design in Architectural Practice" theme of the symposium "Architectural Episodes 02: New Dialogues in Architectural Education and Practice".

As a result, what is quite important here is that in the case of large-scale, rapid, anonymous, profit-oriented mass production, the company's assistant manager distributes the architectural design process among sub-contractors to increase the profit by gaining time. However, although what is officially apparent is that there is only one contracted architectural office, the assistant manager commissions different architectural offices to handle each part of the design and production process. The manager defines the limits of architects' decisions precisely. At the overall scale, the manager divides phases of architectural production according to their functions and distributes them among different roles that take place in this process, as if mimicking the efficiency of serial production. Moreover, this research gives us a ground to discuss "architecture of the kind-of architects" as a part of the capitalist production of space.

Keywords: *Capitalism; Mass production; Definition of Architect; Mass Housing*

Introduction

Representation of the architect in architectural historiography, architectural schools, and architectural media comes with the creative and genius artist image. This genre of representation of the architect still exists as if it is against the capitalist mode of production, with the unique, singular objects he creates, an understanding coming from the pre-modern era. Throughout related literature, the works of names such as Andrew Saint (1983), Dana Cuff (1989), and Robert Gutman (2010) call this image the "artist-architect image," which is also happening today. Especially since the late 1970s, star architects, who have existed within the framework of globalization and neoliberal economic policies, are establishing the exact equivalent of this image. Rem Koolhaas, Zaha Hadid, Frank Gehry, Norman Foster, and many more define the boundaries of being an architect with this artist-architect image and their architecture considered as being original, unique, and producing only the extraordinary. Well, is it so? Considering the architectural practices of everyday life, it is evident that cities do not consist only of unique and extraordinary architectural objects.

Capitalist mode of production has redefined the meaning of the city, the architectural object, and the architects. Large-scale, mass-produced, profit-oriented, repetitive, standardized, anonymous production of space and its sense of sameness is what establishes our daily lives today. While architectural historiography, architectural theory, schools of architecture, and architectural media do not give place to the representations of these architectures in their domain, they find a place in the field of the economy with their commodity value. While architectural historiography, architectural theory, schools of architecture, and architectural media, areas that determine the current definitions of architecture and architect, do not give place for the representations of these architectures, they exist with their commodity values in the field of economy. We do not question who the architects are here, and how they design these buildings. This study examines the design and production processes of mass-produced everyday life spaces. Questioning the decision mechanisms of these processes and bringing forth the architect's position in the process are the key

disputes of this research. Whom do we define as the architect in such a process, then becomes important?

This paper is part of a Ph.D. study that aims to define the architect's role in the capitalist mode of production and within the framework of mass and repetitive production (1). The methodology designed in line with this goal involves a case study which comprises interviews with managers and architects about the decision mechanisms of those construction companies carrying out large-scale mass housing projects either of state or private sector entrepreneurship in Istanbul, during the last twenty years. The Ph.D. thesis study referred here consists of the research and analysis of five construction companies and five architecture offices, one typical sample is chosen here among the construction companies to represent the changing role of the architect and the design decision-making process. The results of the study show, to design, produce and market large-scale, mass-produced housing projects requires an organization based on multi factors and actors. Corporate identity is one of the basic factors of the process, affecting the type of relationship when commissioning the architect. Land location and target group factors are interrelated factors of the decision-making processes dominating all financial decisions about the projects.

Depending on the analysis of all company manager's interviews, the architect profiles encountered in the decision-making process are architect as a concept developer, architect as an in-house team, architect as a businessperson, architect as a draftsman, and architect as a government official (Çetken, Uluoğlu, 2021). Besides these types, the analyses of the architectural office interviews also show that the architect as concept developer title hosts some other architect types as star-architects and small-size office architects. All these types are defined in the context of the corporate identity of the companies. Table-1 presents a matching of the design decision-makers of all the companies including types of architects and other prominent decision-makers of the design process. As illustrated in the table, it is possible that different architect profiles could work on the same PROJECT. According to the corporate identity of the company, they could interrelate during the process with each other or not. On the other hand, each company has other prominent decision-makers involved in the design processes of mass-housing projects. Those decision-makers are the ones who also determine the roles of the architects in the process.

Name of the Company	Architect Profiles Encountered in the Decision-making Process	Other prominent decision-makers
Company A	Architect as a Concept Developer, Architect as a Company In-house Team, Architect as a Draftsman	Company Owner, Assistant Manager
Company B	Architect as a Concept Developer, Architect as Company In-house Team	Company Owner, Marketing and Sales Department
Company C	Architect as a Businessperson, Architect as a Company In-house Team	Board of Directors, Marketing and Sales Department
Company D	Architect as a Company In-house Team	Company Owner
Company E	Architect as a Concept Developer, Architect as a Government Official	TOKI President, Vice Presidents

Table-1: The Decision-makers of Mass-Housing Projects according to company interviews analysis

The case presented here focuses in detail on the data, driven from an interview with the assistant manager of a large-scale construction company in Istanbul and the definition(s) of the architect pointed out by these data. This case is representative of a process wherein the company manager distributes the architectural design and production process among different roles and several subcontractors, in the favor of saving time and capital. Here, it is a distinctive example of how the other decision-makers become prominent in the decision-making process. By explicating the process, we see how the company manager introduces and leads different architectural offices for each part of the design process, including conceptual design, documentation for the contract drawings, construction drawings, and construction administration. The manager's holistic perspective about the design and construction process reminds us of the definition of the architect's role before modernity. Beyond the polished image of the star architect, we examine other role definitions for the architect determined by the capitalist production of space here. When it comes to mass and repetitive production, the definition of the architect's role becomes fragmented in accordance with function.

The first part of the study discusses the current definition of the architect under the capitalist mode of production based on relevant literature. The second part comprises methodology and is about the case study framework. Finally, the design decision-making process of the project is illustrated through the case study to analyze those mechanisms when it comes to large-scale, repetitive, mass production of space. The set-up of this case study is to reveal the architectural decisions made by other professions, to expose the "architecture of the non-architects" and the roles undertaken by "architects" through contemporary capitalist space production. According to findings, in the capitalist mode of production, the architect's role is redefined with the concepts of industrial production like speed, standardization, homogenization, repetition, large scale, capital accumulation, mass production. Thus, observing that there is such a production in which non-architects

are influential in fundamental decisions made within the process, who are not among the architectural experts.

Definition of “Architect” and “architect”

The agreed-upon representation of the architect in architectural history, schools, competitions, and media is based on the image of a creative, genius artist who makes special and unique productions. In contrast to this representation, according to Cuff (1989), working styles of architectural offices within competitive market conditions, the relationships established with customers, or the architectural objects they produce do not match this artist-architect image. She proposes that this image has continued as a myth for centuries, from past to present, based on concepts defined by Vitruvius, Vasari, and Ruskin, about the architect and architecture. However, the star-architects give the same sense as the artist-architect image. They are presented as independent of the capitalist production relations and as having control over the decisions alone and no other party being involved. On the other hand, the artist-architect image enables the creation of privileged architectural branding. Architects use this image as a strategy to create their brand identities, out of which their architectures are differentiated from the rest of all other productions.

According to Ponzini (2014), who investigates the commodification of architecture based on star-architect image, international architects have played an essential role in the branding of cities and the marketing of real estate products for the last two decades. Correspondingly, Tanaka (2013)'s research on New York shows that residences designed by famous architects tend to sell more than similar units in buildings designed by lesser-known architects. In their study, Fuerst, McAllister, and Murray (2011) talk about the increase in rental prices in office buildings designed by Pritzker Prize-winning or American Architectural Institute Gold medalist architects in the United States. Ultimately, the image of the artist-architect has become a tool to exist and survive in the global construction market.

Upton (2002;707) indicates two types of architecture set against each other; the first is “Architecture with capital A-the realm of high design and theory that forms one small corner of the larger world of architecture”; the second is architecture with a lower case-a, anonymous, ordinary, mundane architecture of everyday life. According to him, this fundamental distinction between (A)rchitecture and (a)rchitecture” began with Nicholas Pevsner's comparison between a “bicycle shed” and “Lincoln Cathedral.” Pevsner (1968) states “A bicycle shed is a building; Lincoln Cathedral is a piece of architecture. Nearly everything that encloses space on a scale sufficient for a human being to move in is a building; the term architecture applies only to buildings designed with a view to aesthetic appeal”. He draws the boundaries of which can be considered an architectural object through the sanctity, sublimity, exclusivity, and uniqueness, wherein daily productions are excluded. Upton (2002;709) defines this distinction as “mere building” and “piece of Architecture” furthermore he states, “other binaries derive from this original one: “high” or “academic” or “art” architecture versus vernacular architecture, progressive or modern design practices versus traditional or folk ones, elite versus popular

aesthetics, art versus craft.”. Bernard Rudofsky's (1987) work titled “Architecture without Architects” which has similar ideas to Upton and focuses on the boundaries of architecture while presenting examples of the ordinary, anonymous architecture of everyday life, makes us question what happens to be there that is beyond the institutional, professional architecture and their architects.

The distinction between (A)rchitecture and (a)rchitecture continues to be present in the capitalist production of space as well. Mass production creates anonymous, repetitive, ordinary, everyday life-oriented architectural objects and environments that are not considered (A)rchitecture. Uluoğlu (2012; 298) mentions that ontology of the architectural object depends on its "singularity" and "speciality" from past to present; hence she states that "Capitalism has caused the ontology in question to be radically shaken within the concrete practices of everyday life; it has transformed the architectural product from being a single and special object into a massive and ordinary/common commodity". According to Uluoğlu (2005), the special singular architectural object here turns into an everyday life commodity. This radical change affects the definition of the architect as well. Since the industrial revolution, the introduction of large-scale, standardized, profit-oriented, mass-produced architecture changed the organizational structure of architectural practices. Under global capitalist conditions, the organization of architectural services becomes more complex in line with the worldwide production of space. Architects as well become part of large construction firms with many other decision-makers, corporately and institutionally. This situation creates a slippery ground to define who the architect really is. Beyond the (A)rchitects and their sparkling (A)rchitectures, we have less information about the (a)rchitects of our everyday environment. The next section continues with the case study, analyzing design processes of mass housing projects and the role of (a)rchitects in this process, to see what is happening beyond the works of (A)rchitects and to find out what those other architectures and architects are.

Case Study: (a)rchitects of Mass-housing projects

The case study is based on an interview with an assistant manager of a large construction company in Istanbul, regarding the decisions and decision-makers of a mass-housing project's design and construction process. The research aims to examine a large-scale mass housing project's multi-actor and multi-factor decision mechanism to question the role of the architect and to find out who the architect really is and what is the definition of the architect, as the architectural object becomes a large-scale, mass-produced, profit-oriented everyday life commodity for the market? Within the scope of this research, the selected construction company (Company A) is one of the famous construction companies which produces and markets large-scale mass-housing projects with a high-volume business. Therefore, the main criteria of the study are that the interviewee is an assistant manager who has all-inclusive knowledge of the decision mechanisms throughout the design and production processes of the project. Here, the interviewee's statements are illustrated in Table-2 and Table-3 to represent the decision-makers and decisions

made throughout the design and construction process of the company's mass-housing projects to investigate the role of architects and who really would be considered as the architect/architects here.

The interviewee, assistant manager (AM) is a graduate of Business Administration and administers the company's Project-Business Development Department as well. He is responsible for fundamental issues such as preparing architectural briefs of the projects, controlling feasibility studies, and managing decision-making processes for the architect. The company owner is the company's CEO, the chairman of the board of directors, and the head of the sales & marketing department. Therefore, the interviewee must inform him about his decisions regarding the projects and get his approval. The questions of the interview focus on whether there is a decision hierarchy among these decision-makers and the architect's role in this organizational structure. In addition, the factors affecting the decision-making process are examined, mainly how they decide to work with the contracted architect and how they do this. Finally, the aim of the interview is to define the architecture and the architect's role under the capitalist production of space from the perspective of an assistant manager, a non-architect.

Decision Phases	Related Decision-Makers	Gives the Final Decision
Land Location	Business Development department, Project Development Department	Owner of Company, Assistant Manager
Contracting landowners	Business Development department, Project Development Department	Owner of Company, Assistant Manager
Feasibility Studies	Sales and Marketing Department	Owner of Company, Assistant Manager
Documentation of Project Brief	Owner of Company, Assistant Manager	Sales and Marketing Department
The decision of the Architectural Office	Owner of Company, Assistant Manager	Owner of Company
Documentation of Design Development	Architectural Office	Owner of Company, Assistant Manager
Documentation of contract drawings	Other Architectural Offices	Assistant Manager
Documentation of construction drawings	The Company Design Department	Assistant Manager
Documentation of Electrical and Mechanical Drawings	The Company Electrical and Mechanical Departments	Assistant Manager
Documentation of Sales Kit visuals	Sales and Marketing Department	Assistant Manager
Construction of Sales office-show flat	The Company Design Department, The Company Construction Department, Sales and Marketing Department	Owner of Company, Assistant Manager
Pre-launch sales	Sales and Marketing Department	Owner of Company, Assistant Manager
The decision of Production groups	Production Department, Purchasing Department	Assistant Manager
Bidding	Purchasing Department	Assistant Manager
Construction Process	The Company Design Department, The Company Construction Department	Assistant Manager
Revisions on construction	The Company Construction Department	Assistant Manager
Project delivery	The Company Construction Department	Assistant Manager
Management of sales	Sales and Marketing Department	Owner of Company, Assistant Manager

Table 2: The list of Decision phases and decision-makers of the process

According to the answers given by the interviewee, the related decision-makers and the ones who control, change, or approve those decisions of the process are listed in Table-2. As illustrated here, there are decision stages and related decision-makers of each stage. However, those related decision-makers do not make the final decision, the third column of the table includes the ones whose decisions are in priority. Among the decision stages, the interviewee states that the land development phase that includes the location of the land selection decision is one of the key elements of the mass housing projects' design and production decision-making processes. It is important to define what is marketable in that area. So, the sales and marketing department makes feasibility studies to find out the proper functions, apartment types, square meters, unit plans, and sales prices within the market economy framework of the selected land. As a result of this study, they obtain numerical data to convert it into an architectural brief. Finally, the CEO and the AM decide on the final version of this brief.

"Our company gets the conceptual project's copyrights at the beginning of the project by contracts. Unfortunately, none of the architectural offices does an excellent concept, perfect contract drawings, or perfect construction drawings. Instead, everyone has an area of expertise. So splitting the process into pieces makes sense. If the architectural office cannot manage the process in line with the contract, separating the process into fragments and finding other architectural offices to finish all the functions is the solution"

"The concept is important to us. After the concept is straightforward, anyone can do the rest from there. Thousands of offices can do contract and construction projects. However, in the concept project, the important thing is to like and be liked. That part is essential for the company. It is crucial to do a project that will be highly attractive. The project should give the customer the message, "buy me"; it must seduce them"

"We have got help with most projects. However, it seemed like someone else (contracted architectural office) was doing it. We (Assistant Manager and CEO) stepped in when we got stuck"

"The big crisis with contracted architectural offices is about the conceptual project 3D visuals produced as only a product of imagination. Our company has the principle of constructing the same visuality strictly. As a result, architects can come up with meaningless details during the construction phase. For instance, he puts a sun breaker in the image, but there is no surface to fit it. So how do we construct it? Then, I decide to make another structure to check it, and so on. Things like this can happen a lot"

Figure 1: Assistant Manager's speaking

Another significant decision stage is the decision of choosing the architectural office to be contracted. The company organizes an invited competition to select the office which produces the "most impressive visual concept" on the prepared brief. For the interviewee, after the conceptual design phase, thousands of other offices could do contract and construction projects. Therefore, to manage time AM separates the decision-making process into pieces and assign another architectural office that has become competent in preparing contract documents. After the approval of the project by local authorities, the company's architectural department produces the construction drawings by bringing together and overlapping the drawings obtained from the company's electrical and mechanical groups. The construction department is responsible for ensuring the contracts and technical specifications of production. They do not interact or interrelate with the first architecture office. However, from

the decision of plan types to material selection, AM is the one who audits all the decisions on design and construction at first.

Analysis of the Data

Company A's organizational chart regarding the decision-making mechanisms and the decision-makers of the mass-housing design and construction processes is presented in Table-3. In the table, color codes are defined with straight lines and dashed lines to represent the decision-makers and their effectiveness on decisions. The solid burgundy line states CEO, AM, and business development department who are influential in the stages such as land development, contracting processes, feasibility studies, project brief preparation, and selection of the architectural office. The solid black line expresses the contracted architectural office active in conceptual design and preliminary design decisions. The company works with different architectural offices according to the service they want to receive; as a result, we see the division of architectural services here.

During the construction phase of the process, the company's construction department, electrical and mechanical departments are overriding the decisions, which is represented here with a solid green line. While the company's architectural design department produces the construction drawings, the marketing department starts sales. This is presented with a parallel line to the main flow in the diagram. Before construction starts, the production team is organized, which is presented with a solid blue line here. The actors who are influential on construction phase decisions are the company's architectural design and construction departments; the electrical-mechanical groups are also effective, but secondarily, represented with light blue. Finally, after the construction phase, delivery of houses follows wherein the sales & marketing department is quite effective, presented with a solid red line. Throughout all the decision processes, the senior executive group's governance continues.

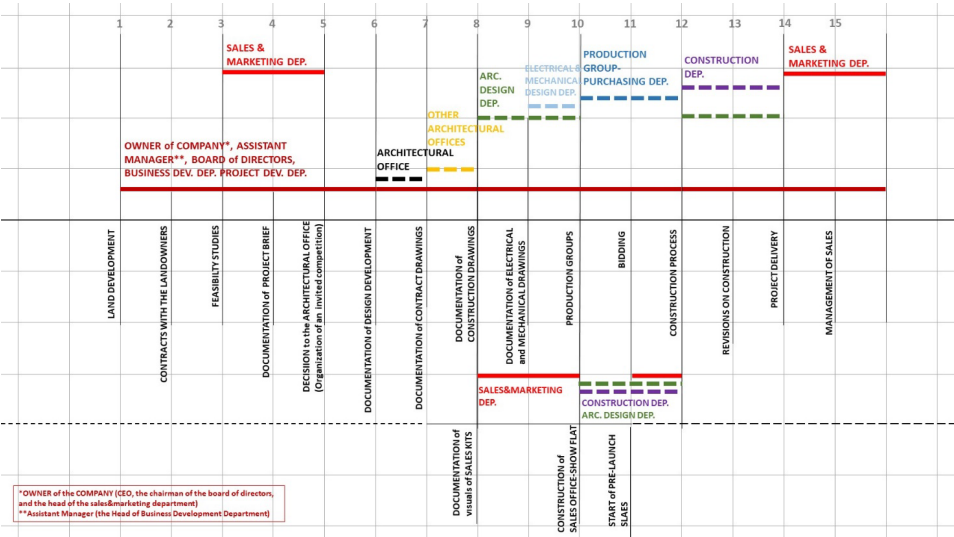


Table 3: Company A, Decision-Making Organizational Structure

In this case, the process is described by the interviewee as very mechanical, consisting of decisions and stages that follow one another. While the company's owner is the CEO and head of the sales and marketing department; the assistant manager is the head of the business development department which reveals that the company has a centralized structure and creates a two-person decision mechanism. Although the company has many departments with multiple actors, the primary decision-makers of the process are the owner of the company and the assistant manager. The organizational structure among the company's decision-makers establishes a sharp hierarchy. This intense hierarchy makes the effectiveness of other decision-makers in the process, especially the contracted architectural office, very limited. As seen in Table-3, there are 3 different architectural practice types: the architecture office for design development, the architecture office for contract drawings, and the company's architectural design and construction departments for integrating the project documents and responsible for construction. There are no interactions between the first architectural group and the company departments. Although all these architects are decision-makers, AM can ignore his decisions about the project based on time and cost limitations, aiming for a rapid, economic, profitable production. Here, remembering AM's statement that "It seemed like someone else was doing it when we got stuck, and we stepped in" becomes significant. Here, in Figure-2, through using the data of Table-2, the network mapping of the relationship between the decision-makers and decision stages also presents how the assistant manager becomes more effective than other decision-makers in the process.

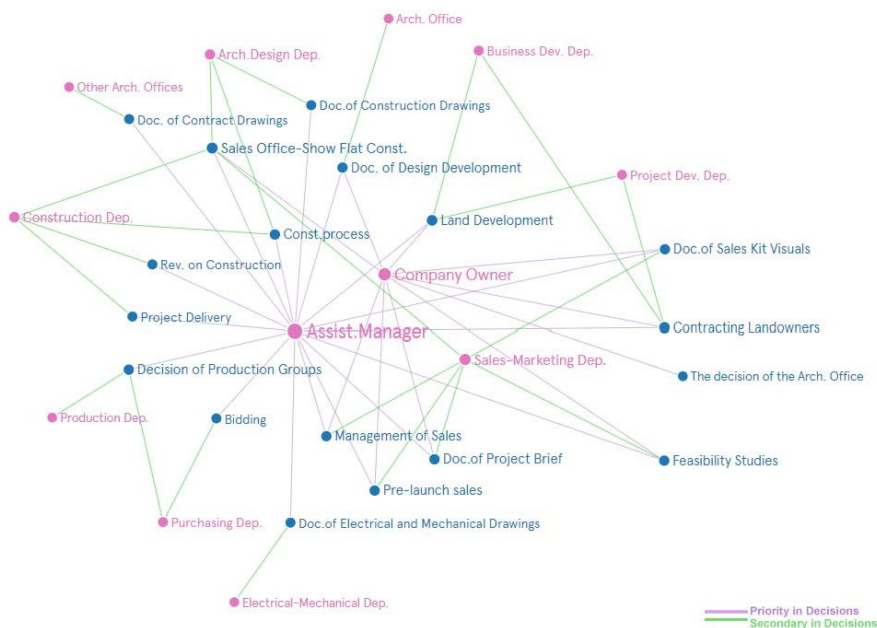


Figure 2: The network mapping of the relationship between the decision-makers and decision stages

According to AM, the architect is the one who produces the conceptual visibility that will ensure the sale of the designed product. Therefore, he defines the architect as a creative and genius artist. Furthermore, he states that everyone can do the documentation for contract drawings, construction drawings, and production on the site. However, the conceptual design phase and the architect who designs it is that which make difference, and which makes it marketable. Accordingly, AM emphasizes artist-architect image, but he also expects projects to be practical and within time and cost limits. If the conceptual projects are not realistic, then AM is the one who distributes the design and construction process to different architectural offices to manage the process. His role here recalls the definition of the architect of the pre-modern times, one master managing the whole work, which is an outdated one, but on the other hand except drawing the project, he takes place almost in every decision. Here, mass production of large-scale housing projects with their multiple decision-makers brings the question of who the architect is. Because, as in this example, beyond three types of architects, the decision mechanism shows AM also becomes a kind-of-architect of this process.

Conclusion

This paper aimed to explore the organization of architectural practices of mass-produced, standardized architectures. It focused on the design process of mass-produced, standardized architectures to explicate their decision-making mechanisms and the decision-makers. The primary purpose here was to inquire about the role of the architect, the role of others acting as architects, and redefine the architect in terms of capitalist production of space. The methodology is based on a case study, where the analysis of an interview with a large-scale construction company assistant manager who controls the design and production processes of large-scale mass housing projects in Istanbul is undertaken. The principal aim of the interview was to question the decision mechanisms and decision-makers of these projects to define who the architect is, and who acts as the architect. Analysis of data, driven from the interview is presented here in Table-3, which comprises decision-makers, their decisions, and the influence and effectiveness of these decisions over the process.

According to data received, company A's decision-mechanism of design and construction process has a centralized decision mechanism and a hierarchical structure. The owner of the company and the AM are two people who make and change all decisions in accordance with cost, time, and profit limitations. The decisions made by the architect are open to the intervention of any other decision-maker during the process. Beyond contracted architectural office architects, we see other architectural groups as decision-makers. However, it is also apparent that every decision needs AM's approval. From material selection to detail-design decisions, AM controls every decision. The decision process seems to imitate the serial production line, and AM divides that line into pieces and controls and supervises each line's decisions. For example, while the first group's role is "architect as a concept developer", the second group's is "architect as a draftsman" and the third group's role is "architect as an in-house team". All these architectural

groups are not interrelated in the design decision-making process. Because of the division of work, the contracted architectural office becomes alienated from what the company's in-house team designs as the construction project. That architectural group may happen to redesign that project within the orders of AM. As a result, the design becomes a production of AM, who in turn, acts as the architect.

AM expects appealing/glamorous conceptual production from the contracted architectural office to promote the artist-architect image, which in turn promotes the marketing of projects in a better way by acting as a branded marketing tool in capitalist production of space. In his opinion, the definition of the architect relates to creating effective, sparkling, artistic, iconic designs. Therefore, he does not consider the works of other phases as architectural production. However, he also claims practical and economic conceptual projects, not imaginary ones.

The findings show that there are many decision-makers in the capitalist production of space, and among all of them, it is hard to limit the definition of the architect with a single role and image. With mass-production, the artist-architect image turns into a feature for marketing the architectural object as a commodity. The decision mechanisms of the mass-housing project processes present similarities between the mass production of a bag or any commodity, so how do we define architecture and the architect here if we still believe that he is the artist creating special products? While capitalist production defines the architectural object as a commodity, the architect becomes the designer of that commodity. At that moment, we cannot discuss architecture within only the conventional limits of (A)rchitecture anymore; we need new concepts, new tools to define architecture here. In the production processes of mass-produced architectural products, we see that the "architecture of kind-of-architects" and the "architects of our everyday life" have the potential to be discussed here within the framework of capitalist production of space. We need to think and rethink the definitions of (a)rchitecture and (A)rchitecture in the capitalist mode of production.

Endnotes

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Stereotomy Reinterpreted

Ali Derya DOSTOĞLU¹, Belkis ULUOĞLU²

1st Author's e-mail: alidostoglu@gmail.com

2nd Author's e-mail: uluoglub@itu.edu.tr

Abstract

In this study, reinterpretation of the stereotomic construction system, which has a rich history but lost its former prevalence, is examined through selected contemporary architectural examples.

First of all, the definition of stereotomy is made, especially by referring to the term's etymology. Then, its characteristics as a construction system, which are defined here as the establishment of a part-whole relationship, translation into decoration and finally, space-making, are explained through a theoretical discussion.

Following the listing of the characteristics, the notions of stereotomic and tectonic are confronted, and defined as opposites, but also intertwining and even replaceable construction systems. This confrontation is important, especially for having a better understanding of what a stereotomic reinterpretation stands for today.

After defining the term, outlining its characteristics as a construction system and positioning it in the context of its relationship with tectonic, it is mentioned that stereotomic loses its importance as tectonic gains weight. As a matter of fact, especially after the emergence of new materials and techniques after industrialization, stereotomic examples became less apparent, while tectonic ones, using reinforced concrete, iron or steel, came into prominence.

In order to illustrate and deepen the discussion, three contemporary architectural projects, 35 Green Corner Building by Studio Anne Holtrop, Jingdezhen Imperial Kiln Museum by Studio Zhu-Pei and Millet Covered Bazaar by Per Se Architecture, are analyzed respectively, as contemporary stereotomic experiments, or rather, reinterpretations. Each project is examined by taking into consideration the term's definition and characteristics. Moreover, documents including technical drawings and photographs serve to found a basis for the said analysis, which aims to present these projects as manifestations of an ancient but reinterpreted construction system, that winks at the future, with the help of contemporary means.

Finally, reinterpretation of stereotomy is differentiated from a literal application of this construction system, by emphasizing the use of new materials and techniques, and the merging of stereotomic and tectonic. In fact, it is by establishing a mutual relationship between these two construction systems, that stereotomy can be reinterpreted.

Keywords: *Stereotomy; Tectonics; Construction; Reinterpretation*

Introduction

The stereotomic construction system, which became more and more visible in the current architectural literature, in both printed and digital media, offers a rich discussion ground in the context of architectural theory of tectonics. In this study, it is desired to expand the boundaries of this ground, by analyzing three recent projects that utilize current design and construction methods.

First, the definition of stereotomy will be made and its characteristics as a construction system will be listed. Then, it will be mentioned that tectonic construction, which will be positioned as stereotomic construction's opposite, becomes dominant with the effect of Modern Architecture, pushing stereotomy into the background.

Finally, emerging stereotomic reinterpretations will be exemplified with 35 Green Corner Building by Studio Anne Holtrop, Jingdezhen Imperial Kiln Museum by Studio Zhu-Pei and Millet Covered Bazaar by Per Se Architecture, which will be discussed as up-to-date cases that show stereotomic features through their components. In order to be able to analyze the aforementioned buildings, documents including technical drawings and photographs will be examined. In this way, each project will be positioned within the architectural theory of tectonics, which is still up-to-date even though its origins date back to the 19th century.

1. Stereotomy: Definition and Characteristics

1.1. Definition

Stereotomy is derived from the Ancient Greek words *stereos* meaning solid and *tomia* meaning cutting (Frampton, 1995, 5). In fact, the expression "cutting solids" does not directly refer to any material etymologically. However, when looking at its common usage, it will be seen that the word stereotomy is often used to refer to stone cutting. What is important, however, is that solid objects, either wood, stone or earth, regardless of the material, are first cut and then joined to form complex geometries.

The frequent use of the term stereotomy within the area of descriptive geometry is due to the fact that the construction system in question is often concerned with the projection of three-dimensional solids onto a two-dimensional plane. Representing solids on such a plane by means of parallel projection and perspective is necessary for designing their cutting and clustering (Wikipedia, 2021).

1.2. Characteristics

Since the definition of stereotomy has been made, it would be appropriate to outline this construction system's characteristics. In this way, it will be clear why 35 Green

Corner Building, Jingdezhen Imperial Kiln Museum and Millet Covered Bazaar are chosen as contemporary stereotomic case studies.

First of all, it should be emphasized that stereotomy, by definition, is based on constructing by stacking or carving solids. Nevertheless, it does not refer to any specific material. Secondly, stereotomy can work from the part to the whole or from the whole to the part, either from the joining of the cut and piled solids or the carving, emptying of the masses. However, in order for it to be evaluated in terms of a part-whole relationship, its stereotomic traces, in other words, its decoration consisting of its texture and mouldings, has to be legible. Finally, stereotomy is able to make space, by stacking or carving.

In addition to these characteristics, for defining and recognizing what is stereotomic, it is necessary to refer to the relationship between the stereotomic and the tectonic. As a matter of fact, it is possible to discern tectonic characteristics in a stereotomic building which possesses one or all of these characteristics, or vice versa, a rather tectonic building with stereotomic features.

1.2.1. Establishment of a Part-Whole Relationship

It is possible to consider the joining of the cut solids to form complex geometries as the parts forming a whole. However, reading the stereotomy only as a linear relationship from the part to the whole will present a limited view. As a matter of fact, there may be a stereotomy going from the whole to the part. So much so that constructing by carving an integral body also corresponds to a stereotomic approach. After all, in both cases, there is a construction activity based on cutting solids. It is possible to illustrate the fact that stereotomy is a process that sometimes goes from the part to the whole, and sometimes from the whole to the part, with the help of two examples: For the former, we can think of a structure built with walls made by piling up the cut stones, and for the latter, we can refer to a cavern composed of carved volumes.

1.2.2. Translation into Decoration

It is possible to state that in stereotomy, structural and material essence can be read through decoration which reflects the construction system. Nevertheless, for the establishment of that relationship, legibility of the decoration is very critical; since, it is by seeing, appreciating the way the blocks have been assembled to form a stereotomic component, or in contrast, the way this unit has been carved, that this reading can occur. In fact, stereotomic decoration has to be borne out of, translated from the structural and material essence (Defilippis, 2000, 951-954).

Again, according to Defilippis, in stereotomic architecture, there are two decoration methods: Texture and mouldings. While texture is related to surface qualities, the mouldings address substantial, material qualities. In other words, while the former emphasizes the planar, the latter focuses on the depth (Defilippis, 2000, 954-957).

What is meant with texture in the context of a stereotomic wall, refers to the way the blocks have been arranged, or stacked (Figure 1). What is critical with mouldings however, is that they belong to the wall mass. This time the emphasis is not on the

surface, but rather on the thickness of the wall. Indeed, in order for the thickness to join the equation, the wall's essence, lying behind the surface, has to be uncovered. Therefore, in contrast with the texture -which is based on the idea of piling up of materials in such a way to create surface patterns- the decoration has to follow another geological logic: carving (Figure 2).

In fact, it is possible to relate a stereotomic component's behaviour in the context of the part-whole relationship, its status as an operation of stacking or carving, to the way it is decorated, either with textures and mouldings.



Figure 1: A wall detail from Machu Picchu, exhibiting the texture on the surface (Wikimedia Commons, 2020).



Figure 2: The mouldings on Pantheon's dome (Wikipedia, 2022).

1.2.3. Space-making

In his passage entitled “The Two Main Factors in the History of Stone Construction”, the 19th century German architect and theorist Gottfried Semper claims that “all events throughout architectural history can be divided into two major groups defined by the manner and extent to which stone construction embodied an architectural-spatial idea” (Semper, 2006a, 552). According to him, while the first group includes stereotomic examples “that merely employs the cutting of stone” (Semper, 2006a, 552), the second one consists of works in which the spatiality is a direct result, an expression of the stone construction. Semper relates the prominence of this second group of stone construction, to the use of various spatial tools, such as “joint cutting”, “the arch” and “the vaulted ceiling” (Semper, 2006a, 552).

It is critical to note that Semper differentiates these two stereotomic groups by considering their respective relationships with tectonic, which will be the topic of the following part. According to Semper, in the first group, “the role assigned to stereotomy (and, in the final analysis, stone cutting), was only *subservient*”, in so far as -excluding the examples built by the piling of stones- it was either used as a replacement for the -originally- textile dressing, or for building a tectonic framework in stone. Indeed, it is possible to say that in both of these cases, stereotomy is obscured by a desire to replicate a fundamentally tectonic operation.

Nevertheless, in cases where new spatial tools were introduced, stereotomy started to refer only to itself, in such a way to directly generate a space, in Semper’s terms, “a mighty spatial art” (Semper, 2006a, 553) based on its own intrinsic qualities. Historically, stereotomy’s ability to make space, is a result of its relationship with descriptive geometry. As mentioned previously, while defining stereotomy, it was with the help of descriptive geometry, by reflecting three dimensional objects onto planar surfaces, that the way solids would be cut and stacked (for instance, in the form of arches or vaults) was defined.

1.2.4. Stereotomic and Tectonic

Since stereotomy’s characteristics have been defined, at this point, it would be appropriate to look at the notions of stereotomic and tectonic together, in order to have a better understanding of what a stereotomic reinterpretation stands for today. For this, the basic building components, which Gottfried Semper described as the four elements of architecture, should be mentioned. The four elements of Semper are listed as roof, perimeter wall, foundation and hearth (Semper, 2015). According to Semper, the remaining three elements surround the hearth in a way that protects it from external threats. Although this basic form of association does not change, which element will gain weight varies from culture to culture.

It is also possible to group the four elements within themselves to correspond to two construction systems: “stereotomics of the earthwork” and “tectonics of the frame” (Frampton, 1995, 5). Kenneth Frampton describes tectonic as a construction system where “lightweight, linear components are assembled so as to encompass a spatial matrix” (Frampton, 1995, 5) and confronts it with stereotomic, which he defines as a construction system “wherein mass and volume are conjointly formed through the repetitious piling up of heavyweight elements” (Frampton, 1995, 5).

This contrast is well exemplified in the wall, one of the fundamental building components. So much so that in German, two different words are used for the two wall types: *die Wand* for the dividing / tectonic wall and *die Mauer* for the load-bearing / stereotomic wall (Frampton, 1995, 86). According to Semper, dividing wall forms the origin of this building element; whereas the emergence of the load-bearing wall comes much later. This order of priority in Semper cannot be explained only chronologically (Koolhaas, Boom, 2014, 3). Not being necessary is another element that makes the dividing wall stand out. As a matter of fact, for Semper, when the requirements such as security and durability disappear, there is no need for a load-bearing wall. However, the dividing wall is a component that is used independently of necessity, to make space (Semper, 2006b, 537).

It should be emphasized that the relationship between stereotomic and tectonic is multidimensional, although they are often presented as opposite construction systems. In fact, sometimes the two construction systems intertwine and sometimes they replace each other. Without underlining this situation, it is not possible to exemplify current stereotomic experiments and position these examples within the architectural theory of tectonics.

2. Stereotomic Reinterpretations

Stereotomy is a construction system as old as human history. It can be said that the origin of the duality between stereotomic and tectonic systems goes back to the cave and the tent. However, it should be emphasized that the balance between these two has deteriorated in favor of the latter, especially with the emergence of new materials and techniques after industrialization. Materials such as iron, steel and reinforced concrete have dominated frame systems, reducing the prevalence of stereotomic architectural examples. Qualities such as secureness and robustness, which Gottfried Semper referred to as "necessity" (Semper, 2006b, 537), that used to be embodied in stereotomic structural components, have gradually left these components. In particular, Modern Architecture has spread each function on a separate layer, scattering the stereotomic mass. It is no longer easy to talk about walls built with solids cut to be piled on top of each other or caves carved to form cavities, so much so that the wall (Semper's *die Mauer*) as a stereotomic component, can now be considered dead (Forty, 2013, 8-17).

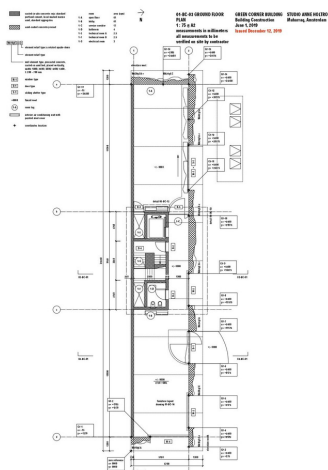
Nevertheless, a new stereotomic architecture that also makes use of current design and fabrication methods has become increasingly popular in the architectural media (Sarkis, 2017, 101). This emerging popularity is no surprise, since contemporary techniques working with solid modeling is more compatible with stereotomy than tectonics. Procedures such as cutting, piling and carving, which were challenging operations previously, are considerably facilitated with the help of digital means. As for the fabrication, CAM (Computer-Aided Manufacturing) technologies allow to easily translate CAD (Computer-Aided Design) drawings into actual fabrications. This way, a wide range of stereotomic reinterpretations, contradicting the tectonic, rather Modern examples, can be on display.

It is important to position these recent examples, which contain the characteristics of traditional stereotomy but blend them with the needs and means of the present, within the theory of architectural tectonics, dating back to the 19th century, again to Gottfried Semper and Karl Bötticher (Schwartz, 2017, xxxvi). In this way, it is possible to establish a theoretical background for the said reinterpretations. In this study, it is desired to establish such a connection through analyzing three case studies, as stated at the beginning. Of course, in order to achieve this goal and to position today's stereotomy within the theory of architectural tectonics, the selection of the buildings to be analyzed is important. First of all, why the structure in question is stereotomic has to be examined in the light of the definition and characteristics explained above, in line with the analysis of the technical drawings and photographs belonging to the projects. Likewise, it should be questioned at the end, how these projects benefit from current design and construction methods and new materials.

2.1. 35 Green Corner Building

35 Green Corner Building by Studio Anne Holtrop (1), located in Muharraq, Bahrain and completed in 2020, will be the first stereotomic reinterpretation example to be analyzed. The building works as an art collection storage for Sheikh Ebrahim Center, a local cultural institution. It has to be mentioned that it is part of a big-scale urban renovation project, called the Pearl Path Project, referencing to the city's pearling history. The name "Green Corner" comes from the neighboring vertical garden designed by renowned landscape designer Patrick Blanc (Studio Anne Holtrop, 2021).

As can be seen below, the building consists of four similar floor plans, including two identical rooms and a core in-between. Because of the shape of the site, it is distinctively narrow, which resulted in an emphasis given on the façades (Figure 3).



Ground floor, building construction, scale 1:75 @ A2

Figure 3: 35 Green Corner Building's Ground Floor Plan (Studio Anne Holtrop, 2021).

At first glance, it is possible to claim that 35 Green Corner Building, by definition, is a perfect example of a certain type of stereotomy, based on the piling up of building blocks, sand-cast concrete panels, to be more specific. However, in reality, it is neither the result of stacking “cut” solids, nor the concretization of a literal act of carving. In fact, it can be said that the building stands somewhere in-between and attempts to blend these two distinct operations. In a way, it can be summarized as the piling of randomly carved solids.

This in-betweenness can be explained furthermore, by reading the building in the context of a part-whole relationship. It can be said that 35 Green Corner Building works from the parts to the whole. It is the culmination of the said sand-cast concrete façade panels, aluminum-framed windows and perfectly shaped concrete floor slabs, carried by the panels themselves. It was mentioned previously that going from the parts to the whole is generally attributed to an operation of stacking, and the one going from the whole to the parts, to an operation of carving. Nevertheless, in the case of 35 Green Corner Building, this base logic is reversed. As a matter of fact, here, each of the sand-cast panels are manufactured on-site and reflects the earth’s surface around the building. In other words, poured concrete is carved, following the site’s topography, in an improvised way. Produced that way, each panel is then stacked to its predetermined location.

In terms of its decorative aspects, 35 Green Corner Building is a very distinct example. It is clear that the sand-cast concrete panels are a direct reference to a monolithic architecture, or rather, considering their dimensions, a cyclopean one (Figure 4). The joints between them are left intentionally visible, in such a way to make the building’s texture a direct parameter of its decoration. In a way, the verticality of these joints going from slab to slab, balances the building’s dominant feeling of horizontality, resulting from the lecture of the sharp edges of the floor slabs. In the case of 35 Green Corner Building, mouldings also are an important aspect of the building’s decoration. Along the edges of the window apertures and on the corners, the panels’ profiles are exposed, in such a way to make the depth, a part of the equation.



Figure 4: 35 Green Corner Building’s Front Façade (Studio Anne Holtrop, 2021).

It has to be underlined that 35 Green Corner Building is an example which illustrates the way stereotomy can make space. Taking the site's narrowness into consideration, the design team made the depth of the façade part of the building's spatiality, as can be seen in the project description: "The plan is very shallow in-depth and has one long main facade with two short-end facades. With the shallow depth of the plan, the facade itself is the main spatial element" (Studio Anne Holtrop, 2021). As Semper explains, the spatiality is one of the aspects which differentiates a certain type of stereotomy from the ones dominated in reality, by a tectonic behaviour (Semper, 2006a, 552). At 35 Green Corner Building, the stereotomic wall is both structural and decorative. It is no longer a scattered architectural element, but rather a reunited component, that is able to make space.

2.2. Jingdezhen Imperial Kiln Museum

Jingdezhen Imperial Kiln Museum is located in the city of Jingdezhen, at China's Jiangxi Province. The museum, designed by the architectural firm Studio Zhu-Pei (2) was opened in 2020. It is in the historical center of Jingdezhen, adjacent to Imperial kiln ruins. Jingdezhen has a long tradition of pottery, which makes kiln a prevalent element in the city and a fundamental reference for the design of the museum (Han, 2021).

It can be said that the Jingdezhen Imperial Kiln Museum is designed as a cluster of vaulted volumes, creating courtyards in-between (Figure 5). As the floor plan shows, these volumes have all different sizes depending on their positions on the site and their functions. The design team created a museum trajectory, by connecting these vaulted spaces through arches and passages.

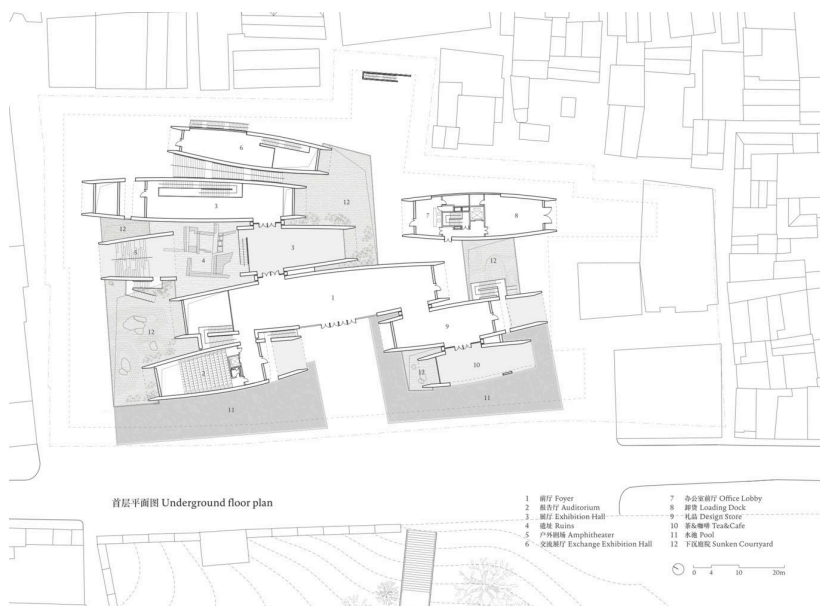


Figure 5: Jingdezhen Imperial Kiln Museum's Ground Floor Plan (Han, 2021).

Jingdezhen Imperial Kiln Museum looks, by definition, like a stereotomic case where cut solids, here, a mixture of old and new bricks, are stacked to generate the volumes. Nevertheless, it has to be mentioned that by vaulting, the design team managed to create a cavernous atmosphere, which would normally be obtained by carving. By focusing on the bricks, one sees a stacking activity, whereas by focusing on the whole volume itself, one can think of a carving operation. In other words, the location of focus influences the perception of the volume. It can either be considered as a result of stacking the parts to obtain the whole, or an emptied whole to create parts within. Nevertheless, it has to be mentioned that this rather phenomenological discussion has to be the topic of another study.

In fact, it is possible to say that the exposure of the bricks is the principal characteristic of the Jingdezhen Imperial Kiln Museum's decoration. By blending old and new bricks, the design team managed to generate a rich texture, merging different colors, tones and even time zones. The idea of recycling bricks is actually a tradition of the city of Jingdezhen, since, the brick kilns were being demolished periodically in order to keep their thermal performance. This constant activity of demolition and reconstruction provided the city with high amounts of brick, as building material (Han, 2021). The vaulted volumes are pierced with arches on their long edges, exposing the thickness of the brick shell (Figure 6). However, here, the visibility of the thickness is not a result of the usage of the mouldings, but rather a consequence of the intersection of two geometries.

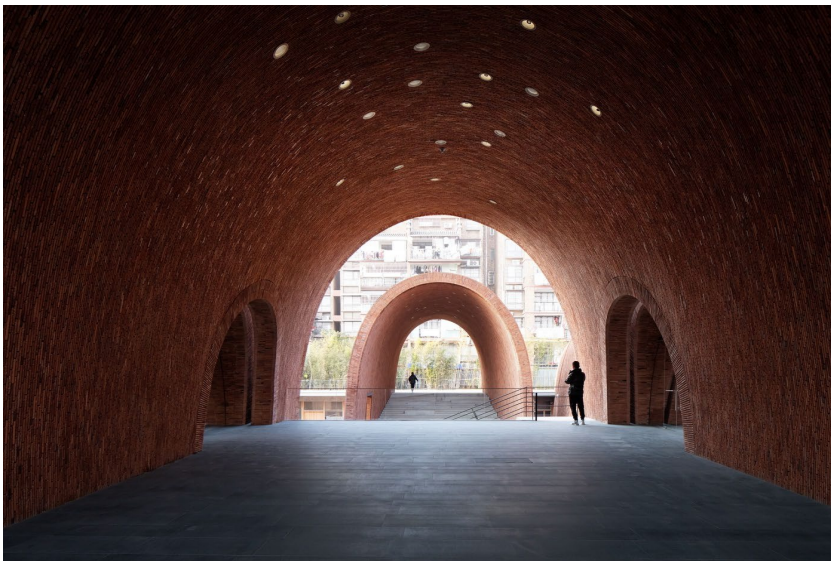


Figure 6: Jingdezhen Imperial Kiln Museum, view from the open vault exhibition space towards the amphitheater (Han, 2021).

Jingdezhen Imperial Kiln Museum is an agglomeration of brick vaults and arches. Vaults make the space, whereas arches define the entrances, exits and connections. In fact, the museum can be considered as a literal application of a stereotomic space-making, based on the combination of these two geometries. In the project description, the architect talks about the formation of a traditional brick kiln and explains that it is built with a special technique, without using any

scaffolding. With the help of its thinness and lightness, the brick allowed for “a maximum interior space with minimum materials” (Han, 2021). Nevertheless, differing from this tradition, at Jingdezhen Imperial Kiln Museum, the vault is based on a sandwich system, consisting of two layers of masonry brick and an additional layer of concrete poured in-between (Han, 2021). Therefore, it is possible to argue that here, we see a composite system, reinterpreting a traditional construction system by adding a new material within.

2.3. Millet Covered Bazaar

Millet Covered Bazaar by Per Se Architecture (3) is located at a newly established neighborhood in the Yıldırım District of Bursa. It contains a series of shops looking towards the main avenue and bordering an entrance square, along with 230 mobile and 12 fixed stalls at the back (Figure 7). The service units, consisting of a kiosk, toilets, prayer rooms and a control room, are placed in the triangular area between the sloping edge of the plot and the right-angle geometry of the bazaar, together with the vehicle ramp descending to the covered parking lot underneath (Per Se Architecture, 2022).

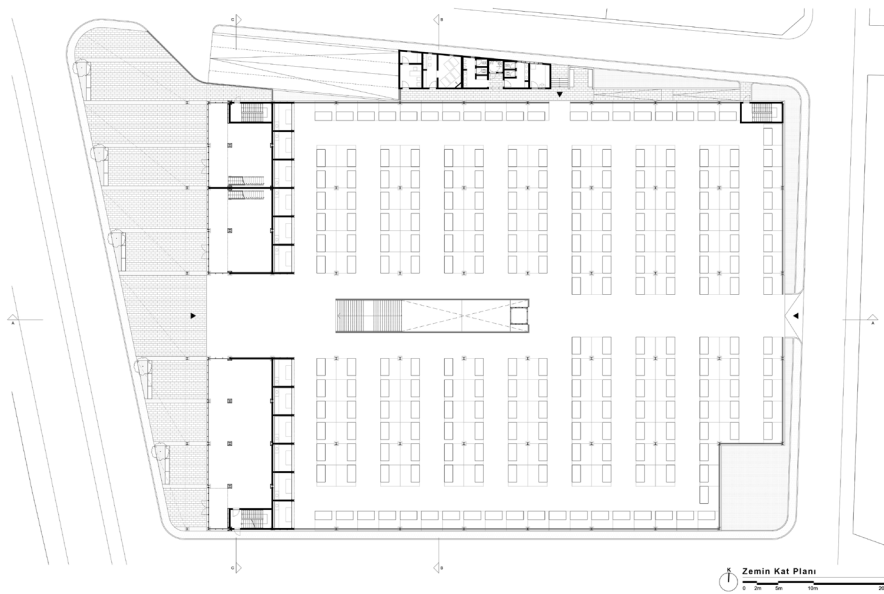


Figure 7: Millet Covered Bazaar's Ground Floor Plan (Per Se Architecture, 2022).

With its delicate steel structure, Millet Covered Bazaar looks like a tectonic building by definition. However, it is possible to discern stereotomic details and behaviours spread within the bazaar: The walls of the structure containing the shops and one-storey masses containing the fire escapes and service units are all formed with 60 cm wide cellular concrete panels, in a single-layered manner. In this way, a solution that is both easy to implement and maintain, has been achieved (Per Se Architecture, 2022).

The panels within the shops' steel structure are used as infill; while the ones in the single-storey buildings form high-density, masonry walls (Figure 8). These high-density wall panels are stereotomic building components, used with a simple principle of stacking. They are laid one by one, vertically, above the reinforced concrete foundation, and supported with construction bars. As a matter of fact, it is possible to consider the construction process of these one-storey buildings as the culmination of the parts to obtain the whole.



Figure 8: Millet Covered Bazaar, cellular concrete wall panels forming load-bearing walls (Per Se Architecture, 2022).

At Millet Covered Bazaar, exposure of the cellular concrete panels adds a textural quality to the building. The gaps at the joints between the panels, as well as the pores on their surfaces, are filled with a mortar of the same material. In this manner, the joints can be left visible, allowing to make the modular and rhythmic understanding of the steel structure, readable on wall surfaces as well. In order to maintain this readability, the panels are finished without plastering, but only with a grainy paint (Per Se Architecture, 2022). Although not structural, the infill wall panels of the retail building have the same textural quality (Figure 9). Besides texture, mouldings are not used to enrich the decoration.



Figure 9: Millet Covered Bazaar, cellular concrete wall panels between the steel structure (Per Se Architecture, 2022).

It is possible to talk about a space-making stereotomy, in the context of Millet Covered Bazaar's one-storey buildings. Single-layered walls forming these additional and independent volumes are both structural and decorative. However, the ones surrounding the side and back façades of the retail building can be said to be subordinated to the principal tectonic structure consisting principally of H section columns, supporting double inverted and parallel chord steel trusses. Even so, although not space-making, this secondary position makes the relationship between cellular concrete infill wall panels and steel structure, a concrete confrontation between the tectonic and the stereotomic.

3. Conclusion

Finally, it is possible to say that none of the projects analyzed above can be seen as literal stereotomic applications, but rather stereotomic reinterpretations. First of all, it is important to emphasize that, all three projects use materials other than stone. As mentioned at the beginning, the term stereotomy does not specify any material. However, it is obvious that, in the literature, it refers to the stone masonry construction in general. Moreover, the first and the third projects can be said to offer innovative solutions that transform materials that do not necessarily behave in a stereotomic way, into such building components. Also, by blending stereotomic and tectonic systems, they all allow to adapt this ancient construction system to contemporary needs and means.

The first one, 35 Green Corner Building blends the stereotomic processes of stacking and carving. It uses sand-cast façade panels, which are first carved by the surrounding earth surface, and then stacked between reinforced concrete floor slabs. The second one, Jingdezhen Imperial Kiln Museum takes a traditional way of space-making, referencing to old kilns of the city of Jingdezhen, and transforms it

into a museum space, consisting of vaulted volumes connected with each other through arches and passages. By pouring concrete between two layers of brick, the design team finds a way to reinforce the system with a non traditional way. The third one, Millet Covered Bazaar makes use of cellular concrete wall panels in two different ways: First as load-bearing components supported with construction bars, and second as infill pieces between a tectonic, steel structure. By exposing these panels, it aims at increasing the building's textural quality.

It is undeniable that the current design and construction methods, helping with the merging of stereotomic with tectonic, examples of which are given above, have a significant impact on overcoming the unique difficulties of stereotomy, thus making the said construction system prevalent again. It is clear that this reinterpretation in practice makes stereotomy, in other words, building by stacking or carving, constitute a contemporary and fruitful discussion ground within the theory of architectural tectonics. Talking about current experimental stereotomic reinterpretations open also new discussions in many fields from building physics to materials science, from architectural design to building technology, from sustainability to phenomenology, far beyond the limits of architectural tectonics.

4. Endnotes

(1) Studio Anne Holtrop is an architectural firm based both in Muharraq, Bahrain and Amsterdam, the Netherlands, is located in Muharraq. Their work covers a wide range from temporary pavilions to public buildings (Studio Anne Holtrop, 2022).

(2) Studio Zhu-Pei is an architectural firm based in Beijing, China. It was founded in 2005 and since then, produced various works in the fields of art, architecture and culture (Studio Shu-Pei, 2022).

(3) Per Se Architecture is an architectural firm based in Istanbul, founded in 2015. Their work covers architectural projects of different scales, with various contexts and programs, in Turkey and Senegal (Per Se Architecture, 2022).

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DIALOGUE 3: CO-HOUSING AND THE CITY IN NEW AGENDA

From Cabinet in the Forest to the Villas in Nature: A Reading on Human-Nature Relationship and Nostalgia

Merve EFLATUN¹

1st Author's e-mail: merveeflatun@gtu.edu.tr

Abstract

Recently, when the concept of nature has gained a lot of place in architectural education and discussions, it seems important to think through the sense of nostalgia, which constitutes a paradoxical framework of questioning nature, in making sense of the built environment. In this paper, a dual reading of the nostalgic dimension of human's relationship with nature, includes a view from the Post-Industrial Revolution to the present, will be problematized. Nostalgia comes from the Greek words nostos (return to home), algia (pain); it is summarized as a melodramatic longing for what is now lost but existed in the past, but also characterizes mourning for an impossible past that is no longer and will not happen again. The dangerous dimension of nostalgia is the tendency to reproduce the past through different signs. Therefore, the concept of nostalgia can create a meaningful base for understanding the nature-human relationship. Especially after the Industrial Revolution, the rapid destruction of nature positions it as a "disappearing home", "nature in the past" is idealized and tried to be revived. As a matter of fact, two-year life in the cabinet of Thoreau in the Walden forest can be considered an iconic nostalgic act today. Again in the 60s, the lifestyles in ecological villages, which started with the emergence of the ecocentric view, can be described as an example of a nostalgic search for nature. The rapid progress of technology and conceptualizations such as "posthuman" and "cyborg"; questions the dominant state of humanbeings over nature, as well as the loss of nature, the increase in artificial productions and the possibility of nostalgia.

In the first part of the article romanticism, nature and nostalgia will be discussed in general terms, and its relationship with nostalgia will be questioned. In the second part, the questioned situation will be investigated through the Riva region in Istanbul and various villa projects constructed there in the context of nostalgia. Case study area Riva is discoursed "escape from the city", "meeting with the longing for nature with houses", is related with nostalgia. The method used in the paper is content analysis therefore the representation of the relationship between nature and nostalgia will be analyzed and interpreted through various advertisements about villas, travel guides and newspaper reports. It can be indicated as that (THOSE) ambivalent nostalgic reflexes about life are produced in nature. On the one hand, the longing for "lost nature" is represented by various approaches, on the other hand a "new nature" imitating nature is produced and nature is "hyperized". The way in

which the longed nature and the house built are diversified. At the same time, whether these constructed "home-nature" issues belong to nature is another matter of debate due to the description of nostalgia. The nature-human relationship is an important paradigm in contemporary architectural discussions. It is thought that looking at this relationship through nostalgia will create a new perspective for the discussions.

Keywords: *Lost nature; Nostalgia; Post-industrialization; Riva; Dwelling*

Introduction

Etymological origin of nostalgia comes from the Greek words "*nostos*" (home) and "*algie*" (pain). In the Turkish dictionary, it is called "*gündedün*" meaning yesterday with today (Nostalji, n.d.). Additionally, it is defined as a feeling of nostalgia for the beauties of the past and a feeling of taking refuge in the past as a result of fear of change. However, nostalgia includes more than longing and feeling safe in the past.

It was first observed and interpreted as a disease by Johannes Hoffer in the 17th century on soldiers who wanted to return home in pain, suffering from homeland longing, and the word was derived from this situation. It can be thought that nostalgia is a demand for a return in general terms. However, the return does not have to accommodate a house. The aspirations of modern nostalgia may include the unity of time and space, the impossibility of a fairy-tale return. The individual in a nostalgic mood seeks a responsible being or situation for the lost past, but what comes across is silence. In the face of this silence, a person tries to find nostalgic signs that have not been forget but misreads or tries to rebuild what he lost and could not find, but what he does and can do is only an imitation (Lowenthal, 2015). The past is animated with present or future that fictionalized expectations, however it is not past anymore. (Boym, 2009). In this context, the determination of Barbara Cassin (2020) seems to be revealing: "This invasive and sweet feeling is a chosen fiction that, like origin, constantly reminds us that it is a pleasant and humane cultural phenomenon" (Cassin, p.13). Although the sense of nostalgia is derived from the words home and pain, it can manufacture itself with different variations. The framework limited to the homesickness of people who have only left home has changed shape as the desire to regain the commodities or experiences of the consumption-oriented society. Mostly the loneliness brought about by the nomadic lifestyle, the rapid change in everyday life, and the sadness caused by this or the lost belief in the future is associated with nostalgia (Cross, 2018, p. 297).

In this sense, nature and the way human-being are related with nature constitute one of the meaningful themes in terms of examining nostalgia. Additionally, to see nature as an inspiring research laboratory specifically since romanticism, iconic life practices produced with nature (such as cabinet life, eco-village) confirm the thoughts of Lowenthal (2015) and Boym (2009) about nostalgia. After the Industrial Revolution, the relationship among humans, nature, and nostalgia was questioned through the cabinet-home relationship and it is continued on different pillars such as eco-village and technology. Riva, which constitutes the case study area of the paper within the context, is read as a place where nature is discursively made in

Istanbul, and where nature is reconstructed as a home in a nostalgic context. In the article, the human-nature relationship and the sense of nostalgia will describe with a theme from romance to the present day, through technology and variation of cabinets. The discursive interval created in Riva will be interpreted through the theme of the human-nature relationship and the sense of nostalgia.

1. Cabinet in the Forest as a Romantic Nostalgic Nature

The solid relationship that nostalgia establishes with taking a place in a subject and then being displaced allows us to read it in connection with nature. To understand the associations, it can be said that seeing nature as a lost and returning area from the human eye and becoming a past is an integral threshold. The example that Boym has titled pastoral nostalgia is dramatic. Boym (2009) reads buildings such as greenhouses, aquariums, and herbariums added to the city with the rapid urbanization in Europe and bourgeois colonies in the mid-nineteenth century as a reflection of an idyllic nostalgia. The imitation of nature, seen as missed, lost, and perhaps a home to return to the city, but not being identified with longing, makes the relationship produced nostalgic.

In the understanding of romantic nature in context, it can be observed that nature is seen as something to be returned, even if it is not read as an exact loss. One of them is the iconic two-year nature experience of Thoreau spent in the Walden forest, and he collected this experience in the book "Walden" in 1854 (Fig.1). In the book, Thoreau wants two people at the same time: one of them is a primitive man who was in touch with nature in the past, the other is his wisdom, although not exactly an urban individual (Thoreau, 2017, p.23). Being in nature is a tool that regains the time lost in urban life. The ideal is to return to nature and build the "home" there. Because, according to Thoreau, "There is a similarity between a man's building a house and a bird's building a house" (Thoreau, 2017, p.60). Thoreau sees building by hand as a poetic and self-developing act and says that dark melancholy can not exist in someone who lives in harmony with nature. The phrase "dark melancholy" is often encountered in the past meaning of the word mourning. Due to the fact that it means sadness for loss as a word, it is associated with nostalgia. To illustrate, rain is not a source of sorrow, on the contrary, rain should make us happy because it makes the beans grow (Thoreau, 2017, p.156). Thoreau also states that children enjoy being in the natural environment because it is an instinct coming from primitive man. He characterizes this instinct as a natural longing for the past, therefore nature also has a liberating power (Thoreau, 2017, p.40). It is possible to read the action of Thoreau as a longing for nature, marked as the "home in the past", and a search for finding the untouched nature to be attained in response to this longing. Mourning, an emotion that we can associate with nostalgia, has disappeared when it is related with nature.



Figure 1: Replica of Thoreau's cabin in Walden region (Source: Wikimedia)

For architect Louis Sullivan (1947), one of the influential names in the modernization process of America, nature is the "home to be inspired by the past". According to him, "Nature prepares a sleeping continent, a virgin wilderness as the home of the free man" (Sullivan, 1947, p.98). On the other hand, nature also seems like a source for idling during the summer; It is an escape point from architecture and the polluted city (Sullivan, 1947, p.79). For Sullivan, big cities are built on strife and greed on the contrary nature, almost in opposition to it, has an empowering and refreshing effect. It is not surprising that people living in the city constantly go to the park areas and the countryside outside the city because it is a semi-conscious will to protect ourselves from the sickly discomfort and melancholy caused by the city (Sullivan, 1947, pp. 112-113).

The situation observed in both examples is the acceptance that nature is the home of the free man. This is a home in the past, this home is missed, this home is inspired, this home is still considered in a returnable position, we are freed from melancholy and sadness when we reach here. Nonetheless, it does not seem to be a place to stay forever. Sullivan spends only his summer while Thoreau has spent two years. This situation as seeing themselves as observers of nature rather than as part of nature can also be evaluated. It is possibly said that with the increasing influence of the Industrial Revolution, the representation of nostalgia will become more and more evident.

2. Industrial Revolution and New Nostalgic Form of Nature-Home Relationship

The dominant attitude of human has increased the nature from gear wheels to the steam engine, from steam engine to the artificial intelligence. Recently, it is periodically mentioned that the heaviness of man-made products, in which human domination of nature has grown, exceeds the heaviness of living beings in the world. Nature is not the one that can be returned when desired, but the one that is realized to be lost. In this sense, the reflexes produced regarding nature also differ. For instance, eco-villages can be related to awareness of the loss of nature and building

a sustainable world. Additionally, “Ecovillagers may also be characterized by yearning towards something: A strong opposition to cities, moving out from the designed, pre-determined cities and into eco-villages” (Farka, 2017). Apart from that, it is possible to read eco-centered protest movements as an approach towards loss (Fig. 2)



Figure 2: Ecovillage as an built environment (Source: ecovillageithaca.org).

With the dominance of technology over nature, the relationship between technology, nature, and nostalgia has also been investigated. Spuybroek (2016) focuses on a new definition of nature that is aligned with technology. Accordingly, it questions the possibility of keeping the natural approaches such as freedom, diversity, and spontaneity of the early 1800s alive in technology. The postmodern wants to send the tools back to the premodern because there is no nature to go back. This approach is affirmative about moving picturesque approaches away from naturalism and directing them to technology. Thus, mechanism of the sameness produced by technology will be broken. He states that technology and nature have changed positions and that we should question what is natural in nature, and that what anyone or Thoreau experiences is not nature. The expectation of liberalizing technology is dominant, therefore Spuybroek considered liberalized technology, the possibility of breaking the technologic standardization (Spuybroek, 2016, pp.105-215).

With this nostalgic description of that nature which is mentioned together with technology, human beings are also tested with nostalgia in the way they relate to nature. Reading humans through titles that can be considered new, such as post-human and cyborg opens a different window in terms of its association with the concept of nostalgia. In this association, nostalgia is positioned as seemingly attractive but somekind dangerous feeling. According to Haraway (2006), we are cyborgs as-fabricated hybrids, a fused image of both an imagination and a concrete reality. The definition of nature and culture is differentiated, and it is no longer possible to make one belong to the other (p.6). Comment of Haraway here on being a cyborg and the relationship that the cyborg produced with the definition of nature in the past is remarkable. A cyborg does not dream of Eden or the cosmos, does not hope for it. The certain judgment to nature, which is seen as a key to insight or a promise of innocence, has been irreversibly broken (Haraway, 2006, p.7). This position, in which a nostalgia-free look is applied to nostalgia, is also encountered

in Braidotti. Braidotti (2014) points out that technological circulation is at the center of post-human subjectivity. Realizing that these new posthumans are made of flesh and blood, they restrain the tech frenzy. Self-controlled stance of it aims to resist the attractive perception of nostalgia (p. 102). Discussions on the relationship of humans with nature try to get people out of a melancholic position that miss the past and want to revive it.

The fact that the boundaries in the human-technology relationship have been removed to a large extent has also changed the self-descriptions of the human being. The emergence of new definitions such as being-woman and being-other is a way out of the pattern to which people are accustomed, and this inversion also includes the loss of many beloved thoughts and representations with which they are close. This condition can produce fear, insecurity, and nostalgia at the same time. (Braidotti, 2014, p.185). Braidotti interprets this situation through syntheticization of living creatures. She says that the realization of productions such as synthetic meat and synthetic tomatoes will create disgust for someone who hears it for the first time, but if it becomes widespread, the organic will be missed, and this can be figured out through nostalgia (Braidotti, 2019).

The home of the free human, the cabinet of wild, that is part of the romantic nature, has turned into another image. It is an escape point that represents a return to solitude and freedom. It evolves into the past, where the simple universe is dreamed of, a secondary home, a vacation spot. (Padzerka, 2016). From the contemporary perspective, since the mid-nineteenth century, the "wooden cabinet in nature" is considered as both a symbol of nostalgia and a tool that serves a practical function. It can be said that the wooden cabinet in nature has an intricate structure with the American past. In this sense, Hoogland (2018) reminds us that the wild nature is not really a wild nature. The situation points out the nature is already consumed by the indigeneous people, and the non-existent nature is driven for marketing purposes. Thus, nostalgia can also become a way of marketing and discourse. All these approaches suggest that nostalgia manifests itself through different means in the new nature, which has gained the definition of green area.

3. Nostalgic Nature Dwelling Disguised in Riva Region

Looking at Riva on the city map of 1970s and comparing it with the present, it is noticed that it has evolved from a green area far from the city to a built area surrounded by green (Fig. 3). Recent map photo shows the green area symbolized nature framed with the construction such as bridge, highway and housing projects. However in recent the area is interpreted as an illustration of nature that wanted to be seen. The area has been changed with the construction activities such as bridge, highway, and housing projects. The nostalgic nature is framed by these construction activities. However, Riva diversely has a green area when compared with the urban fabric. Therefore, the area has an opportunity to represented with green area. In spite of this, in the 90s, it was seen as a part of the city that remained green and was in danger of disappearing (Yeşil sona eriyor, 1994). For this reason, literary representation like popular and social media, advertisements, travel writings may be seen as an exploration area that comprehend the nostalgic nature description of Riva.

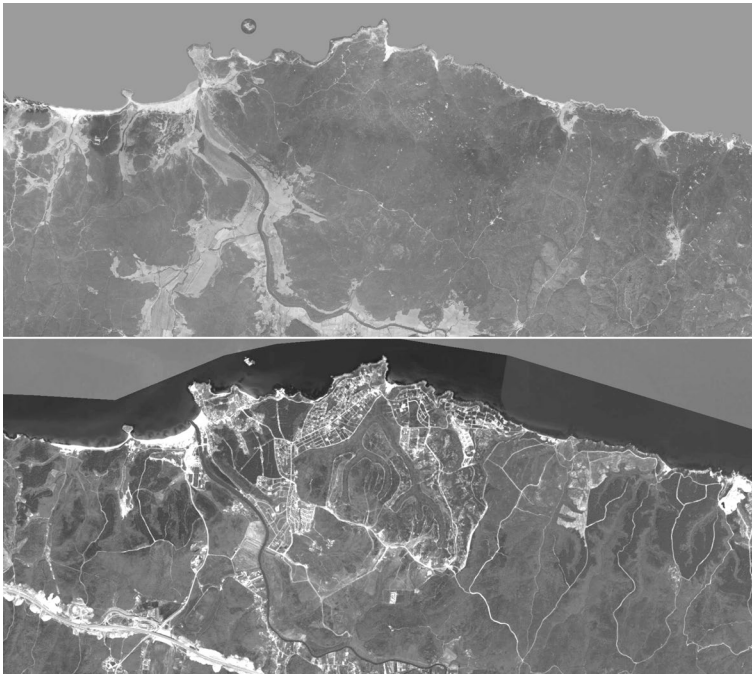


Figure 3: Changing relationship built environment and green area in Riva, comparing 70s and 00s (Source: ibbharita.com).

3.1. Riva in Travel Writings

When examined through various travel or blog posts on Riva, it is observed that it positioned as an escape point for those who are tired of the city and miss nature. However, just nature is not sufficient for becoming free. The opportunities gained from the city is indispensable. Riva is generally promoted as a one-day holiday destination and promises to become “beautiful” with new construction activities. It is promised that roads will be built with a nature park, bicycle parks, asphalt dumping (Iha, n.d.). Riva is region that has started to develop with its housing texture. Due to earthquake risks and suffocating nature of city life, it becomes a kind of protection zone. The development in Riva appears parallel to the development of the transportation in the region (Şehir dışına kaçan kaçana, 2005). Thereby, the reflections of the effort to produce a touristic escape point are read as taming of nature. For instance, since Riva Beach Enterprises located in the village, barbed wire is drawn to prevent animals such as cats and dogs from entering the beach, and pesticides are applied at the same time (Beykozses, 2015). Baysu (2019) describes Riva as a place that contains oxygen and reached all alone with the nature in his travel writing. On the other hand, the fact that the way of getting away and being alone with nature is via man-made elements (such as cars, roads) suggests the nostalgic dimension of the human-nature relationship.

3.2. Weekend House

Since Riva being as a weekend destination, the condition of the houses rented through Airbnb draws attention. When the titles of the houses are examined, “in the heart of the nature”, “alone with nature”, “boutique villa in the heart of the nature”, “rest house and hobby garden in touch with nature”, emphasize the promise of

staying in nature (Airbnb, n.d.). Photographs of the houses show them as singular in the landscape. Some of these houses, having a rustic look with different construction techniques, remind cabinet of Thoreau in appearance and type. But, these cabinets describe a vanishing point much lesser period compared to Thoreau. Sometimes an artificial nature in nature: It is in a situation that constructs different landscape elements such as a hobby garden or garden. User comments for these houses actually open the nature-nostalgia relationship. Homes are often interpreted as specialized spaces for escaping the city, relaxing and being alone (Airbnb, n.d.), (Fig.4).



Figure 4: Some houses for rent in Riva (Source: Airbnb.com).

3.3. Dwellings in Riva

The advertisements of the projects realized in Riva are made with various discourses that nature is a return to essence. The commitment of these projects is to offer a reunion with nature that people have lost and missed. Anyhow, the projects Antriva Houses, Riva Mansions, Düşler Vadisi Riva in closer scale can not be distinguished from the urban fabric. On the contrary, some signs of green make those who live or wish to live here, believe they can find a clue to the past.

To illustrate, Antriva Houses are promoted with the distance to the third bridge and the airport and the convenience of transportation, while at the same time mentioning the advantage of being a part of nature. The text that advertising Antriva Houses is remarkable because of the connectedness with nature: “The neighborhood of Antriva enjoys the indescribable pleasure of growing organic plants and healthy eating in their own gardens. To live in Antriva Houses means, being inside the green, feeling the nature, reading under the shadow of the pine-tree, long walking beside the stream and much more of those” (Antriva Evleri, n.d.). It is possible to read this paragraph as a reference to longing for nature of Braidotti (2019). In fact, there is an awareness of being a built environment in nature and a perception of nature that is thought to be genuine of what is “new and organic” within this built environment (Fig. 5).



Figure 5: Project of Antriva Houses (Source: villaprojeleri.istanbul)

In another housing project *Düşler Vadisi Riva*, the relationship between nature and people is advertised in detail. It is expressed as “Those who surrender their dreams will enjoy the fresh air in the large villa gardens” or “A future where you will add value to life with natural products in cultivation areas” (Düşler Vadisi, 2021). At the same time there is a long advertisement movie that explains the project. Firstly the film begins with the dreams of human-beings about the nature. These dreams are activities such as eating the product that has been planted, lying on the grass and counting the stars. The commercial mentions that although modern life and technology seem to make our lives easier, people dream of returning to their roots, namely nature (Düşler Vadisi, n.d.), (Fig. 6). Freedom is associated with nature, the definition of “the dream of freedom” is frequently encountered in advertisements. A nature tamed against nature is also seen *Düşler Vadisi Riva*. Designed cultivation, planted areas and an artificial biological pond are among those explicates in the advertisements.



Figure 6: The screenshots from the commercial of Düşler Vadisi Riva (Source: duslervadisiriva.com)

4. Discussion and Conclusion

In the article, it is noticed that nature has evolved into a nostalgic possibility rather than a metaphorical guide that will present the source of experience and inspiration. In the face of all changes, it can be thought that nature is calling us back, discursive as a part of our dreams, and read as a main focus of reunion. Despite the tendency of nostalgia that appears with the development of technology, nostalgia somehow reveals itself. Nostalgia of nature can be settled by a mechanism that does not mourn with the awareness of loss on technology: Nature, thought to have been reached in the past from the frame of today, becomes hypothetical and can be described as nostalgic. It is comprehended as making different nostalgia reading through the imagery and discourse of the romantic nature image. It can be thought that is ready to produce the contradiction of nostalgia in the nature-human relationship.

The contradictory state of nostalgia is also visible in Riva. It is observed that discourse focus of Riva is shaped through nature and nostalgia. In Riva, in addition to interpretation of nature as a home, the dwelling in “nature” is also outlined as nature within nature. However, the nostalgic perception also has a commercial focus. The construction of accommodation or new living spaces also points to the capitalist extension of nostalgia. Struggling to be away from city life and positioning the benefits associated with city life as indispensable reminds the subject of technology and nostalgia at Riva. In this sense, the most dramatic example seems to be the artificial pond. The artificial pond also shows that there will be no nature to mourn, but the possibility of a nature can be done at any time. However, the mimetic repetition of the trace of the past reminds of nostalgia.

Another situation is how the relationship between shelter and nature shows itself in a nostalgic context. Here, it is possible to say that the cabinet has typologically urbanized itself after the Industrial Revolution. The escape to nature does not position itself in harmony with nature as before, but its claim continues by disguising nostalgia.

The architectural design agenda of nature and ecological design has an expanded literature. It is thought that the feeling of nostalgia that is not very conspicuous in this literature, will make new paradigms visible in relation with “being home” and “nature”. At the same time, nostalgia can be considered as a note-worthy parameter on the sensory perception of the dwelling in architectural education. In this context, nostalgia plays a disruptive, thought-provoking role in the understanding of home and nature. Nostalgia, which offers a different range in the understanding of nature, will also provide awareness of obsessive looks to the past in the design process and will trigger innovation.

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Participatory Design in Affordable Housing, a Guideline for Turkey: The Case of Architect Alejandro Aravena Initiatives, Chile

Ubeydullah YAŞAR¹, Sedef ÖZÇELİK²

1st Author's e-mail: u.yasar2020@gtu.edu.tr

2nd Author's e-mail: sozcelik@gtu.edu.tr

Abstract

Contemporary architectural milieu addresses prominent buildings which are the works of professionals called "star architects". It should be noted that these works welcome the user with the finished product, regardless of the construction type. Nevertheless, the users have not been included in the preliminary design process. It is a fact that architectural products generated with a process that is detached from the influence of the user in the production stages are open to discussion. However, housing is at the center of a larger debate including urbanism because of the layered meanings. In the continuation of adventure that started as the basic need for humanity, the fact that the house gains connotations and is in a constant-even circular relationship with its user throughout these processes that increase the importance of the discussion. In such an environment, the initiative of the community is crucial especially in terms of affordable housing. Such houses can be supported by the state or local governments as well as by the architectural organizations that make room for divergent professional practices. Thus, it is ensured that these housing types are accessible by focusing on low-income groups. Lacking the alternative housing production models in Turkey and further studies are urged and few examples draw attention. The works by Aravena from Chile and his team are a rich example for the case. Aravena carries out social housing projects with the Elemental Office of which it is the founder. The team is known for bringing simple, economic, and participatory solutions to today's affordable housing problems. In this paper, which refers to the case-study method approach, the evaluation of daily architectural practice and the basic concepts of architecture are discussed. It should be noted that Aravena's works set solid examples by demonstrating a participatory stance both in three main aspects: (1) evaluation of procedures and the management of the preparation process, (2) the design phase, and (3) the subsequent processes. The paper aims to create a discussion environment through process comparisons and will evaluate the housing production phases such as procedure and preparation, design and implementation, and transformation with use. Eventually, the study can be considered as a tentative guide for affordable housing production. It is provisioned that the output of the study will contribute to increasing participatory process practices in Turkey.

Keywords: Participatory Design; Affordable Housing; Aravena; Chile; Turkey

1. Introduction

According to the 11th article of the annexed version of the "International Convention on Economic, Social and Cultural Rights" signed by Turkey in August 2000, everyone has the right to housing, adequate living standards and to improve these standards, as well as adequate nutrition and clothing (UN, 1966). In such an environment, the importance of housing and the necessity of discussing what kind of process it has gone through and will pass draws attention. Despite this, it is seen that the housing production process has not progressed successfully. Among the main reasons for this situation in Turkey, it is seen that the policies of architectural production are compelling. Considering that companies/institutions such as TOKİ (Housing Development Administration of Turkey), Emlak Konut (Real Estate Investment Company), KİPTAŞ (İstanbul Housing, Zoning and Planning Company) which produce social housing and mass housing, generate in line with government policies. This situation causes the design phase to move forward partially cumbersome and far from innovative.

In addition, housing prices are increasing faster than incomes in most OECD countries. Accordingly, many low-income households dedicate a significant portion of their income to housing. The challenges faced by social housing feel the need to resonate more broadly in the housing industry (Adema, Plouin & Fluchtman, 2020).

Besides problematic housing production environment, the points where architects can have a say are more limited. Bilgin states that the fact that architects excluded from housing production, especially until the 90s (Bilgin, 2010). Only some spatial solutions and visual harmony expectations arise from the architect's role, who is perceived as a designer. Indeed, along with the wider decision-making stages of the architect, his contribution in process planning is also important. This process, in which the architect is involved, may include affordability, the project budget and how it can be supported economically, communication with the intended user community etc.

In addition to the architect's involvement problem, there are also different issues related to housing production in Turkey:

- After the processes in which the relations between the housing production actors are weak, the users are mostly neglected. An organic process in production cannot be enabled.
- As a result of top to bottom planned processes, the connection between the user and the environment is weaker.
- The housing production model excludes the users from the production processes.
- Construction production is expensive due to the production method.
- Low-income groups are not considered sufficiently in social housing practices.
- The quality of the house is crucial, it should be more than a mere shelter.

This study aims to discuss how the final product is affected by the architect's involvement rate in the production process and the integration of the participatory approach into this process. So, it tackles the issues, especially in the Turkish context, in the aspects of the above-mentioned parameters: (1) the design phase, (2) the subsequent processes, (3) evaluation of procedures, and the management of the building preparation process.

Housing Production Processes

Due to the situation in today's professional specialization, housing production also includes certain professionals. In the process and the architects who create and plan the final product are often the primary responsible person, even though the influence of the architects in the planning of the process is controversial. In addition, it is noteworthy that users are kept away from the process as much as possible. Participatory design is a design approach that seeks to actively involve all stakeholders (e.g., employees, partners, customers, citizens, end-users) in the design process to help ensure that the final product meets need and is usable. This perspective in architectural practice is a structural and systematic change that allows the design to serve communities responsibly (Feldman et al., 2011).

John Habraken describes the changing role of the architect in his speech with Teerds and Havik in 2011: He liberated the architect to design the floor plan. An urban planner constructs not the architecture, but the framework in which the architecture will perform. This gives us the idea of working with different levels. As a designer, you don't need to see the endpoint; but you are expected to initiate action on the important points. That's why, regardless of the architect's self-expression and originality, we should discuss production systems where everyone can freely intervene in common use and reveal their own identity (Teerds et al, 2011). Very parallel to this approach, İhsan Bilgin reminds that until the 1990s, architects could not contribute to the house; nevertheless, not only are they able to build any part of the city, but also keeping architects so far away from housing production was solved later. Moreover, Bilgin states that successful works have been achieved in projects where architects are active regarding mass housing (Bilgin, 2010: 11).

The impact of central governments and local initiatives on housing for the public, especially for low- income groups, cannot be ignored. Another key fact to remember about the legal initiatives in Turkey, the reality of TOKİ. TOKİ, defined its duty in the scope of The Mass Housing Law (Law No. 2985) as "credit support to low and middle-income groups, housing projects with low monthly installments in long terms and encouraging banks to enter the field of mass housing finance, with the aim of providing financial resources with suitable conditions for those who cannot afford to pay in current conditions...". This problem generates procedural drawbacks.

Among the main issues is the process progresses and its hierarchy and that the architect can be included in the process since the beginning of the projects. He/She is given a limited role only at the design processes. Nevertheless, in the housing production process, many other phases require solutions before the design phase.

These are: solving the political problems, initiation of the negotiation processes, making the financial calculation for the product selection, evaluating the location and land selection, solving the connections at the city scale, depending on the previous articles, the size of the building and its possible changes, etc. the architect should be involved in the process earlier due to the importance of the processes before the design

Moreover, users encounter housing only when the final product is formed. It is seen that instead of the ideas presented from the top down, the productions that are progressed with communication in the process should be given importance. The successful solution of the buildings on their own scale will enable them to be moved to a successful point on the urban scale. Therefore, assuming a process in which the parties involved in production have a say to the extent of their own expertise, it can be said that the resultant house will be at a satisfactory point (Sanoff, 2012).

Sanoff, the success of user-oriented experiences is based on the users living at the area, more than architects and other professionals. Thus, the supportive production actors should be aware of the realities around them (Sanoff, 2000). Also, as Parnell and Day mentioned outsiders can help by making valuable contributions simply because they are outsiders, but they can never make design socially relevant, inclusive, and respectful without input from the people who live and work there. *"As users of a place, we not only know our own needs and how we like to do things (better than anyone else), but we also know the place, its climate, and the microclimatic intricacies of every valley and slope, every street and open space."* (Parnell & Day, 2007). Aravena conveys the importance of the idea of the user in the definition of the problem and in the formation of knowledge about what the need is, with its experience during the production of social housing. When they interview with the families "Which is more important: hot water or a bathtub?" to meet the economy; decision-makers, politicians, or professionals tend to answer the water heater; on the contrary state that 100% of the families prefer the bathtub. They knew that while the users would be able to benefit from the bathtub immediately, they cannot pay the bill even if the water heater infrastructure was provided (Aravena, 2013).

In the participatory process, there are key components such as promising that user inputs will influence the decision and informing how those inputs will affect the decision. Stakeholders and experts in housing production have different expertise than users. The user, on the other hand, is not an expert at solving the problem but is an expert at pointing out what the problem is and where it is. With the consensus in the participatory process, all participants have a say in the design process to the extent of their expertise. This sharing brings efficiency to the process (Sanoff, 2000). Defining the methodology of participatory design, Spinuzzi says, it is derived from participatory action research or practice research (practical interventionist research and parallel theoretical reflection). Contrary to architects who argues that the designer should be a dictator, participating designers state that they see themselves as facilitators who try to empower users to make their own decisions (Clement, 1994; Spinuzzi, 2005).

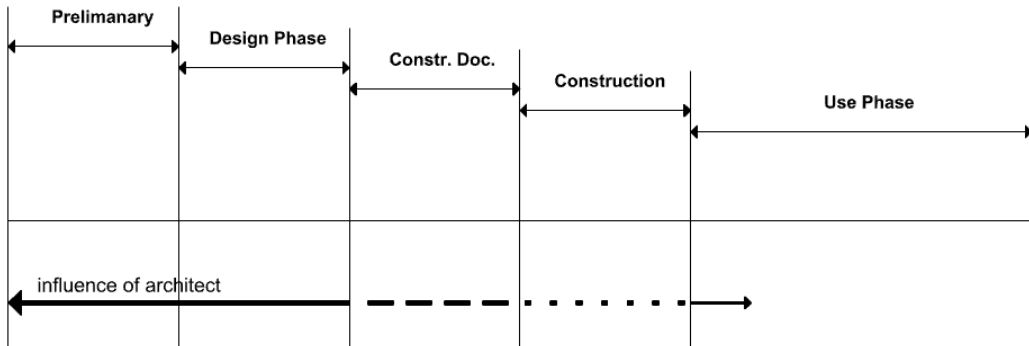


Figure 1: Level of control by architect in conventional Dluhoshch (2006)

As displayed in flowchart (Figure 1) from Dluhosch; in housing production, architects are effective in preparation and design processes, but their effects end by decreasing during the construction phase. In the usage phase, the influence of the architects is not seen (Dluhoshch, 2006). The building environment, in its current form, cannot solve the emergence of social and societal problems if it is not properly and responsibly managed. Traditional architectural practice often causes such problems, as only the paying customer has a say in the design process. Solutions to societal problems can be addressed on a long-term basis by directly involving the public through participatory design. (Feldman et al., 2011) There are social housing examples such as the "Miljonprogrammet" project, which Sweden has tried across the country (Hall & Viden, 2005), and examples for also participatory design such as the "Aranya Housing" designed in Indore, India by the Pritzker award and RIBA Gold Medal-winning Indian architect Doshi (Mollard, 2019). Besides these, Aravena is demonstrating remarkable work by using public interest design and participatory design to solve problems that seem financially and administratively impossible.

Aravena: What is special about the Aravena projects?

Resembling the problems and discussions mentioned in the previous section, the architect's contribution to the process planning stages is important. It is possible to see accomplished examples of processes such as advancing the political stages in which the architect is involved, ensuring, planning the economy, and consensus with the participants in Aravena projects.

Aravena and the social housing process can be studied through the Quinto Monroy houses example, which is almost the beginning of this process. Because it is noticed that the proceeding projects by Elemental are formed by feeding on this one. What was done and achieved differently by Aravena in the production of social housing is that he initiated the process himself independently as an architect. It is noteworthy that they continue to negotiate with the government until they can convince the model needed to provide housing for those in need. Afterward, they acted as architects in the main role in the whole process, including how to solve the process economically. (McGuirk, 2014)



Figure 2: Quinta Monroy (Aravena & Iacobelli, 2012)

As seen in the facade view (Figure 2) and plan scheme (Figure 3) of Elemental's Quinto Monroy project, it is noteworthy that the possible scenarios of the process after the design phase are included in the plan. With this detail in the process, the user contributes to the design, and the project can be provided with a low budget. In addition, with this detail, it has been made possible for the users to make the land selection at a more valuable point, although it is expensive compared to the places far from the city, indirectly and in connection with the previous articles.

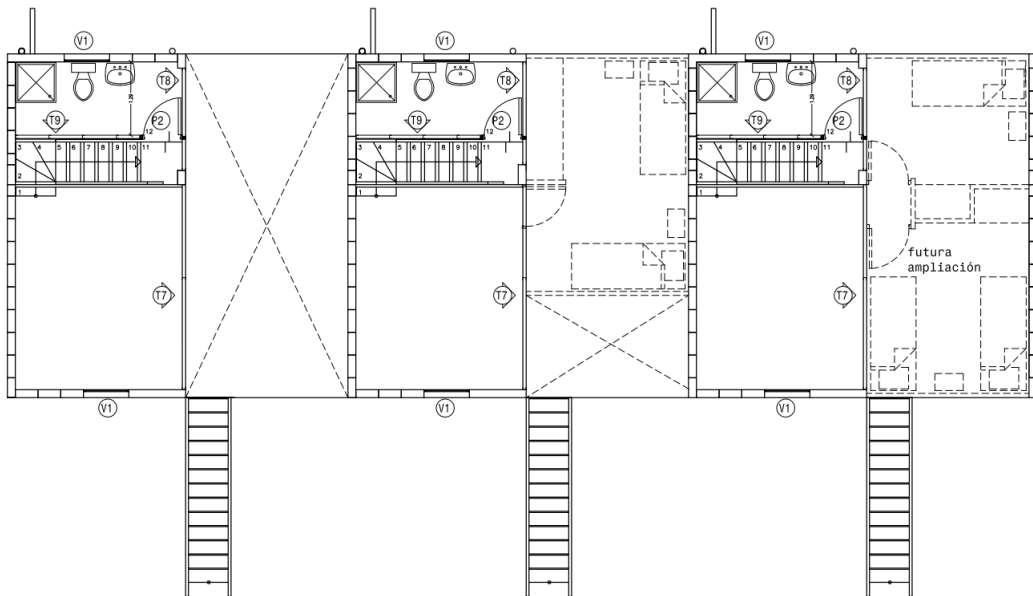


Figure 3: Quinta Monroy Plan Scheme (Elemental, 2016)

Elemental communicates with the state-formed “Chile Barrio” initiative. First, the location of the land is decided as the urban layout. When designing Quinto Monroy

homes the easy architectural answer would have been to place the complex on cheaper land away from the city center. But Aravena, whom has the role as policymaker and architect, chose otherwise, as such a distance would cut off residents from Iquique's economic flows. Then, depending on the project budget, the idea of "making half of a good house" is decided instead of a small house (Aravena, 2013). The design of the overall mass, which may seem simple but thoughtful, is decided. Considering which parts of the house should be built in the first stage, the parts that the user will have difficulty in doing later: kitchen, bathroom, partition walls, stairs from the main mass preferred. A base suitable for the user scenario is formed for the rest of the house. Thus, the user effect can be traced from the silhouette after finishing the whole mass. Resembling the problems and discussions mentioned in the previous section, the architect's contribution to the process planning stages is important. It is possible to see successful examples of processes such as advancing the political stages in which the architect will be involved, ensuring, planning the economy, and consensus with the participants in Aravena projects.

Breaking the Mould of the architectural discipline by acting as a policymaker, Aravena quickly reassumed the role of architect by making official moves to solve the financial problems arising from the placement of the project in the city center. Elemental team decided on the following parameters in the design after preliminary research and needs assessment: In terms of cost, the project should be a maximum of \$7500 per residence, fit all 100 families on the plot, and enable families to expand their residences if needed. In the light of these parameters, they decided that the most suitable solutions in terms of design and structure were formed on the ground and first floors (Elemental, 2008).

With the row house typology, it was seen that only 66 families could settle in the area. It is not possible to apply the expansion principle in high-rise blocks, because structural necessities make light-air circulation difficult when a new room is added to the flat, and privacy problems arise as the rooms are intertwined. Expansion detail has an important place in this study. The project formulates future speculations for affordable housing.

Elemental has adopted a participatory process that involves residents prior to and during the construction of the project, which is crucial to the temporary resettlement of residents—and what unfortunately some residents understand as a government measure to evacuate them permanently. The rest of the process; relies on permanent consultations with residents and workshops to make key decisions about layout, budgetary constraints, housing selection, site visits, and the construction and maintenance of future housing extensions [Carrasco and O'Brien, 2021; Aravena and Iacobelli, 2016]. This situation recalls issues such as informal housing and architecture without an architect, in Turkey as well as in the rest of the world.

Emphasizing that the main reason for the slums, which is the most common example of this situation, is economic, Pekin states that there are two ways to find a solution; 1) To reach the level of income that can benefit from the current housing market, (2) To create a housing market according to the current income level (Çelik,

1970). Therefore, the architect is at the intersection point where design input and process planning meet in these problems. This again reveals the influence of the role of the architect because the architect is the person who will ensure that this whole process turns into a design result and becomes a value-attributed product.

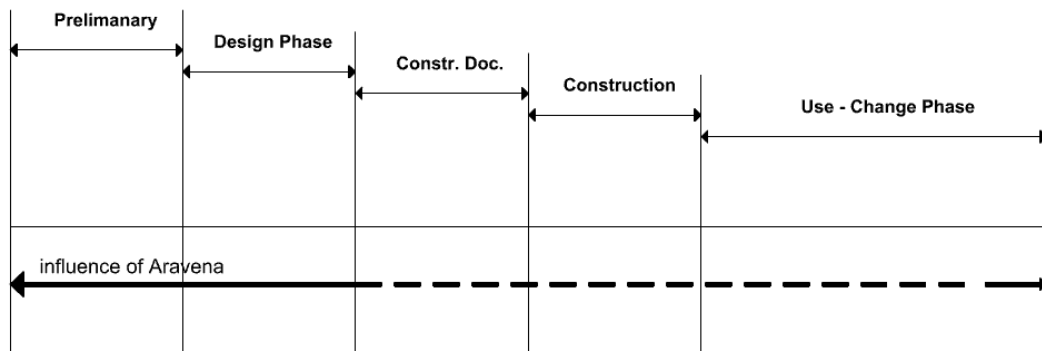


Figure 4: Level of control by Aravena

To afford the central land, Elemental chose to build "half a house" or, as Aravena prefers to say, "half a good house" (Aravena, 2013). The solid, originally built areas of the houses are roughly thirty-six square feet. It is about half the size of what is considered a typical comfortable family house. Empty spaces are on the upper and ground floors and allow for expansion, especially horizontally and vertically, with little predefined structural logic. In Quinto Monroy homes, residents finish the house by filling in unbuilt, open spaces as they see fit, bringing the total square foot closer to ideal. This process also shows the effect of the role of the architect, as it is a pre-planned thing under the control of the architect. Figure 2 addresses the position of the Aravena in the housing production process. It draws attention with the fact that it includes the user in the project process earlier and, he is more effective in the later processes than the conventional one.

Discussion and Conclusion

Architect vs. Local Authority: Comparison on Aravena and Turkey Examples

We encounter the post-war residences in the world, the residences formed after the great migration wave, and the dwellings that are dependent on them or independently of them with the problem of economic purchasing power. For example, it can be said that TOKİ emerged with a new task such as regulating the housing market during the Özal period (Bilgin, 2010). This type of housing production has a preparation phase, design phase, and subsequent processes. In these processes, it is seen that the success of the final product is affected by the presence or absence of certain concepts.

Considering the scenarios where the contractor, architect and users are separate in current spaces, it is a fact that there is a hierarchy which is the contractors' word

comes first because they are the person in the center of finance, the architect only provides the design idea and the users do not have the necessary say even though they are the customer. This level of dominance is acted upon in the interest of the person in power.

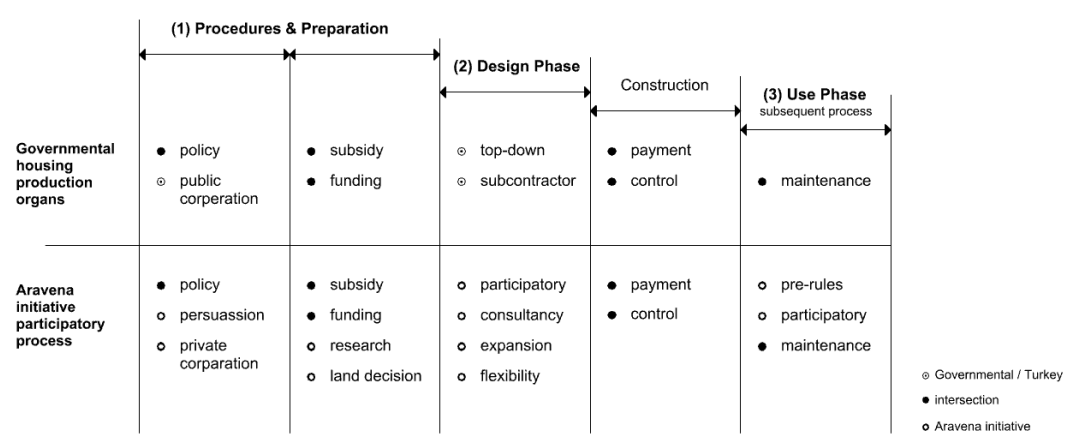


Figure 5: Comparison of Governmental affordable housing process and Aravena initiative

Procedures and preparation:

This phase includes policy and public cooperation. It should be noted that in an example where appropriate environments are provided and relations are well maintained, there may be no harm in housing production with the existing hierarchy and presence of contractors. The contractor can even be the architect also or one of the users at times.

Turkey's social housing and mass housing examples, which are being criticized, are problematic due to some details in the process. As the participant is not included in the process, the architect can only be involved in very barren points, and the points where he has a say are narrowed. As displayed in Turkey's hierarchical affordable housing system (Figure 5), different terms like persuasion draw attention from the participatory system of Aravena. They have also some basic intersection points for housing production: policy, funding, control etc. Even, the differences in approaches in these concepts should be considered. For example, funding can be provided as government support, but it can also be provided in different ways as like charities. Even if it is the same, the architect can only have information about this process or can take an active role in providing direct funding.

Design Phase:

This phase includes design and possible future manipulations on design. Since social housing is also mass housing and therefore has multiple users, it should be formed around common values and interests. While the Turkey mass housing examples have top-down processes, it can be said that the consensus environment created with the participatory design, which we are used to seeing in Aravena's

projects since Quinto Monroy, is especially effective in user satisfaction. In the case of Turkey, mass housing initiatives are generally established in places far from the city center contrary to the situation in the land decision of Aravena. Looking at the whole process, Aravena's research-based and flexible design draws attention positively due to the difference in understanding. It is possible to see that the projects made by subcontractors constitute the reality of Turkey that cannot achieve the low-income housing target in an effective way. In its 2008 report, IMO (Chamber of Civil Engineers) notice the fact that Turkey construction companies, for example, TOKİ produces luxury housing rather than social housing. In addition, IMO criticizes Turkey's housing policy for the quality of the houses has developed for low-income groups, as "constructed by reducing the cost without considering the living and living criteria" (IMO, 2008).

Use Phase:

This phase includes manipulation which is planned in the design phase and simple usage. In the example of Aravena, it is seen that a more conscious process is created for the users and the environment as he takes an active role, and with the participatory design practice these people are also ensured to be effective in the process and the final product. In this context, for example although maintenance seems to be a intersect point, it is noticed that it was planned and foreseen from the very beginning in the Aravena example, while the user is alone at this stage in the Turkey governmental housing example. Regardless of the success of the final product, the existence of participatory design should be considered as it allows the user and the architect to feel responsible in the ratio of their influence on the process and the product.

This paper considers the participatory design approach of Aravena as an example in order to bring a new perspective to Turkey's problematic affordable housing system process. It can be predicted that some changes in the process and production practice will be beneficial for the Turkish housing system, depending on the situation emerging from the comparison. Further in this field, other affordable housing productions held by non-governmental initiatives can be studied. Also, further studies in these areas will be valuable in terms of presenting new perspectives. It is expected that this paper will create a discussion environment for possible affordable housings in Turkey and with this discussion, examples will be created relatively satisfy both the user and the environment at the city scale.

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Importance of Urban Design Studios for the Education of Architecture Under Multidisciplinary Perspective

A. Ceren ONUR¹, Jülide Alp²

1st Author's e-mail: aliyeonur@maltepe.edu.tr

2nd Author's e-mail: julidealp@maltepe.edu.tr

Abstract

Emerging technologies, participative and multidisciplinary approaches that support sustainable designs, gain importance in architecture. Urban design acts as an intermediate between architecture and planning scales, where planning and architecture have becoming closer and interrelated with each other. Even though the urban design projects and competitions discussed at the international agendas seem that include holistic approaches at spatial designs, multidisciplinary and participative approaches, the existing architecture practices do not reflect these innovations efficiently in to the system. The existing architectural practices are still limited in building scale without considering the importance and/or relation with the city neither in design nor conceptually as a result of both lack of urban design scale in legal planning system and architecture education. The results of such approaches can be seen in regeneration projects at Fikirtepe, Tarlabası, Galataport, high rise buildings around E-5 Highway etc. In this changing architectural and planning era, the importance of urban design in the education of architecture is needed to be discussed. So the education of architecture should be developed considering holistic, multidisciplinary and collaborative working methods including different sectors, actors and institutions.

Nowadays; the approaches, competitions and discussions on architectural design do not consider the project only in a limited study area, but also try to integrate the design with all the city. Related with this, during the education of architecture, urban design studios promote the architecture students to have the opportunity for reading/understanding the city, producing analyses and synthesis related with urban area and developing holistic and sustainable solutions for the city. The education of urban design studio considers different issues like holistic perspectives, open public spaces, urban functions, transportation, natural and socio-economic environments, identity etc. together with spatial design. Urban design studios make the students to have experiences on creating a common understanding and making cooperation with other disciplines before starting their professional practices. Beside face to face learning process, the rising importance of online platforms in professional practices, have also taken place in the education of architecture since the pandemic. It was an innovative process for architecture education which was used to be done only face

to face. In this perspective, a hybrid education process considering both online and face to face education methods facilitate the access to the knowledge and participating to the online seminars and activities from different disciplines at different online platforms.

In this study, Maltepe University, Architecture and Design Faculty, Architecture Department, Urban Design Studio class experiences will be discussed. These courses have been done face to face and online at the beginning of pandemic. The final urban design studio (2021-2022) has been done in a hybrid system both online and face to face. Beside face to face education, with online feedback processes, juries and seminars are integrated. Group work was preferred for creating different discussions, benchmarking and developing common study perspectives.

In this urban design courses; the study areas were chosen considering the central areas, historical value and identity, socio-cultural diversities in relation with urban problems. Collaborations are done in order to support the participatory approach. With field trips, students were able to understand local life and make a better reading about the social structure. Urban revitalization, urban regeneration and urban re-functioning were the main working topics discussed in studies. Throughout the course, developing knowledge from the study area, with a holistic perspective were expected to be reflected at the students' projects. In order to do this, using schemas and mappings that reflect the data from the upper to local scale are evaluated, sketches, analyses, collages, texts and other images were created. Concepts and design process are expected to be according to the data collected from the upper-local scale and synthesis. In hybrid system; online juries, seminars, discussions and revisions are done face to face together with online platforms. The results are tried to be discussed in this paper.

Keywords: *Urban Design Studio, Architecture Education, Multidisciplinary, Holistic Approach, Urban revitalization*

Introduction

Urban design has still been accepted and implemented as “city beautification” in most cases. But urban design concept is beyond this simple role. A multidimensional, multidisciplinary point of view is needed, in order to give/have information from/to different scales (Madanipour, 2006, Forsyth, 2006). A dynamic process which reflects the change in urban scale with a holistic point of view is very important (Lefebvre, 1991). Focusing only building scale in architectural projects denying or not reflecting enough its relation with the close environment and the city cannot be a good strategy for a better and sustainable city. Urban design has capacity to understand and solve the urban problems in a collaborative way (Forsyth, 2006). It is more than public sector planning and building scale designs collapsed in parcels.

Participatory approaches including all the actors of the city is an important tool for sustainability. Environmental, social, economic and governmental issues should be

well analyzed from a broader perspective in order to understand the dynamics of the city (Madanipour, 2006).

In worldwide, challenges of the cities like increasing population, rapid urban growth, urban poverty, climate change, consumption of the resources, extreme economic and political changes and extreme situations like COVID 19 pandemic increases the importance of urban design which may create sustainable solutions to increase the quality of life even in the extreme situations and threats.

After World War II during 1940s-1950s, as result of a need for repair and reconstruction of the city, urban reconstruction projects have been started to be accepted by all the actors of the cities like private, public sectors and national government (Roberts, 2000). 1960's and 1970's the urban revitalization considering the improvement of the existing old urban fabric and urban renewal, became the main discussed urban strategies of this period. 1970's; economic, social and spatial issues in urban policies were started to be discussed. This continued with the urban redevelopment concept in 80's, focusing on local authorities and private sectors rather than national governments. Also collaborative partnerships between public-private sectors due to outcomes of globalization and competitiveness of the cities, gained importance. In 90's urban regeneration has become the major strategy for urban development as a holistic approach different than the other approaches of the different periods emphasizing on; economic, environmental, social, cultural and political dimensions (Bianchini and Parkinson, 1993; Duzcu, 2006)

After 90's, urban regeneration has become the driving tool for the economy. Abandoned industrial areas, old city centers and coastlines have become the most attractive places for the urban regeneration dwellers (Gospodini, 2010). This has been supported by the local and central governments and cities has been accepted as an important part of competitiveness of the international markets. Unfortunately, urban regeneration projects have been realized only in architectural scale not considering neither sustainability of the city nor spatial and socio-economic segregation as a result of neo-liberal policies.

Urban planning has been interested more in public sector, social issues and 2 dimensional master plans so the gap between urban planning and architecture in urban design scale has been tried to be filled by architects (Forsyth, 2006). As two disciplines couldn't meet at the same scale, the urban design projects as well as building scale projects like urban regeneration projects in Istanbul, are observed to be segregated from its environment not only spatially but also socio-economically. The results of such approaches can be seen in urban regeneration projects done in Fikirtepe, Sulukule, Tarlabası, Galataport and high rise building projects around E-5 Highways.

Nowadays, due to the increase in technological innovations, cities have more possibilities to adapt the technology into their system and increase the quality of life. Urban design acts as an intermediate between architecture and planning scales, where planning and architecture have becoming closer and interrelated with each

other. Urban design has power to change the city not only environmentally but also socially and economically. Urban design should answer the needs of the city with appropriate tools, actors, functions etc. It has a unifying crucial role between larger scale plans like masterplans and building scale (Madanipour, 2006)

The importance of urban design for the sustainability of the city should be implemented starting from education of architecture, landscape design and urban planning schools to professional life. This should be also addressed in the planning system of the cities.

This study discusses the need for an urban design education in architecture education considering multi-scale, multi-dimensional, multi-discipline and holistic approaches for a better professional practice and for the benefit of the nowadays cities like Istanbul with lack of holistic and sustainable approaches starting from planning scale to building scale. The urban design studio course (2019-2020, 2021-2022) discusses in this study has 3- 4 hours in a week, Design Studio VII (2017-2018) has 10 hours in a week. The courses have been given to the 3rd and 4th grade architecture students in Maltepe University. Discussions were done to address the relationship between the study area and the whole city, preserving historical value, nature and identity, including different social and economic classes, developing a collaborative and participatory holistic approach. In hybrid system (2021-2022) collaboration with public institutions like Kadıköy TAK and Kadıköy Municipality, online/ face to face seminars, juries, revisions from other disciplines and group works were the main keywords of the learning process of this course.

Importance of Urban Design in Architecture and Urban Planning Disciplines

The importance of urban design in architecture and urban planning as a junction point in both disciplines, has been significantly rising in worldwide. This can be seen also from competitions, best practices etc. The limitation of architectural projects only in project area/parcels, may end with inappropriate designs detached from the surrounding and the city. The responsibility of architecture for the well-being and sustainability of the city cannot be denied. An architectural project may act as a catalyzer for the city to be developed. These holistic examples can be seen in most of the implemented best practices like in London- Dockyards, Paris, Berlin, Liverpool, Rotterdam, Barcelona etc. in 80s and 90s (Gospodini, 2010).

Forsyth (2007) emphasizes that, urban design education can be efficiently prepared by a collaborative work. Urban planning discipline which is generally known with the preparation of city master plans should expand its interest towards urban design scale. It should meet with architecture discipline in urban design scale which has both 2 and 3 dimensional perspectives. The newly built areas are generally under interest of architecture, but understanding and solving existing problems of the city by urban design starting from city scale to the building scale can be realized by a

collaborative approach in education considering the related disciplines under the same studio (Forsyth, 2007).



Figure 1: Elephant & Castle project (Özyörük, 2021)

There are so many urban design projects take urban design as a holistic and collaborative tool for sustainable urban development. Elephant & Castle project which has started in 2001 and not finished yet, is designed according to the needs of local communities. The project has been done successfully as a result of public and private partnership. In addition to this, a transformation model with broad participation has been realized with non-governmental organizations, neighborhood residents and visitors. In the project; new public spaces, green areas, social housing and new transportation systems has been done in the whole area (Figure 1).

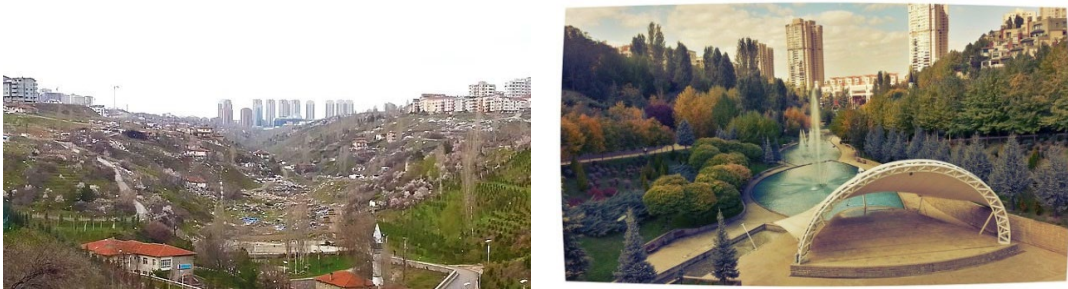


Figure 2: Ankara Dikmen Valley Urban Design Project (Özyörük, 2021)

Ankara Dikmen Valley Urban Design Project is one of the successful urban regeneration projects in Turkey. Urban transformation has been achieved by protecting the valley. The valley creates a green corridor which includes parks, public spaces and social housing areas. There is a public and private partnership in the project and an agreement has been made with the slum owners (Figure 2).

1. Education of Urban Design

Unfortunately, the education of urban design as an interdisciplinary discipline has still been coordinated by only architects in architecture education and by only urban planners in urban planning education in most of the Turkish universities. This cause

a gap between these disciplines because both have different perspectives and understanding of urban design. In most of the cases while architecture education accepts urban design with simple obligatory analyses not understanding or considering enough the integration with the city efficiently, urban planning education accepts urban design only 2 dimensional perspectives, not considering the 3 dimensional building scale design. But the changing and rising importance of urban design, together with rising importance of multidisciplinary, multidimensional and participatory approaches in all sectors, should have a common teaching methodology considering not only architects or not only urban planners but together with architects and urban planners also landscape architects, sociologist, urban economists etc. In order to achieve that appropriate teaching systems, urban design education should be integrated in the education of the architecture, urban planning and also landscape architecture disciplines. Scholarships, workshops, research projects or collaboration with private and public sectors by integrating the professionals, lecturers and the students participating to the real-life urban design process should be supported by the universities and public private institutions. By creating such alternative urban design education, innovative teaching systems can be developed (Forsyth, 2007).

During the education of architecture, urban design studios promote the architecture students reading/understanding the city, producing analyses and synthesis by urban researches and developing holistic, sustainable solutions for the city. The education of urban design studio should consider different issues like city as a whole, open public spaces, urban functions, transportation, natural and socio-economic environments, identity etc. together with spatial design. Urban design studios make the students to have experiences on creating a common understanding and making cooperation with other disciplines before starting their professional practices.

In Covid-19 pandemic the importance of technology has increased and the rising importance of online platforms in professional practices have also been taking place in the education of architecture, which was used to be done only face to face. In this perspective, a hybrid education process considering both online and face to face education methods have been experienced that facilitates the access to the knowledge and provide participating in the online seminars from different disciplines at different online platforms.

2. Urban Design Studio Experiences

In this study, Maltepe University, Architecture and Design Faculty, Architecture Department, Urban Design Studio class experiences 2017-2018 (10 hours, Design studio VIII), 2019-2020 (3 hours' urban design studio), 2021-2022 (4 hours urban design studio) will be discussed. These courses have been developed for the 3rd and 4th year of architecture students. The studio in 2017-2018 was face to face. In the beginning of the pandemic period the 2019-2020 urban design studio was instructed just online because of the lock down during pandemic. Finally, the 2021-2022 urban design course was decided to be done with a hybrid system. Beside

face to face education, online feedback processes, juries and seminars were experienced as the benefits of a hybrid system. Regarding to the experiences learnt from the studios; group works with around 3-4 students each, is very efficient for creating different discussions and developing common study perspectives in urban design studios during 3-4 hours per week. A group work gives opportunity to students for experiencing collaborative works. It would be better under a collaboration between different universities and different departments where different students from different disciplines like architects, urban planners and landscape architects may meet at the same studio. But lack of time and gaps at education system made this almost impossible.

During 14 week of urban design studio process following phases are programmed.

- Area visit and seminars
- Analyses
- Synthesis
- Concept
- Design

Between the phases there were juries and feedbacks are evaluated by the students.

2.1. ARCH 310 – MIMB 310: Design Studio VI (2017-2018 Spring)- Coastal Area (Bosphorous) And Old Industrial Area

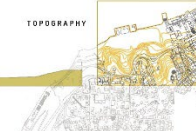
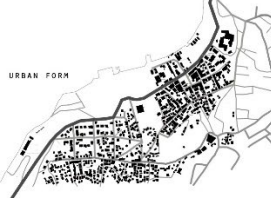
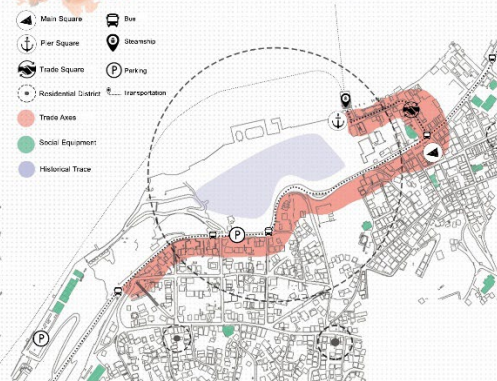
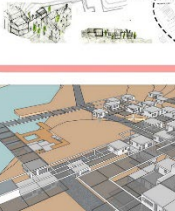
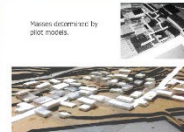
This urban design project is realized in Design Studio VII during 10 hours per week. The study area was chosen in Beykoz Paşabahçe Tekel Industry Area. (Figure 3, Table 1) The importance of coastal areas and their protection considering the Bosphorus was the main idea of the Project. Bosphorus, Bosphorus Law, Natural Protected Area, construction restrictions, public interest, coastal-public area relationship, historical and social heritage were the main discussions of the Project. Site visits and face to face seminars and juries are done.



Figure 3. Beykoz Paşabahçe Tekel Industry Area (URL 1)

As the studio was 10 hours per week, there were enough time for group discussions, benchmarking and individual design proposals. It was coordinated by Assoc. Prof.

Dr. Jülide Alp (urban planner) and Assist. Prof. Dr. Aliye Ceren Onur (urban planner). Each lecturer had an average of 16-18 students in their groups. This course can be explained as multidisciplinary as it was instructed by urban planners to architecture students which may give the students an opportunity to understand and read the city from a holistic point of view. It can be criticized with lack of collaboration with other institutions like municipalities etc. The submission was done with A3 booklet (print-out & online) and A0 poster (print-out & online).

AREA VISIT	BEYKOZ PASAŞABAHÇE
ANALYSIS + SCHEMES + MODEL OF LAND (1/2000) Analyzing relation with city, transportation, function, urban pattern, social life, urban identity etc. Discussions about urban problems, design proposals	UPPER STREET ANALYSIS BEYKOZ / PASAŞABAHÇE Project is in the middle of the edge of the Beşiktaş in Istanbul. It is close to the past and recently becomes isolated in the past. The project area includes green, sloping land. There are trade networks, squares and some transportation flows along the river. The land on the edge of the river is in closed condition and has small trees and pedestrian obstacles. TOPOGRAPHY  GREEN AREAS  COASTAL PATH  URBAN FORM  Legend: - Main Square - Pier Square - Trade Square - Residential District - Trade Area - Social Equipment - Historical Trace - Bus - Bicycle - Parking - Transportation 
SCENARIO/PRINCIPAL SKETCHES (1/2000 - 1/1000) Creating a program within the framework of the proposal scenario, bubble diagrams..	UPPER STREET        Notes: Notes determined by plot models.

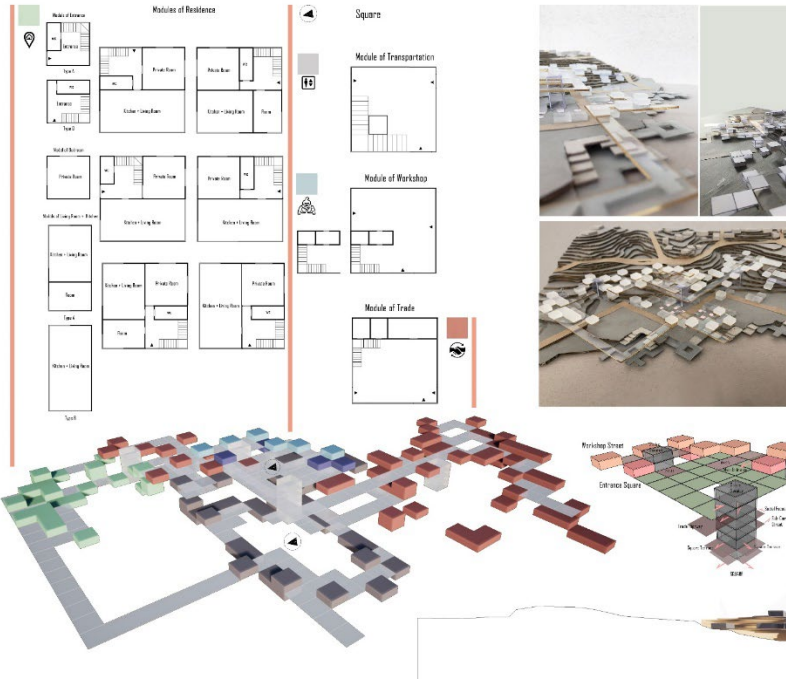
SITE PLAN (1/2000 - 1/1000) Mass site plan, pedestrian-vehicle transportation, functional zoning, open-semi open public spaces etc. LOCAL SITE PLAN / SCHEMATIC FLOOR PLANS / SCHEMATIC SECTION (1/500)	
DETAIL PLANS, SECTION, ELEVATION (1/500 - 1/200)	

Table 1. Program and student works of ARCH 310 – MIMB 310: DESIGN STUDIO VI (2017-2018 Spring)

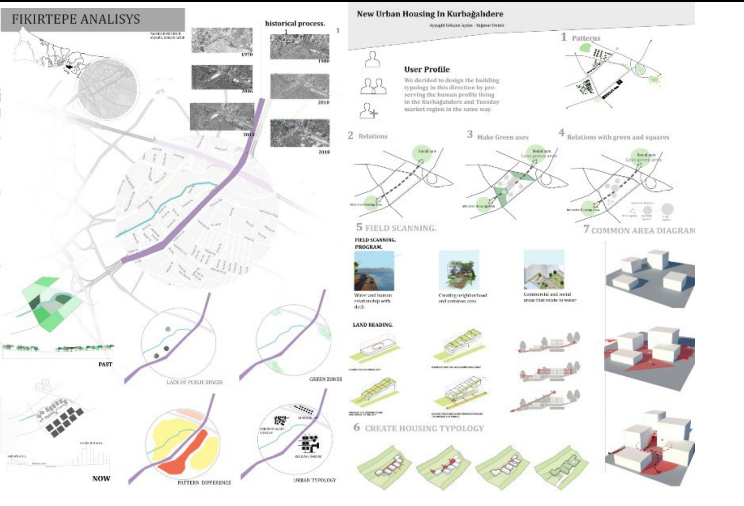
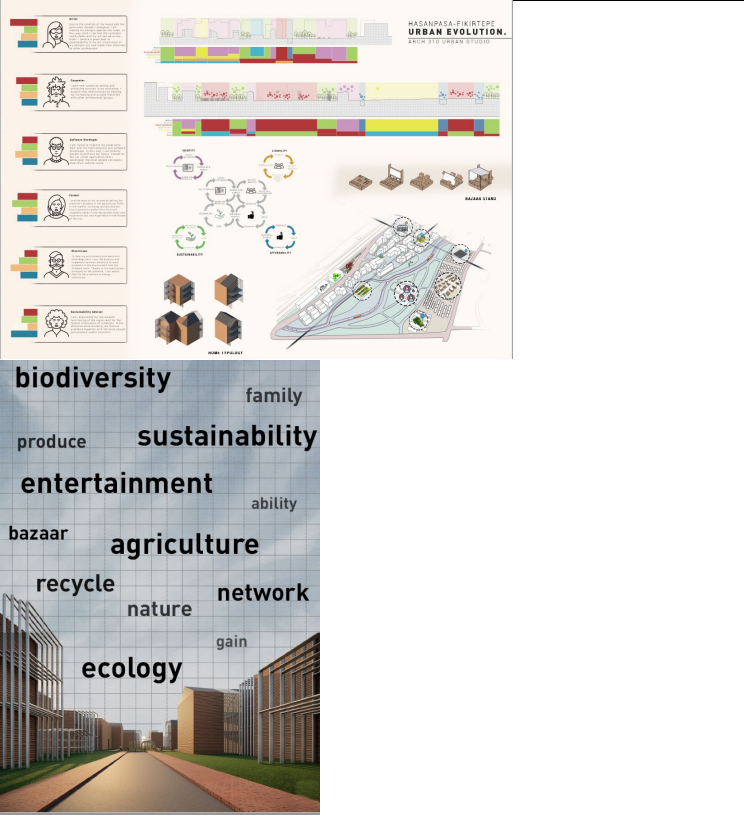
2.2. ARCH 356 – MİMB 356: URBAN DESIGN STUDIO (2019-2020 Spring) – Salıpazarı and gecekondu areas

This urban design studio was instructed 3 hours per week. The study area was chosen Salıpazarı- Gecekondu areas in Fikirtepe (Figure 4, Table2). The regeneration projects in gecekondu areas and the importance of urban rivers/streams were tried to be emphasized in this Project. Urban regeneration, public space, public interest, urban river/streams, potential green corridors in city center, river-public area relationship, Fikirtepe urban regeneration, regeneration of gecekondu areas, gentrification, socio-spatial segregation were the main discussions of the Project. Site visits were done by the students' efforts but it was very difficult for some of them to go to the situ because of the beginning of pandemic and the security problems of the area.



Figure 4. Salıpazarı and closed gecekondu areas (URL 2)

In the beginning, the studio was started as face to face, but less than 2-3 weeks because of pandemic lock down it was obligated to be done online including seminars and juries. The studio was 3 hours per week and there were connection problems in the beginning of the pandemic lock down. So there wasn't enough time for discussions and benchmarking. It was coordinated by Assoc. Prof. Dr. Jülide Alp (urban planner) and Assist. Prof. Dr. Aliye Ceren Onur (urban planner) and lecturers were Berrin Özdemir (Architect) and Arch. Özge Saatçi (Architect). Each lecturer had an average of 14-16 students in their groups. This course can be explained as multidisciplinary as it was instructed by urban planners and architects to architecture students which may give the students an opportunity to understand and read the city from a holistic point of view. It can be criticized with lack of collaboration with other institutions like municipalities etc. The submission was done with A3 booklet (online) and A0 poster (online).

AREA VISIT	SALIPAZARI AND CLOSED GECEKONDU AREAS
ANALYSIS PROCESS: ANALYSIS + MAPPING	
DESIGN PROCESS I: SCENARIO + CONCEPT	

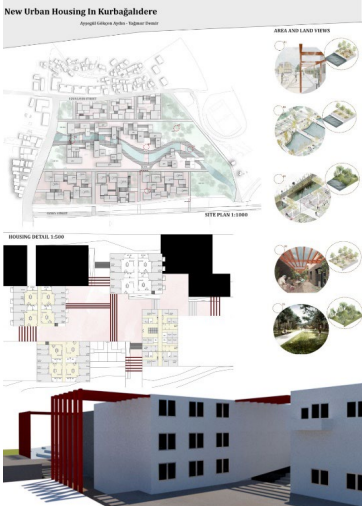
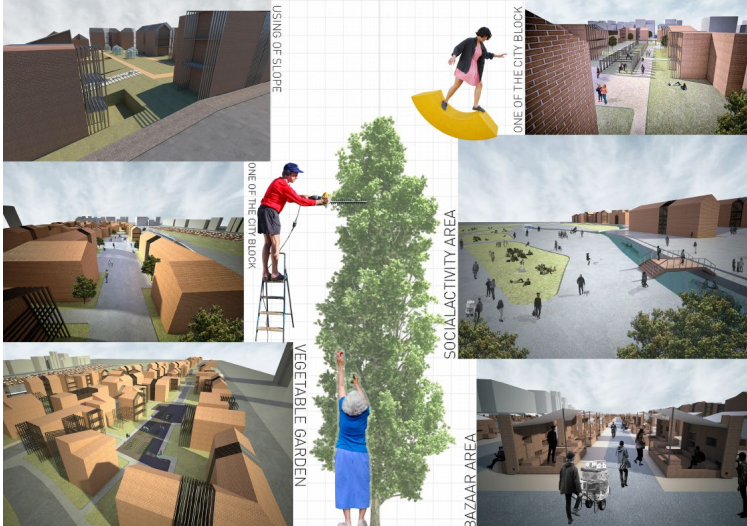
DESIGN PROCESS II: UPPER SCALE PLAN APPROACH DESIGN PROCESS III: SITE PLAN (1/1000) + PEDESTRIAN&VEHICL E TRANSPORTATION SYSTEM	
LOCAL SITE PLAN / SCHEMATIC FLOOR PLANS / SCHEMATIC SECTION (1/500) DETAIL PLANS, SECTION, ELEVATION (1/500 – 1/200)	

Table 2. Program and student works of ARCH 310 – MİMB 310: DESIGN STUDIO VI (2017-2018 Spring)

2.3. ARCH 415 – MİMB 415: URBAN DESIGN STUDIO (2021-2022 Autumn)- Historical area, neighbourhood

For the study area; six building islands was chosen in Kadıköy Yeldeğirmeni Neighborhood (Figure 5, Table 3). The relation with the central areas, historical value and identity, socio-cultural diversities and possibilities of associations with the institutions in order to support the participatory approach, were the significant reasons for choosing the project area. Urban revitalization, urban re-functioning, historical area, urban center, public Space, public interest, socio cultural life, pedestrian city, neighbourhood, urban identity, urban morphology were the main working topics discussed in Kadıköy Yeldeğirmeni Neighborhood.

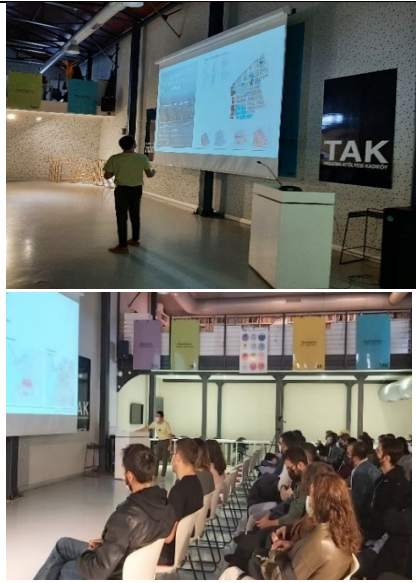


Figure 5. Kadıköy Yeldeğirmeni Neighborhood project area. (URL 3)

A collaboration was done with Kadıköy Municipality and Kadıköy Design Atelier (TAK) in this process. With field trips, students were able to understand local life and make a richer reading about the social structure. Because of limited lecture time, students couldn't work with the citizens in situ. Also online seminars and 3 juries are done during 14-week education period. In the seminars professionals who have urban design experience were invited online to share their experiences in urban design and Yeldeğirmeni- Kadıköy neighborhood. It was coordinated by Prof. Dr. Derya Oktay (Architect) and the other lecturers were Assoc. Prof. Dr. Elif Yeşim Kösten (Architect), Assoc. Prof. Dr. Jülide Alp (urban planner) and Assist. Prof. Dr. Aliye Ceren Onur (urban planner). This course can be explained as in accordance with a collaborative and multidisciplinary perspective. Each lecturer had an average of 10-15 students in their groups. A hybrid education system (because of pandemic) with studios, juries and seminars. The submission were done with A3 booklet (online) and A0 poster (online). The excess amount of paper consumption is tried to be minimized and the dissemination of the results are facilitated by online submissions.

AREA VISIT&SEMINAR in TAK Kadıköy

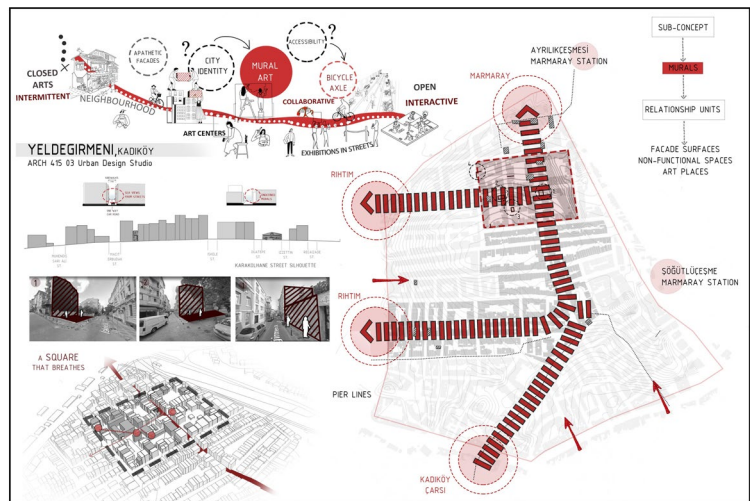
First week of the studio is done in Kadıköy TAK with collaborative seminar explaining the history, development, problems and potentials of the area and its importance with Istanbul and Kadıköy. After seminar there was a field trip with the students.



ANALYSIS + MAPPING + SYNTHESIS

Analyses are done from city scale to urban design scale including citywide transportation centers of the city close area relations (Kadıköy) are tried to be analyzed considering transportation, green and built area analyses, historical, social and economic identities.

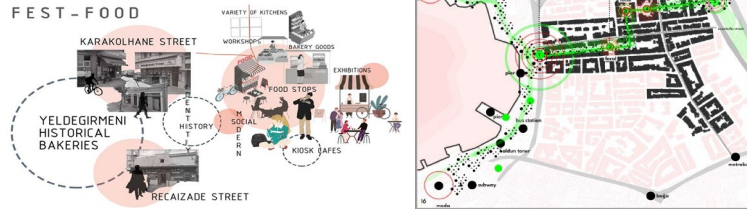
Synthesis is an important component of urban design projects. In most of the cases this process is neglected by the students and lecturers. But it is a phase which has to be done before the concept phase. It doesn't only show the problems but also the potentials of the area. Synthesis has to be thought in connection with the whole city and the close area of the urban design project area.



DESIGN PROCESS I: SCENARIO CONCEPT

Integration with the city, green corridors, public areas, protecting the history etc. are the main strategies for a sustainable concept in urban design. These keywords are tried to be integrated with the main concept of the study area.

Creating a program within the framework of the proposal scenario ,bubble diagrams..



DESIGN PROCESS II: UPPER SCALE PLAN APPROACH (1/5000)

DESIGN PROCESS III: SITE PLAN (1/1000) + PEDESTRIAN&VEHICLE TRANSPORTATION SYSTEM

Design is not process collapsed only in study area especially in urban design. It should start from upper scale in connection with the city. It can be done starting from 1000 scale – 200 scale. Each scale should be complementary of each other. It should try to find solutions for the needs in different scales.

It is aimed to **restore** the registered buildings in the building block, where the green pedestrian axis is located, by using **renewable materials**, to change their functions, to transform them into a museum, and to exhibit the works done in the workshops related to sustainability and renewability to be created on the ground floors of the axis buildings that continue along an axis. By constructing a public open space in front of the synagogue, which we encounter in the inner courtyard, it is aimed to cut the continuous slope to a certain extent and to integrate the square and axis setup at the same time. Thus, the symbolic/cultural/religious assets in the city center were protected.



site plan scale 1/1000

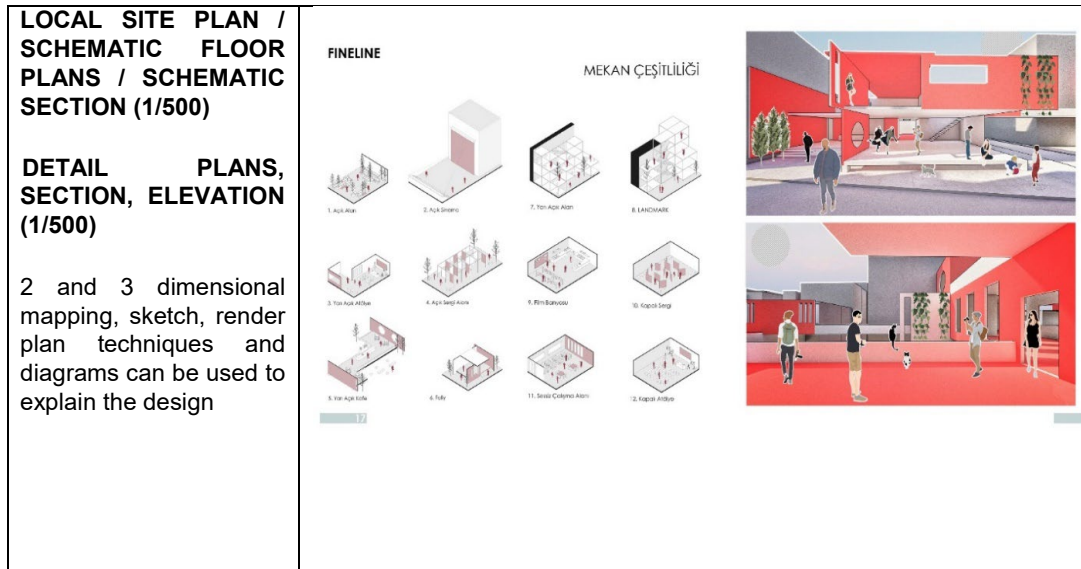


Table 3. Program and student works of ARCH 415 – MİMB 415: URBAN DESIGN STUDIO (2021-2022 Autumn)

Evaluation

As a result of these studio experiences, architecture students were more close to understand the importance of urban design as it can be a catalyzer for the city to support sustainability and well-being by increasing quality of life. In order to have a sustainable, holistic and livable city, urban design approaches should be integrated with architecture and urban planning starting from design education (Table 4). The analyses made in different scale from city to building scale made students to understand to real need of the city in different levels. Students have already experienced city based analyses in design studios, but in architecture design studios, the analyses are generally made without considering enough the real needs of the city and /or the close surrounding of the project area. Urban design studios make students to understand the integration of architecture projects for the city which is beyond just designing the study area. The urban design scale process from city level to building scale is very important. Students may find to contact with the citizens even though there was a limited time for participatory process. This shows the need for an urban design based design studio in order to be more productive especially realizing participatory approaches in situ.

In order to have a sustainable, holistic, liveable cities, urban design approach should start from the design education.

Existing design education and Professional life of urban implementations;

- Not enough being multidisciplinary, participatory and multi dimensional
- Lack of holistic approaches
- Not enough discussing the urban problems/ concepts.



SO;

- Multidisciplinary approaches (urban planners, architects, landscape architects, sociologists etc.)
- Participatory approaches considering all sectors (Public-private partnerships in education)
- Cross sectional studios/ workshops/seminars / benchmarking in education (like urban planning studios and architecture studios together)
- Online/Face to face hybrid education/platforms to facilitate the cooperations and benchmarking.
- Involving real-life urban design projects (supported by private sectors like star architects, known design offices)
- Support from universities (facilitating partnerships and collaborations between faculties and other universities/sectors)
- Being effective in technology and innovations
- Involving into research projects like TÜBİTAK, EU Projects

Table 4. Urban design education approach.

A multidisciplinary learning system increases its importance in all the fields and sectors. This kind of collaborative studios should be created and the system of the universities should be adapted according to this new changing perspective, considering architects, urban planners, landscape architect's lecturers and students under the same studio having guidance from sociology, economy and even psychology or engineering disciplines where needed under collaborations between different universities and departments. Additional obligatory or selective courses related with the city should be developed in order to support urban design studios. Seminars, benchmarking, participatory workshops both online/face to face are important components of urban design especially during and after Pandemic. In order to achieve these activities, more hours for urban design studios are needed. Appropriate collaborations with NGO's, institutions, organizations and people have crucial importance in this education. The participatory, collaborative, multidisciplinary, multidimensional perspective of sustainability should start from education, and continue in professional life. Research on cities considering urban design should be supported by universities and other public and private institutions. It should be kept in the mind that urban design is a catalyzer for the sustainable urban development especially for cities like Istanbul.

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Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography

Pedro NETO¹

^{1st} Author's e-mail: pneto@arq.up.pt

Abstract

This paper synthetizes theoretical aspects of photography related to architecture, city and territory, as well as the case studies coming from the research project Visual Spaces of Change, focusing on the use of photography to investigate the dynamics of architecture and urban change. The project proposed to engage researchers and artists from the fields of architecture, art and image in the creation of visual narratives that promote a new understanding about architecture as well as public debates on urban change in the Porto Metropolitan Area. The methodological framework adopted was designed with special attention to the multidisciplinary character of this project, complementing each other and putting in relation the various aspects covered within this integrative approach regarding Architecture, City and Territory. Thus, the research implied, for the first case study, promoting a series of open talks, public presentations and exhibitions of contemporary photography projects related to the subjects of Architecture, City and Territory during the years of 2019 and 2020 on several public spaces and Metro Stations of Oporto City. These initiatives intended to broaden the discussion about how architecture transforms and is transformed by trends and ways of living, using as its subject of study Porto's Metropolitan Area and the results from this case study had as base the several impressions from the audience collected through qualitative survey. For the second case study, a pedagogical experiment was taken that builds up on previous research combining blended learning and e-learning with visual research methods and photographic that enabled students to manage the whole process of conception, development and implementation of photography projects in a collaborative learning environment. The results from this case study had as base the several impressions from the students collected through quantitative and qualitative survey.

The potential of visual methods for communicating the identity and transformation of architectures and public spaces are made clear through the discussion of photography (including its uses, methods and approaches) as a valuable research tool and technique to disseminate architecture and public space problematics in contemporary cities. The paper presents the results of the qualitative survey made to the audience of four site-specific exhibitions comprehending visual narratives produced in the context of the research project, as well as the survey made to students of Architecture from third year (1^o cycle) in the Faculty of Architecture of University of Porto (FAUP).

Keywords: *visual spaces of change; architecture; photography*

1. Photography in the field of architecture, city and territory

The uses of photography as a research instrument in the fields of architecture, city and territory follows the proposition that valid scientific insight in social and natural sciences can be acquired by observing, analysing, and theorizing its visual manifestations¹. From this perspective, the use of photography may contribute to the creation of a knowledge-enabling environment that allows a specific study of architectural forms and spatial realities, its transformations and appropriations, rendering visible aspects of urban spaces where people socialize and interact which would be difficult to perceive without the use of images and photography.

The use of visual methods and tools in research may open the door to a deeper understanding and interpretation of social realities but visual culture continues to be controversial². Visual studies have been criticized for their insufficient methodological instruments of discourse analysis³, and certain researchers even point out that an excessive emphasis on visualization and imagery can impoverish communication⁴. The discussion on the validity of visual evidence is particularly polemic when it comes to the analysis in the investigation of urban matters and the respective social fields⁵. In fact, while the use of photography has massively penetrated the fields of architecture, city and territory, there is limited research on the use of visual data in the study of urban matters. This results in shortcomings on current research in visual studies, often facing severe criticism of disregarding methodological issues, including problems of unintended bias, lack of rigor and active misrepresentation⁶.

The development of an informed and independent reasoning by a visual researcher and its expression through a photographic series implies the possibility to critically think the political, economic and social dimensions of the object being analyzed. From this perspective, the selection of the appropriate methods and the pertinence of its uses according to the specificity of the problem is paramount for developing a visual communication strategy of the object being studied. As Banks argues, the capacity to correctly select and manipulate visual information, constitutes the unifying element for deciphering how people build the world around them, what they are doing, or what is happening to them in terms that are meaningful and offer enriching perspectives⁷. An integrative approach towards communicating, exploring and perceiving architecture and public space transformation requires a number of theoretical and practical challenges, but it is not clear what might be the common level of abstractness of representation methods to be used or the level of complexity of the design issues to obtain an effective communication with the public, e.g., type and level of realism of representation to be used.

Therefore, the type of information that it is intended to communicate can and should explain the use of the different types of representation methods⁸. Thus, photography can be combined with other materials and forms of visual expression, introducing an admittedly subjective view that uses the theme and subject matter

of architecture and urban spaces to communicate something more than is common in architectural photographs. Through these interdisciplinary approaches, the articulation of photography with other analogue and digital supports of image may be explored, sometimes incorporating texts, personal stories, drawings and other images in addition to photographic images. The combined use of these resources addresses particularly useful aspects in the study of architectural objects and urban landscapes, providing the researcher with essential research tools and communication strategies as seen in the work of, e.g., Martino Stierli; Luca Galofaro; Klaus Bollinger, Florian Medicus and Kiesler Privatstiftung Wien; Eric Margolis and Luc Pauwels; Theo Van Leeuwen and Carey Jewitt and Gillian Rose⁹.

A visual researcher can explore the potential of image in its broadest sense, encompassing photography as an object of thought and production of meaning with the possibility of creating fictional and symbolic worlds. Photography has the ability to move between reality and fiction, rendering visible innovative visions and introducing new links between realistic representations, fictional worlds and symbolic meanings. These features are identifiable in the work of several photographers, for example: Filip Dujardin's work addressing the potential of digital manipulation of images to represent new spatial forms and architectures and creating new imaginary spaces¹⁰; Bas Princen's work rendering visible transformations of urban landscapes that have not yet occurred and altering notions of time¹¹; Paulo Catrica's work on landscape and architecture that constitutes a synthesis and insightful perspective of a recent past, and present realities of hybrid city spaces¹²; Paolo Rosselli's and Philip Schaerer's work creating exploratory and fictional images using specialized digital montage techniques.¹³

Also, in the sense given by Walter Benjamin when speaking of photography as a constructive and depositary object of cognitive forms, capable of establishing a connection between the real and the imaginary¹⁴. Or remembering Susan Sontag when she mentions that all the photographs witness the relentless dissolution of time¹⁵, or, Roland Barthes who says that photography is unclassifiable because it is always invisible, we never see photography in itself but rather what it gives us to see¹⁶. For example, the ephemeral character of memory, its apparent fragility and possibility of partial or total disappearance, as well as its complexity, is enough to think that the act of remembering always implies the recovery, from the preserved memory, of something which has already happened, and therefore, incorporates a diffuse temporal structure.

It is important to mention these less evident dimensions of memory related with space, where fictional or artistic expression assume significant relevance for understanding architecture as a comprehensive discipline and practice capable of integrating psychological domains. The city is understood as a living organism, a rich and multifaceted space defined by various experiences and architectural programs that result from the knowledge, beliefs, values and customs

characterizing different social contexts. Through this process of memory and experience of space, the visual researcher and audience may find in photography appropriate tools to interact with the physical environment, developing relationships and creating connections with the surrounding space, turning anonymous spaces in meaningful places to which people are connected and that therefore, compete for the construction of their identities.

In addition, connections can be made between identity and place: meaningful spaces, with which there is a certain familiarity and/or a sense of being at home; and between identity, feeling of disorientation or anxiety, and that which is fragmentary and/or an experience of non-place. The photographic image communicates not only the perceptions gathered from these spaces but also emotions, whether they are sympathies, inclinations, hatreds or other psychic sensations: the set of experiences that move from physical space to the psychic and emotional, transforming the images of photography in the medium through which we establish with these places, known or imagined, a certain understanding. The photographic image always has some influence on how the past is remembered and how memories are constructed in an uncontested way by the various images of past events or situations.

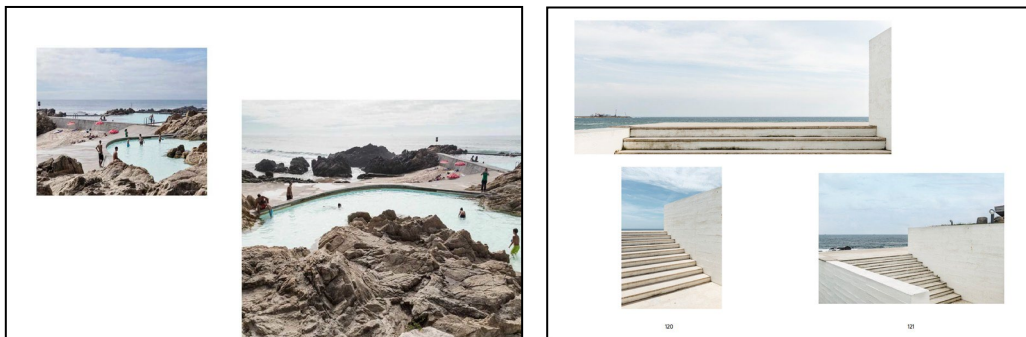


Figure 1: Left images is a diptic of Álvaro Siza's Piscina das Marés (Marta Ferreira) and the triptic on the right side is a sequence of different vistas when walking towards Álvaro Siza's Boa Nova restaurant (Helder Sousa), VSC Exhibition at FAUP 2020 (Source: VSC)

The weight and intentionality contained in the act of photographing proposes that photographic images can be instruments of representation and conception in the practice and discipline of architecture and urban thinking that demand a comprehensive understanding of visual culture, capable of integrating and giving meaning to its various dimensions (technical, social, economic, historical, political and artistic). This means, among other things, to perceive the photographic image as an instrument of architectural thought beyond a constructive or technical representation and, therefore, a medium of conceptualization in the universe of architecture – the image is used as an instrument of design in architectural practice and theory.

It is relevant to refer the importance of photography being able of communicating the important and singular relationship that architecture can establish with the

context in which it is inserted, the poetics of the ensemble, and the work itself, as well as being used to construct a narrative capable of transmitting a sense of sequence of spaces and direction of movement along the lines of what Le Corbusier termed as *Promenade Architecturale*¹⁷. In fact, reflecting on the importance of the path for understanding architecture, it is important to keep in mind that our perception of space is linked in general to the direction of our path, which involves movement and displacement¹⁸. To summarize, it is important to create through photography visual narratives that might afford the opportunity to explore and communicate, via an architectural and fictional point of view, the real space and their experiences, telling us a story about the spaces through a journey composed of successive moments, ones that are quite close to a real experience. The weight and intentionality contained in the act of photographing proposes that photographic images can be instruments of representation and conception in the practice and discipline of architecture.

1. Methodology

The case studies of the Visual Spaces of Change (VSC) research project promoted a series of open talks, public presentations and exhibitions of contemporary photography projects related to the subjects of Architecture, City and Territory during the years of 2019 and beginning of 2021. These initiatives intended to broaden the discussion about how architecture transforms and is transformed by trends and ways of living, using as its subject of study Porto's Metropolitan Area.

The methodology developed in this pedagogical experiment builds up on previous research combining blended learning and e-learning with visual research methods and photographic techniques that enable students to manage the whole process of conception, development and implementation of photography projects in a collaborative learning environment. The use of these different components allowed to enhance the articulation of activities between teaching staff, researchers and students, enabling the exchange of knowledge and explore scientific and technological capabilities of each of the participants. The learning activities of the VSC project have been structured in two main technical and artistic components which enable the researchers to develop individual photographic projects inserted in a collective pedagogical strategy containing various communication tools, representation methods, visualization techniques, and involving multiple interaction levels and new ways for the researcher to understand and relate with various aspects of the public space.

The methodological framework has been designed with special attention to the multidisciplinary character of this project, complementing each other and putting in relation the various aspects covered within this integrative approach regarding Architecture, City and Territory. Within this general approach, the researchers involved in the VSC project developed empirical investigations in concrete case studies of selected urban spaces, confronting the present reality of specific places with documentary photographs and original photographs taken from chosen viewpoints of the study objects. Practical exercises of image manipulation and

diachronic reconstitutions of certain landscapes organized in temporal layers, allowed to visualize changes in the configuration of public spaces – these diachronic reconstitutions were not only based in the research of historical records, but were also combined with other techniques of photo montage and the overlap of temporal sequences, among other techniques of image manipulation from existing urban spaces.

The identification of the VSC public spaces for this first case study were restricted to a set of MetroStations located not so far apart from each other – because of technical and administrative reasons. This first case study was complemented with the second case study, a major exhibition of those same Contemporary Photography projects that took place at FAUP using its outdoor and indoor spaces, in order to give force to some of the results obtained with the former case study and maximize its experimental potential. The collection and systematization of visual information about the selected places constitutes the working database of the research, which is an ongoing process organized in three main information blocks: cartography (maps and satellite images), photography (document and artistic registries of selected locations), and historiography (monographs and previous research). These elements have been used in order to characterize the main features of each photographic project, providing the means to create a comprehensive analysis of the territory under study. The contextualization of the collected material focused on the evolution of architecture and public spaces and the modes of appropriation of the cultural and symbolic meaning of particular places.

Informed by the material collected for each architecture selected in the data collection within the VSC project, empirical investigations in the field has been held in order to compare the present reality of each specific place, producing original current records of the same viewpoints found in the data collection surveyed. In this context, a set of critical visual narratives have been constructed about architecture, public space and their experiences, through the art and technique of photography, it was necessary to adopt a photography teaching strategy that integrated, from the outset technical and aesthetic aspects. This meant, first, to convey the idea that photography is a unique form (art and technique) of visual language and as such is based on a specific visual grammar.

In both case studies, this research explored the universes of photography and editorial in two complementary strands: (i) The exhibition of Contemporary Photography Projects in several public spaces of collective use located in Porto's Metropolitan Area and (ii) an Exhibition of alternative publications for the dissemination of authors and photographic works with a particular focus on Architecture, City and Territory.

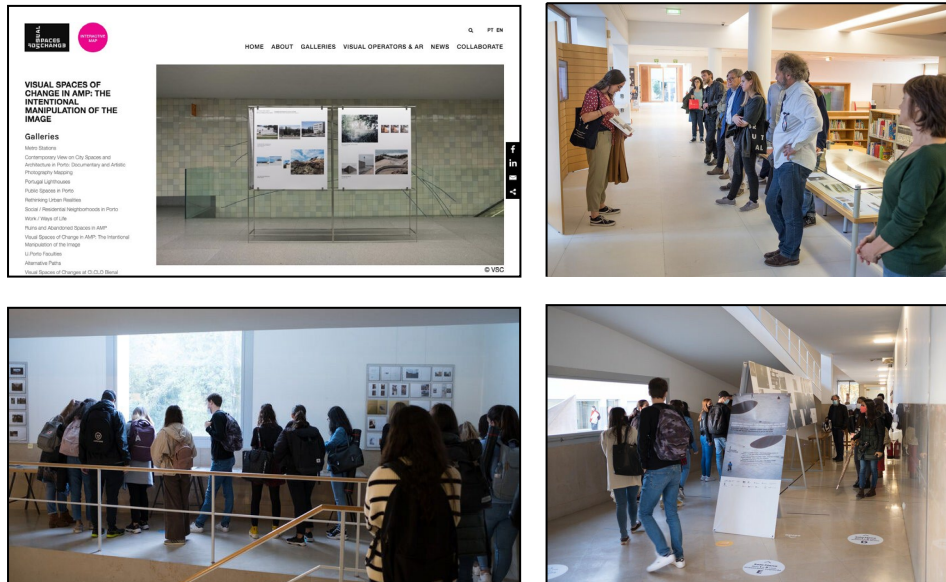


Figure 2: These images starting from top left clockwise direction display The Visual Spaces of Change online platform; Debate and presentation that occurred during Ci.CLO 2019; VSC Exhibition at FAUP 2020 (Source: VSC)

A total of seven photography projects were exhibited, plus one video project. The seven photographic projects are: Fendas Intemporais by Jiôn Kiim and Artur Leão; Clareira by Ana Miriam; Ode by Edu Silva; Piscina das Marés by Marta Ferreira; Contínuo by Sérgio Rolando; Casa de Chá da Boa Nova by Hélder Sousa; Momento. Percepção – Representação by Sofia F. Augusto. The exhibited video project is called Déjà Vu – Uma Lembrança do Presente, a work by Leonardo Motta Campos (AoLeo).

During the exhibitions, that took place between 2019 and the beginning of 2021, a series of public presentations of the projects with the presence of the authors was organized, in order to promote the debate about the multiple representations of the public space as well as its own process of change. The activities proposed in both case studies were oriented towards an understanding of the processes of interrelations between Architecture, Art and Image, identifying the points of articulation of the ethical and aesthetic dimensions of these universes.

4. The questionnaires and its methodology

The questionnaires applied in the context of each exhibition held within the VSC project for both case studies adopted an on-site approach. It was explained to the respondents that the data provided would only serve for qualitative purposes in the specific context of the scope of the project Visual Spaces of Change, and subject privacy has been guaranteed. Surveys were made face-to-face and individually, and wherever possible the conversation has been recorded, making sure that the

areawhere the surveys were conducted was sufficiently isolated from noises that would impede this recording. Three publicly announced exhibitions of contemporary photographic projects took place. In result of the interest in having the respondents' qualitative evaluation of the exhibition of photographic projects and the questionnaires, several open-ended questions were included in the questionnaires. To test both the exhibition of photographic projects and the content of the questionnaire before conducting the public presentations, some adjustments were made to the content of the questionnaire given to the public in order to facilitate the respondents' answers.

5. Results

The main results of the research were obtained through interviews and questionnaires used for collecting quantitative and qualitative information about respondents' perceptions towards specific public spaces of Porto's Metropolitan Area. A broad set of issues have been addressed, directing the questions to aspects related with spatial experiences and subjective perceptions of urban transformation. The key aspect addressed in the questionnaires in both case studies was the impact of each photographic project in individuals' perceptions regarding the transformations of the physical spaces selected as objects of study within the VSC project, reflecting questions about the processes of change that occurred over time, driving the conversation towards individual memories of these places by the respondents.

We will not describe in this paper the results obtained in the first case study, which can be consulted in other publications¹⁹, but will refer to some of the most interesting results obtained with second case study of FAUP and compare these with former and draw some possible deductions.

For the second case study, a pedagogical experiment was taken that builds up on previous research combining blended learning and e-learning with visual research methods and photographic that enabled students to manage the whole process of conception, development and implementation of photography projects in a collaborative learning environment. The results from this case study had as base the several impressions from 34 students collected through quantitative and qualitative surveys.

A significant result of the questionnaires concerns the high percentage of students considering the exhibition of the photography series and visual narratives important for: (i) encouraging a site visit to the architectures and places being communicated, (ii) for stimulating critical thinking about the architectures and places being communicated, (iii) for modifying our perception for those spaces giving a new insight about the architectures and places being communicated.



Figure 3: These charts starting from top left clockwise direction display the data obtained from questions (i), (ii) and (iii) (Source: VSC).

These results confirm the importance given to the same issues by the respondents of the 1st case study, just to make a case in point, namely issues as “To what extent your perception about the spaces portrayed has changed?” and “To what extent do you think this exhibition enriches the debate about architecture, public space and urban transformation?”, where a large majority of the respondents recognized that the photographic projects had an impact on their perception about the architectures and places portrayed¹⁸.

Also, based on the overall results of the queries of both first and second case studies, we can sustain that these initiatives were successful in promoting the debate on the current dynamics of use and appropriation of certain spaces in Porto’s Metropolitan Area. This happened during the 1st case study exhibitions / debates and now with the students in this 2nd case study, which proved to be an important Agora to trigger the debate about the importance of architecture and public spaces, as well as to reflect about the best ways to communicate and talk about these issues.

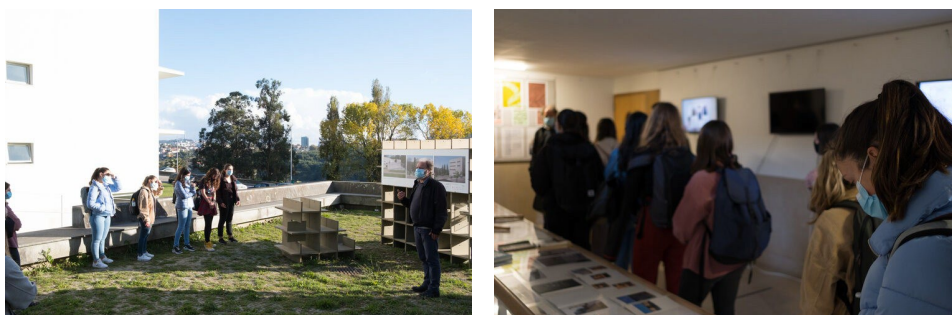


Figure 4: These images starting from left display open space presentation to students and the right image a visit to indoor exhibition with tables for book format and videos, FAUP 2020 (Source: VSC)

While it is not possible within the limits of this paper to present an exhaustive list with the contributions made by the respondents (students) it is important, however, to mention their opinion on certain aspects related to visual strategies and ways of communicating architecture through a photography series. One aspect is the importance of the exhibition to integrate several supports (videoprojection, panels with visual narratives and the photographic series and text about the architecture being communicated in book format and online gallery). Then, to have the curator or authors of the photographic series of the exhibition explaining the visual narratives and to have a space and time for open discussion and critical thinking about architecture and public space based on the exhibition. Finally, it is worth to mention that the different kinds of visualisation of each photographic series offered by the VSC Galleries were considered very important for the individuals' perceptions regarding the transformations of the physical spaces and the architecture being communicated, namely the most sophisticated Gallery called Diacronic Landscapes.

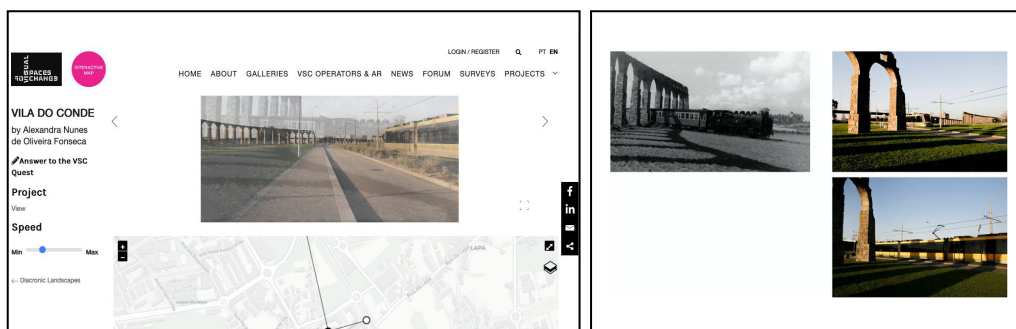


Figure 5: These images starting from left display the Diacronic Landscapes Gallery, FAUP 2020 (Source: VSC).

Being still difficult to clearly find a pattern regarding the opinions of the public in 1st case study and students in 2nd case study about the impact of the VSC project in the debate on architecture, publicspace and urban transformation, we can see that the positive opinions of the younger age groups of 1st case study are reinforced by the opinion of the students in this 2nd case study, namely a positive opinion about the extent to which the exhibited photographic projects enrich the

debate and perception about architecture and public spaces and of how these are used by people.

5. Conclusion

The self-replicating potential of this open public and pedagogical experiment will allow to expand communication and interaction capacities between the public, students, researchers and institutions, namely opening academia to society and allowing the creation of synergies between them. It is expected that the VSC platform will potentiate interaction, feedback, and networking among the participants in a pedagogical process designed to structure, represent and expose individual and/or collective interpretations of their social reality, stimulating the capacity of the public and academic community to understand and to critically think and act over its transformation. If and when the capabilities of this case study are used in its fullness, these may prove the potential of image for broadening horizons both for academic teaching, learning and research, making citizens in general as well as the academic community more conducive to the construction of new spaces of political discussion and social intervention.

The various photographic projects and site-specific exhibitions facilitated the access to its often- invisible problematics and language, creating localized forums for discussion of perceptions and memories of the city, while contributing to the dissemination of a language that will allow public participation in future discussion on the transformations of urban spaces. And, in doing so, addresses issues such as the need for correctly selecting and manipulate visual information, with the objective of allowing a richer and more comprehensive experience and understanding of architecture and public space.

These distinct photographic projects, with their visual narratives, contributed to enrich and inform the perception and memory of the spaces photographed, while creating “visual pathways” to intentionally interfere with the territory in a self-reflective representation of its own process of change. They give visibility to spatial and temporal aspects that are difficult to perceive without the purposeful use of photography and imagery, which reinforces the claim of photography as an object of thought and production of meaning for rendering visible transformations of architecture and urban landscapes and altering notions of time. The proximity between these visual narratives connected by the Metrodo Porto, its stations and urban pathways suggest a network, an “Open Museum” in the metropolitan area, which extend their reach to collectively transform imaginings of the city.

The questionnaires addressed the impact of each photographic project in the perception of the physical space’s transformation, its spatial experiences and subjective perceptions. The results indicate that a large majority of the respondents recognized that the photographic projects had an impact on their perception of the architectures and places portrayed in the exhibitions, and also on the role of the photographic projects in this process.

As a general conclusion, we have enough elements to confirm that the choice of the communication strategy adopted in both case studies for each photographic project should depend on a number of variables to be taken into account, namely the possibility of the authors to be present in live sessions explaining their visual narratives to the public and the use of different support and visual strategies. The research conducted so far confirms that the photographic projects developed by the researchers and students involved in the VSC project made a useful contribution to make the general public more conscious and to participate in problems of common concern regarding the transformation of concrete public spaces, engaging to the general public in specific issues. The present study certainly confirms this potential while exposing some shortcomings regarding its impacts on urban change. However, it is remarkable that the potential of bringing about real change in urban matters is significantly potentiated by making the research products of the VSC project available online, which will be happening in the near future with more force, allowing a more dynamic interaction between the locations where photographic projects are being developed, and the general public, as well as enabling to communicate diverse aspects of these spaces from various perspectives and disciplinary backgrounds.

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DIALOGUE 4: CO-REFLECTIONS ON DISASTERS

Investigating the Multidisciplinary Design Process in Architectural Design Studio: A Collaborative Digital Studio Context “House During & After Pandemic”

Esin HASGÜL¹, Berkay OSKAY², H. Nur KIZILYAPRAK³, Şeyda ŞEN⁴, Gamze ALPTEKİN⁵

1st Author's e-mail: e.hasgul@iku.edu.tr

2nd Author's e-mail: berkayoskay@yandex.com

3rd Author's e-mail: nur.kizilyaprak@gmail.com

4th Author's e-mail: seyda.sen@iku.edu.tr

5th Author's e-mail: g.alptekin@iku.edu.tr

Abstract

This paper aims to investigate the multidisciplinary design process in architectural design studio within reflections of Covid-19 pandemic concluding as a digital studio education experience. The process of pandemic is being taken as an urgent circumstance ended up with a digital design studio context where both lecturers and students have been faced with. In this study, it is questioned that if it is possible to carry out a collaborative studio process in architectural education in which dialogues between people with different fields of expertise can be constructed. To do so, the design studio context is structured through lecturers from different expertise; architectural design, building science and restoration. In addition, the structure of the design studio was determined involving meeting and discussion platforms by different age groups and professions.

Linking the collaborative design studio with the digital learning approaches in pandemic process, the subject of the Architectural Design Studio III which is held in 2020-2021 Fall Semester in Istanbul Kültür University, is given as “House during & after pandemic”. The design problem and changing circumstances of dwelling spaces before and after pandemic is discussed by five sections of second-year architecture students. Students were asked to create focal subjects as a design tool in pandemic design solutions. As a result of the progressing experience within the house in pandemic process, the design solutions of the “students” and the attitude of the “lecturer” brought differentiated answers to the design problem. The outputs of each section revealed varied solutions while questioning the creation of design to pandemic circumstance.

Within the constructed studio context and scope of this study, the conceptual background of the studio culture is examined by the details of collaborations in studio and the process of architectural design studio education during Covid-19 pandemic. The methodology is constructed upon instructional design models and accordingly the comparisons comprised a combined method that also directed the

design of the course structure. The multi-disciplinary design process in architectural design studio is clarified co-actors involved in the process while examples from studio outputs are shared. The findings show that configuring co-structured steps in the design education brought up intensive and collaborative dialogues and it also enabled different actors in the process to come into play at different layers within the timeline and put forward a process management and design that supports each other.

Keywords: *Design Studio Education; Co-Actors; Multidisciplinary Design Process, Collaboration; Pandemic house*

Introduction

The subject of the Architectural Design Studio III which is held in 2020-2021 Fall Semester in Istanbul Kültür University, is given as “House during & after pandemic” and it is aimed to investigate the multidisciplinary design process in architectural design studio within reflections of Covid-19 pandemic. As a part of multidisciplinary design process, the design problem and changing circumstances of dwelling spaces before and after pandemic is discussed by five sections which are carried out by lecturers from different expertise; such as architectural design, building science and restoration.

The investigation of multidisciplinary design processes in architectural design studio constitutes overall research of the design studio culture. Examining the design studio as a culture, consists of many related components whereas the investigation of this research constructs the theory on the collaborative design studio education including studio’s initial features. Design studio education with its method has an initial structure where the teaching strategies are constructed more on a process development. The process-oriented strategy makes studio’s unique character in which learning inputs orients the students’ creativities. Salama (1995, 7) defines the focus point of the architectural studio as to improve ‘creativity’.

In the studio, a specified design problem is given during the project semester and students are expected to create a design solution. Teaching and learning models through this specified design problem end up with a design solution whereas students build up their ideas while using the methods of design thinking and creative thinking. In addition, design studio activities are related with the related semester’s learning inputs so that the lecturer’s selection of project title, area and respectively the design studio context comprises an ever changing, interactive process. While design studio education based on an interactive process, the Covid-19 Pandemic forced existing educational course contents to be transferred to distance learning and to organize new process and methods. This paper aims to define the findings of these new process and methods where lecturers from different expertise create a collaborative studio process in architectural education and different actors and tools support the interactive process of the digital design studio context and the students’ creativities.

In this context, the first chapter of this paper examines the literature review over the processes and new methods and the collaborative digital practices in architectural design studio education during Covid-19 pandemic. In the second chapter, different approaches and models for designing programs analyze in detail and adapt to the architectural design studio process. In the third chapter, collaborative process constituted in studio explain through the dialogues that were created to support the interactive process. Results define the intensive and collaborative dialogues between different actors within the multidisciplinary design process of architectural design studio course.

1. Literature Review

1.1. Processes and New Methods in Architectural Design Studio During Covid-19 Pandemic

Designing manifesto and solutions for the built environment specializes the process of architectural design studio which integrates the education in both interactive and experimental way. The studio process has a structured transmission of a design problem and solution so that the social aspect of the studio becomes an important input. Tempelman & Pilot (2011) determines three design principles as context, content and chain of activities that is showing the process of the studio as a link between theory and practice. 'Design education is not a structure focused on a single-dimensional and uniform teaching/learning process' (Önal & Turgut, 2017). Revealing the studio process, each of the semester a design problem is given to students within a defined program that includes goals, user requirements, site conditions and technical information so that students would make researches on related topic and improve a design solution (Utaberta, & Hassanpour, 2010, 359). Lecturers in design studio aim to encourage students' creativity in the design processes while correlating with the structural learning process of evaluating systems and tools (Batuhan & Fehmi, 2021). Firstly, the progress defines the studio productions. Secondly, ongoing projects in each stage are reviewed and criticised by the lecturer. Assignments would be individual or group works so as the critique's formation can vary according to the 'self-orientation of the lecturer'. Meyer (1991) underlines the topic of employing criticism in practice within three contributions: supporting a design language, creating new ways of thinking/ evaluating and motivating a background. Rahma & Noraini (2012) put forward also personal behaviours of the students that cultural schemes and previous knowledge structures direct the subject of design thinking within problem solving and designing. Student's perception and understanding of the knowledge is an area of 'exploration' of initial situation. In studio process, 'interaction' with lecturer and students (learning and teaching) needs an initial method dealing with an open-ended problem with heterogeneous materials, opening up the imaginative subjects and structuring communication between different actors. Salama & Wilkinson (2007, 4) determines four types of pedagogical approaches in architectural education based on academic, craft, technological and sociological to underline the fact that architectural education have multi-disciplinary contents that designing process and methodology of the studio needs to be constructed on interconnected but interrelated fields. Saghafi (2020, 402) differentiates this progress in the studio with problem-based or project-based learning. The model in the studio has its own values and different habits and

patterns influence student's education and process (Abdullah, et al., 2011, 28). Schön (1988, 4) defines architectural studio as 'a reflective practicum in designing'. Being 'reflective' constitutes an interactive learning environment with its initial features.

While design studio education included an interactive process, the unforeseen conditions of the Covid-19 pandemic forced every institution to take new positions to organize new process and methods. Therefore, each institution tried to continue the process with methods suitable for new conditions to quickly adapt to new challenging conditions and reach their current targets. The European University Association (EUA) presented a report setting out their new policies to The European Union Council about the experiences of the pandemic, putting "Universities without walls" as a goal until 2030. In order to enable a resilient and a workable environment, cooperative/collaborative and multi-national efforts are encouraged and seen as a part of the university's mission. These efforts are seen as a basis for development of the "Open Science Cloud" (EUA, 2021). Architectural schools and design studios, where sharing, interaction, communication and contact in physical environment were accepted as a common attitude, have withstood new conditions with different approaches in the virtual environment. During the Covid-19 pandemic, content and context had begun to be questioned afterwards. Via the concurrent communication tools and collaborative information were produced in distance learning design studio, short-term exercises like workshops provided a dynamic environment and helped instructors to recognize students. Site visits which are integral part of the design studio, were also realized virtually (Ozorhon & Lekesiz 2021). Questioning the content of architectural design studios together with non-design courses during Covid_19 pandemic, Deamer (2020) argues that graduates of architectural education schools should be empowered about both the spatial/physical problems and social justice problems as well. He also found vital to question today's problems in three axes as; aesthetics, supply/purchase and demand/scenarios that shape design pedagogy to prepare architects for exceptional crises. Comparing architectural design studio context as conventional and non-conventional, it is widely accepted that conventional design studios are providing a framed and stereotypical learning environment, while non-conventional ones are providing a limitless virtual environment and presentation techniques although with heavy dependency on digital tools. In terms of design thinking, it is seen that neither of the design studios have an accelerated effect on design thinking ability of the students, and both are following similar processes. Conventional studios are found more solution-driven, while non-conventional design studios are more focused on the design process (Hettithanthri, U. & Hansen 2021). As Schön (1984, 3) express 'creativity' as a necessary activity in architectural design studio, collaborative and interactive processes become important determinations while searching new methods in differentiated digital platforms. Online seminars, meetings, workshops, digital exhibitions, etc. which are included in the studio education, have made new contributions to the method by revealing new collaborative integrated areas of digitalization. In this context, collaborative practices have come to the fore as a

result of the integration of digital tools in studio education that increase a newly interaction regarding process management.

1.2. Collaborative Digital Practices in Architectural Design Studio Education

The design studio culture, along with digitalization, brought up the discussion of new collaborations that can be built in the studio in different contexts. While Valkenburg (2001) defines features as collaboration, rapid communication and broad social relevance in studio context, Wang (2010, 176) relates initial studio features explaining with complexity that heterogeneous materials are used to solve in each of the project and assignment. The method of studio shows that there are links between lecturer-student and student-student relationship where learnings are shared searching for the subject 'creativity'. However, the lack of interaction problem in digital studios also opened up the discussion how different digital collaborations can be made. Thus, the issue of digital collaborative teaching and learning techniques come a current issue in studio education. Establishing links between different actors of the collaborative practices would be an integrated method in which social and interactive-based learning methods are being used.

The main property of collaborative learning is to define a strategy that is implemented in the design assignments so that all lecturers and students participate jointly (Qureshi, 2019). The teaching strategies of design studio aim to create an interactive teaching setting so as to provide a multi-disciplinary approach of learning. This creation leads us to discussion of how different actors can involve in studio process while constructing collaborative practices. Designing the participation processes within the studio process, start the search of collaboration between different actors and their roles in the process. For instance, as an actor in the studio, it would be questioned whether the lecturer's main purpose is to give critiques or share experiences with students. Lecturer's roles are described as an expertise/authority while orienting them to make decisions, encouraging their self-design proposals with self-confidence and courage' (Goldschmidt, Hochman & Dafni 2010; McDonnell 2016). Whereas the roles in studio would have diversified collaboration such as: Lecturer/student (instructive collaboration); student/student (social collaboration); student-lecturer/other practices (cultural, practical, specialized collaborations, etc.). 'Finding methods to make the design process explicit, for both teachers and students, is a way to avoid that pitfall of design critiques' (Boudhraa, Dorta, Milovanovic & Pierini, 2019). Architectural design studio, comprises a physical space but also a social, interactive space, where formal learning practices but experimental instruments (drawing, producing, modelling, etc.) are being used. To answer the question of how knowledge from practical world of the lecturers can be transferred to a social and interactive space; the social process of the studio can be examined in digital world. To do so, social process of communicative interaction between all actors such as relation between education and the professional field outside academia are needed. Lecturer-centered expert should rely on a shared dialogue while other dialogues are needed in the design studio setting. Donald Schön (1985, 1987) determines a term of 'Reflection-in-

Action' in which the context of problem-based learning in the studio are settled upon conversations, dialogues and collaboration. These topics are related to open-ended problems and encourages speculative exploration (Roberts, 2004).

Collaborative pedagogy creates the main part of studio culture in conventional architectural design studio. Cooperation with various stakeholders is expected to improve students' competence (Emam et.al., 2019) During Covid-19 pandemic, collaborative environment is undergoing a change, not only in terms of moving design studio to a virtual environment, but also in terms of structuring the studio culture as a method. 'The studio culture, defined by all participants as a mode of interaction around a discipline-specific subject, mimics the informal modes of acquiring, appropriating and sharing of knowledge of every-day social interactions' (Catina, 2020, 2). Participatory approaches and collaborative processes show the creation of a more integrated design solution in the studio process (Salama, 2016). As web-based education systems removes time and location restrictions of traditional educational methods, for flexible and distributed environment of the new education system, 'the objectives (why), objects (what), methodology (how) and management (who)' issues should be discussed from 'social, ideological, epistemological, and pedagogical' aspects. In design education, students may increase design awareness according to design stages by communicating with design consultants from various disciplines in a web-based design course (Sagun et. al., 2001). Buldan (2021) argues that virtual design studios are starting to lose their collaborative social environment and students' proximal development areas are unconsciously expanding into a 'knowledge pool' without interaction. Furthermore, distance learning requires advanced time management and work management skills for students more than conventional learning environment, so students may need more guidance and support in distance learning not to be disengaged from online design studio (Alnusairat et. Al, 2021). Against the arguments mentioned above, by taking the advantages of collaborative digital practices with differentiated actors, the study is constructed on the methodology of multidisciplinary design process in architectural design studio as a collaborative digital studio context of 'House during&after pandemic'.

2. Methodology

Instruction can be a casual and unplanned activity, or it can be experienced as a highly structured process. Throughout history, many different scientists have thought about the design of instruction (Brown & Green, 2015). It is possible to encounter quite different approaches and models for designing programs and processes in higher education in the literature.

Instructional design is the systematic development of instructional features using learning and instructional theory to ensure the quality of instruction. It includes the development of teaching materials and activities and the testing and evaluation of all teaching and student activities (University of Michigan, 2003). The most important point in the process of designing an instructional module is to establish educationally sound and logical connections between learner needs, goals, learning outcomes,

resources, learning and teaching strategies, assessment criteria and assessment itself (Donnelly & Fitzmaurice, 2005).

It is possible to encounter many different approaches and models in the literature for designing instructional programs and materials, which vary in line with the goal of the program to be designed. These models and approaches can be exemplified as the ADDIE Approach (Branch, 2009), the program design model for action learning (McArdle, 2010), the module design for learning (Donnelly & Fitzmaurice, 2005), the culturally based program design model (Young, 2009).), instructional design paradigm (Ledford & Sleeman, 2001), Gerlach and Ely's program design model for interactive instruction (Ledford & Sleeman, 2001), general instructional design paradigm (Ledford & Sleeman, 2001), Searle's program design model (Ledford & Sleeman, 2001), Foshay, Silber, and Westgaard's instructional design model (Rothwell & Kazanas, 2011), Kemp, Morrison, and Ross's curriculum design plan (Brown & Green, 2015), Dick and Carey's instructional design model design model (Brown & Green, 2015) and Merrill's pebble-in-the-pond model (Brown & Green, 2015).

Within the scope of this study, these approaches and models were examined in detail and adapted to the architectural design studio process, and a studio process based on the collaboration of different actors in architectural undergraduate education was designed as follows:

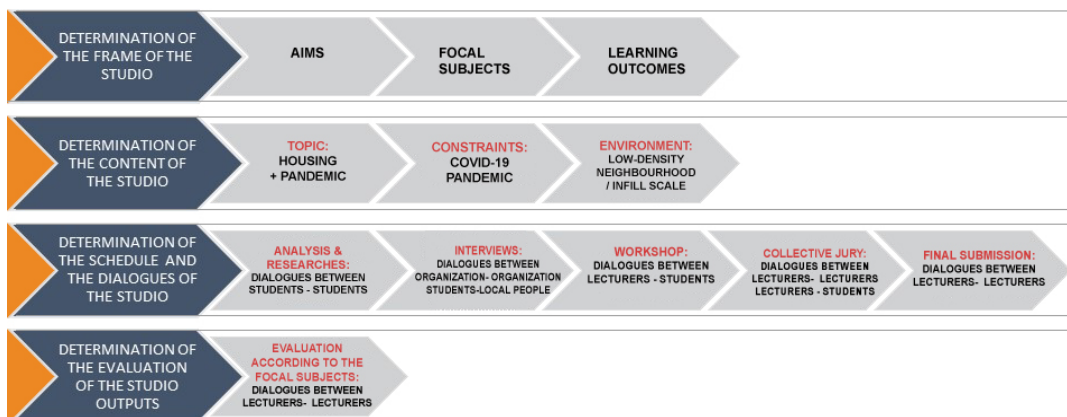


Figure 1. Design process the architectural design studio.

As the first step in the design of the course the framework of the studio was determined. In this context, the aim, focal subjects and learning outcomes of the studio were revealed through the collaborations established between the lecturers who have expertise in different fields.

The second step is the stage where the content of the course is determined. Decisions regarding the topic of the studio, design constraints and the environment that will be focused on during the design process were made. As a subject, it was stated that students would be expected to develop functional suggestions for the building in addition to the "housing" function and that this additional function should be associated with the COVID-19 pandemic, which was the biggest limiting factor

we were in at that time. In addition, the selection of environmental alternatives in which this additional functional housing structure will be located has been made. Kuzguncuk and Beylerbeyi regions, which are thought to be more suitable for the level of 3rd term students due to their low-density structures, were chosen as the area. As a result of the settlement characteristics of the regions, the necessity of considering the houses as "infill" has emerged.

In the third step, the schedule of the basic stages of the studio process and the collaborations to be established in these stages were determined. In this sense, it was decided to start the process with analysis and research studies aimed at understanding the field and enriching the knowledge on the subject. At this point, the students in the studio were expected to work in cooperation with the dialogues and divisions of work they established with each other. Then, it was decided to conduct interviews with potential users in order to have data in the development of programs and scenarios for the user profile and structure. In this direction, an inter-institutional cooperation was established as IKU and Işık Schools, and meetings between studio students and high school students were organized. In addition, it was decided that the students should have detailed interviews with the residents of the project area. In order to enable students in different studio sections to be in contact and dialogue with each other during the term, a collective midterm jury is planned to be held in a manner that allows the technical possibilities of the studio, which is carried out in the digital environment.

As the final step in the design of the course, the quantity and quality of the studio outputs were determined and the criteria for the evaluation of these outputs were decided. In determining the evaluation criteria, studio focus points and learning outcomes were taken as basis (Figure 1).

3. New Dialogues in Architectural Design Studio III: Housing During & After Pandemic

The spread of the COVID-19 pandemic to whole world in a short time is seen as a consequence of global urbanization. Accordingly, many institutions and researchers are struggling to explore the dynamics and impacts of pandemic on cities (Aykaç&Elbek, 2020; Sharifi&Khavarian-Garmsir). The mobility opportunities with the expansion of trade and transportation networks under the influence of global capitalism has increased the density in cities. Urban density, which increases human interaction, has been the determining factor in the spread of pandemic. In İstanbul, one of the most crowded cities in the world, it is seen the highest number of cases in Turkey during pandemic because of its size, density, and location (Aykaç&Elbek, 2021). In these circumstances, there is no doubt that the changing conditions and the emerging requirements of society will reflect on the residential areas that form a large part of urban settlement.

In design fields, practices oriented towards investigating solutions to social problems have a long history. If we trace the creative design practices through history, it is obviously seen that economic and social crises that extremely affect societies revive the interest for social role of design (Gürdere Akdur, 2020). In this context, pandemic process we have been struggling with points out to both social and economic

tensions. The curfews and restrictions put into effect within the scope of pandemic precautions narrowed the public life, and whole life was trapped in houses. It causes residents to question the meaning of home/house/housing again and search for new interpretations. These circumstances undoubtedly reflect on architectural education.

As mentioned above, while these facts brought up the question of new meanings of housing to the agenda, new education environment points out the need for interaction for creativity. Considering architectural design studio environments should include the interdisciplinary climate comes from the nature of profession, collaborative dialogues were structured within the content of Architectural Design 3 course, which was conducted online by lecturers from different professions. Since Architectural Design 3 course mainly aims “housing” as a theme, it provided a remarkable environment to question the possibilities of new housing, and hence to determine new focal subjects under the pandemic conditions within the frame of learning outcomes. Therefore, the main topic of the course was defined as “Housing during & after pandemic”.

During pandemic, the common trend of our society has been escaping from the cities and turning towards rural areas. This phenomenon also affected the decision of project site selection for the course. Considering the site trip of students and the health issues that would have occurred within the organizational processes, it was decided to select a low-density settlement in Istanbul. In addition to this principle, investigations on the feasibilities of new collaboration environments eventuated in the search for a low-density settlement in where the old and new town patterns exist. The reason of that was to combine the background of the lecturers who worked together. Due to the different qualifications of the lecturers such as restoration, building science, architectural design and housing, selection criteria were defined as: historical value, different housing typologies, and different structural systems and materials. In the light of these diversity, Bosphorus villages were focused on and Beylerbeyi and Kuzguncuk neighbourhoods were selected as the project sites. All these steps describe the preparation process of the course.

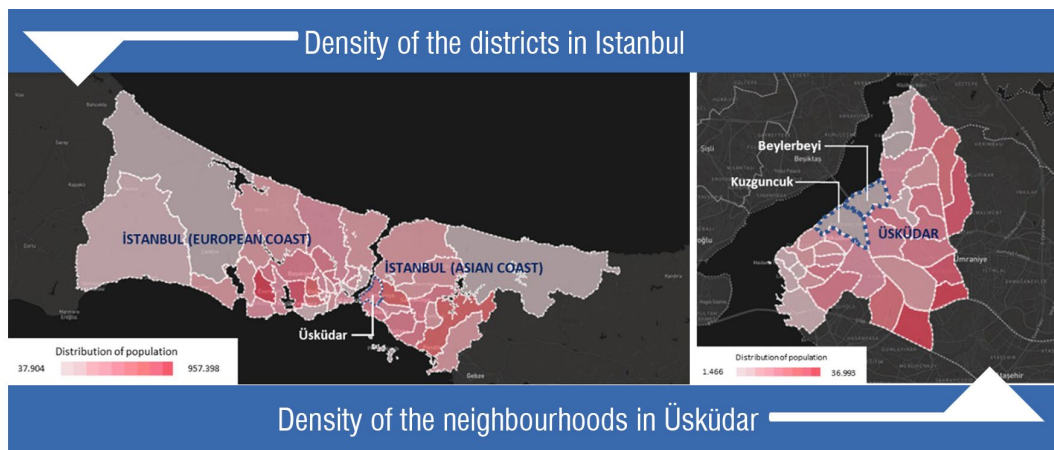


Figure 2. Density map of Istanbul and Üsküdar (Source: Endeksa)



Figure 4. New Living Scenario workshop poster (on the left) and examples from the students' posters (on the right).

Following the preparation process with a collaborative approach, first of all, the students were divided into groups, and they began to analyze and investigate the site in terms of physical and social aspects together. Accordingly, they discussed the outputs of their analysis among each other to build a collective information and shared to enable all the data gathered from this process to be used by the whole class. By the time the students are analyzing the site, they also conduct interviews with the local people from different age groups. Secondly, a collaborative dialogue between different institutions were investigated. As a consequence of these investigations, an online meeting with the high school students in collaboration with the external education institute (Işık College) was held. The reason was that the government operated strict curfews to 20- aged groups (also included the college students) in Turkey. Thirdly, a workshop entitled "New Living Scenario" was held to understand the experiences of the students during the COVID-19 pandemic and to measure their attempts towards new conditions and house relations in their minds. As can be seen in the Figure 4, the students mainly focused on dystopic proposals, and they mostly developed isolated individual units. Thus, it can be indicated that they felt alone and depressed during this process and adopted the strict physical and social distance phenomenon. It was also a predictable result; hence it was planned to maintain the collaborative environment with the external organization to disintegrate this shared-nothing situation. For that purpose, the high school students from Işık College were also invited to the collective jury session.

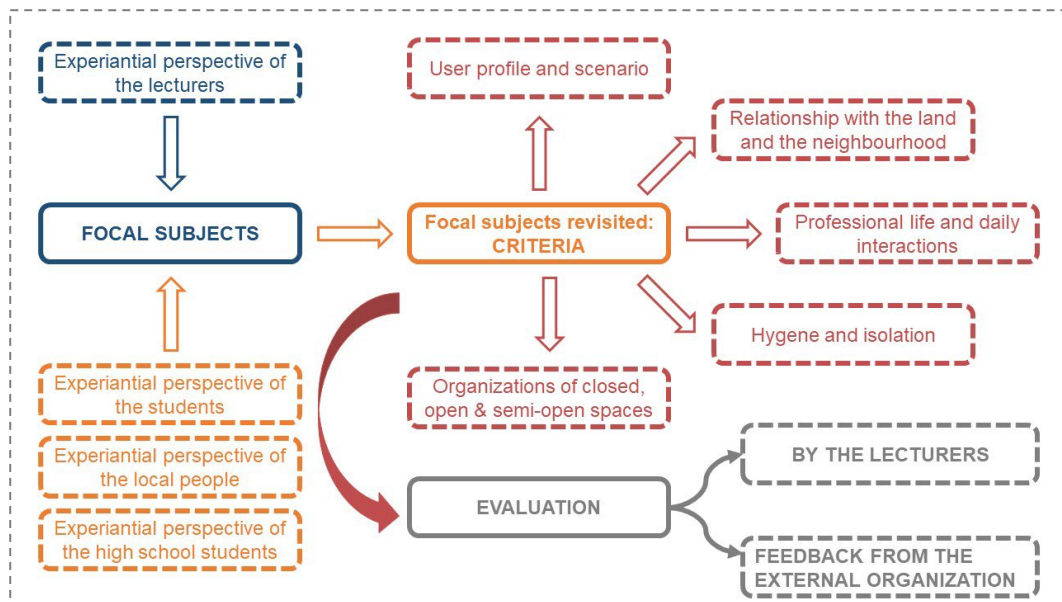


Figure 5. Students and the lecturers' shared experiences and focal subjects that constituted the design ideas.

After the interviews and meeting with different age groups, the design inputs were determined. In the manner of data gathered from this process, the students and the lecturers shared their experiences and the focal subjects which constituted the design ideas were reconstructed (Figure 5). Subsequently, the students developed their proposals by the aim of the lecturers and an online collective jury session was held to benefit from the different backgrounds of the lecturers. Following the long discussions, the students improved their works and analysis according to the critics about the historical value, construction system, design idea and typology and they got feedback from the high school students joined the online jury session again. While this collaborative process motivated the students, the lecturers also investigated new possibilities to enlarge the cooperation in an institutional scale. In accordance with this purpose, it is planned to hold an exhibition of the students' final works in both the college and the university. Even though the exhibition could not be held in a physical environment, an online presentation would take place at the end of the term by sharing the portfolio of final works with the managers of the high school.

Finally, the evaluation process was organized in terms of combined collaborative dialogues. In this context, criteria were determined by the lecturers and also the officers from the external institution who discussed the outputs with the high school students gave feedback for the projects. They stated that they were satisfied with the cooperative process and that they were willing to work together again. It is also observed that the students were motivated at the end of the term as a consequence of collaborative and interactive study environment. One of the most important results is that the students paid attention to unpredictable needs of different age groups with one-to-one communication. Furthermore, intensive and collaborative dialogues

between different actors such as the lecturers, the students, the organizations, local people and high school students (Figure 6). The process also provided new opportunities for further cooperations with the external organizations.

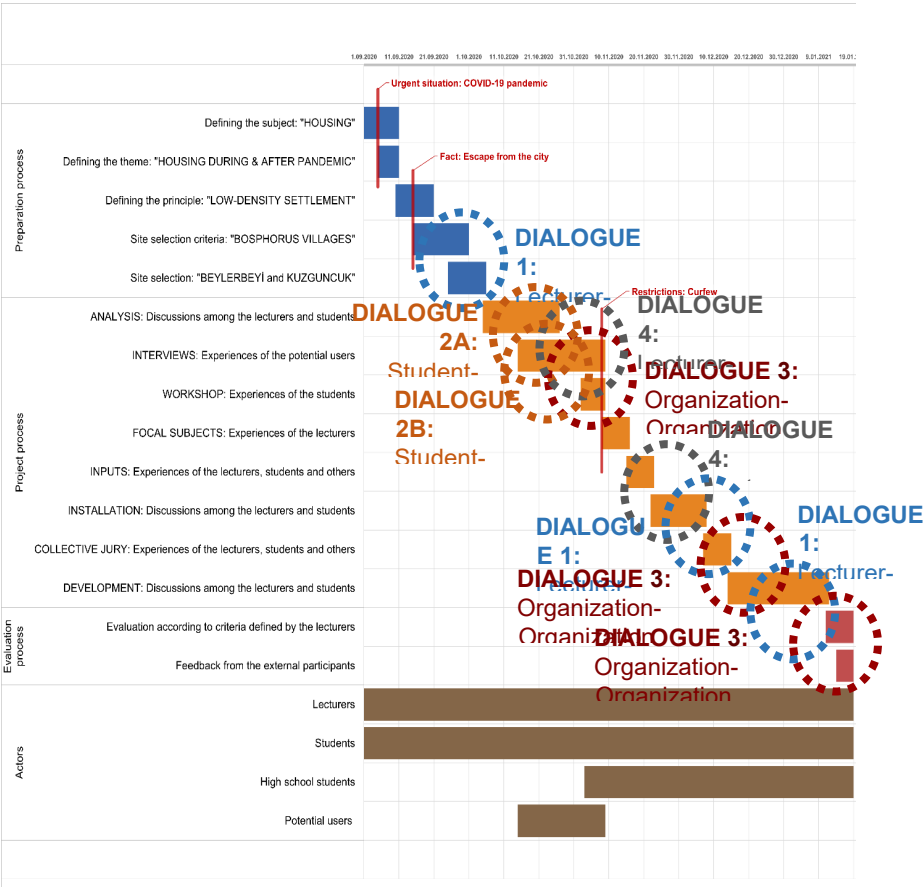


Figure 6. The process graph: Intensive and collaborative dialogues between different actors.

In Figure 6, the agents of collabrorative dialogues have been determined as follows: Lecturers, students, local people and organizations. While Dialogue 1 represents the collaboration between the lecturers who have different backgrounds, Dialogue 2 presents two subgroups related with the students: (A) dialogue between students and local people which takes place in person, and (B) dialogues between peers. Students includes both the students in design studio and the high school students of external organization participated in the collaborative process. Dialogue 3 constitutes the collaboration between organizations including the university and high school. Eventually, Dialogue 4 represents the interaction between the lecturers and students which also constitutes the main character of the studio environment.

4. Conclusion

As a result of this study, while the multidisciplinary design process was investigated in the architectural design studio during the Covid-19 pandemic, a digital studio

education experience was realized, and intensive and collaborative dialogues were formed between different actors in the process. According to the results of the studio, it had been realized that design solutions were developed considering pandemic but also adaptable to post-pandemic conditions as well. Main focal subjects of the pandemic and post-pandemic house which were inferred at the end of the studio has also diversified results which is also an interesting outcome of the collaborative process. Primarily, the dialogue between students in the studio provided collaboration and communication between students. In this way, both the learning processes of students were supported and the link that the students established with the studio was strengthened within the limits of the available resources in the restrictions during the Covid-19 process. Then, the dialogues between organizations provided connections easily while using the opportunity of digital platforms. In the following processes, dialogues between students in the studio and local people helped students understanding the area and developing diversified scenarios and programs. Another intensive dialogues that had been established between lecturers and students, provided the mutual exchange of knowledge and experience. The overall collaborative organization and evaluations in the design studio also affected the dialogues between the lecturers which provided a rich perspective by presenting different perspectives in the development of the course.

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Student with a Movie Camera: The Representation Challenge in the Corona Pandemic of Introductory Architectural Studio

Tonguç AKIŞ¹

^{1st} Author's e-mail: tongucakis@iyte.edu.tr

Abstract

*Dziga Vertov, author of the movie Man with a Movie Camera (1929), aimed at eliminating the dramatic scenarios, set-up scenes and actors and he paved the way to emerging documentary track of cinematic representation in the film industry with the motto of reflecting **life as it is**. This ideological perspective, challenge and experience of him and his friends while using the apparatus of cinematograph seems to be a fruitful source for the people who are suddenly involving in the remote architectural education without any preparation in the conditions of Corona Pandemic. Since one of the main contribution and output of any built environment education is developing a holistic approach in understanding of space production, perception and experience, the digital video production with capturing and editing tasks act as a transmitting tool between actual and virtual worlds together with the other methods of representation such as posters, photos, models, drawings, sketches and diagrams. Locating the production of space into the centre of design education paves the way to define new modes of representing ideas, designs and spaces.*

Developing this notion of space in introductory studio, the video apparatus with its moving images may help to understand and define the limits and possibilities of online education of Corona Pandemic. This apparatus turns into both a thinking device and a documenting tool. Recording lectures, tracing critiques, processing digital videos, representing student works via moving images with sounds at cloud herald new operating ways in design education. Introductory Architectural Studios of İZTECH houses loaded packages of educational experiences in physical, mental and social awareness of space and this paper is an attempt to reveal and criticize these accumulated challenges of representation. Plunging in to the depths of studio platform in İzmir, our task in this text is to define, frame and extend the limits of possible representation techniques and developing ways of operating within design process in transition. Multiple dialogues in the studio between instructor and student, assignment formulations with intentions and responses of student by their collective and individual efforts are the focus of this particular use of digital video apparatus in the studio.

Keywords: Video Apparatus, Introductory Studio, Representation Techniques, Architectural Education, Corona Pandemic

Introduction

It is still an unprecedented situation for all the roles in the architectural education in Corona Pandemic. For instructors, students and administrators, this particular atmosphere somehow dominates the possibilities and limits of the implementation within the frames of transmitting knowledge and experience. Especially, within the introductory courses in architectural education, the pandemic seems to generate shocking impacts and trigger some wicked or ill-defined reactions in contrast to deep and calm considerations. Besides, the scholars seem to develop easy-reach conclusions, ready-made outputs and big-mouth results, but for us these are quite quick responses and need a critical distance and thinking as we are still in these extraordinary times. For the limit of this paper, we are not aiming at big-letter words, but sharing some modest thoughts and local experiences within a decent framework of self-reflections.

It has been for a while that the introductory studio uses some moving images and the camera apparatus becomes part of the education. Architectural films are shown, spatial documentaries are exposed, and design videos are represented by the instructors. In some studios, videos are taken for granted to support the assignments or tasks in the studio both for student and instructor. However, in this paper we would like to focus on more about the video production in urgent remote architectural education between the years of 2020 and 2022. With the impact of Corona Pandemic, as we shifted to the extraordinary way of architectural education, video production becomes a substantial tool of representation for students and instructors. It enhances the communication process in the studio and develops a broader perspective in grasping and capturing the works of students.

As we have witnessed since 2015, videos were produced, edited, and published as a part of the course syllabus in IZTECH. One can find the accumulated traces of those experiences and objectives at the website called of : t o y : (basic design approaches and experiences in Izmir schools of architecture).¹ Through this production, we, as the members of the studio both as instructors and students, are taking part of this unique video production process by capturing, editing and representing images.²

Through this paper, we focus on constructing a critical but peculiar reading of the student works developed in that particular period of time. This interpretation involves a commentary method and approach that consist of observation, clarification and explanation of produced short films. We were 12-15 instructors and approx. 160 students in 2020 studios and by 2021, the teams were 12-14 again but the students were approx. 180. Within the limits of this paper, nearly 80 student videos having 3-minutes-shot are examined which were produced in 2020 and 2021 by the first warm-up assignment as a group work in AR 102 Introduction to Architectural Design course. Approximately 120 student videos having 10-second-shot also were analyzed which were edited by our students. Each product of students are uploaded after every given assignment at the digital cloud of the Faculty of Architecture. Two separate basic lectures about film editing are given each year by Ayça Cox at the online courses recorded at Microsoft Teams platform to enhance the video production skill set. In this particular venture, no lectures were given about any specific editing software. Just a several comments were raised in one of the online

courses lasted two hours before the submission of the videos to have the unity and continuity for the editing process. These formation of moving images articulated, filtered and selected to construct a comparative analysis of what we had lived while we are in this unprecedented conditions of Pandemic. Both in this paper and during the implementation of each assignment in the studio, we, as a happy team, have insisted on being transparent to the students both in communication and pedagogical levels, developing constructive criticism towards produced works, considering the inequality among students and instructors formed by the Pandemic

Additionally, we have contended on documenting and showing this experience though a short video expressing the educational venture in the studio at the end of each semester. Here, in this paper we are going to relate our studio-based works, focus on our preparation studies, discuss the implementation methods though these semester videos.³ We believe it is important to think further on what we were thinking in the introductory studio education during the pandemic.

Video Apparatus and its Production in Introductory Studio

"I am kino-eye, I am a mechanical eye. I, a machine, show you the world as only I can see it. Now and forever, I free myself from human immobility, I am in constant motion, I draw near, then away from objects, I crawl under, I climb onto them... Now I, a camera, fling myself along their resultant, maneuvering in the chaos of movement, recording movement, starting with movements composed of the most complex combinations... My path leads to the creation of a fresh perception of the world. I decipher in a new way a world unknown to you."(Manifesto of Kino-glaz) ⁴

Dziga Vertov, author of the movie *Man with a Movie Camera* (1929), aimed at eliminating the dramatic scenarios, set-up scenes and actors and he paved the way to emerging documentary track of cinematic representation in the film industry with the motto of reflecting life as it is. After a careful reading of this particular manifest of Kinoks (the Soviet Journalists having moving camera), one can easily uncover the political, cultural and ideological context. Eliminating the dramatic forms in cinema and enhancing the non-acted formulation in film-making, they have developed a novel and emancipating action of film-viewing with a critical framework. This critical lens have extended the individual limits of the eye and improve it with collective experiences via technical expansions in the apparatus.

To summarize this revolutionary approach of film-production, one can say that the perspective of Vertov's and his friends on films was quite generative, documentative and deviant. Considering him with his contemporaries, the way of producing pellicles were distinguishing in terms of capturing, framing, editing and representing. The subjects, actors or the topics were from the deep, trivial, unseen but obvious settings in everyday life of Soviets. Acting a role or any dramatic approach for an event was clearly isolated and forbidden in frames. Each frames in the montage or editing table had to be closer to the real world. Any alienating form or alienation through shooting process was strictly omitted to be transparent in transforming the life as it is. Montage table and the production on it was visible in the film as the whole theatre setting (Figure 06a) with the viewers that the film was screening (Figure 05a). There was nothing to hide from the viewers. No mystifications or idealisations. The key

device, the moving camera, was directly shown in the film without any hesitation (Figure 04a). The cameraman (Figure 07) happened to be the main character throughout the whole film with its limited feelings, sights, perspectives and moves rather than a hiding figure in a contemporary and regular Chaplin movie. This novel approach had signified a unique attitude of transmitting the multiple facet aspects of reality into a two dimensional screen

This ideological perspective, challenge and experience of him and his friends while using the apparatus of cinematograph seems to be a fruitful source for the people who are suddenly involving in the remote architectural education without any preparation in the conditions of Corona Pandemic. Since one of the main contribution and output of any built environment education is developing a holistic and critical approach in understanding of space production, perception and experience, the digital video production with capturing, editing and representing tasks act as a transmitting tool between actual and virtual worlds together with the other methods of representation such as posters, photos, models, drawings, sketches and diagrams. We think that video production may become an apparatus to understand and transform the real built environment.

As a collective working team of instructors, we believe that we have to touch and get connected to the reality and learn from the outside world as much as we can. Since we are going to be part of the everyday life with the probable design as producer of the built environment, developing a clear understanding on what the life is and how can this life can be represented becomes a vital task for us in the preparation process of the studio. That's why we are aiming at spatial experiences as far as we can (Figure 01). In order to construct an experience-based perspective, we pave the way for our students to make them encounter significant amount of different physical spaces during the implementation of the schedule of the studio syllabus. It is a vital principle for us to follow: **Learning from reality and outside.**

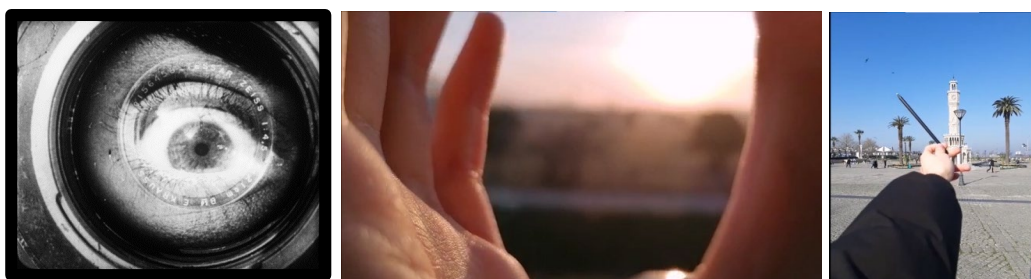


Figure 01: a) Shot from the film, *The Man with the Movie Camera*, b) and c) Shots from the student videos

Figure 01a is a still image from the Vertov's movie and it is related to the other two distinct stills from our student videos. Vertov, through his lens, checked the appropriate frame for depicting the multiplicity in Sovietic Life in 1929 in Kyiv, Odesa and Moscow. Figure 01b is from Muğla rural life and Figure 01c is from İzmir Konak Square. These two colourful and careful visors, lenses and viewfinders had selected

a critical frame for depicting the everyday life in their own context and seems to develop a documentative commentary for their immediate built environment.

Locating the production of space into the centre of design education paves the way to define new modes of representing ideas, designs and spaces. Developing this notion of space in introductory studio, the video apparatus with its moving images have helped to understand and define the limits and possibilities of online education of Corona Pandemic. This apparatus has turned into both a thinking device and a documenting tool. Recording lectures, tracing critiques, processing digital videos, representing student works via moving images with sounds at digital cloud herald new operating ways in design education.

Introductory Architectural Studios of IZTECH houses loaded packages of educational experiences in physical, mental and social awareness of space and this paper is an attempt to reveal and criticize these accumulated challenges of representation. Plunging in to the depths of studio platform in İzmir, our task in this text is to define, frame and extend the limits of possible representation techniques and developing ways of operating within design process in transition. Multiple dialogues in the studio between instructor and student, assignment formulations with intentions and responses of student by their collective and individual efforts are the focus of this particular use of digital video apparatus in the studio. To reflect and extend these dialogues within the limits of the paper, we have categorized the video production into three main process: Capturing, editing and representing. The device or the apparatus is quite a common one: the cell phone. Besides, the computer and cell phone were used together by some of our student in capturing, editing and representation process.

Capturing, Editing and Representing

Capturing (Framing or Filtering) includes the ideological perspective of the camera user. It highlights the act of framing basically. Moving images are the result of video producer perspective and realized by the notion of framing, documenting and capturing the decision by the video apparatus of the author. It develops a certain point of view, way of looking at things and develops an accumulation of images that are selected by the camera user. Through this particular process of framing and recording, some of the images are left apart and disregarded, and located out-of-the-frame. The screen act as a frame and omits the un-necessary and un-wanted. It filters the out-side-world and develops a filtered design field.

During the Pandemic, three significant moments had been witnessed while we were working in the online studio environment. These three capturing instants had made us think on the implementation of the video apparatus - the video machine. One is about understanding the physical environment of the student: How they are perceiving their own environment and their friends' environment and additionally how they combine or edit them. Second one is about the model making: After making the physical model of any particular exercise by given materials, the video apparatus, the 10-second video, turned into an informative platform for transferring the knowledge of the individual projects. Third one is the record of the courses:

Documenting the acts of the team and introducing the studio environment that the instructors were settled.

Due to the Corona Pandemic conditions, in the studio we thought that it would be better to understand the context and condition of the student's physical setting so that we can produce an appropriate assignment for the following days of the given but tentative schedule. We spent two weeks to comprehend the physical and psychological environment that the students were encountering. As a result, we, as the team of the studio, decided to build an assignment uncovering the setting and background of students who are inhabiting and participating in various locations of the country (Figure 02).

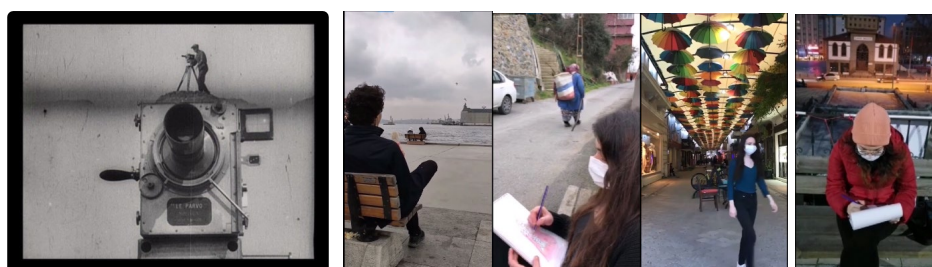


Figure 02: a) Shot from the film, *The Man with the Movie Camera*, b), c), d) and e) Shots from the student videos

Figure 02a has the still of the camera man with an abstract setting. By this gesture, Vertov was aiming at clarifying the role and limits of the camera man and his cinematography machine. By repeating images at that particular time of the movie, camera man was compared by a soldier using a machine gun as an allusion. This underlined role and mission of this new figure in the novel society was the duty of representing the life as it is without any filter. Figure 02 b, c, and d are portraying some stills from different built environments. The students intentionally develop a spatial consciousness in showing the everyday as it is seen in the screen. No filters are applied, but carefully set camera views and calculated figure as a camera(wo)man is there articulated to enhance the flow of the videos.

To develop an understanding on the students' condition and situation, we construct the first digital assignment in Pandemic called: **Bytes and Bits**. Though this particular assignment, we gave a limited element such as paper, face, hand and pencil. They produce a collective video and capture some images from their immediate surrounding. This includes the roof, balcony, rooms, etc. (Figure 03). Figure 03 underlines the parallel reading of both motivations. Vertov's understanding in depicting the everyday life resembles with the efforts of our students. The limits of device and its user is extending in each cases. At that moment of the assignment, the pandemic risk level was at high and there were restrictions in going out. Limited conditions lead to significant results. The tone of the assignment was to enhance the group-work awareness, to eliminate the dark clouds of the pandemic and to reduce the load of the students, as a team we chose to develop an online-group assignment. When we consider the outcome and end-product of the assignment, it was an indicator work for student that after the shock

students were able to raise their psychological modes and response with a healthy result at that certain period of the early pandemic.



Figure 03: a) Shot from the film, *The Man with the Movie Camera*, b) and c) Shots from the student videos

After understanding the physical and mental situation of student, we aim to follow the previous curriculum that was determined by the face-to-face education. Due to the limited conditions, we try to shift to the different Learning Management Systems and try to transfer the assignment into the novel situation which was quite unprecedented in every level. We believe that hand and mind coordination in the studio help students to follow the content and goals of the assignment. Therefore, we try to set new restrictions and regulations for the assignment that were based on the control and design with the volumes.

Although the conditions of the students were limited and all the stationary opportunities were not equal among the students, we decided to work on physical model performed by primitive geometric elements. However, the model was not produced in studio and this particular model would not be criticized as it were before. At first, we want some amount of photos, still images of the model so that we can discuss the physical volume via the ability of a designer in controlling volumes: **Enveloping Volumes**. However, images were not that suitable to reflect the overall character of the model. After considering the failure of the limited 2D images (photos of the model) of a 3D object (model itself), we decided to get a video of the model. At that particular moment, the moving images of the model says a lot for the works and attitude of the design. The model were depicted in various ways by the student. (Figure 04). Some student hang their model by invisible strings and constant rotation of the model started to give substantial amount of knowledge about the model. Again the video production helps us to set a more informative platform for communicating with the student.



Figure 04: a) Shot from the film, *The Man with the Movie Camera*, b) and c) Shots from the student videos

The task of bringing together of things in design processes works parallel with the process of editing the moving or stable images in video production. This process of combining elements, **Montage**, is relevant and vital for the architectural design education. Composing boards, posters, models with any design elements in any particular design field, the student or the instructor follows, refers or remembers certain design vocabularies and terms. This particular terminology seems to construct a language that is quite new for the student. Although the editing techniques of video seems linear in some levels, editing a video and composing design has a lot in common.

Here we would like to discuss the editing process of the students. They set a controlled ability in processing the moving images. They reproduce any images by image processors, they cut, crop, copy, flatten various images for the assignment that they have learn to control both the moving and still images (Figure 05). As they personally produce the images by cell phone or computer, they are at the commanding role in the world of bytes and bits. For any group work in the studio, we believe as instructors that there is always a learning activity and significant environment among the peers. So, during the pandemic, we have enhanced this particular learning environment of team-work as far as we can within the limits of online education. The students responded positively to those studies, they mentioned both in the written questionnaire and personal conversations, they mostly learn a lot though these group-work assignments. Their digital abilities seem to be improved after each collective studies.

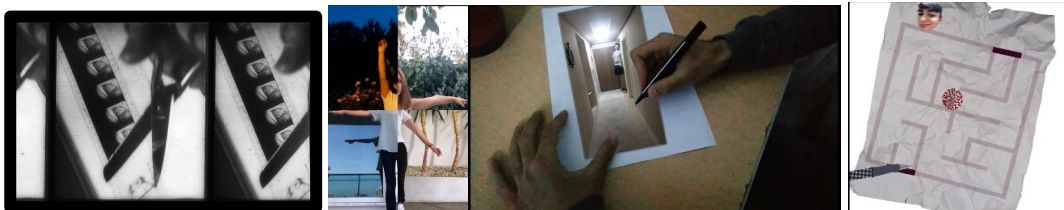


Figure 05: a) Shot from the film, *The Man with the Movie Camera*, b) and c) Shots from the student videos

The condition of being not in the studio was a real challenge for any instructors. It was not just a loneliness of individual, but inherited a couple of lacks. We were not able to discuss any subject face to face. We did not use the panel boards. We did not set a proper platform for studio culture. We could not organize excursions physically. After discussing with the instructor team, we have decided not to leave the school (Figure 06). Following the health regulations and security restrictions, we tried to reflect the physical condition of the studio to the students. Although it sometimes becomes an impossible task to accomplish, we, as a team, have kept our positive mode and faced the absence of students in favor of transmitting images from studios. We have developed certain moments in the online settings to improve the perception of the studio and its culture. We have told lots of stories and quotations from the previous life before pandemic during online courses. These courses again recorded and documented by computer cameras and watched by the

computer or cell phone screens. The representation of studio culture **as it is** to our student was a substantial duty for each instructors.

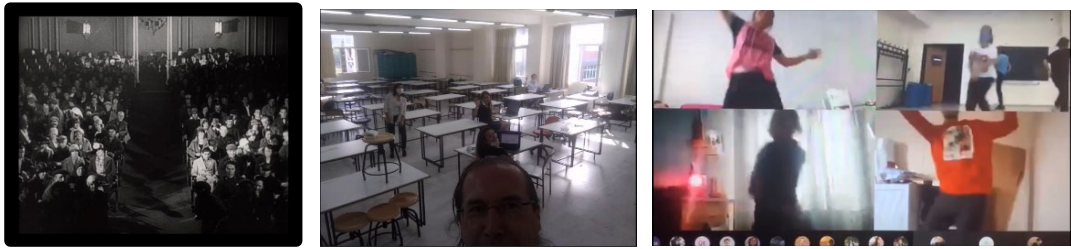


Figure 06: a) Shot from the film, *The Man with the Movie Camera*, b) and c) Shots from the studios without students

Conclusion



Figure 07: Shot from the film, *The Man with the Movie Camera*

“The camera “carries” the film viewer’s eye from arms to legs, from legs to eyes and so on, in the most advantageous sequence, and organizes the details into an orderly montage study” (Manifesto of Kino-glaz)¹

These extra ordinary times forces us to extent the limits of the studio and reconsider the basic principles of introductory methods in design education. Although, we are still encountering the impact of the Corona Pandemic, the resilience of each of us is increased and flexibility and practicality turns out to be the most referring ability in these days. This particular ability may increase by contemplating on what we had done in those hard days. Specifically, the video apparatus seems to improve our vision for a while on representing design and physical environment. Besides, it opens our way on developing multiplicity in examining one single built environment. Moreover, it seems to construct novel opportunities for the coming days of architectural education if we accept this particular device as a new thinking machine. Considering the potentials of this widely used device, one can extend the limits of architectural education.

¹ Vertov, Dziga. 1984. *Kino-Eye: The Writings of Dziga Vertov*. Edited by Annette Michelson, translated by Kevin O'Brien. Los Angeles: University of California Press. p. 17-8

Opportunity to read and evaluate our potentials nowadays with a critical lens can support us to improve the possibilities of new introductory studio. This parallel reading of two year experience in first-year studio with the early days of the cinematograph in early 20th century may help us to re-think what we have done to improve the conditions of the immediate online education. The devices sometime determine the conditions and sometime conditions determine the devices. Here camera and computer, editing and video production, digital platforms, online courses, capturing moving images determine and herald a new ways and methods in the studio. The question is “Are we ready for this transformation both as a team and as an individual?”. We believe we accumulated significant amount of experiences in the pandemic and we need a metacognitive process to digest these particularities. Thinking on what we are thinking within the limits of the studio needs a full consideration and substantial critiques. This limited self-reflection paper on particular studio experience can become a modest beginning for this venture.

Endnotes

¹ For the website, please check the link: <https://toytasar.wordpress.com/iztech/>

² You may find the list of students (<https://toytasar.wordpress.com/iztech-students/>) and instructors (<https://toytasar.wordpress.com/iztech-people/>). This website, : t o y : , also houses the summary of each semester and some examples of student works.

³ Following four videos were produced by different teams in the introductory studios of IZTECH. The related links of these videos are as follows:

AR 102 2020 (<https://www.youtube.com/watch?v=HCYjrEMyNWY>),

AR 101 2020 (https://www.youtube.com/watch?v=t7p_uX_6xEE),

AR 102 2021 (https://www.youtube.com/watch?v=9P2FK65_jFQ) and

AR 101 2021 (<https://www.youtube.com/watch?v=GPcyWCKTpfE>)

⁴ Vertov, Dziga. 1984. *Kino-Eye: The Writings of Dziga Vertov*. Edited by Annette Michelson, translated by Kevin O'Brien. Los Angeles: University of California Press. p. 17-8

⁵ Vertov, Dziga. 1984. *Kino-Eye: The Writings of Dziga Vertov*. Edited by Annette Michelson, translated by Kevin O'Brien. Los Angeles: University of California Press. p. 17-8

Innovation and Decolonization: Revisiting a Theory for Knowledge in Architectural Design Education

Ashraf SALAMA

Prof. Dr., University of Strathclyde, Department of Architecture

Abstract

This talk argues for revisiting a theory for knowledge integration in architectural design education considering the Covid-19 condition which has instigated serious questions about the challenges facing the established two-centuries old canons of pedagogy in architecture and urbanism. Developed in 2008 and revisited in 2015, the theory involved a contextual analysis of the reasons for developing a theory is introduced and reasons are categorized. The milieu of the theory is constituted in contextual elements and encompasses several underlying theories and concepts derived from other fields that differ dramatically from architecture, but essential to its evolution and development as an academic discipline and a profession. It consists of three major components: the disciplinary component; the cognitive-philosophical component; and the inquiry-epistemic component. Each of these components encompasses other smaller components integral to the building of the theory itself. Notably, the three components address ways in which knowledge can be integrated, how the desired integration would meet the capacity of the human mind, how such integration relates to the nature of knowledge and how knowledge about it is acquired, conveyed, and assimilated. Possible mechanisms for knowledge acquisition are an indispensable component of the theory, whose aim is to foster the development of responsive knowledge critical to the successful creation of built environments. The talk is premised on the postulation that understanding current efforts to meet Covid-19 related challenges, cannot be grasped in isolation from interrogating the course of history as it relates to decolonisation of knowledge and the associated socially progressive and innovative practices. In response, it calls for a more reflective and in-depth analysis on how pedagogical traditions in architecture and urbanism have evolved and arrived at the pre-Covid-19 condition, what some of the current voices of those involved (educators and students) are calling for, and, in the process of confronting this challenging situation, what the scope of opportunities that enables the evolutionary process to take its natural course, truly is.

DIALOGUE 5: CO-LINK WITH ARCHITECTURE AND INDUSTRY

Discovering New Potentials of Bauhaus-invented: “Vorkurs”

Nilsu ALTUNOK ¹

1st Author’s e-mail: altunokn20@itu.edu.tr

Abstract

This paper attempts to produce an epistemological investigation based on Bauhaus-invented pedagogic terminology and notions. Since Bauhaus paradigm has created a vast amount of pedagogical terms, these terms have not only been used in Bauhaus but also moved both geographically and epistemologically throughout the world and time. In this context, it is meaningful to divulge these terms and make an epistemological investigation considering their move not only geographically but also pedagogically. Herein, it is significant to ask some questions: Who proposed these terms? In which places and contexts are these terms used? And, how these terms are transferred to different geographies by which translations? At this juncture, the paper focuses on “Vorkurs” as a term that has reflected on theoretical, cultural, social, historical, political and even economic issues and established dialogues between architectural education and new potentials of interdisciplinarity, design-thinking and collaborative approaches in different geographies by different translations. This paper mainly highlights how language use -in the section of terms and nouns- relates to its social, political and historical context. Unlike linguistic approaches that focus only on the rules of language use, this analysis emphasizes the contextual meaning of language by considering it inseparable from its social, political and historical context. As the move of the term “Vorkurs” sheds a light on tectonics of architectural education even in present, discovering current potentials in architectural education becomes feasible with epistemological investigation of this paper.

The aim was fulfilled by following the move of “Vorkurs”, looking at different translations like “Vorlehre”, “Grundlehre”, “Hazırlık dersi”, “Temel tasarım”, “Temel tasar”, “basic course”, “basic design”, “preliminary course”, “orientation course” and “foundation course” with their separate contexts and then discussing them on a theoretical basis. Archival research method was used in this epistemological investigation by focusing on secondary sources like Bauhaus Manifesto, books and texts written by Bauhaus masters. In conclusion, this paper laid down an academic discussion on current possibilities of design-thinking and co-approaches in architectural education. This investigation may make us ask that, can there be a coincidence in Bauhaus-invented ‘Vorkurs’s moving, both geographically and pedagogically, since Bauhaus had never isolated itself from Germany’s political, economic and historical background? Or, is there a possibility for ‘Vorkurs’ to move both geographically and pedagogically even through present because of its foundation which questions current designer and by this way current design product and education on every field that are connected more or less by itself? Today, how is the situation of the course “Temel tasarım” or “Temel tasar” in our country? Is it

constantly transforming itself according to the political, educational, economic background of our time just like 'Vorkurs', as it is included with potentials and developments related to design education and the pursuit for current designer?

Keywords: *Vorkurs; Temel tasarım; Bauhaus terms and nouns; Epistemological investigation; New potentials in architectural education.*

Introduction

Bauhaus paradigm corresponds not only to a school, a movement, an approach, a method; but also, a style, a system... In extension, Bauhaus paradigm shows a multilayered meaning system. Since formation, it has constituted a new world of notions and meanings in every field that it is bound up with. Here, *a new world of notions and meanings* corresponds to both derived words, compound words and their reflection on theoretical, educational, cultural, social, historical and even political issues. Bauhaus invented pedagogical terms have moved both geographically and epistemologically throughout the world and time just like Bauhaus paradigm and in some cases Bauhaus masters.

Walter Gropius who is a German architect and the founder of Bauhaus (architecture and arts) school states that; the guiding principle of the Bauhaus was the idea of creating a new unity through integrating many disciplines, arts and movements in his text *The Theory and Organization of the Bauhaus* (Walz, 2014). This idea of creating a new unity has articulated also in the *Bauhaus Manifesto and Program*. According to the manifesto, "The ultimate aim of all visual arts is the complete building" (Conrads, 1971, p.49)! and various disciplines, arts and movements must be integrated with the workshops. In many aspects, such an intention of Bauhaus school enounces the origins of various disciplinary and collaborative approaches. The Bauhaus pedagogy which gathered different disciplines, students and masters into its schedule must have influenced today's design-thinking pedagogies. According to the admission criteria of Bauhaus, it is apparent that there is a manner of not to limit the variety of students in terms of the unity through integrating many disciplines: "Any person of good repute, without regard to age or sex, whose previous education is deemed adequate by the Council of Masters, will be admitted, as far as space permits" (Conrads, 1971, p.53). The most sensitive spots here, are to make admission easier for students from different knowledge and disciplines and to make way for them to reach personal experiences and discoveries which will enable them to see their own potentials and limitations (Itten, 1963). Thus, a course appears at the same time with the establishment of Bauhaus: *Vorkurs*.

Vorkurs is, in general terms, a beginning of a training where new, experimental educational methods were applied to acquaint students with the use of materials and the basic principles of design ("Preliminary Course", n.d.). Apart from its general theme, *Vorkurs* is an area for individuals to discover their own creative possibilities. One can find his or her creativeness in light and shade, the other in materials, third one in color and so on... Therefore, Johannes Itten who laid the foundation of *Vorkurs*, suggested to Walter Gropius that all students from varying disciplines who

show an interest in arts and architecture should be admitted to *Staatliches Bauhaus at Weimar* for a term. Hence, they called this trial term the *Vorkurs* (Itten, 1963). Although the term *Vorkurs* was not articulated in Gropius' manifesto in 1919, the term was used in *The Theory and Organization of the Bauhaus* in 1923. If it is considered that Johannes Itten came to Bauhaus after the manifesto had published in 1919, he could have suggested the name *Vorkurs* for the course he founded. In German, *Vor* corresponds to preliminary and *kurs* means course. Different terms and nouns were used instead of *Vorkurs* in German language too: *Grundlehre* and *Vorlehre*. In other respects, in terms of its translation in English, we come across with *basic course* in Johannes Itten's (1963) book's English version, *orientation course* in John Peter's (1994) interview with Gropius, *preliminary course* in Gropius's curriculum chart's English version, *foundation course* and even *basic design* (Figure 1). Furthermore, about translation in Turkish, *Hazırlık dersi* appears in a comprehensive source of Eva Forgacs (2017), *Bauhaus 1919-1933. Temel tasarım* and *Temel tasar* are also terms which are used in first year architectural education at universities of Turkey. When *Vorkurs* had been moved through languages, it also transferred into different settings that caused change in pedagogical paradigms and methods. Since Bauhaus paradigm has also showed changes throughout its history according to the intense political features of its time, *Vorkurs* which has regarded as the foundation and essential part of this pedagogic approach, must reveal -with its all inputs and outputs- background of its time in all contexts. In this paper, by locating *Vorkurs* to center and departing from *Staatliches Bauhaus at Weimar*, Bauhaus invented pedagogic terminology will be revisited and its reflection on current architectural education, design-thinking approaches including interdisciplinarity and collaboration will be investigated through an epistemological investigation that puts importance on archival research and secondary data.

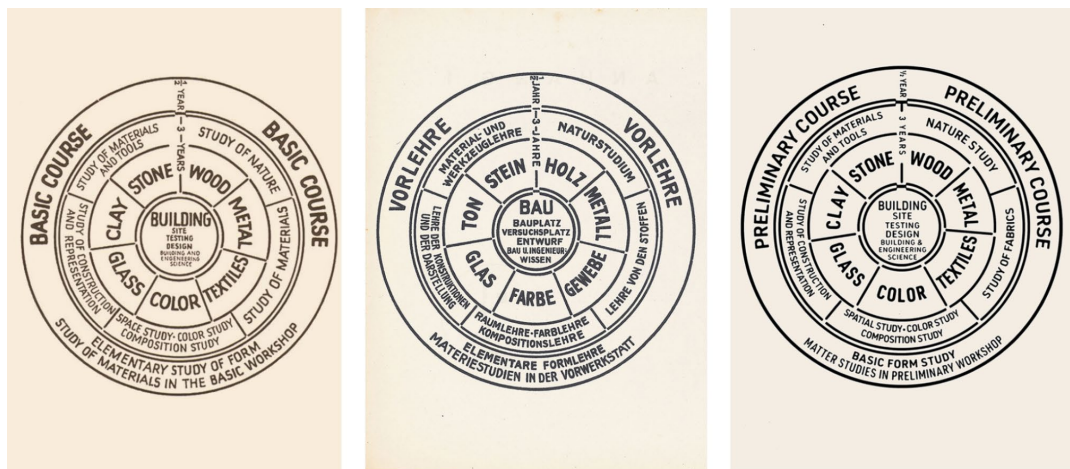


Figure 1: Three different curriculum charts of Bauhaus (url 1, url 2).

Methodology

This paper aims to produce an epistemological investigation based on Bauhaus invented pedagogic terminology and notions. To conduct this epistemological investigation, the paper seeks after answers to these questions: Who proposed

these terms? In which places and contexts are these terms used? And, how these terms are transferred to different geographies by which translations? As a matter of fact, investigating a selected term which has potential in terms of moving and paving the way for new pedagogical possibilities may shed a light to Bauhaus invented terms' reflection on theoretical, cultural, social, historical, political and even economic issues. However, this paper would not focus on how values, beliefs and assumptions are communicated. This paper mainly focuses on how language use -in the section of terms and nouns- relates to its social, political and historical context. Unlike linguistic approaches that focus only on the rules of language use, this analysis is an epistemological investigation into the Bauhaus invented terminology, and it emphasizes the contextual meaning of language by considering it inseparable from its social, political and historical context. In detail, this paper's epistemological investigation is an inquiry into Bauhaus invented pedagogic terminology which establishes an archival research and reconsiders secondary data like Bauhaus manifestos, manuscripts of Bauhaus masters.

At this juncture, the paper focuses on *Vorkurs* as a term that has reflected on theoretical, cultural, social, historical, political and even economic issues and established dialogues between architectural education and new potentials of interdisciplinarity, design-thinking and collaborative approaches in different geographies by different translations. Starting from *Staatliches Bauhaus at Weimar*, *Vorkurs* has been a beginning of a training where different disciplines, materials, masters from different fields, students from different backgrounds have forgathered and composed a synthesis. This synthesis is worth in revealing embedded origins of today's architectural pedagogies after approximately a hundred years after *Staatliches Bauhaus at Weimar*. The aim of the paper is to investigate the extension of the vocabulary of Bauhaus paradigm and to discover unknown potentials of Bauhaus' terms and nouns according to the transfer of language use and world of meanings.

Vorkurs at Staatliches Bauhaus at Weimar

During 14 years in which Bauhaus remained open, the school battled against its political background which was almost the unsteadiest times of Germany. During this period, Bauhaus continued its education in three different cities: Weimar, Dessau and Berlin. Each of the cities brought various pedagogical setups because of masters who had different pedagogical savings and approaches. Post-war conditions and rapid changes contributed to Bauhaus' position that was being incorporated with various conflicts and debates on pedagogical approaches. First year study, *Vorkurs* has become a leitmotiv which follows the changes in Bauhaus both with its translation and content.

In Weimar Bauhaus, two different masters and their pedagogic methods conducted *Vorkurs*. First one was Johannes Itten and he gave the class between 1919 and 1923. Itten's *Vorkurs* was came into existence with conflicts and debates which were emerged because of the unsteady condition of the setting and divergent opinions of masters. Itten (1963) conveyed that, he designated three tasks for *Vorkurs* in his

book *Design and Form, The Basic Design at the Bauhaus*. These tasks were to liberate the creative forces and thereby the artistic talents of the students, to make students' choice of career easier, and to present the principles of creative composition to the students for their future careers as artists (Itten, 1963). Thereafter, Itten fulfilled these tasks by his own method: by using relationships between contrasts. Such contrasts were: large-small, long-short, broad-narrow, thick-thin, black-white, much-little, straight-curved, pointed-blunt and so on (Figure 2)... Students had to approach the contrasts from three ways: they had to experience them with their senses, make them objective intellectually and realize them synthetically (Itten, 1963).

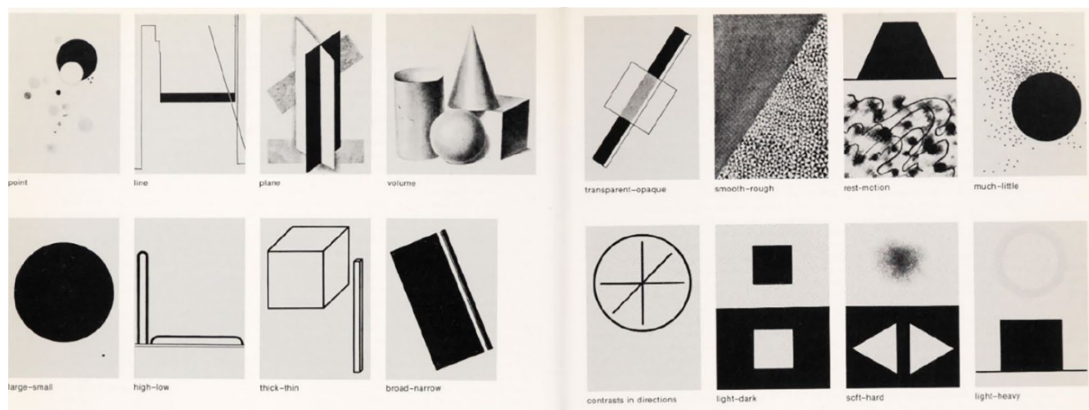


Figure 2: Representations of Contrasts in Johannes Itten's (1963) *Vorkurs*, Weimar.

His aim was to awaken a vital feeling for the subject through personal observation, experience and perception. This argument also agrees with Itten's realization of inward-looking thinking by spiritual forces must be balanced with outward-looking scientific research (Itten, 1963). Namely, Itten was trying to make students express their senses with contrasts by using limited base forms and expressions to reach a total visual language (Figure 3). His inward-looking position under the impact of post-war conditions could be political, reactionary and contrary as he put forward the importance of subjectivity without time and place in terms of discovering a context-free visual language. Itten (1963) expressed post-war conditions of his time as; the terrible events and the shattering losses of the war had brought in their wake confusion and helplessness in every walk of life, students held endless discussions in their eager search for a new intellectual approach while the political and economic instability were lasting, studios were unheated, students were destitute, and most lectures couldn't be done. In a word, Itten had built *Vorkurs*' structure to get out of unsteady setting and gravitate to the discovery of one's subjectivity. Along the same line, *Vorkurs* as a pedagogical term indicates a metaphor by its analysis as a noun. *Vor* means prior and conveys something before the main thing, something to shed a light on the way but not interfering rigidly to that way. Namely, *Vorkurs* became a prior course to help students for finding their own way of subjectivity with inward-looking. However, since it is *Vor*, it is not the main and it foreshadows the main thing that will be on surface by individuals on their own.



Figure 3: Student works in Johannes Itten's (1963) *Vorkurs*, Weimar.

In the early 1920's, according to the historical context, Bauhaus workshops gained a dual structure which separated arts and crafts. This situation was disapproving the unity of arts and crafts which was mentioned in Gropius' manifesto and started to damage the main aim of *Staatliches Bauhaus at Weimar*. Since some masters believed that crafts are more important than arts, Itten's pedagogical approach based on subjectivity instead of objectivity brought debates and discussions and thereafter, Johannes Itten left the school in 1923. After Itten had left, László Moholy-Nagy started to give *Vorkurs*. Moholy-Nagy's pedagogical approach in *Vorkurs* was quite different from Itten's. In fact, in his book, *Von Material zu Architektur*, he used the term *Grundlehre* instead of *Vorkurs*. According to Moholy-Nagy's book, it is quite consistent to make an argument about his approach distanced from subjectivity. Moholy-Nagy (1968) stated that, individuals' position would be determined by both his or her biology and culture, so expression of that individual would both contain his or her emotional pattern and objective meaning for all people in terms of collectivity. He attached importance on objectivity and built a course which maintained by experimental, rational material and technology use (Figure 4).

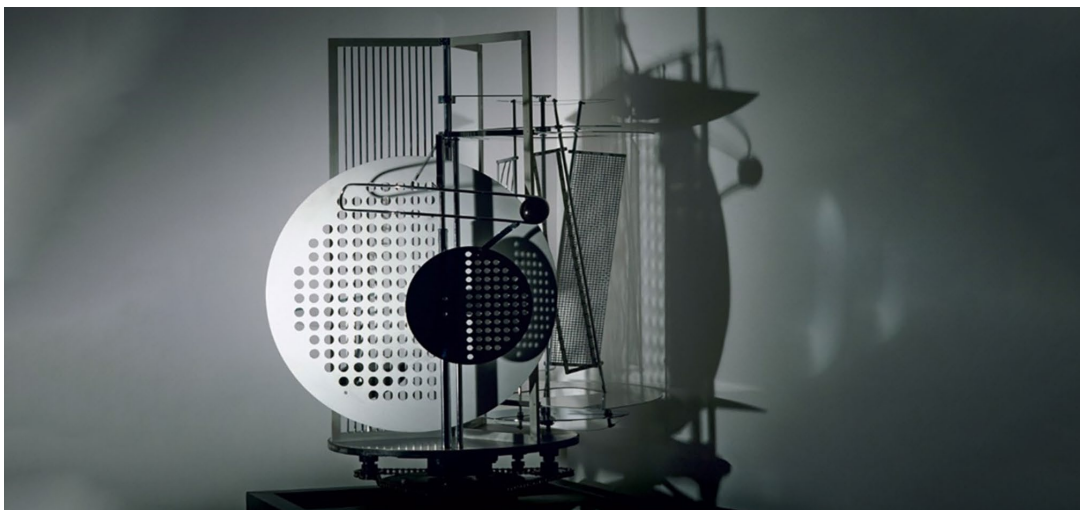


Figure 4: Light-Space Modulator: Moholy-Nagy, 1922-1930 (url 3).

In *Grundlehre*, leading notions were haptic qualities, strength of materials, weight and density of materials, compositional equilibrium, scale, ratio, three dimensional volumes and light. With these being said, he drove forward objectivity to raise designers who contribute to industry. This manner of Moholy-Nagy, also bound up with economic and historical context: the factuality of hyperinflation. Moholy-Nagy's setup for design-thinking was closer to materiality and industrial design. Apart from Itten's intention of creating a context free visual language, Moholy-Nagy built more functional design-thinking approach, probably by being affected from economic and political situation of that time. This approach is still be practiced at architectural schools which stand close to engineering and construction -maybe by the long run impact of devastating world wars- today. Regarding the noun analysis of *Grundlehre*, the use of *Grund* instead of *Vor* is significant. *Grund* means base and here, it connotes basis of the main thing instead of something before the main thing. Thus, it conveys something more comprehensive and essential than *Vor*: it indicates the basis that is essentially required for design education. This metaphor correlates with pedagogical background of its time. As time progressed, *Staatliches Bauhaus at Weimar* were coming close to a design school which serves for industry and the concrete building. Indeed, when Bauhaus moved to Dessau in 1925, it became a school of design.

Vorkurs at The School of Design in Dessau

After Bauhaus had moved to Dessau in 1925, László Moholy-Nagy was still teaching for the first year with Josef Albers. Even though Moholy-Nagy was with Josef Albers between 1923 and 1928 in first year education, Moholy-Nagy's pedagogical methods were more dominant. When Moholy-Nagy decided to leave Bauhaus with Walter Gropius in 1928, Josef Albers assumed the position of teaching *Vorkurs* by himself. Moreover, Albers gave *Vorkurs* longer than former masters, he taught between 1928 and 1933 and he became a significant name in terms of the transformation of *Vorkurs*' content and methods. He was in charge until Bauhaus closed in 1933, so, his *Vorkurs* had been the latest version of Bauhaus' first year education before it transferred into different settings.

Albers' *Vorkurs* provided an environment for eliminating the dual structure which separated arts and crafts during early 1920's. His *Vorkurs* built a bridge between expressionistic approach and structuralist approach so that, it brought different composites together. Josef Albers approached more on objectivity instead of subjectivity just like Moholy-Nagy and additionally he deepened the interactive relation between other masters like Klee, Kandinsky and Schlemmer and *Vorkurs*. All these masters had different savings and pedagogical ideas. Thus, his approach in the name of *Vorkurs* contributed to interdisciplinarity and collaboration by elimination of disintegration between arts and crafts in Bauhaus circumstantially after Gropius had left in 1928. Students were able to attend other courses that were given by different masters according to the syllabus besides main *Vorkurs* lecture. This situation has paved the way for including more disciplines into first year education and broaden the minds of students.

At the beginning, Albers had drawn attention on potentials of materials just like Moholy-Nagy, but his approach differentiated from Moholy-Nagy's by the decrease in experimental methods based on strength, density, weight, haptic qualities, scale, and ratio of materials. The focus of Albers' *Vorkurs* was on the development of spatial structures where the correlation of material, construction, function, and production technology was to lead to optimal performance with a minimum input of material, energy and time: a school of invention (Figure 5) ("Josef Albers's preliminary course", n.d.). The most important thing in development of spatial structures with basic graphic tools was, not to waste any material. Hereunder, the economic and political background took effect because Germany was on the eve of Second World War and there was an economic crisis. Josef Albers (2014, p.211) mentioned that "Ours is an economically oriented age. In earlier times, worldview was more important. Today, nobody can exist without considering economics: we are concerned with economic form. Also, because the need for rational design necessarily follows the previous overemphasis on emotion or historical forms."



Figure 5: Albers teaching in Bauhaus (url 4).

Vorkurs in the United States

Between 1932 and 1933, for a short period of time, Bauhaus served as a private education institute in Berlin. In 1933, a historic moment emerged, and Bauhaus was closed down by Nazis. The closure accelerated the integration of Bauhaus with a diverse range of international trends and by that way Bauhaus was required to reinvent itself consistently in new contexts due to its forced relocation. "With the emigration of many members of the Bauhaus, Bauhaus idea was transplanted into other cultural circles and under the new conditions, the content and form of expression changed. Josef and Anni Albers, Walter Gropius, Ludwig Mies van der

Rohe, Marcel Breuer, Ludwig Hilberseimer, Walter Peterhans and Herbert Bayer emigrated to the USA ("The aftermath", n.d.) By this means, *Vorkurs* was also relocated with Bauhaus approach. Josef Albers was appointed to a position at *Black Mountain College* in Ashville, North Carolina at the recommendation of the Museum of Modern Art and he taught in this school until 1949 ("Josef Albers", n.d.). In *Black Mountain College* years, Albers maintained and developed his pedagogical understanding which was structured in Bauhaus (Figure 6). In *Concerning Art Instruction*, he conveyed that, all renderings of form and creative work move between two polarities: intuition and intellect or subjectivity and objectivity (Albers, 2014). His discourse overlapped with the bridge between expressionistic approach and structuralist approach which he built in his Bauhaus *Vorkurs*. This kind of design-thinking is between abstract and tangible, and still applied in architectural education today. According to his understanding, creative work varies between where subjectivity and objectivity overlap and by that way, the understanding of art can grow both through learning and teaching (Albers, 2014). In short, he attempted first to teach the student to see in the widest sense about the phenomena of himself or herself in *Black Mountain College* instead of teaching the development of spatial structures in Bauhaus where production leads to optimal performance with a minimum input of material. The reason of that difference could be decreasing pressure of economic rigors, as when he was teaching in Bauhaus there was a hard situation and wasting materials was unacceptable. However, in *Black Mountain College*, Albers freed himself from a setting which had tough rigors and he started to teach leisurely: step by step.



Figure 6: Albers teaching in Black Mountain College (url 5, url 6).

Albers clarified the curriculum of *Black Mountain College* as, "We have three main disciplines in our art instruction: Drawing, Basic Design (Werklehre), and Color-Painting" (Albers, 2014, p.219). This division reminds the interdisciplinary and interactive relation between Klee, Kandinsky and Schlemmer and *Vorkurs* at Dessau. It is obvious that, Albers has held his intention to piece together architectural knowledge and arts in various kinds. The choice of the term *instruction*

represents strict steps during learning and teaching art and architecture. However, in contrast to former *Vorkurs* syllabus, there were more time and practice to learn art between these three main disciplines for students. Drawing class was regarded as construction of one's own graphic language in terms of seeing the widest sense and was study of objective representation. *Basic Design*, *Werklehre* in Black Mountain College corresponded to design with material but rather than a general constructive thinking, it was especially a holistic thinking. The point that bound up with Albers' former *Vorkurs* was to consider possibilities and limits of materials with as few tools as possible. On the other hand, in *Basic Design* materials that had been infrequently used were preferred in contrast with *Vorkurs*, since *Vorkurs* had no chance to be selective that much. The course in *Black Mountain* was divided into two; *matière* studies and material studies: "Matière studies are concerned with the appearance, the surface (epidermis) of material. Here we distinguish structure, facture, texture. We classify the appearances according to optical and tactile perception. Material studies are concerned with the capacity of materials. We examine firmness, looseness, elasticity; extensibility and compressibility; folding and bending – in short technical properties" (Albers, 2014, p.220). Under favor of these, Albers tried to develop an understanding of space, volume, and dimension. Except that, the ratio of effort to effect became less stressful in America in terms of decreased economic pressures. Regarding noun analysis of *Basic Design*, we can rediscover that the noun *Basic* corresponds to both elementary and fundamental. Since Josef Albers articulated *Werklehre* near *Basic Design*, it might be possible that *Basic* was used instead of *fundamental*. Because, in German *Werk* means work and corresponds to something created because of effort. So, in *Black Mountain College Basic Design* was more than just first year preliminary education and became the backbone of design education.

Furthermore, László Moholy-Nagy and Walter Gropius had left Bauhaus in 1928 and a few years after they emigrated to America. On Walter Gropius' recommendation, László Moholy-Nagy was made director of the *New Bauhaus–American School of Design in Chicago* in 1937 ("László Moholy-Nagy", n.d.). In *New Bauhaus–American School of Design in Chicago*, latter *Institute of Design, Chicago* the first two terms were devoted to a *preliminary (foundation) course*. The course was obligatory to all students and presented the fundamentals of shop work, intellectual integration, the physical and biological sciences, modelling, drawing, lettering, photography, and music or literature (Moholy-Nagy, 1967). The main acceptance of this pedagogical approach was every student could be talented and do creative work. Apart from Moholy-Nagy's pedagogical aim in Bauhaus, which was to raise designers who contribute to industry, in *Institute of Design* there was not an objective or an aim to cultivate geniuses or free artists who contribute to a specific field. Moholy-Nagy described *preliminary (foundation) course* in his book *The New Vision and Abstract of an Artist* as, "The basic workshop of the foundation course is a great aid to genuine development. Also, he (also she) becomes conscious of volume and space, fundamentals in three-dimensional design. Since, in the first year, every topic receives equal attention, he has ample opportunity to discover his preferences and inclinations before deciding on vocational specialization" (Moholy-Nagy, 1967,

p.21). Considering Moholy-Nagy's description and noun analysis, *preliminary course* education in Chicago bore a resemblance to involve in an independent design education institute, however there was a contradiction in use of two terms together: *preliminary* and *foundation*. *Preliminary* as a noun corresponds to *Vor*, but *Foundation* corresponds to *Grund* (base) in German.

In another setting, Walter Gropius started to teach in *Harvard University Graduate School of Design* in 1937. In America, Gropius found out that there was a lack of integrated pedagogical method in art and design education. Therefore, he suggested an experimental school setup just like in Bauhaus. The unity out of all different branches were important in education method (Gropius, 1937). *Vorkurs* approach was influential in this setup in terms of preliminary training which is for developing and ripening intelligence, feeling and ideas. "With regard to the American public school system, Gropius proposed a *preliminary* artistic training that resisted the constraints of vocational labeling as long as possible" (Lerner, 2005, p.220).

Vorkurs in Europe

During Albers, Moholy-Nagy and Gropius had been teaching art and architecture in United States, Second World War happened and ended in Germany. Bauhaus evolution in Germany originated with a difficult legacy in Ulm in post-war period. Ulm as a bombed city in 1944 needed a reconstruction, but that reconstruction is not only infrastructural but also democratic. Following that, Inge Scholl, Otl Aicher and Max Bill founded *Hochschule für Gestaltung HfG Ulm* in 1953. To illustrate the connection between Bauhaus and *HfG Ulm*, it may be notable to look at Tomás Maldonado's (the chairman of the directing committee of *HfG Ulm*) speech in 1957 at the opening of the new study year: "Our relationship with Bauhaus had lead repeatedly to a misunderstanding in the public by assuming that our school has been defined as a continuation of the Bauhaus, even if it sounds paradoxical, nevertheless this sounds true and not true at the same time" (Mantele, 2020).

HfG Ulm was containing some pedagogical terms and methods from Bauhaus and Walter Gropius had been informed about all processes of this new design school. First year educational approach was one of these and *Vorkurs* pedagogy had influenced *HfG Ulm*. According to Max Bill, the *Grundkurs* should pull the rock from under the feet of the students by trying to shake all received ideas and assumptions (Mantele, 2020). Bill insisted that, the *Grundkurs* should be compulsory, and students should be divided into different fields after taking *Grundkurs*. Apart from Bauhaus' curriculum charts, in *HfG Ulm*, *Grundkurs* sits on the center and education goes towards five different departments which are product design, visual communication, architecture, city planning and information (Figure 7). Moreover, in *HfG Ulm*, students were educated in a very broad mind and interdisciplinary processes with lectures on sociology, politics, economy, philosophy, and psychology. Under light of these, there is no doubt to say that post-war period with its all nodus, affected pedagogical understandings towards a unity of different fields because all political, economic, historical situations are in relationship with design education and methodology. Between curriculum chart and noun analysis of

Grundkurs, the important thing is *Grund* connotes foundation, the place where *Grundkurs* sits, overlaps with the choice of term. A foundation to reach the unity of different fields in design school.

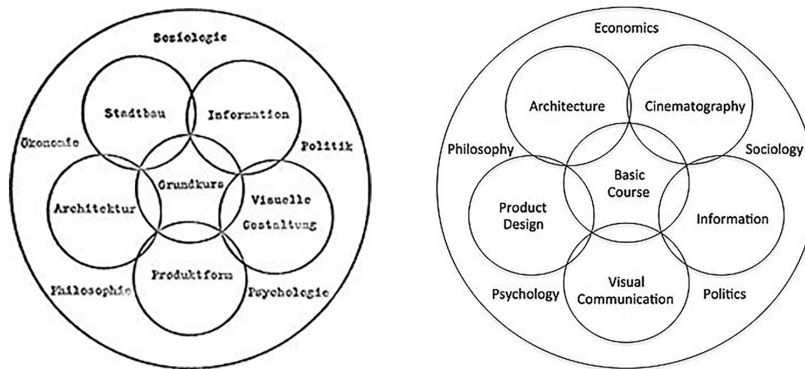


Figure 7: HfG Ulm Curriculum Chart, 1950 (Mantele, 2020).

Walter Peterhans was one of the lecturers who taught *Grundkurs* and he gave the class by using abstract tasks on sensibility, proportion, and general ultimate precision. He believed that, with his method, a disciplined process execution could be achieved. Secondly, Helene Nonné-Schmidt used color morphology in *Grundkurs*. Latter lecturer was Josef Albers, and he gave the class after many experiences and knowledges from Bauhaus and America. In one of his writings, *My Courses at the Hochschule für Gestaltung at Ulm*, in 1954, he clarified that, his experiences shaped his pedagogical understanding more than anything (Albers, 2014). Albers (2014) expressed his approach as; *Grundkurs*' start is not retrospection, not the ambition to illustrate, but a learning to see that every visible thing has form and that every form has meaning. Also like his previous approaches in other institutes, he made much of materials, shapes, discovery and invention to reach creativeness. These information about *HfG Ulm* gives presumptions about Ulm model of design teaching, but it can be notable to articulate Otl Aicher's expression about Ulm model: "The result is the Ulm model: a model of design supported by technology and science. The designer is no longer a lofty artist, but an equal partner in the decision-making process of industrial production" (Mantele, 2020).

Discussion on the Findings

Departing from 1919 -*Staatliches Bauhaus at Weimar*- till now, Bauhaus pedagogy has been one of the influential and leading design pedagogies. Of course, the unsteady conditions of the time it was founded and survived were also influential in this, but Bauhaus brought many pioneering features and innovations to design education. *Vorkurs*, one of the cornerstones of this pedagogical structure, is one of the concepts invented by Bauhaus. In Weimar years, *Vorkurs* started with an inward-looking thinking which neglects the context but paradoxically is the result of the context. After, it gained more rational and functional aspect with László Moholy-Nagy. In the School of Design in Dessau, *Vorkurs* has been built as a bridge

between expressionistic approach and structuralist approach by Josef Albers so that, a design-thinking that puts more importance on interdisciplinary and collaborative issues has emerged. The transplantation of *Vorkurs* into different geographies, for instance US and Europe (after Bauhaus), has paved the way for the move of first year education understanding and by that way fitting into different contexts. A diagrammatic expression about the transplantation of *Vorkurs* is represented below (Figure 8). Today, in Turkey in most universities, first year architectural education includes *Temel Tasarım* course. The aim of the course *Temel Tasarım* or *Temel Tasar* is to make the students gain abstract and creative thinking ability which were not taught to them before. *Temel tasarım* is a process of finding abilities, gaining material and form knowledge, trying to understand architecture as abstract as possible in collaboration and sometimes including other disciplinary areas. However, in contrast with Bauhaus or *HfG Ulm* pedagogies, *Temel Tasarım* has no place centered on any curriculum chart. It is a course that should be taken few hours a week with other courses in first year education. The contradiction is, *Temel Tasarım* is a *foundation (essential) course* that has constant output every term while it was a course whose roots have been moving from 1919 to present with various transformations and adaptations. Today, *Temel Tasarım* should be a course which consistently transforms itself according to the needs of our time mostly in interdisciplinary, transdisciplinary and co-approaches according to the political, educational, economic background just like *Vorkurs*; because it is included with these potentials and developments related to design education and the pursuit for current designer.

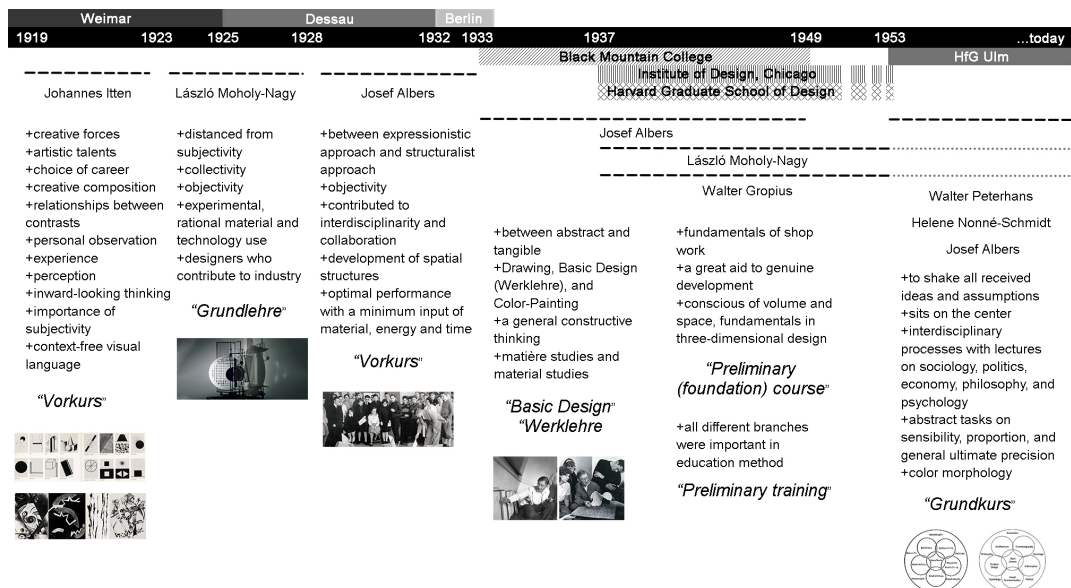


Figure 8: The Diagrammatic Expression on the Findings (created by author).

Conclusion

Bauhaus paradigm represents a quite large area of knowledge and pedagogy with its multilayered meaning system. It has created a *new world of notions and*

meanings which resulted in the moving across of it to the world both geographically and epistemologically. This paper has focused on *Vorkurs* as a term of Bauhaus pedagogic approach and investigated moving of the term *Vorkurs* epistemologically and pedagogically through dialogues between architectural education and new potentials of interdisciplinarity, design-thinking and collaborative approaches in different geographies by different translations. As a method, secondary data like Bauhaus manifestos, manuscripts of Bauhaus masters are searched, and archival research has been conducted. Unlike linguistic approaches that focus only on the rules of language use, this analysis is an epistemological investigation into the Bauhaus invented terminology, and it emphasizes the contextual meaning of language by considering it inseparable from its social, political and historical context. The investigation has shed a light on Bauhaus' effect on tectonics of architectural education even in present. Since Bauhaus have never isolated itself from Germany's political, economic and historical background, its pedagogic approach still reveals itself in current interdisciplinary, collaborative architectural education pedagogies.

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The effect of interdisciplinary actors and related factors in material selection for architectural conservation

Dilara GÜR ¹

1st Author's e-mail: d.gur@iku.edu.tr

Abstract

As an intervention-oriented discipline, architectural conservation needs actions to understand the state of buildings. Conservation means the process of retaining structure's historical, architectural, aesthetic, cultural significance. Preservation stands for maintaining the fabric of a place in its existing state and retarding deterioration by the introduction of materials into the fabric. Material selection is an important and time-consuming part of a modern architectural project and application. These knowledge and techniques may be transferred into material selection also in conservation projects in the future. For a complex system which are composed of many parts, no one can provide all necessary information to select the optimum material. Preliminary studies to present the decision-making process in the area of conservation is necessary in this manner. Actors who are generally individuals, institutions, and agencies have been central to delivering such goals in practice. However, the definition of actors within the discipline has been narrow and their role in influencing material selection therefore the conservation outcomes inadequately conceptualized. The choices of the decision makers directly affect the quality of the restoration of buildings therefore the final state of the monument. Unlike projects for newly built structures, conservation projects connected with cultural heritage are not only more complex but are also more demanding. Therefore, the employer who is not knowledgeable in the field of material science or conservation should be correctly guided through this laborious process.

In this study, an introduction of a broader conceptualization of actors and factors in conservation is presented in order to produce new forms of understanding that could lead to different approaches in conservation research, enhance practice and draw attention to spheres of conservation activity that might require stronger oversight and governance. Conservation and preservation approaches affecting material selection in global scale are investigated along with national codes and regulations in order to understand the decision-making process of the actors. Therefore, a survey study with the actors in the conservation field, on the criteria effecting the material decision is presented, followed by the interpretation of results by an inferential statistics analysis method, analysis of variances (Anova). Nine predetermined material selection criteria which are material sustainability, chemical properties of material, physical properties of material, mechanical properties of material, color compatibility with genuine material, texture compatibility with genuine material, material reversibility, cost and material availability; related to decision making for choosing materials in heritage conservation, were subjected to evaluation by actors in the field of conservation. Based on the classification and determination of the relative importance of the criteria, it is seen that color

compatibility is distinctly the most important criteria in material selection followed by physical properties. Lastly, the relations of the actors and the factors are discussed and visualized by network mapping which is online accessible to anyone in the need of consultancy. This study can also lead to further investigations on holistic models and customized tools to be used for material selection in conservation works when combined with information technology perspective.

Keywords: Conservation, Material selection, Systematic approach, Network mapping, Anova.

Introduction

Heritage buildings and monuments in any country are mute testaments of its glorious past. The condition of such monuments are determined largely by their present function and use. Conservation becomes inevitable where monuments which have no further utilization tend to decay rapidly, while monuments which are still in use have a better chance of being maintained. Conservation means the process of retaining structure's historical, architectural, aesthetic, cultural significance. Preservation stands for maintaining the fabric of a place in its existing state and retarding deterioration whereas reconstruction implies returning a place as nearly as possible to a known earlier state and distinguished by the introduction of materials into the fabric.

Procedure of material selection, knowledge of multi-disciplines is needed. For a complex system which are composed of many parts, no one can provide all of the information enough to select the optimum material. Therefore, computer aided engineering tools are being developed in order to define methods for optimal material selection combined with decision making theory since the beginning of 2000's (Jee and Kang, 2000). These knowledge and techniques may be transferred into material selection also in conservation projects in the future. Preliminary studies to present the decision-making process in the area of conservation is necessary in this manner.

Physical materials of an earlier time, that might have been state of the art at the time of construction, might have failed and currently needs replacement with contemporary, better functioning, but aesthetically similar materials. Material selection is a crucial part of the conservation projects with myriad of factors affecting the decision of actors. Guidelines and regulations also lead them to develop the best suited approach prior to treatment. There are many actors such as historic building owners, building managers, academic consultants, architects, contractors, advisory board officials and authorized laboratories which take a part in the selection of materials and techniques used in the repair of monumental buildings.

The choices of the decision makers directly affect the quality of the restoration of buildings therefore the final state of the monument. Unlike projects for newly built structures, conservation projects connected with cultural heritage are not only more complex but are also more demanding. This is caused by – at the initial stage of a renovation project – a lack of knowledge about building materials, construction and

the foundation, as well combining these individual parts into a unit called a building. Therefore, the employer who is not knowledgeable in the field of material science or conservation should be guided correctly through this laborious process. Even though there is a universal approach to heritage conservation, each country has their own guidelines and formal system with unique actors. It is necessary to define the roles and territory over which authority is exercised.

The conservation of cultural heritage and the renovation of other historical buildings require a whole and interdisciplinary approach, cooperation between experts and the use of modern techniques. A holistic model proposal that can systematize the relationship between actors and identified factors specific to Turkey. Thus, mapping the relations in the third dimension is mandatory to improve the quality of conservation works. Related factors will be derived from surveys with the actors and the relations will be presented by online network mapping. This web interface will be accessible to anyone with the need of a professional consultation in the area of historic conservation.

1. Conservation and Preservation Approaches

Contemporary conservation principles have been shaped in the direction of the protection of the physical environment, including historical buildings and sites, with all the necessary materials and construction techniques. The understanding of preserving the original by putting all the best efforts, starting with Ruskin, has reached the modest sized residences in the urban historical sites. In this context, principles such as the preservation of the monuments and sites included in the world cultural heritage list with the five criteria of authenticity, and the protection of the "authentic souls" of the buildings and their messages from history to the present, with the authenticity of the spiritual cultural heritage behind the physical forms were added. Preservation is the physical preservation of the historical building in its current state by stabilizing the state of preservation in which it is located and controlling or stopping the speed of further deterioration. Contemporary conservation theories are based on the protection of the original materials at the maximum rate, taking into account the age and the value of use of objects as historical documents or aesthetic values (Poulios, 2014).

Conservation could be encapsulated in two approaches, developed since the birth of the discipline to present: a material-based and a values-based approach. These approaches, though appearing at different periods of time, are both applicable today (Poulios, 2010). A material-based approach also referred to as "authorized heritage discourse shows an extreme focus on the preservation of the material/fabric. Examples of a material-based approach are: the early approach to conservation marking the birth of the discipline in the nineteenth century and the early twentieth century, and the development of the World Heritage concept and adoption of the World Heritage List. A values-based approach focuses on the values that society, consisting of various stakeholder groups / interest groups, ascribes to heritage. A value can be defined as 'a set of positive characteristics or qualities', while a stakeholder group or interest group is "any group with legitimate interest in heritage".

A values-based approach has been developed since the 1980s, within the developments of post-processual archaeology and is considered the current most preferred approach to heritage conservation (Demas, 2002).

2. Material Selection Regulations

Deterioration of the material may be caused due to various reasons, some of which are long life, lack of maintenance, unchecked growth of trees and creepers on the structures, improper drainage system, irregular inspection, deterioration and weathering effect. Therefore, modern codes and building standards, observance of cultural context, conservation criteria, attainable benefit, traditional and innovative methods etc. pose major challenges in restoration of heritage structure (Sandbhor and Botre, 2013). For a better understanding, guidelines and regulations must be hierarchically examined from building scale to material scale.

The types of interventions carried out on historic buildings in Turkey are grouped under three main headings as maintenance, repair and reconstruction. No changes are made to the material in the form of maintenance type intervention. Wood, mineral, terracotta, stone, etc. It is essential to replace the decaying or decaying architectural elements with the same material in accordance with their original forms, and to renew the damaged interior and exterior plasters, coatings, color and material in accordance with their original forms. In the third type of intervention, the reconstruction method, emphasis is placed on the unconditional provision of reconstruction application based on comprehensive restitution study, using original material and construction technique as well as the original plan scheme (KTB, 1999). In all three types of intervention, the design and structural elements of the building have a significant share along with the material.

The modifications and repairs carried out within the framework of the mentioned intervention methods; In accordance with the original form and material, it is carried out with the permission and supervision of state institutions that have established protection, implementation and inspection offices (KTB, 1983). In addition, the damaged interior and exterior plasters, coatings should be renewed in accordance with their original forms by ensuring color and material harmony (KTB, 2005)

In most restoration applications, the quality of the material to be used is determined according to the guidelines prepared by the General Directorate of Foundations and the Ministry of Culture and Tourism, which include unit price lists and unit price analyzes. These guides Turkey's is available in all provinces and districts. In the first guide, called the old work unit price list, there are standards regarding the construction technique and materials to be used in restorations. For example, in the important note section of the historical monument repairs in the introduction of the guide prepared by the General Directorate of Foundations, there are basic standards regarding facade stone coating, lead roof cover, Turkish style tiles, and wood protective materials (VGM, 2022). As an example, in the guide prepared by the Ministry of Culture and Tourism, approximately 3000 intervention methods and

the physical and chemical properties of the materials to be used in the applications and the description of how these materials will be applied (KTB, 2022)

The materials to be used in such restorations on Turkey two guides are standardized in the direction given above. However, the intervention criteria related material International Council on Monuments and Sites and Turkey National Committee of the Council (ICOMOS Turkey) and prepared by an academic and scientific studies are gained ground. According to the protection values in the ICOMOS Turkey, Architectural Heritage Protection Declaration published in 2013; *"It is not possible to mention that the structures built in a new environment with new design, carrier system, material and workmanship are preserved without considering their originality and destroying their repairable material assets"* (ICOMOS, 2013). Accordingly, preserving the original material is the primary goal in restoration interventions. Again, according to the Nara Certificate of Authenticity prepared by ICOMOS in 1994; the preservation of the historical building depends on the recognition of its values. These values form the basis of the judgment about the originality of the building and are related to both form and material (NARA, 1994).

3. Actors in Material Selection

The property rights of historical buildings must be acknowledged prior to the defining actors in the field of conservation. The right of ownership of cultural property in Turkey are in public institutions or private persons. While the historical monument category owned by private persons are generally residential buildings; the property rights of non-residential civil architectural structures, religious and military structures are held by public institutions. Particularly, General Directorate of Foundations, The Ministry of Culture, Municipalities, Governorates, Republic of Turkey Presidency and other ministries can be given as the main public institutions. The example of a private person can be given as a private association, foundation and similar societies as well as being a single person.

Regardless of the owner, the registration of a cultural heritage is carried out by the Cultural Heritage Preservation Boards under the Ministry of Culture (Ahunbay, 2016). Registration of a building is one of the first and most important steps to be taken for its protection. In case there is no registration of any cultural property, the registration is made by the application of the owner to the Ministry of Culture or by the general inventory study of the ministry institutions. The registered buildings should definitely be prepared by the architects who are registered with the Chamber of Architects, experienced and competent in historical artifacts.

In the conservation works, first of all, the building survey should be prepared and its current situation should be documented by. In these studies, the problems of the building are determined with the material samples taken from the structure. Material samples are analyzed in the laboratories of universities or state institutions such as the Municipality and the Ministry of Culture, and the necessary studies can also be carried out in private laboratories recently (Şahlan, 2007). In addition to material analysis reports depending on the nature of the cultural heritage, in some cases,

conservation and material experts from universities are consulted. In laboratory analysis studies, the distinction between original and non-original materials of the cultural heritage is revealed, and comprehensive information is obtained about the nature of the original materials, their physical and chemical properties, and the damage they have suffered.

In a restoration project; the actors that determine the restoration decisions regarding the material are the project conservation consultant, laboratories that prepare material reports, restoration expert architects, and owner state institutions. Experts working within the material analysis laboratories prepare laboratory studies and analyzes according to the material samples taken from the structure under study. These analyzes are evaluated and put into a report by conservation consultants. At this stage, while making decisions about the material, an interdisciplinary study is carried out with the restoration expert architect who prepared the restoration project. The restoration expert architect carries out his own professional practices in line with the opinion of the project conservation consultant in interventions and decisions accordingly regarding the material (Uçarkuş, 17). In making decisions about the material in a restoration project, the opinion of the owner state institutions is also taken. In state institutions that do not have scientific competence, these decisions are limited to issues such as the cost and supply of the material. After the restoration project is approved by the Cultural Heritage Preservation Regional Board, the implementation phase starts. During the implementation phase, according to the blasting and research excavations carried out within the building, the decisions regarding the material are updated when necessary. At this stage, restoration experts and architects working within the implementing firm take their place as actors. According to the nature of the restoration application, the conservation consultants are also consulted during the implementation phase.

4. Factors in Material Selection

In material and building sciences, there are general rules need to be considered for selecting the most appropriate materials for design and manufacture. These are; kinds of available materials, properties of the available materials, initial and maintenance costs and methods of testing and inspection necessary to determine the extent of conformance of the materials with the relevant specifications (Erdoğan, 2009). Although, the context in material selection slightly changes in the field of conservation and preservation, the main purpose in material selection is still meeting the need and determined working conditions to achieve the long-lasting repair material. Deterioration occurs in the physical integrity of historical artifacts is directly related to the deterioration of the material itself. Which interprets as the main subject of conservation in practice is the intervention to the material.

Material selection criteria for historical conservation can be divided in to three main categories. First one is the technical properties of the material which are physical, mechanical and chemical properties. It is clearly known in the light of the studies conducted today; physical, mechanical and chemical properties of the new materials must be compatible with the authentic materials (Gür, 2019). These can only be tested and calculated in authorized material laboratories by material specialists and technicians. Mechanical properties of the material consist of compression strength,

tensile strength, adhesion strength and ultrasound velocity. Physical properties can be defined as water vapor permeability, water absorption rate, specific weight and volume weight. Chemical properties are tested by advanced devices in order to determine elements, compounds and possible organic additives of binder and aggregates of complex historical materials.

Secondly, the visual adaptation of the material can be investigated in the means of color and texture. Materials selected for the conservation of the building must be compatible with authentic materials. There is a large literature characterizing human perception of the lightness and color of matte surfaces (Maloney and Brainard, 2010). Therefore, the selection can be based on the contrast or coherence of color and texture, depending on the desired conservation approach to be perceived by visitors or users of the monument.

Minimum intervention is a basic concept in preservation. Therefore reversibility and re-treatability of the material and application technique has high importance. Sustainability is also a very important criteria in material selection nowadays. Although it is not associated with material selection in historical conservation, it is necessary to put emphasis on importance of the ecological aspects of a conservation work and investigating its effect on material selection. Therefore, it is chosen as one of the material selection criteria for the survey study. In addition, there are economic aspects that are certainly important, especially when treating large surfaces monuments. What is expected is that it satisfies some balance between the ability of the material to work well and its overall (initial and maintenance) costs.

Last selection criteria chosen for the survey is availability. Contrary to general belief, heritage practitioners also would like to know how much time it takes to receive a certain conservation material. Generally, speed does not have high importance in practical built heritage conservation works. To carry out a treatment to a heritage structure, a month, or two, sooner or later, does not usually result in a significant problem. In a study by Turk et al. (2019), ten pre-determined criteria for selecting conservation treatments for the built heritage were demonstrated by subjecting an evaluation to expert stakeholders (Freund and Perles, 2004).

5. Methodology

Research is designed in three main steps. Data is collected based on an online survey consisting different types of questions. Collected data is interpreted based on an inferential statistic analysis technique, analysis of variances (Anova). Lastly, interpreted data is visualized by network mapping.

5.1. Survey (Data Collection)

Survey study was conducted on professionals with at least 10 years of experience in the field of conservation. An online survey interface, Microsoft Forms was preferred in order to collect different types of data. Participants were a group of 26 people who are within the age range of 30 to 50. They could be divided into four main professions such as, conservation specialist architects, material scientists, restoration specialists and civil engineers (Figure 1).

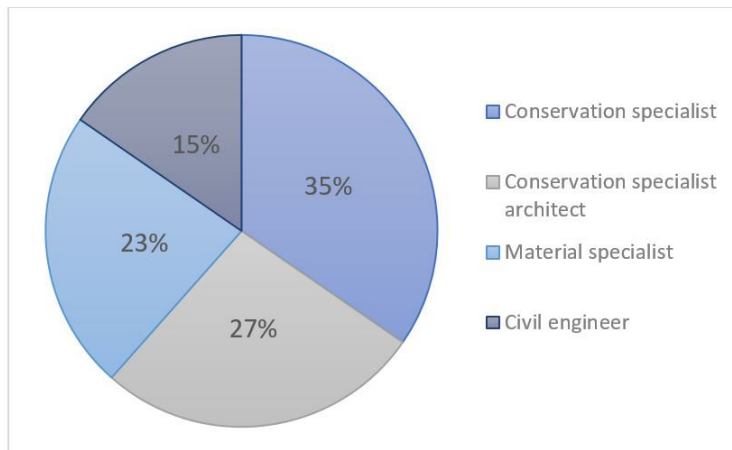


Figure 1: Distribution of participants' profession

Participants can also be divided into four groups according to actor institutions and organizations in the field, such as academic consultancy, conservation carrier company, conservation project owner company and others (Figure 2). They are carefully selected in order to prevent bias and for each group to be equally represented.

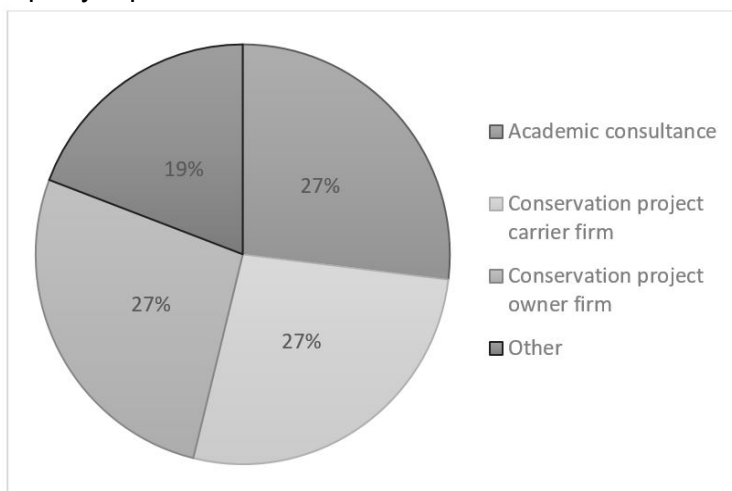


Figure 2: Distribution of participants' working field

The survey consists of 3 multiple choice questions, 1 open-ended question and 14 questions in 5-point Likert scale. Multiple choice questions are preferred in order to specify area of work and knowledge in the area. Likert scaled questions were chosen in order to compare the effect of 9 material selection criteria which are material sustainability, chemical properties of material, physical properties of material, mechanical properties of material, color compatibility with genuine material, texture compatibility with genuine material, material reversibility, cost and material availability, in material selection in conservation works.

In addition, for the comparison of impact of actors which are academic consultants, conservation project owner company, conservation project carrier company and authorized material laboratories, also a Likert scaled question was addressed. Data obtained on material selection criteria evaluation from 26 participant are given in Table 1.

Part. No	Material Sustainability	Chemical properties	Physical properties	Mechanical properties	Color Compatibility	Texture Compatibility	Material Reversibility	Material Cost	Material Availability
1	5	5	4	4	4	4	3	5	5
2	4	4	4	4	4	5	5	3	3
3	5	5	3	3	4	3	4	4	4
4	4	4	4	4	4	4	4	3	3
5	5	4	4	5	4	4	4	4	3
6	5	3	3	4	4	3	4	3	3
7	4	4	4	4	4	4	3	1	1
8	5	4	4	4	5	5	3	4	4
9	4	4	4	4	4	4	4	3	2
10	5	4	5	4	5	5	3	2	3
11	4	5	5	5	4	4	4	3	3
12	4	4	5	3	5	4	5	3	3
13	4	3	4	4	5	5	5	4	4
14	5	4	4	4	4	4	4	3	4
15	3	4	4	4	3	2	5	1	1
16	5	5	5	5	5	5	5	3	3
17	1	3	5	4	4	2	5	1	1
18	4	4	4	3	5	5	5	4	5
19	4	5	5	5	5	5	5	3	4
20	4	5	5	5	5	5	3	3	5
21	4	5	5	5	5	5	5	4	5
22	4	5	5	5	5	5	4	3	4
23	4	4	4	4	4	3	2	3	3
24	5	5	5	5	5	5	5	4	4
25	4	3	3	4	4	4	3	5	5
26	4	2	3	4	5	5	5	2	3

Table 1: Data from material selection criteria evaluation.

5.2. Survey (Data Collection)

Data interpretation is based on analysis of variance (Anova). "Basic idea of analysis of variance is to express a measure of the total variation of a set of data as a sum

of terms, which can be attributed to specific sources, or causes, of variation” [22]. Anova, is an important statistical analysis method in scientific work, particularly when factors produce certain results and researcher is interested in their individual contribution. Therefore, it corresponds to one of the main aims of this study which is to compare the effect of certain criteria in material selection in conservation works.

	Smp. No 1	Smp. No 2	Smp. No 3	Smp. No 4	Smp. No 5	Smp. No 6	Smp. No 7	Smp. No 8	Smp. No 9
	Material Sustainability	Chemical Properties	Physical Properties	Mechanical Properties	Color Compatibility	Texture Compatibility	Material Reversibility	Material Cost	Material Availability
Sample Size (<i>n</i>)	26	26	26	26	26	26	26	26	26
Sample mean value ($\bar{x}$)	4,19	4,12	4,23	4,19	4,42	4,19	4,12	3,12	3,38
Sample standard deviation (σ)	0,85	0,82	0,71	0,63	0,58	0,94	0,91	1,07	1,20
Sample variance (σ^2)	0,72	0,67	0,50	0,40	0,33	0,88	0,83	1,15	1,45

Table 2: Sample size, mean value, standard deviation and variance of the material selection criteria.

Each criteria is a sample with a sample size of twenty-six. Sample mean values, standard deviations and variances are given in Table 2. F value obtained from the ratio of variance among sample means to variance within samples is 6,46. Since it is bigger than 1, it can be assumed that variance among samples can not be explained by sample noise. Detailed datasets and calculations are given in Appendix-3.

To further investigation, critical values from the f-distribution table was checked for 95% and 99% confidence levels. Critical value for the 0.05 significance level is 1.94 while it is 2.51 for the 0.01 significance level. As our F is larger than the critical values at both significance levels, the null hypothesis is rejected which is based on the assumption, samples are not significantly different.

Therefore the relative importance of each criteria on material selection is sorted by mean values of the samples and given in Table 3. According to the table, color compatibility is distinctly the most important criteria in material selection while physical properties of the material is ranked in the second place. Sustainability,

mechanical properties and texture compatibility have equal effect, slightly higher than chemical properties and reversibility ranked in the last place.

	Mean value ($\bar{x}$)	Rank
Color Compatibility	4,42	1
Physical properties	4,23	2
Sustainability	4,19	3
Mechanical properties	4,19	3
Texture compatibility	4,19	3
Chemical properties	4,12	4
Reversibility	4,12	4
Availability	3,38	5
Cost	3,12	6

Table 3: Relative importance of material selection criteria

5.3. Network Mapping (Data visualization)

Interpreted data and literature reviews are compared in the manner of presenting a systematic approach to a network of relations in the field of restoration. An online network mapping interface, Graph Commons is selected for this part of the study. Graph Commons is a collaborative platform for mapping, analyzing and publishing data-networks. It empowers people and organizations to transform their data into interactive maps and untangle complex relations that impact them and their communities (GC, 2022). It is also preferred to express complex data and to gain insights on a matter.

Material selection criteria which are related to actors are given in this network map. Primary nodes (red) in the mapping represent actors in the field. Secondary nodes (blue) represent actor institutions and agencies. Gray nodes are the material selection criteria related with the actors. One-way and two-way relations between given nodes are specified as, in relation (yellow), effects (green), authorized (orange) and employ (purple). Map can be accessed via given quick response code and website url (Table 4).

Access the network map	
Quick response code (QR)	Website (url)
	http://bit.ly/3c9Ums0

Table 4: Information on accessing the network map.

Relations of the nodes becomes visible when the cursor is on the line; A relationship list comes up by clicking on each node which is a helpful tool for examining all network web in the means of the study. Clusters of nodes is also identified by color and the position of the nodes are organized in a legible order. All data given in the map can be filtered and analyzed; also comments and information can be added interactively-which makes the study an improving and growing ongoing project. A snapshot from the interface is as given in Figure 3.

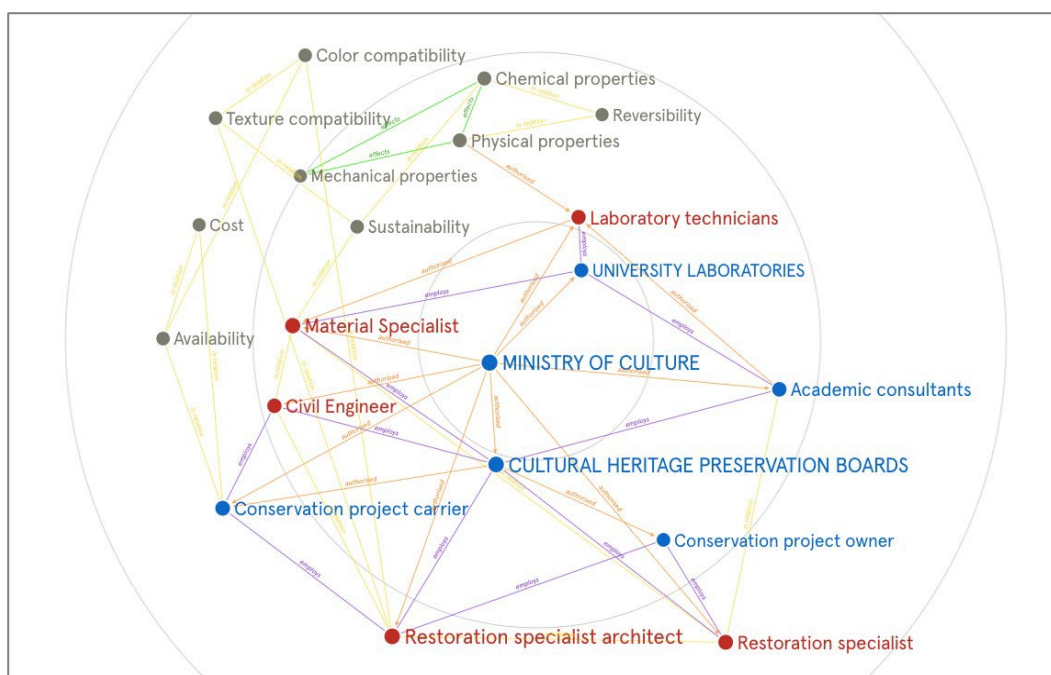


Figure 3: Network map of the study (via graphcommons.com).

7. Conclusion

It has been observed that among the actors involved in the preparation of the restoration projects of historical buildings and the conservation studies carried out, state institutions, private sector and academic institutions work in communication and are in an interdisciplinary harmony. Having the necessary professional

competence of the subject actors and knowing about the working methods of other disciplines have been the most important factor in this harmony. In a restoration study, academic institutions and laboratories determine the quality of the decisions on the material, the private sector meets all the requirements of this issue, and the state institutions organize the necessary approval and other administrative processes relatively.

The conservation of cultural heritage and the renovation of historical buildings require a whole and interdisciplinary approach, cooperation between experts and the use of modern techniques. In this study it is presented how nine predetermined material selection criteria which are material sustainability, chemical properties of material, physical properties of material, mechanical properties of material, color compatibility with genuine material, texture compatibility with genuine material, material reversibility, cost and material availability; related to decision making for choosing materials in heritage conservation, were subjected to evaluation by actors in the field of conservation. Based on the classification and determination of the relative importance of the criteria, color compatibility is distinctly the most important criteria in material selection while physical properties of the material is ranked in the second place. Sustainability, mechanical properties and texture compatibility have equal effect, slightly higher than chemical properties and reversibility ranked in the last place.

When the relations of material selection criteria and the actors in the field of conservation are network mapped, it is possible to observe the complex interrelations of actors from different professions. In taking into account such interactive approach based on peer recommendation and evidence-based decisions is applicable in conservation field, may encourage favouring material selection choices and application efficacy in the means of improving overall restoration quality. This study can also lead to further investigations on holistic models and customized tools to be used for material selection in conservation works when combined with information technology perspective.

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Dialogue Between Architecture and Material Sciences for Sustainable Urban Ecosystems: Biodegradable Polymer Plastic Seed Capsule Production Process for Porous Concrete Structures

Hatice DURAN ¹, Aktan ACAR², Cem AŞÇI³, İsmail ÖZTAŞ⁴, Öznur TİFTİK⁵

1st Author's e-mail: hduran@etu.edu.tr

2nd Author's e-mail: aktanacar@etu.edu.tr

3rd Author's e-mail: cemascietu@gmail.com

4th Author's e-mail: ismailoztas98@gmail.com

5th Author's e-mail: oznurtiftik114@gmail.com

Abstract

The presented study introduces an interdisciplinary and inter-scale collaborative research project of the Department of Material Science and Nanotechnology Engineering and the Department of Architecture. The main objective of the project is to investigate appropriate methods of developing polymer capsules made of upcycled waste plastics for plant seeds, which are to place in permeable/porous concrete mixture. Furthermore, we plan to modify recycled plastic to make it biodegradable.

Porous concrete is a special type of concrete with a high permeability rate due to its material composition. It is composed of narrowly-graded coarse aggregate, cement or cementitious materials, and water. It does not include sand. Therefore, it is able to transmit water and air because of its inner voids, 15-35% compared to conventional concrete. The voids are considered for seed capsules.

The teams of Material Science and Nanotechnology Engineering and Architecture discussed and elaborated on the issues and problems of developing waste plastic upcycling for biodegradable seed capsules in porous concrete. The recycling of waste plastic, thermal conditions of porous concrete during curing, uniformity, controllability, versatility, mass-productivity, high efficiency, and reproductivity of polymer encapsulation methods for properly scaled dimensions have been considered.

The process has been formulated but could not have been tested due to the pandemic. It is planned to carry out the project in early 2022. It is our utmost concern to initiate projective and experimental research for innovate technological advancement and know-how to introduce, develop and settle new, smart, resilient, and sustainable human-nature ecosystems and biodiversity by means of creative dialogue/collaboration among various disciplines and professions.

Keywords: porous concrete, polymer, biopolymer, capsule, recycling

Introduction

It is reported that the second most used substance in the world, after water, is concrete, which is a material based on cement, the largest mass-manufactured product on Earth (Scrivener, John, and Gartner 2018). In 2019, 77.000.000 m³ ready-mixed concrete was produced in Turkey, which has the third biggest production capacity in the world, after China and USA (THBB 2019). Concrete is a major parameter of the heat-island effect (Jhatial et al. 2021; Mohajerani, Bakaric, and Jeffrey-Bailey 2017). Concrete has a leading role in the biodiversity crisis, which cannot be isolated from climate change. It is not only about decreasing the concrete dependency of the economies and building industry; but also how we deal with the cities already massed with concrete, and the more yet to come, regarding climate change and biodiversity!

Plastic is another major anthropogenic source. The Pacific Ocean is already the world's largest plastic garbage area. It is considered that there are 180 times more plastic types than the ordinary habitats of the oceans. By 2050, the amount of plastic is expected to outnumber the fishes (Neufeld et al. 2016). The micro and nano plastics circulating among the species on the same food chain are already terrifying pollution and health issue.

These two anthropogenic sources dominate the major mass-production and mass consumption on the Earth. They cannot be omitted. Concrete or plastic-based economies cannot be replaced or changed in short term. We need to consider policy changes and alternating materials, methods, and production types. But it is also vital to investigate mitigation strategies, innovative solutions, creative approaches for re-using, re-cycling, and upcycling the existing concrete and plastic waste mass. Our basic question was how to utilize the two major triggers or factors of climate crises to introduce biodiversity into the cityscape to fight climate change and help nature to settle a peaceful balance.

In this respect, the main objective of the study is to investigate appropriate methods of developing degradable polymer capsules made of upcycled waste plastics to cover and protect plant seeds, which we are planning to place in permeable/porous concrete mixture. It was considered that plants can survive in porous concrete without damage, and in time the roots and branches could transform into a kind of reinforcement for the permeable concrete components. Because of the voids in permeable concrete, it is not suggested to use traditional reinforcement that will be exposed to humidity, water, and other detrimental factors.

The study was conducted by Öznur Tiftik, Cem Aşçı, and İsmail Öztaş, fourth-year students in the Department of Material Science and Nanotechnology Engineering and supervised by Assoc. Prof. Hatice Duran of Material Science and Nanotechnology Engineering Department. Assist. Prof. Aktan Acar, Department of Architecture, supported the study as co-adviser. This study is transdisciplinary research. Unlike other approaches, in transdisciplinary research, a case or problem, including many problems and levels of difficulties, is at the center of the research. The stakeholders might have individual objectives. Collaboration, coordination, and communication are the utmost concern. Instead of transferring or

borrowing methods or tools of other disciplines, the transdisciplinary approach lets the different knowledge and experience engage and contribute in their own way. Each discipline handles related problems and levels of the case with respect to the objectives and work of the others, which would benefit the outcomes of the collaborating disciplines and research.

In this case, there are three different objectives or research questions that had been intersected on the same problem: Possibility of more green and sustainable concrete building construction material or system was the first question. The second question was about emerging biodegradable polymers for encapsulation which promise various application potentials, such as medical diagnosis, drug, gene, therapeutic or protein delivery, imaging, bioreactors, catalysis, adsorption, food science, biological and chemical research, and biomedical. The third question was the use of waste plastic to protect plant seeds to be placed in porous concrete. This transdisciplinary research focused on bringing the backgrounds and learnings of the research teams to achieve a common objective: investigate appropriate methods of developing polymer capsules made of upcycled waste plastics for plant seeds, which are to place in permeable/porous concrete mixture. Green and pollinator-friendly porous concrete building construction components are considered as a key factor for the biodiversity in urban areas, mitigation of heat island effect, waste or stormwater management, etc.

1. Background

The possibility of using porous concrete in architecture is relatively new. It has been used for ground covering, retaining wall solutions, and pavement. It includes coarse aggregate, cement, and water only. No sand is used, therefore pores or voids are not clogged or filled. The porosity lets air and water move inside. It is suggested to have voids of 15% - 35%, with %30 lighter than the conventional concrete (Kevern and Nowasell 2018; THBB 2019). Those voids could be utilized for various biological factors, like pollinators, creeping or climbing plants. At the TOBB University of Economics and Technology, Department of Architecture Graduate Program, we had conducted different experiments with conventional concrete for biodiversity.



Figure 1: Concrete vegetation experiments

In 2019, within the scope of BETONART Summer School, organized by Türkiye Çimento Müstahsilleri Birliği (TÇMB) – Türk Çimento after 2020 – the idea of concrete structure reinforced with plants was explored by means of porous concrete. The main supporter of the 2019 BETONART Summer school was BAŞTAŞ Hazır Beton. Baştaş team provided know-how and on-site support to conduct the “KONAK” project. The project developed by Aysu Kuştaş, Aysu Haşımoğlu, Bingül Çakacı, Ala Taleb, Melih Karataş, and Sercan Deniz, under the supervision of Aktan Acar. The main idea was to offer architectural volumes and inherent voids for vegetation, pollinators, and any biodiversity factors.



Figure 2: Konak in BETONART 2019.

During the pouring and curing period of some organic substances, such as topsoil, used coffee grounds tea leaves had been added to Konak. Unfortunately, it was not a planned and scientifically managed process. But the lessons were learned for future experiments.

The second attempt was the part of the Basic Design Studio of the Department of Architecture. It was developed within the scope of our regular climate change workshops for the collaborative design and built activity for elementary school students and first-year architecture students. Two different age groups designed a porous concrete structure to accommodate pollinators at the schoolyard. Endemic plants were selected, and seeds were covered with various substances to protect them from the effects of the curing process of concrete. The natural vegetation around the project was promising. Protected seeds, nevertheless, could not have made it.



Figure 3: School Yard Project.



Figure 4: Seed packs

After the second attempt, it was obvious that the problem should have been considered from a scientific perspective and handled systematically. This scientific approach has been provided by faculty and students of the Department of Material Science and Nanotechnology Engineering.

2. A Research on the waste plastic encapsulation for seeds

Öznur Tiftik, Cem Aşçı, and İsmail Öztaş were studying their last semester in the Department of Material Science and Nanotechnology Engineering. Within the scope of the MBN 497 Senior Design Project course, they conduct research titled “Development of Waste Plastic-Based Capsules for Plant Seeds to be Placed in Permeable Concrete Materials”. Assoc. Prof. Hatice Duran was the advisor. Assist. Prof. Aktan Acar was the co-advisor.

The main question was how to develop a capsule made of waste plastic to protect seeds from the chemical reactions of the concrete curing period. After having discussed and reviewed the concrete chemistry, curing process, practical issues of pouring, and characteristics of porous concrete, the research team conducted a literature review for polymer encapsulation.

2.1 Polymers and encapsulation

Polymers are of great importance in the global industry (Abhilash and Thomas 2017). There are natural polymers known and benefitted since prehistoric times. Starches, latex, proteins, cellulose are a few to name. Mesoamericans are known to use some polymers to form objects in the 17th Century (Hosler, Burkett, and Tarkanian 1999). There are synthetic polymers based on natural materials. The majority of polymers, however, are petroleum or fossil fuel-based. It is also possible to develop polymers from non-carbon-based substances, like silicone. Plastic is a synthetic or artificial polymer. It is light and chemical-resistant. Moreover, it is low-cost and widely used. It was reported that 381 million tons of plastics were produced worldwide (Ritchie and Roser 2018).

Polymeric capsules have a polymeric shell and a hollow core (Abhishek 2015). They have a wide range of application areas including imaging, microreactors, diagnostic, sensors, and drug delivery. Although polymer capsule sizes can vary in each method, polymer encapsulation techniques can be divided into three categories based on the average capsule sizes; macroencapsulation, microencapsulation, and nanoencapsulation (Arán-Ais et al. 2012; Suganya and Anuradha 2017). Macroencapsulation is simple and efficient for mass production, particularly in the medical industry. Considering the size of the seeds, it seemed to be the proper solution for the problem. The other two methods, microencapsulation and nanoencapsulation, require more complex, but sometimes less efficient processes, which could produce chemical even toxic residues, unstable end-products (Suganya and Anuradha 2017). The rotary die process is a promising Macroencapsulation method because of the uniformity and dosage accuracy for the end product. Basically, it produces gelatin capsules, softgels made of gelatine shell, and fill material (B.Srividya, C, and Chappidi 2014).



Figure 5: Soft Gelatin Capsules (<https://www.saintytec.com/rotary-die-process-soft-gelatin-capsules/>)

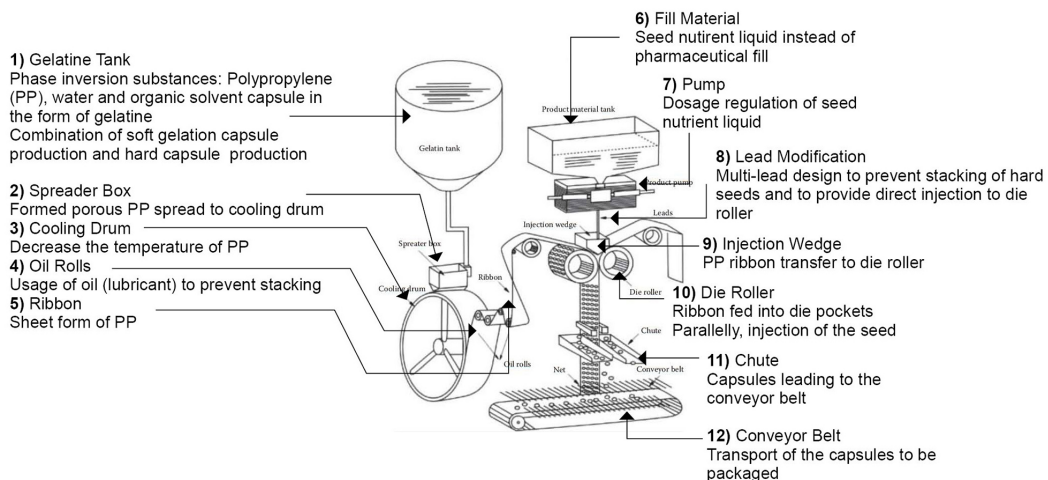


Figure 6: Rotary die process (<https://www.pharmapproach.com/manufacture-of-soft-gelatin-capsules/>)

The process is as follows (Marianela, Daniel, and German L. 2021): The gelatin ribbons are directed regularly into twin dies which are rotating. In molds, semi-shaped capsules are formed. The system is integrated with the fill material injection. The fill material dosage is arranged by a pump which provides the quantity distribution into the capsules. When the dies move rotationally, the filled capsules are cut. In the next step, the capsules are dried with a great quantity of air. The capsules are headed to plates. In the final section, capsules are moved into the area having low evaporation.

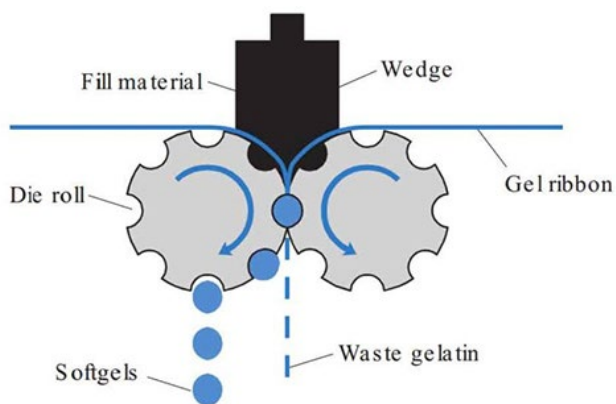


Figure 7: formation mechanism (<https://www.pharmapproach.com/manufacture-of-soft-gelatin-capsules/>)

2.2 Biodegradability

Most of the polymers remain in nature as waste for a long time, and even if they degrade in nature, it is a fact that they are threat to life in the ecosystem. Generally, waste plastics, which cannot be completely degraded, turn into microplastics as a result of partial degradation and these microplastics enter the bodies of living things in some way. This has become a problem, especially in the marine environment

(Andrady 2011). Future studies will reveal that human beings living in an ecosystem, where all living things affect each other, will be affected more and more negatively from this situation. For this reason, biodegradable polymers are now attracting attention not only in the biomedical field but also in all other fields, including industry.

Considering all these conditions, it is predicted that biodegradable polymers will be used more in the polymer encapsulation process. Biodegradable polymers can be both synthetic and natural polymers. The degradation of polymer biomaterials can occur in two ways: enzymatically and hydrolytically. Degradation occurs when the enzymatic or hydrolytic sensitive bonds in the polymer begin to cleave (Katti et al. 2002). Natural polymers degrade mostly by enzymatic degradation. Examples of such polymers are protein, collagen, polyamino acid, albumin, fibrin, and polysaccharides. Changes in the chemical structure of natural polymers directly affect the rate of degradation. Hydrolytically degradable polymers have weak hydrolytic bonds in their functional groups such as carbonates, orthoesters, urethanes, anhydrides (Li 1999; Nair and Laurencin 2007).

2.3 Quality Control for Softgel Capsule

The capsules are tested regarding their chemical, mechanical, thermal, and morphological characterization. Tensile, compression, and hardness tests are administrated to assess the mechanical properties of the capsules.

For the chemical properties of the capsules, the Fourier Transform Infrared Spectroscopy technique, known as FTIR, is used. Since each molecule or chemical structure leaves a unique spectral fingerprint, the samples are scanned with infrared light to examine the chemical properties.

Thermal characteristics of the capsules are investigated by means of differential scanning calorimetry (DSC) technique and thermal gravimetric analysis (TGA). DSC is a thermoanalytical technique. The amount of heat required to increase the temperature of the capsule is measured and compared with a reference or norm value. In TGA, sample mass is measured during a period as the temperature changes. This thermal analysis provides information about the physical and chemical properties of the sample, including absorption, phase transition, thermal decomposition, and liquid-solid reactions. The morphological characteristics cover shape, size, structure, pattern of the solid and voids of samples. The capsules are examined with and optical microscope for their morphological properties.

The method and process were studied carefully. The team was ready for the production of samples and testing. The Covid-19 pandemic, remote working, and financial issues forced us to freeze this phase of the study for a while. This unprecedented condition impacted the next step of the research. Placement of the seeds and testing of porous concrete.

3. Seeds in Porous Concrete

As mentioned above, the previous attempts to place or plant seeds in the porous concrete works had failed. The theoretical framework of softgel capsule for seeds helps us to discuss both, the possible problems, and the solutions.



Figure 8: Seeds without capsule on Porous Concrete Structures

A soft gelatin capsule would let the seed have enough oxygen. It is possible to have a certain level of porosity on the capsule. The germination process requires moisture and nutrition. A liquid infill material can provide both. The capsule and the liquid infill will protect the seed from chemical reactions and heat during curing. The chemical, mechanical, thermal, and morphological characteristics, the pores, the elasticity, etc. will help the germs to tear down the capsule.

The next phase will be the production of a set of samples with different properties. It is of importance to have the encapsulated seeds to test. Another important issue is the mechanical, thermal, and morphological characteristics of the porous concrete structure after having capsules placed. For this step, the boundaries of this transdisciplinary study will expand to cover professionals from the biomedical or drug industry for sample production; from the cement and concrete industry; structural engineers; biologists; landscape architects; etc. It is necessary to develop a hypothesis about the germination of encapsulated seeds, as well. They should be tested under different conditions. And then, their behaviors in their new host, the porous concrete, should be examined accordingly.

4. Conclusion

The presented study is an example of the creative collaboration of different domains in a transdisciplinary research project. Instead of importing or borrowing approaches or methods, each part attempted to introduce innovative solutions for the related part of the problem. Each solution was discussed from a part-whole relations perspective. The case oscillated among different scales, micro – macro – nano, materials. The inputs and processes of each discipline were insightful and

very instructive for the others. In fact, there was mutual and informative communication, collaboration, and coordination, in which parts benefit the outcomes of each other. It is quite different than commissioning different disciplines for certain tasks and collecting or borrowing the outcomes and methods to develop a solution.

The core objective of the study is to develop a sustainable and ecological strategy to re-introduce biodiversity to the built environment where concrete is the most used substance, after water. In this respect, porous concrete has been considered as a promising material because of its physical and mechanical properties. It is 30% lighter, and 15% - 30% more porous concrete since no fine aggregate or sand is used. It is used in retaining walls, large ground covering, and pavements. Its permeable form lets the water access the underground filtered and faster. It has a use in noise control on highways.

The conventional reinforcement methods do not work with porous concrete. Its pores expose the reinforcement to the detrimental effects of outside conditions. For this reason, it is not appropriate for vertical building construction elements.

On the other hand, those voids can be used for some ecological purposes. As was mentioned above, the effects of concrete and plastic on climate change are on a critical level. The study was about researching an intersection of all these topics.

The far-reaching goal is to have a porous concrete structure reinforced with plants growing in the voids, which will enhance biodiversity and support ecosystems in built environments. As the first step, we searched for proper methods for polymer encapsulation of seeds that will be placed in the porous concrete. A biodegradable capsule made of waste plastic is a great step.

For more sustainable and inclusive natural-built environment ecosystems, it is of importance to initiate and advance transdisciplinary studies. In certain cases, collaboration and communication produce some outcomes and ideas, even beyond the initial purpose of the research.

5. Acknowledgements

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Investigation of the Collaboration and Communication Parameters of BIM Ecosystem

Betül YAZARKAN¹, Aktan ACAR²

1st Author's e-mail: byazarkan@etu.edu.tr

2nd Author's e-mail: aktanacar@etu.edu.tr

Abstract

In building production, architects, civil engineers, electrical engineers, mechanical engineers work together to produce a common denominator. While the activities in the field of Architecture, Engineering, and Construction can be discussed within themselves, the "Building" is located at the intersection of these disciplines. Discipline-specific models and methods are not enough to explain and manage this intersection area. Nowadays we have to produce within intersection areas. This has made it a priority for different disciplines to come together.

"Transdisciplinary approach" handles a problem that concerns more than one area by focusing on the problem and taking the process within a whole system without fixed boundaries between disciplines. The way different disciplines come together requires new ways of production and problem-solving tools. These new productions and tools are problem-specific without boundaries and non-use for other problems. This approach means that experts from different disciplines make innovative, transdisciplinary productions at the center of the problem. It is suggested that BIM (Building Information Modelling), which forms a basis for bringing the productions together from different disciplines, is a transdisciplinary form of cooperation and production. BIM is a process that enables coordination, communication, and cooperation of all actors from idea to demolition. It enables the creation of a shared data model. These models can also contain information related to the build's life cycle and its expected maintenance requirements. (3D) Modeling programs are Autodesk Revit, Graphisoft ArchiCAD, Rhino- Grasshopper, etc. Information such as time planning (4D), cost estimates (5D), sustainability (6D), management (7D) brings additional dimensions to BIM models. The data models are fixed and limited. The digital platform of BIM is limited with the application of semantic and geometric information. BIM, however, is not limited to the digital environment. It is an ecosystem extended to the digital world. In this respect, its capability for creative collaboration in real-world conditions needs to be explored. By addressing this discovery on the transdisciplinary project, we can capture new perspectives and these new perspectives can enable development in real-world conditions.

"Fog catcher" is a transdisciplinary design and build project. The main objective is to harvest water vapor/moisture in the air. It requires knowledge and expertise in

material science, structure, climate, architecture, fluid dynamics, machine learning, which are considered to be processed in a BIM environment. The study presents the theoretical model for the investigation of the parameters and dynamics of creative communication among the experts of the project within the BIM ecosystem through the case of "Fog catcher".

Keywords: *Transdisciplinary approach; BIM (Building Information Building); Interdisciplinary; Creative collaboration; Fog catcher*

Introduction

In the build's life cycle, experts from many different disciplines, including architects, interior designers, structural engineers, electrical engineers, mechanical engineers, acoustic and fire safety specialists, contractors, and many other actors of the process. There may be intra-disciplinary discussions, but they converge on the common denominator, that is the "building". The "building" is located at the intersection of these disciplines. Discipline-specific models and methods are not enough to explain and manage this intersection area. All the disciplines have the right to have a say in the field formed by this combination. The building, as a physical entity and process, is well known and extensively examined issue. But the nature of interaction and communication among the disciplines are rarely discussed and elaborated. This study claims that it is necessary to investigate, review, and reframe the relations among the building specialists to understand and improve. It is possible to state that "building" is at the core of the relations of an over-specialized group of people. The construction sector, in relation to software and hardware technologies, has been utilizing new tools and platforms to manage those relations. We claim that unless those relations evolve to interaction, collaboration, and communication, which are much further and more creative than coordination of work packages, the building will have to rely on the capacity of either the construction manager or the management and building information modeling draftsmen. In this respect, we utilize two approaches or concepts to reframe the issue and present a case: Transdisciplinary approach and Building Information Modelling.

The concept of a transdisciplinary approach has emerged precisely with an attitude that recognizes these common areas and questions interdisciplinary boundaries. A problem-oriented process has considered as a whole system without disciplinary limits. "Fog Catcher" is a transdisciplinary design and build project that harvests water vapor/moisture in the air because water poverty is experienced in many places today because of climate change which is a global and social problem. It requires knowledge and expertise in material science, structure, climate, architecture, fluid dynamics, machine learning, which are processed in a BIM environment. In the research conducted in the production of these water harvesting systems, different samples have been found. These systems have produced an

answer to the global problem from the point of view of a single discipline. With the knowledge obtained from these examples, it was envisaged that supporting the fog catcher project with a transdisciplinary approach and BIM ecosystem would be to address the project most inclusively. The project focuses on the problem without any instruction that creates new connections among related disciplines to the boundaries of the BIM ecosystem.

1. Fog Catcher Project as Transdisciplinary Approach

The concept of transdisciplinary is an approach that aims to move forward by focusing on the problem. The word transdisciplinarity have been introduced in 1970 at a seminar on interdisciplinarity in universities held at the University of Nice (Bernstein, 2015). The transdisciplinary approach is referred to as "higher stage succeeding interdisciplinary relationships which would not only cover interactions or reciprocities between specialized research projects but would place these relationships within a total system without any firm boundaries between disciplines" (Piaget, 1972). Erich Jantsch and André Lichnerowicz also contributed to the concept of the transdisciplinary and Jantsch's transdisciplinary has been created as a science, education, and innovation model in line with the social goal (Klein, 2017). The boundaries drawn by the separation of disciplines have begun to be rethought. The transdisciplinary approach has not focused on using the existing knowledge in disciplines but transdisciplinary work deals with the accumulation more comprehensively, according to the needs of the problem, focusing on a common goal (Hugill & Smith, 2013; Jantsch, 1970). Re-establishing the connections is also about cooperation and communication. Therefore, creative communication and cooperation are inherent in the transdisciplinary approach. The transdisciplinary approach is a way of investigating the process of creative communication and collaboration. This use makes transdisciplinary original and innovative. Fog catcher, which is considered a transdisciplinary project, also plays an important role in managing the process as it ensures that creative communication and collaboration are effective.

Water poverty is experienced in many places today because of climate change. In our country, it has been determined in the water risks report that we are on the way to becoming "water-poor" (Uyduranoğlu, 2014). To eliminate this situation, it is of great importance to produce systems that will increase the available water resources. In these water harvesting systems, different samples have been found. The fog collector system, fog mechanical project, and Warka project are examples that have different perspectives towards this goal. The fog collector project has a simple and 2-dimensional structure for an effective water holding capacity. Even if it is seen to be more sustainable with its passive structure, it has problems with the

yield to be taken in different periods ("Fog harvesting", n.d.). This system is used in many countries including North Africa, Morocco, Yemen. Fog mechanical project also consumes energy when harvesting water created using mechanics and technology. It can be said that the fact that it does not have a passive system and is treated only as a machine prevents this project from being a creative system. Warka project is a project aimed at creating a passive system that tries to find answers to the water shortage in Africa (Figure 1). It aims to establish an effective passive system with its form varying according to different conditions in different places. In addition, these systems acquire a function not only as a water harvesting system but also as common areas of socialization where tribes gather ("Warka Water", n.d.). In the review conducted on these examples, the situations presented by processes and perspectives on the problem were emphasized. With the knowledge obtained from these examples, it was envisaged that supporting the Fog catcher project with a transdisciplinary approach and BIM ecosystem would be to address the project most inclusively. Because when a global and social problem such as the water problem is considered from a transdisciplinary point of view, it can lead to an economic, sustainable solution, and this process begins to become a whole that adds different perspectives to each discipline. Focus group meetings will be held throughout the case study process, considering the issues mentioned in the theoretical study, and these focus group meetings will be recorded and reviewed.



Figure 1: The Warka Project ("Warka Water", n.d.)

Focus group meetings have been started and with these meetings, the framework of the problem has been redrawn and the current information has been discussed in the focus of the problem. In this context, The Fog catcher system consists of 2 subsystems which are the water collection system and structure system. When the

relationship of these two subsystems with each other and within themselves is mentioned meteorological data such as temperature, humidity, pressure, wind- are collected about the area where the water will be harvested. To accumulate the different states of water at the highest rate, a subsystem is established in which the water will be directed with the collaboration offered by fluid dynamics, materials science, architecture, and machine learning. Hydrophilic and hydrophobic materials have great importance in the production of this system, and their combined form controls the flow of water. This subsystem provides the determination of the most sustainable and efficient subsystems by conducting different option tests with machine learning and machine learning uses meteorological data to do this. By combining this subsystem with a structural system, parameters such as form, structure, size are included. This time the system will be directed with the collaboration offered by materials science, architecture, structural system, and machine learning. By combining different materials, sizes, and form tests, the system is made rigid and able to produce the most effective production. The system requires knowledge and expert opinion in material science, architecture, structure, climate, fluid dynamics, machine learning. It also recreates the problem potential surrounded by these expert opinions and determines how the relationships of the disciplines should be handled with these focus group meetings. The way in which these relationships are received becomes predictive about the communication parameters of the BIM Ecosystem.



Figure 2: TOBB ETÜ Basic Design Studio, Fogcatcher Project, Student group-work, Group 7, Fall 2021-2022, (Aykut Nesne, Begüm Ceyhan, Berna Köker, Erva Üçüncü, İdil Dünder, Kaan Küllüoğlu, Nilay Uyanık)

Climatical condition: humidity, precipitation, air pressure, temperature, etc. Climate specialists.

Form: form developing by means of machine learning / generative algorithms. Architecture, software – machine learning and AI domain.

Structure: In relation to form, material, lateral forces (wind). Structural engineering.

Material: To hold moisture and water, let them realize their very nature through adhesion and cohesion forces. Material science, textile engineering, and mechanical engineering. (Figure 3)

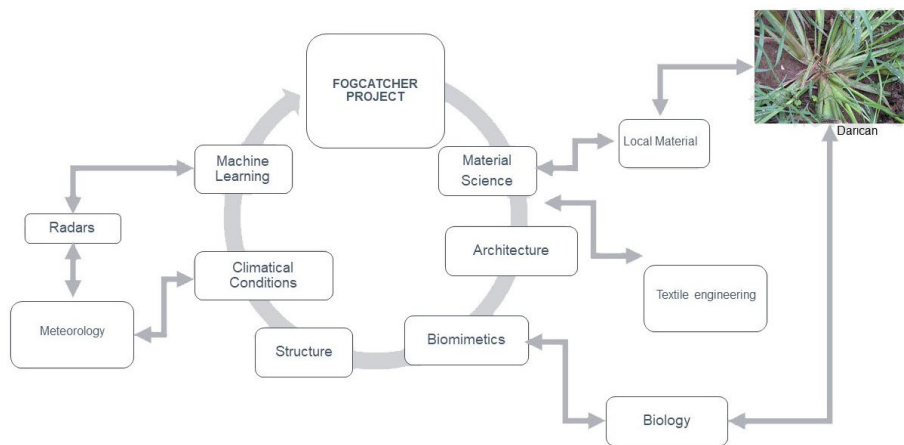


Figure 3: Relation diagrams of Fog Catcher Project

As it can be seen, although it was discussed before the Fog catcher project, when it focuses on different disciplines, the stakeholders of the problem get into the detail of this problem and start thinking about different collaborations. Each discipline reveals its own parameters and accumulations. As a result, the process begins to produce itself. An insoluble problem belonging to a different discipline reaches a solution when taken together. BIM, an ecosystem in which we can collect the parameters of these disciplines, has an important place in the progress of the project, and both the transdisciplinary project allows us to explore the BIM ecosystem.

2. BIM Ecosystem and Relation with Fog Catcher Project

Eastman et al. (2008) considered that BIM is used as a tool that allows the project of different disciplines and has a database that can collect all the information in one common database. Studies have argued that BIM has a nature that facilitates interdisciplinary collaboration (Bozoğlu, 2016; Azhar et al., 2008; Krygiel & Nies, 2008). BIM is a process that enables coordination, communication, and cooperation of all actors from idea to demolition from the real world to the digital world. As we know creative communication and cooperation are inherent in the transdisciplinary approach. It reveals the relationship of the BIM ecosystem with the transdisciplinary approach. Basing and developing the BIM system with the concept of a transdisciplinary approach is an important discovery model for the effective use and discovery of the potential of BIM. In addition, these approaches are open to being fed from each other. However, the BIM Ecosystem cannot mature based on traditional ways of doing things in applications and by dealing with old infrastructures. The maturity levels (Khosrowshahi & Arabici, 2012) developed on top of this tell us about the criteria that should be in place for effective process and production. The Fog catcher project has an established process that addresses the potential of BIM. At this point, it establishes its communication and cooperation parameters with the communication network it has established to set up its system.

•Maturity Levels: Stage-0 Traditional Construction Implementation: It is an undeveloped and conventionally executed project stage. Many losses and obstacles are present. (Khosrowshahi & Araçici, 2012) Stage-1 Transition from 2D to 3D which is object orientation modeling: It is a transition from 2D to 3D modeling and documentation. The BIM model belongs to the only discipline, and deliveries are CAD-style documents (Khosrowshahi & Arabici, 2012). Stage-2 Collaboration and Communication: It is the transition to modeling and the enabling of cooperation and interoperability. Designing and managing a building is a complex process that requires communication and cooperation between the project team members. (Khosrowshahi & Arabici, 2012) Stage-3 Integration of system: Project lifecycle phases are largely destroyed, and players increasingly interact in real-time to gain benefits from the virtual workflow. (Khosrowshahi & Arabici, 2012).

The level of maturity (Figure 4) (Khosrowshahi & Araçici, 2012) whole increases when it can establish its relationship with the physical space, and not just the digital space as a whole (Khosrowshahi & Araçici, 2012) and it is seen that the transdisciplinary form is used effectively. It can be said that the Fog catcher project has a form that aims to address the BIM ecosystem at the Stage-3 level with its transdisciplinary form. At this point, the system to be developed for the water problem addressed in the project is separated from other projects by its process

aimed at being sustainable and adaptable. For understanding this integration, we can also examine the main elements of the BIM ecosystem.

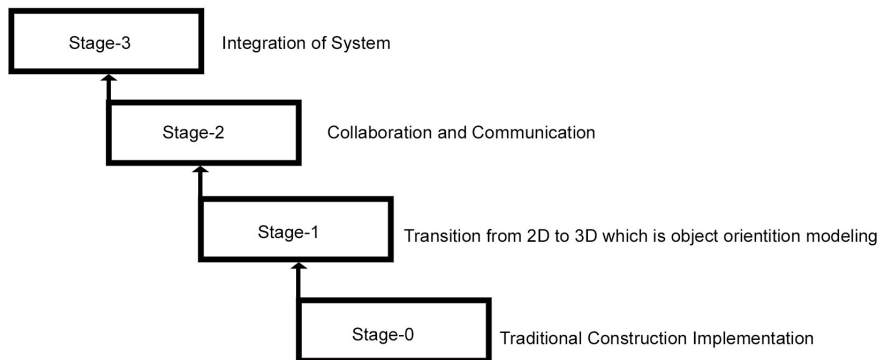


Figure 4: Maturity Levels (Khosrowshahi & Araçici, 2012)

The main elements of BIM are nD (n-dimensional) modeling, parametric modeling, object orientation modeling, interoperability (Özorhon, 2018). These elements of BIM provide some convenience in grouping and re-examining information from different disciplines in the Fog Catcher Project. The fog catcher project has parameters which are climatical conditions, material properties, form, structure and these parameters are interconnected BIM elements provide convenience by allowing you to change different parameters together. It provides an environment where different disciplines can combine their parameters and make rapid changes, but the main approach that ensures integration is transdisciplinary. This concept coincides with the main element of interoperability. This element makes it easy to handle the project as a whole without limitations in the transdisciplinary approach. Interoperability is the ability to manage and transmit design, construction, maintenance, and project data (O'Connor & Dettbarn & Gilday, 2004). This main element reveals the transdisciplinary nature of BIM. However, the lack of this element in applications prevents the high-level handling of BIM. The Fog Catcher Project focuses on this situation and highlights the dynamics of communication with a transdisciplinary approach. At this point, the Fog Catcher Project does not focus on the digital environment because it is based on disciplines producing their processes and does not use the usual process in this way the BIM is built on the consideration of the ecosystem as a whole.

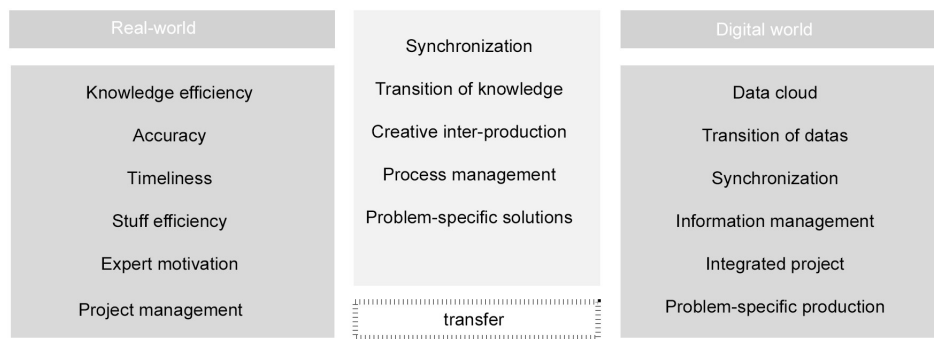


Figure 5: Communication dynamics of BIM Ecosystems from real-world to the digital world

Communication dynamics that are important for the integration of the BIM process can be mentioned. The reason for the processes with low maturity levels is the lack of these dynamics. These parameters are also in the real world and the digital world, and there may even be different dynamics for the transition. In real life, dynamics such as knowledge efficiency, timeliness, accuracy, stuff efficiency, expert motivation, and project management are involved. In the digital world, on the other hand, there is data cloud, the transition of data, synchronization, information management, integrated project, problem-specific productions. These different dynamics are possible by providing transition dynamics in the transformation of each other (Figure 5).

In addition, it can be said that the transdisciplinary approach to the BIM ecosystem, which has many different digital platforms but still has a production need or a low effective usage rate in the application, has raised this process to the highest level. BIM has a lot of potential with its transdisciplinary form, but its application meets with obstacles, limits, and traditional way of application. Basing and developing the BIM system with the concept of a transdisciplinary approach is an important discovery model for the effective use and discovery of the potential of BIM. In addition, these approaches are open to being fed from each other. Information integration is an important part of the formation of this system and therefore the collection, processing, and construction of information have also been raised. BIM (Building Information Modelling) ecosystem in information technology formed with developing technology is also in an important position at this point. It is determined that BIM processes parallel with the transdisciplinary approach will optimum discover BIM limits and potentials. The Fog Catcher Project is looking for a transdisciplinary answer to a global problem with different disciplines. At this point, it has ensured that the communication parameters stand out and can be examined with the process it has established. The project process examined the cooperation and communication parameters of the BIM ecosystem through the elements and

parameters in the ecosystem in order to be able to look at where it stands at this point, how it is involved in the process. The reason why the transdisciplinary approach and the BIM ecosystem have been discussed together has revealed this.

Conclusion

The transdisciplinary approach, introduced to create solutions to common problems, questions the proliferation of knowledge and its separation into disciplines. A process in which boundaries have been crossed with this inquiry and which has been treated as a whole system has been mentioned. Considering this approach, it can be said that the BIM system provides different discoveries and that both approaches are able to expand each other. Though this, BIM has an important place in establishing relations between the digital world and real-world borders. Because the main goal of BIM is that with this integration, borders will disappear and become an innovative, effective, and sustainable process. It is possible to achieve innovative results by conducting this integration process on transdisciplinary projects. There is a common working area of the disciplines in the Fog Catcher Project. Fog Catcher is a transdisciplinary design and build project. It aims to find a solution to the water-poor, which is a social problem. It will help ensure integration between the real world and the digital world with the dynamics from the elements in the BIM ecosystem. "Project lifecycle phases are largely destroyed, and players increasingly interact in real-time to gain benefits from the virtual workflow" (Khosrowshahi & Arabici, 2012). For BIM to be used in this principle, communication dynamics must be used effectively. The fact that these disciplines work together in different combinations will enable them to produce data transformations, digital and real-world transition process definitions, and communication dynamics. Levels or the main elements are not enough to explore the communication parameters of BIM at this point, the transdisciplinary approach is in a position to enable this discovery. The Fog Catcher Project begins to produce its unique process. This unique process allows you to organize, record, and review focus group meetings and provide information on the parameters and dynamics of communication in the BIM ecosystem. The interrelations of these concepts have also been revealed by redefining the project with 2 main concepts and approaches. The Fog Catcher Project, which is focused on these relationships, is also a pioneer in defining the developments of relationships by organizing focus group meetings and examining them.

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PANEL DISCUSSIONS

Neslihan Dostoğlu

We are starting the Session Panel and I would like to invite the Session Chairs, Yüksel Demir, Şebnem Hoşkara, Esin Kasapoğlu and İlke Tekin. Unfortunately, two of our session chairs, Hüseyin Kahvecioğlu and Ahsen Özsoy, will not be able to join us for this final session because of other commitments. Now, we will be with the session chairs, and we expect all participants of the symposium to join us in this final discussion session. What I will try to do is to go through the whole symposium process and to discuss the main issues with the session chairs, in other words the discussions in all the sessions and also the general comments on the main concepts.

As you all know, the first Architectural Episodes Conference was held in November 2018 and the main theme was Educational Pursuits and Experiences. We, at İstanbul Kültür University, have decided to carry on with this title every two years, from now on. Unfortunately, there is almost a 3.5 year interval between the first and the second symposiums because of the Covid-19 pandemic and other unexpected issues. However, we are happy to organize the second one in 2022 and we expect the third one to be held in 2024.

When we started discussing the theme of the second Architectural Episodes Symposium, of course the main issue was the pandemic problem, because this problem influenced the whole world and it changed the way we look at the world, not only as educators but also as people of the world. In this period, in addition to the pandemic problem, many wars took place in our region, in Europe and in other parts of the world. In this context, we became more aware of various crises related with climate, economy, migration, etc. Therefore, we thought that having learnt from the pandemic and other crises, a dialogue has to be established between architecture and other disciplines and different dimensions have to be considered to be able to develop more livable environments in a more rational way and to answer the needs of the discipline of architecture and related disciplines such as urban planning, interior design and industrial design. Collaboration and dialogue concepts might have been emphasized earlier, but I think the pandemic has taught us that we need these much more strongly than before. We have had to change not only the way we look at things but also the means of solving the problems. We knew that we could use the digital platform, but we were not used to using it so well before the pandemic, as Yüksel Demir mentioned during his opening speech in his session.

He said that at Istanbul Technical University they were ready for this for a long time, but they had not made good use of it. However, when we were all faced with the pandemic crisis and became aware that we really had to use it, we were able to do so and could adapt to the new system.

Now I would like to give the floor first to Yüksel Demir and then we will proceed according to the list that is on the symposium program.

Yüksel Demir

Thank you so much for the kind invitation. I'm honoured and pleased to be at least partially a part of this valuable event. To all the contributors, to all the organisers thank you so much, and also to all the audience who are here. I'd like to greet them all with respect. So as Neslihan Hoca stated, maybe I just want to make a modification to my expression. More than ready, we were willing and we were getting prepared, right? I can't claim that we were hundred percent ready but we were discussing and getting prepared including preparing special rooms that have special lighting equipments, that could actually make it more convenient for a conference room which is ready for distant learning, collaboration etc. We were also trying to have some pilot courses, so that we could start creating content that could be open source. Not only for our students but maybe for anyone who would be interested in recording classes etc. I was approached by also the organizing team whether I'd be volunteering to have one of my courses in these. So, we had been discussing this and it was a real thing but it might have also continued if the pandemic didn't just appear out of nowhere unfortunately.

Then in two weeks, very successfully our administration team could take the initiative or chance to choose the platform; to decide how to proceed and in two weeks, right after the pandemic entered the borders of Turkey, in two weeks we started teaching online. I think this is a huge success when you look in that sense. And what have we been doing in those conditions? Of course, it was the same thing we were planning to do. Online education is another paradigm. Transforming classes from face to face classroom environment to video conference environment. However, that's not it. You need a different mind set, you need different preparations, to call what you do in an online course. So, what we have been doing are online courses actually, compared to the ones who are successfully presented for years in many platforms, in many universities all around the world. That's another thing. That content development and the design offset is different from what we are doing, for example now. Even for organizing a conference, there are many tools, platforms other than the video conference platform. You'll remember Neslihan Hocam from the İstanbul Mimarlık Festivali (Istanbul Architecture Festival) we'd

organized. We searched for the most appropriate platform. We found one, and tried to use that. It is not that easy but we could manage to survive thanks to God. I've been always saying to my colleagues and students who naturally have been complaining about not being able to conduct their work face to face. Especially, I'm very sorry for our students who just started, as Ahmet Bender Uğurlu mentioned very well in our session about the effects of online education on interaction during the first year Architecture Studio. So, imagine yourself being admitted to a school of architecture that you have dreamed of and not being able to even be in the building for two years. That's not fair. I'm very sorry for them. Especially, for that case it was really difficult. However, at the same time because of the limitations and the constraints we had in the sense of communication, we had to be well prepared for the courses. We had to express ourselves with good documentation and pre-work before the studio, much better than we had in the face to face studio, and also we had to define the outcome, the communication medium the students were supposed to prepare, because we needed to have an efficient interaction and communication in this limited medium. And I think that kind of helped developing some skills and knowledge on the students' side. I mean I'm not talking about the psychological or other negative effects. Having to prepare a decent document that is legible in thirteen inch or fourteen inch screen is a challenge. And, we all remember either what our professor had told us, or what we told our students. This is not a school of literature or law. This is a school of architecture. We communicate mostly with documents rather than verbally. So, documents became very important. The finishing of the assignment, the handout became important. And, it gave another opportunity to us, to all of us. The pin-ups were limited to thirteen inches screen, so that everyone, I mean, had to see what the others were doing in the class. So, you could focus on what is on the table or what is on the agenda for the moment. So, being in the moment worked well in this process, I assume. But for example, if we also remember what Elif Özlem Aydın and Fulya Solmaz Şakar said about their experience, in let's say conservation studio, I think in some cases this was a bit more of a challenge, because you need to go to a building where you need to make a survey and you need to do some things in an applied way together with a tutor etc. But you can't do that. You leave the students alone. But what they did to overcome this challenge, they recorded some tutorials for example. So, I don't want to talk too long. But I mean what I have said can just help to start the conversation, that could be my contribution. Thank you.

Neslihan Dostoğlu

Thank you for your comments Yüksel Hocam. Istanbul Architecture Festival organized by the Circle group was really interesting for all of us and successful in

establishing dialogues among different schools. We also used this method of online communication not only with our students but also with different individuals and institutions in Turkey and in the world. Now I would like to ask Professor Şebnem Hoşkara to share her ideas and comments about the symposium in general and particularly about her specific session. Thank you.

Şebnem Hoşkara

Thank you very much Neslihan Hocam. I would also like to thank you and all the organizers for this very eye-opening and mind-opening event. I know that it is very difficult to organize these events especially digitally, because it doubles the work. So, I would like to congratulate you, and I am very happy to be a part of this event. I would like to mention first what we have discussed in the session that I was chairing, and then I would like to add a couple of other comments on what Yüksel Hoca has mentioned. I was the chair on the “Co-Education and Related Approaches Session” on the first day of the conference. During that session we had 4 presentations, all of which were the products of joint-research conducted in different universities in Turkey. One of these presentations provided a brief historical framework on the relationship between theory and practice and its influence on architectural education. The institutionalization of architectural education which started with apprenticeship and the emergence of today’s educational system were evaluated with a critical focus on architectural education in Turkey. We have seen a couple of examples, not in depth but as alternative education approaches in architecture, I can say from Turkey. The research is ongoing, so we will be happy to see the end products in the upcoming years.

Two of the presentations in my session focused on alternative teaching and learning methods and models in architectural education. They were examples of revolutionary models as Professor Salama has stated earlier in his speech today. In one of these presentations, the importance of the sense of belonging in design education has been discussed through a workshop experience and presented as having the potential of reversing the traditional master-apprentice learning process into a new informal learning and production method in design education. The second one again as a revolutionary model focused on an interdisciplinary spatial installation exhibition. Here, the instructors challenged their students to question the relationship between design and technology, space and technology, and in this context, they highlighted a collective work with their students. In that specific study, the basic design studio students actually demonstrated change in boundaries of space and body by using technology, so it was an interdisciplinary work and this

was an alternative approach to design education. I think we really need to think of such revolutionary models further in our educational systems mainly due to the changing character of our students. I personally believe that we have to re-evaluate or re-understand who our students are. Now we have students from very different backgrounds, in Turkey we have international students coming from different social, economic and cultural backgrounds. Who the students are and how we approach architectural education is a challenge for us. Before we continue our educational system, I think we need to stop for a while and think about ourselves and re-think our pedagogical approaches and our way of thinking as well.

From what we have heard in my session, we can indicate that there are two common points of these studies in both design studio experiences. They used real life problems on which the students can think and produce collaboratively, and the students had the chance to actually see and experience that their designs are applicable. So, I think this is a chance for our students on hands-on learning kind of approach.

Finally, our fourth presentation is slightly different than the other three. It had an intention to deepen the perspective on designers, planners and practitioners towards participatory design approach. So, the researchers proposed a framework which will enable the creation of an effective evaluation mechanism of the process within the context of the participatory processes. In all the presentations in my session, we have seen the intention of new ways of planning, designing, teaching and learning within the changing dynamic conditions of architecture, both as a discipline and as a profession, and also in its education. We can understand that design studio and design process is still in the core of the educational system whether we are doing the education online or face-to-face, it does not matter. We have our context which is the design studio. Nowadays, the design studio as well as the educational approaches are influenced by many external factors, one of which is what was discussed in our first keynote speech as well. This sustainable development goals, which are somehow giving a kind of guidance to all sectors, and architectural education cannot be out of this. This is somehow giving a heavier role to architects as professionals and to the discipline of architecture and to architecture educators. We need to think of architecture and urban environment from various perspectives with all these cultural, social, economic, physical and climate problems. Oya Atalay Franck has mentioned as a comment to Prof. Salama, that are we going to be super-hero architects and architecture educators. This is almost an impossible task, but we should be at least touching these problems in our theoretical courses and design studios, and we should use design studios as a place where we can expose all our feelings and knowledge and worldviews, and share

them with all our students in this very dynamic world, dealing with globalization, disasters, and wars. Sometimes when I am teaching something, at the back of my mind I feel that it does not make sense because people are in war next door or because there is a big earthquake. So, we need to be aware of all these things among ourselves and discuss more as educators and colleagues and find new ways of transferring this knowledge. We need to be creative, inclusive and so on.

Neslihan Dostoğlu

Thank you very much Şebnem Hocam. Now Esin Kasapoğlu, it is your turn.

Esin Kasapoğlu

Thank you. First of all, I would like to congratulate the organization committee for their great effort. I know they tried hard but the result is a success. So first of all, my first remark will be a great applause for them.

My session is entitled “Co-link with Architecture and Industry”. In fact, there were four papers and I can say that two of them had a common goal, and the other two were different.

The first one focused on basic design course. Its title was “Discovering New Potentials of Bauhaus-invented: ‘Vorkurs’”. “Vorkurs” is a preliminary course of the Bauhaus. It was the origin of basic design courses. So, our presenter first of all explained the evolution of basic design courses from the starting point which was the “Vorkurs”. After evolution it became basic design. So, it was affected by the conditions of those days because when it started, it was really complicated days of the world. And during these developments, being based on the different languages, it gained different contents. The speaker referred to its use in Turkey, i.e. “temel tasarım” or “temel tasar. Today, most of the schools of architecture in Turkey have this course. And she proposed to use it in the way it was used in the original Bauhaus as a “Vorkurs”. In my opinion it is because of the nature of architecture. We are not satisfied and we are always looking for different solutions to achieve the best, so all the time we are offering new solutions and at the end we are coming up with the first solution. Maybe starting from that, we can reach another solution. I asked the speaker if she has any suggestions but she said maybe with new research, as a new research topic, she can develop her study. So maybe in the future, we can hear about an interesting proposal.

The second one was focusing on material selection, especially in relation to architectural conservation projects. Materials are being developed at present. Thus,

we have a lot of alternatives as architects or constructors or participants of construction industry. However, this situation might become a problem, because when we have a lot of alternatives, it becomes difficult to select the suitable ones, and select the best one. And especially here in this presentation, the emphasis was on architectural conservation and it was supported with a research related with the best solution for material selection. As I said this was only architectural conservation but these kinds of material selection methods should be settled during the project process because the success of the projects mostly depends on the correct selection of the materials. So systematic selection of the materials will support the success of the project.

The other two presentations, had similarities because of their common aim. The first one was “Degradable Polymer Plastic Seed Capsule Production Process for Porous Concrete Structures”. It really attracted attention. It is a developing process. They haven’t succeeded yet, but it is proceeding. They are step by step developing and I hope they will find a way to realize it. The other one is “Investigation of the Collaboration and Communication Parameters of BIM Ecosystem”. These two presentations focused on collaboration. Different teams consisting of various experts came together. The members of the teams were from different fields and they came together and worked on the same topic. So, this was important in my opinion. Both of these presentations focused on creating new dialogues and were thus related with the theme of our conference, i.e. collaborations in architecture. Their common focusing point, collaborating with different experts, was very valuable for me.

Yes, this is what I can say about my session.

Neslihan Dostoglu

Esin Hocam, thank you very much for your comments and contribution. That was great. Thank you.

İlke Tekin

My session was today in the morning and it was about the disasters and our workshop panel was also about the disasters, the forest fires. So I will continue with this subject, I think. In the session, there were two papers and both of them focused on the design studio in the pandemic process. The first one dealt with the collaboration with the different groups in and out of the studio. The second one focused on the representation itself, actually video production in the first year design studio. But, both of these papers and presentations tried to adapt to a new situation, which we are in actually at present, so they dealt with digital practices in education.

So this is one thing, but there was no other disaster presentation in my session; but I think most of the papers in the conference mentioned about the intensified climate crisis, massive population displacements, political instabilities, growing rational social inequalities and pandemic also. Therefore, all of them let us rethink our relationship with the planet, the nature and everything, all the things outside of us. As Hashim Sarkis asked in the theme of the Biennale “How will we live together” last year, this is the critical question for us now. I think, we have to consider in our era the human impact named anthropocene, so this is the new challenge and the new agenda of the architects. So as Bruno Latour says “You should be more short-sighted; because of that maybe we can see more projects- small scale projects or all the projects focus on the context in these days; in the last decade. These are the new things and I think architects should make much more relations concerning the way in which the humans, the non-humans, and the things are connected; interactions, connections, adaptations, integrations instead of striving superiority over nature. So these are my thoughts, after your comments in this conference. Thank you.

Neslihan Dostoğlu

Thank you İlke Tekin for your interesting comments. Yüksel Demir has another statement to make I think. Yes, Yüksel Hocam.

Yüksel Demir

Excuse me just not to say the last word before you sum up. I just wanted to add something. Because I just responded to the online education part of your starting speech, but I didn't complete to summarize what was happening in my session. So, I'd like to mention the other two very valuable works in my session. They were both related to sustainability aspect which is very important as İlke Hocam suggested, I mean our relation with nature, reducing our impact on nature as humanity. And they were very valuable in the sense of kind of searching for new methodologies in education integrating studios from different disciplines. And also integrating theoretical courses with applied or studio courses is very very important. It was a PhD study that was presented, a work from a PhD study that was prepared by Khansa Dhaouadi and Pierre Leclercq; “Shaping Sustainability in Architectural Education: The Integrated Design as a Tool”, very interesting research. The other one was, concentrating on living building concept and using architecture as a medium for dialogue for education of these very essential subjects that was conducted again as part of a PhD thesis by Ayşegül AKTÜRK, the name of the title of the paper was “Architectural Dialogues through Living Buildings: Common Design

Strategies and Messages for Public Sustainable Building Education". Actually, we all know from especially cognitive or pedagogical studies that confronting the real situation rather than being told about the situation and even becoming the part of the situation helps learning more than anything else. So, in that sense actually buildings become a teaching medium if you want, or learning medium if they're well kind of organized with this aim in mind and I think this research states really well this situation over selected cases that has the certificate of living building, which is a new concept as well actually. I just wanted to mention these things as well. My session was actually a session that had a diversity that included both undergraduate and graduate studies: first year experience, let's say online education experience, both in fact very different, let's say, different studios with different characters such as the conservation studio or the first year studio, foundation studio and these two papers that concentrated on sustainability aspect looking from different directions. Thank you.

Şebnem Hoşkara

I just would like to add to this discussion of online education. I think digitalization added a new value to our educational system both in general and in architecture as well. In some institutions as ITU for example, we were partially using these digital technologies, however, I think now that we have to use, we cannot go back from it. Therefore, we all need to learn how to use these digital technologies in a socially correct way. We need to understand the opportunities provided by these digitalization techniques. There are potentials and opportunities provided by this digital environment and we have to remember our students from this digital world, they grow up within the digital era. First of all, as instructors, as educators we need to somehow develop our knowledge and our skill as much as possible. This way we are also gaining a kind of way, a personalized way of teaching in our studios because each us with our background, age and interest areas, we use the digital systems in different ways. We cannot be the same, we cannot be equal and we may not be as good as each other maybe. This way the digital world is going to help us personalize or re-personalize our way of teaching as well. Of course, we should use the digitalization as a tool but not as the main goal. We should not be led by digitalization. Teachers' role remains the same, we use the digitalization as a new tool for our new pedagogical approaches. Of course, VR's, AR's are already there, we have to think how we are going to get the benefit of these without ruining the core of architectural education. I think we have a big task, this is why collaboration, sharing information and experiences among each other is very important. This is why, I find these conferences very important, valuable because we are learning from each other. We should keep up doing this either online or face-to-face.

I learned a lot from the papers, they were all so rich with new ideas and new approaches. It was a great symposium. It was also enriched with other events, with the workshop, the exhibitions that are going to follow up, the students' contribution. It was not only the organization committee, but we had a lot of people contributing in different ways to this symposium. This is very valuable. Hopefully, we will continue with these events. I think what we have learned is that we really have to consider the environment, physical and social. We have to consider the relationship between people and other living things.

The way we approach to the role of the architect has changed. At the end of 19th and beginning of 20th century, the architect was considered as a savior. There were even architects who mentioned that if you do the right building and right city planning, there will be no wars and there will be no need for policemen; they even stated that revolution could be prevented with the correct approach to architecture, as Le Corbusier's final sentence in his book "Towards a New Architecture". There was a big belief in the role of architect and architecture. Many things have changed since then. I think we now have a much deeper way of looking at things. Today Salama finished his speech by emphasizing decoloniality and cross-disciplinarity and inclusivity. I think it summarizes the way of looking at things if we want to live in a world that is more healthy and fair. Şebnem has reflected what I thought. There are so many conflicts and problems taking place close and far away from us, sometimes I also question myself while teaching architecture; I try to do research in related areas, but then I ask myself about what the role of this is in resolving at least some of the problems. At the end, I try not to lose hope. These comments are also for young academicians and students. Maybe we should start with an attempt to solve the problems within our close vicinity that might be the best we can do at the beginning. This was the aim of the collaboration between İstanbul Kültür University and Muğla Sıtkı Koçman University, in the endeavor to analyze carefully the Muğla forest fires that took place in the summer of 2021, from inside and outside in order to suggest ways to prevent such fires in the future. It was kind of a social responsibility project. I think we have reached our aim. I really would like to thank you all, the Organization Committee, the Scientific Committee, the participants, the workshop organizers, to everybody who took role in the whole process heartily for bringing us to the end successfully.

SYMPOSIUM PROGRAM

March 24-25, 2022
Istanbul Kültür University

AE 02

New Dialogues in Architectural Education and Practice

2nd AE International Conference, İKU Department of Architecture

Focus Theme

The theme of the 2nd AE International Conference focuses on the concept of "Co-Architecture" which identifies new dialogues in architectural education and practice. After the breaking point created by the Covid-19 pandemic, the situation of distance has brought up questioning different types of collaborative platforms.

New approaches in architectural education and practice have resulted in new concepts while linking new dialogues between interdisciplinary actors. Dialogues between architects, engineers, psychologists, educators, researchers, etc. not only provide sharing the professional practices but also identifies influential links in a holistic way of design thinking. The development of co-related themes reveals varied issues in differentiated scales: New methods and related collaborative approaches in education, collaborative design studies, co-housing and new paradigms in the city scale, co-reflections on disasters, and co-links between architecture and industry.

Within the co-related themes of this conference, contributors from various fields of architecture (architecture, interior architecture, landscape architecture, urban and regional planning, and industrial design) and other perspectives (education, health, psychology, law, economy, engineering, etc.) in different parts of the world are welcomed to share their experiences. The process and outcomes of different approaches that are shared will create new dialogues. We invite proposals for paper presentations addressing one of the following themes under the main topics of dialogues.

Conference Program

March 24-25, 2022

Conference Sessions

Co-Education and Related Approaches
Co-Design in Architectural Practice
Co-Housing and the City in New Agenda
Co-Reflections on Disasters
Co-Link with Architecture and Industry

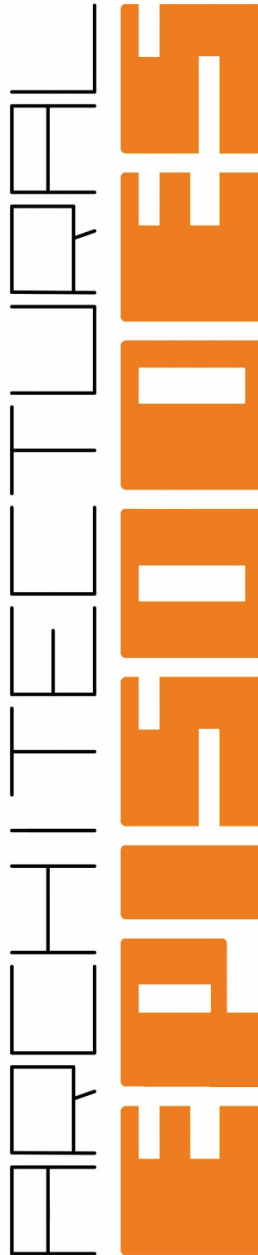
March 5-6, 2022

Workshop

Muğla Transcripts in/on Disasters: Forest Fires 2021"

Organization Committee

Neslihan Dostoğlu, *Prof. Dr.*
Emel Bırcı, *Prof. Dr.*
Esin Hasgöl, *Asst. Prof. Dr.*
H. Nur Kızılyaprak, *Asst. Prof. Dr.*
E. Merve Aksoy Oral, *Res. Asst.*
Dilara Gür, *Res. Asst.*



March 24-25, 2022
Istanbul Kültür University



New Dialogues in Architectural Education and Practice

2nd AE International Conference, IKU Department of Architecture

SATURDAY-SUNDAY, March 5-6th, 2022

WORKSHOP DAY 1 (March 5th, 2022)
WORKSHOP DAY 2 (March 6th, 2022)

THURSDAY, March 24th, 2022

10:00-11:00 OPENING TALKS

11:00-12:00

KEYNOTE SPEECH

Calibration in Disruption: What is the future of Higher Education in Architecture and related fields

Prof. Dr. Oya Atalay Franck,
ZHAW School of Architecture

12:00-13:00 LUNCH BREAK

13:00-14:30

CO-EDUCATION AND RELATED APPROACHES-1

Session Chair: Şebnem Önal Hoşkara

Understanding the Journey of Knowledge in Participatory Design Practices: Mapping the Dialogue in Participation

Gizem Alataş Temel, Duygu Cankurtaran

The Importance of a Sense of Belonging in Design Education: A Workshop Experience

A.Hilal İavarone, Suzan Sanlı Esin

Architectural Education In-Between Theory And Practice: A Critical Evaluation Of Architectural Education In Turkey

Nihan Büşra Kezer, Celal Abdi Güzer

Borderline: An Interdisciplinary Spatial Installation

Aktan Acar, Mustafa Koç, Selda Bancı, Günsu Merin Abbas

14:00-14:30 DISCUSSION

14:30-14:40 BREAK

14:40-16:10

CO-EDUCATION AND RELATED APPROACHES-2

Session Chair: Yüksel Demir

Opportunities and Challenges of Online Education in Architecture: Conservation Studio Experience

Elif Özlem Aydın Oral, Funda Solmaz Şakar

Effects of Online Education on Interaction in the First-year Architecture Studio

Ahmet Bender Uğurlu

Shaping Sustainability in Architectural Education. The Integrated Design as a Tool

Khansa Dhaouadi, Pierre Leclercq

Architectural Dialogues through Living Buildings: Common Design Strategies and Messages for Public Sustainable Building Education

Ayşegül Aktürk

15:40-16:10 DISCUSSION

16:10-16:20 BREAK

16:20-17:50

CO-DESIGN IN ARCHITECTURAL PRACTICE

Session Chair: Hüseyin Kahvecioğlu

Path towards Restorative Community Design

Ignacio Cardona

A Pedagogical Method of Interior Design Projects' Method

Eneko Besa

Capitalist Production of Space and the Changing Role of the Architect

Pelin Çetken, Belkis Uluoğlu

Stereotomy Reinterpreted

Ali Derya Dostoglu, Belkis Uluoğlu

17:20-17:50 DISCUSSION

FRIDAY, March 25th, 2022

09:30-11:00

CO-HOUSING AND THE CITY IN NEW AGENDA

Session Chair: Ahsen Özsoy

From Cabinet in the Forest to the Villas in Nature: A Reading on Human-Nature Relationship and Nostalgia

Merve Eflatun

Participatory Design in Affordable Housing, a Guideline for Turkey: The Case of Architect Alejandro Aravena Initiatives, Chile

Ubeydullah Yaşar, Sedef Özçelik

Importance Of Urban Design Studios For The Education Of Architecture Under Multidisciplinary Perspective

A. Ceren Onur, Jülide Alp

Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography

Pedro Neto

10:30-11:00 DISCUSSION

11:00-11:10 BREAK

11:10-12:00

CO-REFLECTIONS ON DISASTERS

Session Chair: İlke Tekin

Investigating the Multidisciplinary Design Process in Architectural Design Studio: A Collaborative Digital Studio Context "House After Pandemic"

Esin Hasgöl, Berkay Oskay, H. Nur Kızılayaprak, Şeyda Şen, Gamze Alptekin

Student with a Movie Camera: The Representation Challenge in the Corona Pandemic of Introductory Architectural Studio

Tonguç Akış

11:40-12:00 DISCUSSION

12:00-13:00 LUNCH BREAK

13:00-14:00

KEYNOTE SPEECH

Innovation and Decolonization: Revisiting a Theory for Knowledge in Architectural Design Education

Prof. Dr. Ashraf Salama,
University of Strathclyde

14:00-15:30

CO-LINK WITH ARCHITECTURE AND INDUSTRY

Session Chair: Esin Kasapoğlu

Discovering New Potentials of Bauhaus-invented: "Vorkurs"

Nilsu Altınok

The Effect of Interdisciplinary Actors and related Factors in Material Selection for Architectural Conservation

Dilara Gür

Dialogue Between Architecture and Material Sciences for Sustainable Urban Ecosystems: Biodegradable Polymer Plastic Seed Capsule Production Process for Porous Concrete Structures

Hatice Duran, Aktan Acar, Cem Açı, İsmail Öztaş, Öznur Tiftik

Investigation of the Collaboration and Communication Parameters of BIM Ecosystem

Betül Yazarkan, Aktan Acar

15:00-15:30 DISCUSSION

15:30-15:40 BREAK

PANELS

15:40-16:40

WORKSHOP PANEL

Moderators: İlke Tekin, Esin Hasgöl

Workshop Presentation:

IKU-MSKU Students

16:40-17:40

SESSION PANEL

Moderator: Neslihan Dostoglu

Session Chairs:

Yüksel Demir

Şebnem Hoşkara

Hüseyin Kahvecioğlu

Esin Kasapoğlu

Ahsen Özsoy

İlke Tekin

ARCHITECTURAL
EPISODES

SHORT BIOGRAPHIES OF THE PARTICIPANTS

Ahmet Bender UĞURLİ (Research Assistant, ITU)

ugurli@itu.edu.tr

Ahmet Bender Uğurli graduated from Istanbul Technical University, department of architecture in 2018. During his undergraduate education, he participated in many national student competitions and won various awards in Mimed, Mita, and Çuhadaroğlu competitions. In 2019, he started his graduate education in the Architectural Design program at ITU. He tutored some workshops within the scope of the Istanbul Architecture Festival and the National Architecture Students Meetings (UMÖB). He worked as a research assistant at Gebze Technical University for a year. Then, he moved to the architecture department of Istanbul Technical University in 2020 and still continues to work in this department. In 2022, he completed his master thesis titled "The Production of Urban Space Through Conflicts: A Reading on the Golden Horn". Urban actors, urban politics, and social relations of urban spaces are his main research areas; meanwhile, he also continues his research on studio culture, design pedagogy, and contemporary approaches to architectural education.

Aktan ACAR (Assist.Prof., PhD, TOBB University of Economics and Technology)

aktanacar@etu.edu.tr

B.Arch and M.Arch in Architecture from METU. M.Arch-Advanced Studies in Architecture from ETH-Z. PhD from Çankaya University, Faculty of Architecture. Currently works at TOBB ETU, Ankara. Major interests are architectural education, basic design education, climate change and biodiversity, Vitruvius and "On Architecture", cognitive development, augmented reality, and machine learning in/for Architecture.

Ali Derya, DOSTOĞLU (PhD Candidate, Istanbul Technical University)

alidostoglu@gmail.com

Philadelphia born. After graduating from Galatasaray High School, he started his formation in undergraduate architecture at Ecole Nationale Supérieure d'Architecture de Paris-Belleville and finished his studies at Mimar Sinan Fine Arts University in 2009, as first of his class. He received his Master of Science in Architecture degree from Pratt Institute, New York, in 2011, as first of his program. He taught as an adjunct faculty at Istanbul Bilgi University's Department of Interior Design, in 2016-2017 and in 2021. Starting from Fall 2021, he became a tutor at Mimar Sinan Fine Arts University's Department of Architecture. Ali Derya Dostoğlu worked at Garrison Architects in New York, at Mimarlar ve Han Tümertekin in

Istanbul and at PDA in Istanbul and Algiers. Since 2015, he pursues his practice at Per Se, as its co-founder. Per Se's works have been published at various national publications and Çoker House and Emko Electronics Factory projects have been selected for Turkey Architecture Yearbook. Besides his practice, Dostoğlu is a PhD candidate at Istanbul Technical University's Architectural Design Program and in 2018, he became a visiting PhD student at Massachusetts Institute of Technology (MIT). Dostoğlu is a member of Galatasaray Alumni Association, Galatasaray Sports Club and İstanbulSMD.

Aliye Ceren ONUR (Assistant Professor-PHD)

aliyeonur@maltepe.edu.tr

Aliye Ceren ONUR- is an Assistant Professor –PHd in Istanbul Maltepe University, Faculty of Architecture and Design. She has graduated from Yıldız Technical University, Urban and Regional Planning Department, Istanbul. She did her post graduate at Politècnica de Madrid on Environmental Management and graduated from Istanbul Technical University, Urban and Regional Planning PHD Program at 2014, presenting her thesis on "Evaluation of Urbanization Under the Climate Change Adaptation Framework in Istanbul".

She continues working on articles, research projects and gives lectures on urban planning theory, elective courses, design studio and urban design projects. Her field of interests are urban planning, urban regeneration, urban design, urban natural areas and climate change.

Ayşegül AKTÜRK (Ph.D. Candidate & Graduate Teaching and Research Assistant, University of Missouri, Columbia)

aysegulakturk@mail.missouri.edu

Aysegul is a Ph.D. candidate in Architectural Studies at the University of Missouri, Columbia. She was raised in Istanbul and obtained her Bachelor of Architecture degree from Istanbul Kultur University (summa cum laude) and her M.S. in Historic Preservation from Istanbul Technical University. The adaptive reuse of historic buildings and their ability to re-define energy consumption were inspiring for her to head towards the field of sustainability in the built environment. To expand her vision on this regard, she earned a second M.S. in Sustainable Design from University of Minnesota, Twin Cities and attended her Ph.D. program afterwards. Beyond her degrees, she attended a summer school (in 2015) called [IN]City—Introduction to Sustainable City and Regional Planning Program at University of California, Berkeley to better explore the impact of sustainable design in broader scales. While studying in the U.S., she has been working as a teaching and/or research assistant for 7 years. In 2020, she has received the Distinguished Graduate Teacher Award

(college level), showing her passion on teaching. Also, she published several journal and conference papers throughout her graduate studies. Her dissertation research focuses on the current sustainable building approaches and their educational and communicational features and design strategies.

Belkıs ULUOĞLU (Prof. Dr., Istanbul Technical University, Faculty of Architecture)

uluoglub@itu.edu.tr

Belkıs Uluoğlu is a Professor of Architecture at Istanbul Technical University. She graduated from I.T.U. as an architect; she later received an M.Arch from U.C.Berkeley and a Ph.D. from I.T.U. She was a visiting scholar at Carnegie-Mellon University between 1987-1988 and 1990-1991. She teaches architectural design studio and design theory. Her areas of interest are design knowledge and epistemology of architecture. Her publications include, Design knowledge communicated in studio critiques, 2000; Mimarlık Bilgisinin Çifte Kimliği ve Kavramsallaştırılış Biçimi Üzerine, 2002; The Speciality of the Individual Building and the Everydayness of the City, 2005; Design and Cinema: Form Follows Film, B.Uluoğlu, A.Enşici, A.Vatansever, ed.s, 2006; İ.T.Ü. Mimarlık Fakültesi'nin Kuruluş Yılları: Holzmeister, Bonatz, diğerleri ve mimarlık eğitiminin örgütlenmesinde Orta Avrupa'lı izler, 2009; Contestations over a Living Heritage Site: The Case of Büyük Valide Han, A. Baykan, Z. İren Boynudelik, B. Uluoğlu, B. Sevingen, 2010; Mimarlığın Ontolojisi ve Sözde Yıkımı Üzerine, 2012; Revisiting Ottoman Architectural Writings: Thoughts on Other Forms of Knowledge on Architecture, B. Uluoğlu, B. Başyazıcı, Ö. Günöz, S. Tigrel, 2017; Bugünün Türkiye'sinde Mimarlık, E. Aysev (der.), 2018; Nezih Bey: Yüreki, İnatçı, İnançlı, 2019. She has completed NSF and TUBITAK research projects on knowledge of architecture and the architectural design process. She has won degrees and mentions in architectural design competitions, national and international.

Betül YAZARKAN (Master student, MArch, TOBB University of Economics and Technology)

byazarkan@etu.edu.tr

B.Arch in Architecture from Gazi University and M.Arch in Architecture from TOBB University of Economics and Technology. Tutor in Basic Design Studio- I and Basic Design Studio- II at TOBB ETU. Interests are BIM, climate change, digital architecture, and project management.

Celâl Abdi GÜZER (Prof. Dr., METU)

guzer@metu.edu.tr

Celal Abdi Güzer graduated from the Department of Architecture at METU in 1982. He received British Council research grant and studied on 'Architectural Criticism' at the University of Newcastle upon Tyne. Güzer received his doctoral degree from METU, where he is currently leading one of the groups in the 4th year architectural design studio.

He acted as the vice chair of the Department of Architecture, director of the Program on Architectural Design, Vice Dean of the Faculty of Architecture at Middle East Technical University, and the Chairperson of Architects' Association 1927. Güzer has been a jury member in several architectural competitions and received many awards and mentions in national and international competitions including three first prizes.

Güzer was the curator of the 2013 International Antalya Architecture Biennale organized by the Chamber of Architects Antalya section. He is also the curator of some national and international architectural exhibitions including "Speaking with Lines - Architectural Sketches". He realizes most of his projects through Middle East Technical University and has several completed projects, including Middle East Technical University MATPUM Research Center, which received YEM (The Building Information Center) Design Award in 2008. He is the designer and design consultant of many educational and housing projects. With his contribution to architectural medium a special award had been given to Güzer by the award program of the Turkish Architects Association of Practicing Architects in 2019. Güzer's publications and research topics include architectural criticism, culture, educational and cultural buildings, housing, urban design and sustainability.

Cem AŞCI (Research Engineer, Tübitak Sage)

cemascietu@gmail.com

Cem Aşcı has been a research engineer at TÜBİTAK SAGE since October 2021. He received his Bachelor of Science (BS) degree in Materials Science and Nanotechnology Engineering from TOBB University of Economics and Technology, in May 2021. In addition, he has been a Master of Science student in Metallurgical and Materials Engineering at Middle East Technical University since October 2021.

Dilara GÜR (Research Assistat-MSc)

d.gur@iku.edu.tr

Dilara Gür is an Research Assistant at Istanbul Kultur University, Faculty of Architecture. She has completed her Bachelor's degree at Yeditepe University Department of Architecture and Master's at Istanbul Technical University, Environmental Control and Building Technology programme in 2019. In the continuation of the various restoration projects she have taken part, she continues her national and international scientific studies in the field of materials used in the repair of historical buildings. She also designs within the body of Betonark Design Studio, of which she is the co-founder. She currently has been working on her doctorate thesis at Istanbul Technical University and instructs various workshops.

Duygu CANKURTARAN (PhD Candidate at Istanbul Technical University, Research Assistant at Beykent University)

duygucankurtaran@beykent.edu.tr

After completing her undergraduate education at Middle East Technical University Department of Architecture, received her Master of Science degree from Istanbul Technical University Architectural Design Program. Currently continues her studies as a PhD Candidate in the Architectural Design Program at Istanbul Technical University. She has been working as a research assistant at Beykent University Department of Architecture since 2016.

Elif Özlem AYDIN (Prof. Dr., Gebze Technical University, Department of Architecture,)

ozlemoral@gtu.edu.tr

She received her B.Arch degree in Architecture in 1993 and M.Sc degree in Architecture from the Department of Architecture, Program in Restoration from the Istanbul Technical University with the thesis named "The Restoration Project of Hakki Misistreli and Tekeli House at Antalya Citadel" in 1996. After working in some private offices, she joined the Faculty of Architecture of Uludağ University as Research Assistant in 1998. She has taken part in educational activities, studios and in some research projects until 2002 at the same university. She is transferred to the Faculty of Architecture of Gebze Institute of Technology in 2002 as instructor. She received her Ph.D. in Architecture from Istanbul Technical University in 2004 with the thesis named "Bursa Silk Factories and the Conservation of Industrial Heritage Related to Sericulture". She has been awarded by Foundation For Architecture – Turkey in 2005 and European Union (the Prize for Cultural Heritage/Europa Nostra Awards) in 2006 with her Ph.D. thesis. She is currently a Professor of Architecture Department of Gebze Technical University. She

contributes design and conservation studios. Her research interests are monument conservation, urban conservation, adaptive re-use and industrial heritage. Adding value to historic environments as a part of living fabric is her educational philosophy.

Eneko BESA (PhD Architect, IDarte)

enekobesa@idarte.eus

<https://orcid.org/0000-0002-4984-3362>

Eneko Besa qualified as an architect at ETSAUN, University of Navarra (2000).

After completing his Master in Advanced Studies (DEA) in 2009 at ESTAM, he developed his PhD (2015) at the same university and completed his studies for European Doctorate at Faculty of Architecture in TU Delft (2012-2013).

He is Postgraduate Certificated in Education (CAP) at UPV University, Faculty of Education and Faculty of Fine Arts. (2005)

He works as a teacher of interior design at IDarte, Vitoria-Gasteiz School of Art and Higher School of Design.

He has worked in several architecture studios and offices. He was manager of the Qualiberica office in Vitoria-Gasteiz for five years.

He has participated in several expositions and performances in Vitoria-Gasteiz, such as AMARAUN at Montehermoso Cultural Centre.

His work has been published in 'Cuadernos de Proyectos Arquitectónicos', in 'Espacio, Tiempo, Forma', in 'IDA Sevilla Congress Proceedings', in 'EARL Educación Artística Revista de Investigación' and in 'ShodhKosh: Journal of Visual and Performing Arts'.

Esin HASGÜL (Assist. Prof. Dr., Istanbul Kultur University)

e.hasgul@iku.edu.tr

Esin Hasgül was born in Istanbul. She graduated from Istanbul Technical University, Faculty of Architecture in 2009. She completed her master in Istanbul Technical University, IMIAD (International Master of Interior Architecture Design) in 2011. After working in design offices; she received her PhD degree in 2018 from Istanbul Technical University and working as a lecturer in Istanbul Kültür University. Her study areas are Spatial Organization/Wayfinding, Housing Design and Flexibility, Rural Studies and Design Guidelines. She is a member of TARGE and has

participated in several research projects themed "Design Guidelines in Urban and Rural Areas". She has conference and competition awards. She continues her profession studying on research projects, publications; having atelier and exhibition works.

Funda SOLMAZ ŞAKAR (Assist. Prof. Dr., Gebze Technical University)

solmazfunda@gtu.edu.tr

Funda Solmaz Şakar is an architect specialized in restoration. She completed her master at Middle East Technical University, Graduate Program of Conservation of Cultural Heritage. She holds a PhD degree from Restoration Program of Istanbul Technical University. Her PhD research was mainly focusing on the examination and interpretation of the changes in Cappadocia cultural heritage sites. Her research areas are conservation of cultural heritage, historic landscapes and traditional building techniques. She is currently working as an Assistant Professor Doctor at Gebze Technical University, Faculty of Architecture and teaching both Architectural Design Studio and Conservation Studio.

Gamze ALPTEKİN (Assist. Prof. Dr., Department of Architecture, Istanbul Kultur University)

g.alptekin@iku.edu.tr

Gamze Alptekin is an instructor in Faculty of Architecture-Department of Architecture of Istanbul Kultur University and undertaking building science courses as well as elective courses in architectural project management and career development. Her research interests include construction project management, quality management and architectural technology. She is dealing with quality assessment systems in education and particularly accreditation of architectural education in IKU.

She recieved bachelor's degree from Istanbul Technical University-Faculty of Architecture in 1992, Master's Degree from Istanbul Technical University- Institute of Science – Architectural Design Graduate Program in 1996, and PhD from İstanbul Technical University- Institute of Science – Construction Sciences Program in 2006. She worked in Garanti Koza VKV American Hospital in construction stage as a member of Construction Management Group, as research assistant in Anadolu University Faculty of Fine Arts-Department of Interior Design, as an instructor in Beykent University, Faculty of Architecture-Department of Architecture, prior to joining IKU.

Gizem ALATAS TEMEL (PhD Candidate at Eskisehir Technical University)

atemelg@gmail.com

Received her Master of Science degree from Istanbul Technical University, Architectural Design Master's Program following her graduation from Izmir University of Economics Department of Architecture. Currently continues her studies as a YOK 100/2000 Scholar PhD Candidate at Eskisehir Technical University, Department of Architecture on climate change, architectural research and education subjects. Her fields of interest in architecture could be identified as architectural research, research by design, architectural theory and education, sustainable design, climate responsive design, urban design studies.

Günsu Merin ABBAS (PhD, TOBB University of Economics and Technology, Department of Architecture)

gmabbas@etu.edu.tr

Günsu Merin Abbas, full-time lecturer at TOBB University of Economics and Technology, Department of Architecture, holds a B.Arch. from Izmir University of Economics (2011), M.Arch. (2014) and Ph.D. in Architecture (2021) from Middle East Technical University. Her research interests are design computing, performative architectural design, tooling, and emergent technologies. Günsu teaches 2nd and 3rd year 3D modeling and construction courses focusing on BIM and computational design tools at TOBB University of Economics and Technology.

Hatice DURAN (Assoc. Prof. Dr., Department of Materials Science and Nanotechnology Engineering, TOBB University of Economics and Technology, Ankara, TURKEY)

hduran@etu.edu.tr

She graduated from Yıldız Technical University, İstanbul, Turkey with a Bachelor of Engineering degree at Chemical Engineering department in 1997. She received her PhD degree at the University of Akron, Akron, Ohio, USA in Polymer Engineering department in 2004. Then, she joined the Max Planck Institute for Polymer Research (MPI-P), Mainz, Germany as a post-doctoral fellow. She received Marie Curie Intra-European Fellowship for her research study. Since January 2011, she is working at the TOBB University of Economics and Technology (TOBB ETU), Materials Science and Nanotechnology Engineering Department and Micro and Nano Technology Graduate Program and she is leading Micro and Nano Interface Engineering Research Group (MiNiERG). She has 53 peer-reviewed research articles published in international journals and 6 book chapters until 2022. She is an active referee in the prestigious journals of the American Chemical Society and the Royal Society of

Chemistry. Since 2013, he has been working as an expert at the European Union Research Executive Agency (REA). Her academic study topics: Investigation of the structural and functional properties of organic thin films, liquid crystals, the effect of nano confinement on crystallization, photochemistry, nanofluids, nanotoxicology, optical biosensors, dynamic behavior of polymers.

A. Hilal IAVARONE (PhD Student, Istanbul Technical University)

aysenurhilal@gmail.com

A. Hilal Iavarone received her architecture bachelor's degree from Yıldız Technical University in 2016 as the highest-ranked student. With a thesis called "Urban Traveler in Network Society", she received her master's degree from Istanbul Technical University Architecture Design Program in 2019. Between 2017-2022, she worked for Istanbul Kultur University, as a research assistant and teaching assistant. She published several scientific articles in national and international journals. She continues her PhD studies at Istanbul Technical University and lives in Munich as a freelance researcher. Her main research interests are postmodern architecture theory, urban narratives, and new media.

Ignacio CARDONA (Doctor, Harvard University, Visiting Professor, Wentworth Institute of Technology)

cardonai@wit.eduignacio@cardonai.com

Cardona is a Doctor of Design from Harvard Graduate School of Design (2021), magna cum laude Master in Architecture and Urban Design from Universidad Metropolitana (2013), and Architect from Universidad Simón Bolívar (1998). Ignacio has been a professor in architecture and urban planning in more than 4 countries since 2004. Currently, Ignacio is Visiting Associate Professor at Wentworth Institute of Technology (Boston), and Researcher at the Harvard Growth Lab (Cambridge). His work focuses on issues such as spatial opportunities, restorative community design, and ecological justice. Ignacio Cardona is a consultant in different international agencies such as the Inter-American Development Bank, and the United Nations for projects and research in issues like democracy, architecture, and urban development in Latin America. Ignacio leads multiple community engagement activities in Latin America, among which stands out his role as Director of the Training Program for Mayors of the region with Petare Consulting and the National Fund for Democracy. The Program has been the vehicle to train more than 300 Latin American leaders to promote democratic values through design and local governance.

İsmail ÖZTAŞ

ismailoztas98@gmail.com

İsmail Öztaş graduated from Bolu Science High School and he started Materials Science and Nanotechnology Engineering at TOBB University of Economics and Technology in 2016. After receiving his Bachelor of Science degree in May 2021, he has been teaching many students as a tutorial in Bolu. For future action, he is planning to open own private teaching institution by the year 2022.

Jülide ALP (Associate Professor- PhD)

julidealp@maltepe.edu.tr

Jülide ALP- is an Associate Professor –PhD in Istanbul Maltepe University, Faculty of Architecture and Design. She has graduated from Yıldız Technical University, Urban and Regional Planning Department, Istanbul. She did her post graduate at Mimar Sinan Fine Arts University on Urban Design and graduated from Mimar Sinan Fine Arts University, Urban and Regional Planning PhD Program at 2012, presenting her thesis on “Urban Projects in the context of Organizational Capacity, İstanbul Kartal Project”. She received awards from Urban Design Competition Projects of different scales, in which she participated as a team since her undergraduate graduation.

She continues her academic life, which she started in 2013 at Maltepe University, Faculty of Architecture and Design. She studies on articles, research projects, urban design competition projects and gives lectures on urban planning theory, elective courses, design studio and urban design projects. Her field of interests are urban planning, urban regeneration, urban design.

Khansa DHAOUADI (Ph.D. Candidate, University of Liège)

khansa.dhaouadi@doct.uliege.be

Khansa Dhaouadi is an architect who graduated in 2016 from the National School of Architecture and Urban Planning of Tunis (University of Carthage, Tunisia).

Interested in pedagogy and architectural education, she began doing research and working as a teaching assistant in 2018. She is currently a doctoral candidate at the Faculty of Applied Sciences within the Lab for User Cognition and Innovative Design (University of Liège, Belgium). Her research interests include teaching and learning architecture under the scope of the current environmental crisis and the emergency case of integrating sustainability.

Merve EFLATUN (Research Assistant, Gebze Technical University)

merveeflatun@gtu.edu.tr

Merve Eflatun graduated from Istanbul Technical University Faculty of Architecture in 2017. She completed her master thesis titled “Narrative of Topography, Topography of Narrative” in 2020. She is currently a research assistant at Gebze Technical University and continues his doctoral studies at Istanbul Technical University. Merve Eflatun has awards in various competitions, articles on the relationship between narrative and architecture.

Mustafa Koç (Ph.D. Candidate, Istanbul Technical University)

kocm21@itu.edu.tr

B.Sc. in Electrical and Electronics Engineering from Bilkent University. M.Sc. in Electrical and Electronics Engineering from TOBB ETU. M.Arch. in Architecture from TOBB ETU. Ph.D Candidate in Architectural Design Computing in Istanbul Technical university. Tutor in basic design studio in TOBB ETU.

Major interests are machine learning, artificial intelligence, design computing, basic design education, climate change, architecture machine.

Nihan Büşra KEZER (Res. Assist., METU)

anihan@metu.edu.tr

Nihan Büşra Kezer received her bachelor’s degree in architecture from Karadeniz Technical University in 2013 and master’s degree in the Architecture Program from Middle East Technical University in 2017. Currently, she is a Ph.D. candidate in the Architecture Program of METU, studying the relationship between theory and practice in architectural education. She has also been a research assistant at the Department of Architecture in METU since 2014 and has assisted several courses, including architectural design studios. Her research interests include architectural education, architecture schools, architectural theory and practice, architectural design, housing and culture.

Nilsu ALTUNOK (Res. Assist., Yıldız Technical University)

altunokn20@itu.edu.tr

Nilsu Altunok was born in 1998 in Ankara, Turkey. She completed her high school education at TED Ankara College Scholar Development Program in 2016. After high school, she moved to Istanbul and started her bachelor’s degree education. She graduated from Yıldız Technical University, Department of Architecture, where she studied between 2016-2020, as valedictorian. She has been continuing her ITU

Architectural Design Master's education since the fall semester of 2020, as well as she has been working as a research assistant at Yıldız Technical University since December 2021. In her research, she mainly focuses on critical theory, post-structuralist feminist theories, architectural representation possibilities and the relationship between architecture and language. She has been writing her thesis, "A Spatial Conception Based on Walking: Critical Walk" with her thesis advisor Prof. Dr. Pelin Dursun Çebi since the spring semester of 2021. In addition, at Yıldız Technical University she assists architectural design studios. Near her mother-language Turkish; she is advanced in English, intermediate in German and beginner in Spanish.

H. Nur KIZILYAPRAK (Assist. Prof. Dr., Marmara University, Faculty of Architecture and Design, Department of Architecture)

nur.kizilyaprak@gmail.com

She graduated from Istanbul Technical University, Faculty of Architecture, Department of Architecture in 2003. Completed her Master of Science degree in 2011 at the Environmental Control and Construction Technologies program, and Ph.D. degree in 2020 at Building Science program in Istanbul Technical University. During her doctoral studies, she was a visiting researcher at Liverpool John Moores University.

She worked as Research Assistant, Lecturer Dr., and Assistant Professor Dr. from 2009 to 2021 in Istanbul Kültür University, Faculty of Architecture, Department of Architecture. She currently works as Assistant Professor Dr. in Marmara University, Faculty of Architecture and Design, Department of Architecture.

She gives lectures in undergraduate program on material and technology, building science, construction design, physical environmental control, architectural presentation techniques, and architectural design studio.

Her main research interests are on architectural detailing, detail design, construction technologies, architectural design, and architecture education, and has publishings on systematical detail design approaches, construction technology, and construction technology education.

Öznur TİFTİK

oznurtiftik114@gmail.com

Öznur Tiftik graduated from Göl Anatolian Teacher High School in 2016. In same year, she started her undergraduate education at TOBB Economics and Technology University in the department of Materials Science and Nanotechnology Engineering.

After completing her bachelor's degree in May 2021, she has been doing her master's degree in department of Micro and Nanotechnology at TOBB Economics and Technology University as a teaching assistant since January 2022.

Pedro Neto (Professor, Faculty of Architecture of University of Porto - FAUP)

pneto@arq.up.pt

Pedro Leão Neto (Porto, 1962) is a researcher and assistant professor at FAUP since 2007 in the area of Architecture Communication and Photography, being the coordinator of the research group Architecture, Art and Image (AAI), director of the cultural association Cityscopio and the founder and editorial coordinator of scopio Editions. He has curated several architectural photography exhibitions in Portugal and abroad, workshops and international debates and seminars around the universe of Architecture, Art and Image, being Editor-in-chief of Sophia Journal, a peer review indexed journal focused on AAI. He is the author and editor of more than 30 books, being the most recent Another approach on the works of Álvaro Siza Contemporary Documentary Photography on Portuguese Architecture (2021), published by scopio Editions. He is Principal Researcher (PR) of the public funded research project VSC "Visual spaces of Change" financed by the Portuguese public agency - FCT.

Pelin ÇETKEN (Lec, Istanbul Kultur University)

p.cetken@iku.edu.tr

Pelin Çetken was born in Van, Turkey. She graduated from Istanbul Kultur University, Faculty of Architecture, in 2009. Then, she completed her master education at Istanbul Technical University in 2011. She is still studying for her Ph.D. at Istanbul Technical University and working as a lecturer at Istanbul Kultur University. Her study areas are the architect's role in the capitalist production of space, modernity, everyday life and architecture, and the relationship between cinema and architecture. In addition, she continues her profession by studying in publications, having ateliers, and exhibition works.

Pierre LECLERCQ (Professor, University of Liège)

pierre.leclercq@uliege.be

Pierre Leclercq is an architect and building engineer (University of Liege, Belgium). He received his Ph.D. in Applied Sciences in 1994. He is a Professor at the Faculty of Applied Sciences, ULiege.

He is director of the Lab for User Cognition and Innovative Design, a multidisciplinary team of 15 researchers from the fields of engineering design, computer science, and cognitive ergonomics which is active in the international

research and teaching communities of Collaborative Design in Architecture and Engineering.

Sedef ÖZÇELİK (Asst. Prof. Dr., Architectural Design)

sozcelik@gtu.edu.tr

Graduated from Yıldız Technical University, Istanbul in 2004 with the Bachelor degree. Continued her studies in the Building Management and Housing Production Masters Programme in the same institute. Been to Eindhoven University of Technology as a guest researcher in 2008. Her research based on blue-collared workers in the construction industry and legislations in the EU negotiations". Completed PhD studies at the Istanbul Technical University, with the dissertation titled "Grey matters: the constructed and unconstructed outdoor formation for young adults as an extension of the dwelling" in the Architecture Department, Architectural Design. She is a tenure and teaching architectural design studio for bachelors' program and an elective course on housing and social interaction around it for the PhD program at Gebze Technical University since 2009.

Selda BANCİ (Assistant Professor, TOBB University of Economics and Technology Department of Architecture)

sbanci@etu.edu.tr

Selda BANCİ is a faculty member, PhD at TOBB University of Economics and Technology, Department of Architecture, Ankara, Turkey. She graduated from Gazi University, Department of Architecture in 1997, and completed her graduate and doctorate studies in Program of Architectural History at Middle East Technical University, in 2009 and 2016, respectively. She is the author of Matbu Mimarlıklar: Türkiye'de 1950'lerden 1980'lere Mimar Oto-Monografileri (Printed Architectures: Architects' Auto-Monographs in Turkey, 1950s-1980s) by METU Press, the editor of Mimar Nejat Ersin (Architect Nejat Ersin) and co-editor of Ernst A. Egli: Türkiye'ye Katkıları - Yerel Yorumlar, Eğitimde Program, Pratiğin Muhasebesi (Ernst A. Egli: Contributions to Turkey - Local Comments, Program in Education, Reviewing Practice) by Chamber of Architects of Turkey. Her major research interests include twentieth century architecture in Turkey, architecture books, architecture and media, and architectural historiography.

Suzan SANLI ESİN (D.Arch, Sanlı Mimarlık)

suzansanliesin@gmail.com

Dr. Suzan Sanlı Esin graduated first in her class from the Department of Architecture of Istanbul Technical University in 1990. She obtained her master's degree in 1993 and a Ph.D. degree in Architecture with her thesis "Analysis of an Architect's

Housing Designs by the Space Syntax Method,” in 2010 from the same university. As the daughter of Yılmaz Sanlı (1931-2005), one of the leading architects in Turkey, she had the opportunity to work on architectural projects of all sizes ranging from single-family houses to a telecommunications tower and a hotel resort as a partner of the Yılmaz Sanlı Design Studio between 1990 and 2005.

In 2005, after Yılmaz Sanlı passed away, she established her practice, Sanlı Architects, and has been working on many small-to-medium scale architectural projects, inspired by a desire to experiment, and explore, learn, and build. Today, Sanlı Architects is well known for its domestic architecture and its research into the influence of Turkish vernacular architecture on contemporary residential projects. Suzan Sanlı has also been working as a part-time lecturer at the Architecture School of Istanbul Kültür University since 2010. She has written several national and international articles and papers on architecture.

Şeyda Şen (Lec, Istanbul Kultur University)

seyda.sen@iku.edu.tr

Şeyda Şen was born in Istanbul. She graduated from Yıldız Technical University, Faculty of Architecture in 2008. She completed her master in Istanbul Technical University, Restoration Programme (M.Sc.) in 2011. She continues studying on her PhD degree studies in Istanbul Technical University and working as a lecturer in Istanbul Kültür University. Her study areas are Conservation and Restoration of Historic Buildings, Conservation of Historical Sites and Conservation of Modern Architectural Heritage. She is a member of Docomomo_Turkey and working as National Secretariat in the party.

Tonguç AKIŞ (Associate Prof. Dr., İzmir Institute of Technology)

tongucakis@iyte.edu.tr

Tonguç Akış works in the Faculty of Architecture at İzmir Institute of Technology. He earned his PhD from METU, Turkey, in 2008. His research interests are production of rural and urban space and architectural education at national and international scale. Several collective research studies of him have appeared in journals such as International Journal of Architectural Heritage, Space and Culture and Mimarlık.

Ubeydullah YAŞAR (BArch, Architectural Design)

u.yasar2020@gtu.edu.tr

Graduated from MEF University, Istanbul in 2020 with the Bachelor degree.

Continues his studies in the Architecture Masters Programme in Gebze Technical University.

He participated in design-build studios as an assistant and also a tutor. These projects are included in the Arkitera Turkish Architecture Yearbook Selection.

AE 02

March 24-25, 2022
Istanbul, Turkey

Following the first Architectural Episodes Symposium, hosted by Istanbul Kültür University Faculty of Architecture/Department of Architecture, which was held on 15-16 November 2018; the second symposium in the series was held as an online symposium on 24-25 March 2022 with the theme of “ARCHITECTURAL EPISODES 02: NEW DIALOGUES IN ARCHITECTURAL EDUCATION AND PRACTICE”. The international symposium, supported by various institutions and organizations, including the EAAE (European Association for Architectural Education), has focused on the concept of “Dialogues in Architecture”, defining new collaborations in architectural education and practice.

After the breaking point created by the Covid-19 pandemic, the issue of distance has brought up different types of collaborative platforms. New approaches in architectural education and practice have resulted in diverse concepts while increasing the need for dialogue between interdisciplinary actors. Dialogues among architects, engineers, psychologists, educators, researchers, etc. not only enable the sharing of threats, opportunities and responsibilities in education and professional practice, but also identify influential links in a holistic way of design thinking. Accordingly, new methods and related collaborative approaches in education, collaborative design studies, co-housing and new paradigms in the urban scale, co-reflections on disasters, and co-links between architecture and industry are among the topics discussed in the symposium. In this context, participants from various professions related with the field of architecture (architecture, interior architecture, landscape architecture, city and regional planning, industrial design) and representatives of different disciplines (education, health, psychology, law, economy, engineering, etc.) from different parts of the world have shared their experiences, enabling evaluations and comparisons to be made regarding the processes and results of different approaches.

<https://mim.iku.edu.tr/en/ae2>