

## **LivenARCH+ Journal**

Volume 3, Issue 2, July 2026

E- ISSN: 3023-6452

<https://dergipark.org.tr/en/pub/livenarch>

### **Scope**

The “LIVable ENVironments and ARCHitecture+ Journal”: LivenARCH+ Journal which is published twice a year in January, July and an additional Special Issue which the Special Issues may be published in the journal once a year with the decision of the Editor In-Chief.

The “LIVable ENVironments and ARCHitecture+ Journal”: LivenARCH+ Journal includes theoretical and applied studies on current issues within the scope of design disciplines and research, discussion and opinion articles prepared on the basis of sciences related to the field of design. In this context, it is expected that the articles to be included in the scope of LivenARCH+ Journal will be original and scientific research studies, whose contribution to the relevant literature has been proven by qualitative, quantitative, experimental and analytical methods.

LivenARCH+ Journal is an academic, independent, international, double-blind peer-reviewed, open access and online electronic journal which its articles should disclose original data that has not been previously published or submitted for publication elsewhere.

The articles deemed to be in accordance with the submission rules and the scope of LivenARCH+ Journal are sent to at least two referees who are experts in their field for scientific evaluation. LivenARCH+ Journal Editorial Board members who discuss the appropriateness take into account the reviewers' comments on each submission. The final decision for all submitted articles belongs to the Editor In-Chief.

LivenARCH+ Journal does not accept late article applications, but puts the late articles in the process to be evaluated in the next issue.

### **Period**

Biannually (January, July)

### **Publish Language**

English

### **Publication Policy**

LivenARCH+ Journal is an academic, independent, international, double-blind peer-reviewed, open access and online electronic journal published twice a year, with an additional Special Issue, by the Department of Architecture, Faculty of Architecture, Karadeniz Technical University.

LivenARCH+ Journal utilizes the TUBITAK ULAKBIM DergiPark interface.

LivenARCH+ Journal grants the copyright of the published articles to the author(s) and licenses the first publishing rights of the articles to LivenARCH+ Journal.



LIVENARCH +

livable environments & architecture

J O U R N A L



KARADENİZ  
TECHNICAL UNIVERSITY  
FACULTY OF ARCHITECTURE  
DEPARTMENT OF ARCHITECTURE  
FARCH

---

### **Abstracted and Indexed in**

EBSCO Database (Contract signed and our journal is expected to be added to the lists)

ERIH PLUS (European Reference Index for the Humanities)

DOAJ: Directory of Open Access Journals

Idealonline

Tubitak UlakbimTR Dizin

Ulrich's Periodicals Directory

### **Contact**

Address: Karadeniz Technical University, Faculty of Architecture, Department of Architecture,  
Trabzon, Türkiye

Web site: <https://dergipark.org.tr/en/pub/livenarch>

E-mail: [livenarchjournal@ktu.edu.tr](mailto:livenarchjournal@ktu.edu.tr)

Phone: +90 462 377 2605-1616



# LIVENARCH +

livable environments & architecture

# JOURNAL



KARADENİZ  
TECHNICAL UNIVERSITY  
FACULTY OF ARCHITECTURE  
DEPARTMENT OF ARCHITECTURE

FARCH

## Editor In-Chief

Prof. Dr. Asu BEŞGEN  [abesgen@ktu.edu.tr](mailto:abesgen@ktu.edu.tr)

Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

## Co-Editors

Assist. Prof. Dr. Aslıhan ÖZTÜRK  [aslihanozturk@ktu.edu.tr](mailto:aslihanozturk@ktu.edu.tr)

Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Assist. Prof. Dr. Gürkan TOPALOĞLU  [gtopaloglu@ktu.edu.tr](mailto:gtopaloglu@ktu.edu.tr)

Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Dr. Instructor Kıymet SANCAR ÖZYAVUZ  [ksancar@ktu.edu.tr](mailto:ksancar@ktu.edu.tr)

Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

## Section Editors

Prof. Dr. Levent ARIDAĞ  [leventaridag@gtu.edu.tr](mailto:leventaridag@gtu.edu.tr)

Gebze Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Prof. Dr. Catarina CARRETO  [catarinacarreto@ipg.pt](mailto:catarinacarreto@ipg.pt)

Instituto Politécnico da Guarda, Portugal

Prof. Dr. Serap DURMUŞ ÖZTÜRK  [serapdurmus@ktu.edu.tr](mailto:serapdurmus@ktu.edu.tr)

Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Prof. Dr. Iman GAWAD  [iman.gawad@hq.helwan.edu.eg](mailto:iman.gawad@hq.helwan.edu.eg)

Helwan University, Department of Architecture, Faculty of Fine Arts, Egypt

Prof. Dr. Reyhan MİDİLLİ SARI  [rmidilli@ktu.edu.tr](mailto:rmidilli@ktu.edu.tr)

Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Prof. Dr. Lale ÖZGENEL  [olale@metu.edu.tr](mailto:olale@metu.edu.tr)

Middle East Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Prof. Dr. Hıfısiye PULHAN  [hifsiye.pulhan@emu.edu.tr](mailto:hifsiye.pulhan@emu.edu.tr)

Eastern Mediterranean University, Faculty of Architecture, Department of Architecture, North Cyprus

Prof. Dr. İlknur TÜRKSEVEN DOĞRUSOY  [ilknur.turkseven@deu.edu.tr](mailto:ilknur.turkseven@deu.edu.tr)

Dokuz Eylül University, Faculty of Architecture, Department of Architecture, Türkiye

Prof. Dr. Nilhan VURAL  [nvural@ktu.edu.tr](mailto:nvural@ktu.edu.tr)

Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Prof. Dr. Pelin YILDIZ  [peliny@hacettepe.edu.tr](mailto:peliny@hacettepe.edu.tr)

Hacettepe University, Faculty of Fine Arts, Department of Interior Architecture and Environmental Design, Türkiye

Assoc. Prof. Dr. Tonguç AKIŞ  [tongucakis@iyte.edu.tr](mailto:tongucakis@iyte.edu.tr)

Izmir Institute of Technology, Faculty of Architecture, Department of Architecture, Türkiye

Assoc. Prof. Dr. Özlem AYDIN  [ozlem.aydin@ktu.edu.tr](mailto:ozlem.aydin@ktu.edu.tr)

Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye



# LIVENARCH +

livable environments & architecture

# JOURNAL



KARADENİZ  
TECHNICAL UNIVERSITY  
FACULTY OF ARCHITECTURE  
DEPARTMENT OF ARCHITECTURE

FARCH

Assoc. Prof. Dr. Semiha İSMAİLOĞLU  [semiha.ismailoglu@erdogan.edu.tr](mailto:semiha.ismailoglu@erdogan.edu.tr)  
Recep Tayyip Erdogan University, Faculty of Engineering and Architecture, Department of  
Architecture, Türkiye

Assoc. Prof. Dr. Pinar KISA OVALI  [pinarkisaovali@trakya.edu.tr](mailto:pinarkisaovali@trakya.edu.tr)  
Trakya University, Faculty of Architecture, Department of Architecture, Türkiye

Assoc. Prof. Dr. Sibel MAÇKA KALFA  [sibelmacka@ktu.edu.tr](mailto:sibelmacka@ktu.edu.tr)  
Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Assoc. Prof. Dr. Hatice Gökçen ÖZKAYA  [haticeakgun@sdu.edu.tr](mailto:haticeakgun@sdu.edu.tr)  
Süleyman Demirel University, Faculty of Architecture, Department of Architecture, Türkiye

Assoc. Prof. Dr. Nikolaos PATSAVOS  [npatsavos@uoi.gr](mailto:npatsavos@uoi.gr)  
University of Ioannina, Greece

Assoc. Prof. Dr. Fulay UYSAL BİLGE  [fulay.uysal@atilim.edu.tr](mailto:fulay.uysal@atilim.edu.tr)  
Atılım University, Fine Arts Faculty of Design and Architecture, Department of Architecture,  
Türkiye

Assist. Prof. Dr. Şölen KÖSEOĞLU  [solen.koseoglu@atauni.edu.tr](mailto:solen.koseoglu@atauni.edu.tr)  
Atatürk University, Faculty of Architecture and Design, Department of Architecture, Türkiye

Assist. Prof. Dr. Selin OKTAN  [selinoktan@ktu.edu.tr](mailto:selinoktan@ktu.edu.tr)  
Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Dr. Instructor Ahadollah AZAMI  [aazami@cu.edu.tr](mailto:aazami@cu.edu.tr)  
Çukurova University, Faculty of Architecture, Department of Architecture, Türkiye

Dr. Evangelia PAXINOÜ  [paxnou.e@grenoble.archi.fr](mailto:paxnou.e@grenoble.archi.fr)  
Université Grenoble Alpes AAU CRESSON, France

## Production Editor

Assist. Prof. Dr. Gürkan TOPALOĞLU  [gtopaloglu@ktu.edu.tr](mailto:gtopaloglu@ktu.edu.tr)  
Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

## Copy Editor

Assist. Prof. Dr. Aslıhan ÖZTÜRK  [aslihanozturk@ktu.edu.tr](mailto:aslihanozturk@ktu.edu.tr)  
Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Res. Assist. Dr. Deniz BAYRAK  [denizbayrak@ktu.edu.tr](mailto:denizbayrak@ktu.edu.tr)  
Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

Res. Assist. Ece EROĞLU  [eceeroglu@ktu.edu.tr](mailto:eceeroglu@ktu.edu.tr)  
Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

## Layout Editor

Dr. Instructor Kıymet SANCAR ÖZYAVUZ  [ksancar@ktu.edu.tr](mailto:ksancar@ktu.edu.tr)  
Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Türkiye

### Language Editor

Dr. Instructor Nilgün MÜFTÜOĞLU  [nmuftuoglu@ktu.edu.tr](mailto:nmuftuoglu@ktu.edu.tr)  
Karadeniz Technical University, Academy of Foreign Languages, Department of Foreign  
Language, Türkiye

### Secretary

Post Graduate Fatma Berfin ABANOZ  [fatmaberfinabanoz@ktu.edu.tr](mailto:fatmaberfinabanoz@ktu.edu.tr)  
Karadeniz Technical University, Directorate of Construction and Technical Works, Türkiye

### Graphic Designer

Cansu BEŞGEN [besgen@gmail.com](mailto:besgen@gmail.com)  
Ministry of National Education, Türkiye

### Scientific Advisory Board

- Prof. Dr. Burçin Cem ARABACIOĞLU , Mimar Sinan Fine Arts University, Türkiye
- Prof. Dr. Kathryn BEDETTE , Kennesaw State University, United States
- Prof. Dr. Sonay ÇEVİK , Karadeniz Technical University, Türkiye
- Prof. Dr. Manfredo MANFREDINI , University of Auckland, New Zealand
- Prof. Dr. Vitor OLIVERIA , University of Porto, Portugal
- Prof. Dr. Ahmet Melih ÖKSÜZ , Karadeniz Technical University, Türkiye
- Prof. Dr. Şengül ÖYMEN GÜR , Beykent University, Türkiye
- Prof. Dr. İlkey ÖZDEMİR , Karadeniz Technical University, Türkiye
- Prof. Dr. Iakovos POTAMIANOS , Aristotle University of Thessaloniki, Greece
- Prof. Dr. Vjekoslava SANKOVIC SIMCIC , Sarajevo University, Bosnia and Herzegovina
- Prof. Dr. Marc Aurel SCHNABEL , Xi'an Jiaotong-Liverpool University, China
- Assoc. Prof. Dr. Beatriz BUENO , University of Sao Paulo, Brazil
- Assoc. Prof. Dr. Dr. Gül KAÇMAZ ERK , Queen's University Belfast, Northern Ireland, UK
- Assoc. Prof. Dr. Styliani LEFAKI , Aristotle University of Thessaloniki, Greece
- Assoc. Prof. Dr. Carlos MACHADO E MOURA , University of Porto, Portugal
- Assoc. Prof. Dr. Heidi SVENNINGSSEN KAJITA , University of Copenhagen, Denmark
- Assist. Prof. Dr. Jasim AZHAR , Qatar University, Qatar
- Assist. Prof. Dr. Shuva CHOWDHURY , North Carolina A&T State University, United States



# LIVENARCH +

livable environments & architecture

# JOURNAL



KARADENİZ  
TECHNICAL UNIVERSITY  
FACULTY OF ARCHITECTURE  
DEPARTMENT OF ARCHITECTURE  
FARCH

## Editorial Board

Prof. Dr. Asu BEŞGEN<sup>id</sup>, Karadeniz Technical University, Türkiye

Prof. Dr. Vahid GOBADIAN<sup>id</sup>, Iran Azad University, Iran

Prof. Dr. Nilgün KULOĞLU<sup>id</sup>, Karadeniz Technical University, Türkiye

Prof. Dr. Gökçeçicek SAVAŞIR<sup>id</sup>, Dokuz Eylül University, Türkiye

Prof. Dr. Osman TUTAL<sup>id</sup>, Eskişehir Technical University, Türkiye

Prof. Dr. Semiha YILMAZER<sup>id</sup>, Hasan Kalyoncu University, Türkiye

Assoc. Prof. Dr. Alessandro CAMIZ<sup>id</sup>, Università degli Studi "G. d'Annunzio" Chieti Pescara, Italy

Assoc. Prof. Dr. Odeta DURMISHI MANAHASA<sup>id</sup>, Epoka University, Albania



## Volume 3. Issue 2.

| Content | Pages <sup>1</sup> |
|---------|--------------------|
|---------|--------------------|

### Research Articles

|                                                                                                                                                    |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Merve BAYRAK, Aysun AYDIN SANCAROĞLU</b><br><i>Spatial Imaginations in Scientific Novels: Reading Ottoman Modernization in Fictional Spaces</i> | 95-126 |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--------|

|                                                                                                                                                   |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Hüseyin Emre ILGIN, Markku KARJALAINEN, Olli-Paavo KOPONEN, Özlem Nur ASLANTAMER</b><br><i>Innovative Dovetail Massive Wood Board Elements</i> | 127-144 |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---------|

|                                                                                                                                          |         |
|------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Goran Ivo MARINOVIC</b><br><i>Assemblages of Sensible Architecture: Syrian Displacement in Beirut's Vertical Informal Settlements</i> | 145-161 |
|------------------------------------------------------------------------------------------------------------------------------------------|---------|

### Review Article

|                                                                                                                                             |         |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Ayşegül KIDIK, Burak ASİLİSKENDER</b><br><i>The Integration of Virtual Reality Technology into Architectural Design Studio Education</i> | 162-173 |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------|

|                                                                                                                                  |         |
|----------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>Sinem KIZILASLAN</b><br><i>Evaluating the Behaviour of Littering in Public Spaces within Different Theoretical Approaches</i> | 174-192 |
|----------------------------------------------------------------------------------------------------------------------------------|---------|

<sup>1</sup> in order to the date of acceptance.