LOCALIZING DESIGN STUDIES: PERSPECTIVES ON TURKEY

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ACKNOWLEDGEMENTS

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PREFACE - DESIGN HORIZONS: EXPLORING BOUNDARIES AND POSSIBILITIES IN DESIGN

This book is the outcome of the Design Studies Symposium that took place in June 2023 at the Izmir University of Economics, Graduate School, Faculty of Fine Arts and Design. The research presented in the symposium and the articles in this book as the symposium's outcome delve into diverse fields of design with varying scales and forms, tackling contemporary challenges that push the boundaries of the design field and offer new possibilities for its expansion. Although the content may initially appear unrelated, subtle diversities emerge, offering multiple avenues that reflect the role of design as a methodology and an instrument. Among the arguments, these prevailed: What explorations emerge on the horizon in response to trends? What functions do these recent developments serve, and how are they challenging design?

The research presented in the symposium ranges from case/field implementation ideas to quantitative/scientific data surveys to social, theoretical, and historical studies from all subfields of design to address the countless parallel and overlapping realities of design in the post-pandemic era. The post-Covid period and unprecedented earthquake have made us question the role of design in our everyday lives, while the advent of dynamic technologies in design has made us reconsider the design realities that surround us. For this book, quality papers were collected from authors from different Graduate Programs related to the field of design.

In terms of context, the aim within the framework of the book is to bring together opinions from various design and/or disciplinary backgrounds to develop a common and integrated design understanding through philosophy, culture, history, theory, and contemporary discourse, and also by considering the interactions between the arts and science fields. To explore these inquiries, this book explores and interrogates the intersections across diverse fields of design, encompassing visual communication, fashion, architecture, interior architecture, and industrial design. Treating these diverse approaches offers a look into how design methodologies evolve over time and how contemporary underpinnings inform the design process and resulting products.

In her exploration of the role of bio-design and craft, Filiz Özbengi Uslu questions whether design approaches embrace circular and ecologically compatible alternatives to current models of fashion production, and how these alternatives in the fashion design field foster emotional attachment to clothes. As discussed in the paper, the field of design is affected by the convergence of sustainability and biodesign, as well as by tensions arising from technological advances and the limitations imposed by the crisis environment. In relation to these concerns, Elif Karakuş and Deniz Hasırcı explore the challenges of using, transporting and storing props in sustainable stage design. Driven by the contemporary environmental challenges posed by waste materials in scenic design, this research comprehensively examines obstacles inherent in the design process. Their research further explores how professionals working in this particular field navigate and address these challenges, proposing concurrently novel and practical solutions responding to these urgent issues at hand.

Hande Yıldız Çekindir explores the theoretical foundations and practical applications of "design thinking" in higher education by focusing on the case of Izmir Design Factory. Izmir Design Factory is analyzed as a bridge between academia and industry, emphasizing interdisciplinary collaboration, skill development, and problem solving. Selen Çiçek investigates the multifaceted nature of design space in computational design within educational frameworks such as basic design studios and explores the role of evolving generative AI in reconstructing design problems and solutions. Anıl Dinç Demirbilek discusses the concept of open paradigm (OP) in the design field. OP exemplifies a shift from "closed and exclusive" to "open and transparent" design process in a transitioning design system.

Gökçe Çağatay, Tuba Doğu and Deniz Avci focus on the intersection of gender and space, analyzing eleven selected films to reveal how domestic and public spaces contribute to the perpetuation of violence against women, arguing that the cinematic portrayal of violence serves as both a reflection of societal realities and a tool for storytelling, raising questions about its unconscious exploitation and social implications.

Prior to moving into localized discussions in the field of design specific to Turkey and examining future directions and challenges, Canberk Yurt explores the dualities immanent in the production and consumption patterns. The focus in the paper is on understanding the dynamics of supply and demand within the value-creation ecosystem. Drawing on the conceptual framework that analyzes the transitions from consumer to user and user to maker and prosumer concepts, the author conducts a comparative analysis to reveal relational discussions among stakeholders who are the representatives of the actions under value-creation and transfer.

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INTRODUCTION - INTERNATIONAL AND INTERDISCIPLINARY DESIGN STUDIES WITH TURKISH ROOTS

DENIZ HASIRCI

Condensed Background

Now that everyone is a designer of sorts and that "design" has become a household concept, what does it really meant to be in the field of Design Studies, a graduate of Design Studies, and what do we really mean by design studies in various contexts, and with a focus on a Turkish localization?

We planned this book as an edited manuscript on various issues surrounding Design Studies, written in literary essay form, as think-pieces, rather than defensive academic papers, with research that ranges from case/field implementation ideas to quantitative/scientific data surveys to social, theoretical, and historical studies from all subfields of design to address the countless parallel and overlapping realities of design in the post-pandemic era. The post-Covid period and unprecedented earthquake that has taken place at the beginning of 2023 in Turkey, have made us question the role of design in our everyday lives, while the advent of dynamic technologies in design has made us reconsider the design realities that surround us.

The year 2023 had a significance for Turkey as it was the 100th year of the Turkish Republic founded in 1923. With celebrations still ongoing, there are more pluralities than ever, with every citizen celebrating a different aspect of the republic —be it freedom of speech, women's rights, educational privileges, marriage, or freedoms about clothing. One aspect of the republic that one can readily observe, is design in all its many forms, shapes, and fields. Design, in this text, does not refer to any one field as is often the case. Design, here, is referred to in a wider sense, encompassing human creativity in any medium from fashion to architecture. This interdisciplinary approach is useful to understand both the Turkish context and intricate cultural references and nuances, as well as the approach to Design Studies in the framework of this book.

A country of rapid socio-economic change and a dynamic flux of ideas pouring both from Asia and Europe and with land on both continents, design has always been at the center of discourse and a matter of national and personal identity in Turkey. Although often discussed alongside Westernization, progress and modernization in Turkey was always in touch with its roots. Even in efforts establish classical music in the international sense in the new Turkish Republic in 1924 through the establishment of the Risayet-i Cumhur Musiki Heyeti (today, the Presidential Symphony Orchestra), the aim was to aspire to develop music that was based in a folkloric background. Signifying the importance of music as an essential element of modernization and developmental feature of identity, Atatürk, the founder of the Republic stated;

> You do not need music in life. This is because life itself is music. A creature that has nothing to do with music is not a human being. If the issue is life, there is an existence of music, life without music cannot exist anyway. Music is the joy, soul, life, and everything. And thus, one must aspire to create quality music…[1]

This statement also involves the contextual design of the culture of music, taken in its general and interdisciplinary sense, with its architecture, interior design, furniture, communication, and clothing.

As another example of localized internationalization of design acting as representation of a modernizing people, both nationally and internationally, the third and new building of the Grand National Assembly of Turkey (GNAT, designed in 1936 and opened its doors in 1961) was designed by the Austrian architect Clemens Holzmeister, with several Anatolian and Turkish materials, patterns, textures, and practices embedded into design decisions at each scale.[2] Perhaps, partly as an effect of being one of the youngest populations in Europe, the Turkish response to new design has been relatively in favor of adaptation even if there was to be a process of resistance at first. One can observe this even if it meant to change behavioral habits for the design, as one can observe in the changing of bathroom habits to more Westernized ones in the early 30s and 40s, learning the use of the classic lavatory, bidet, and sink, rather than allaturca toilet, kurna, and hammams. These behavior changes through design were further followed by multidisciplinary design competitions that included ceramics artists, industrial designers, interior designers, and architects, to explore where design could take us (Figure 1).[3]
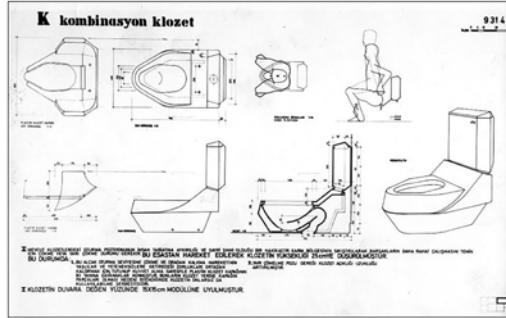
Figure 1. Localized interpretations of modern Turkish hygienic practices, 1970s.[4]

1　Ekici, S. (2008). Türk Müziği Devlet Konservatuvarlarının Bugünü Üzerine Düşünceler, "Millî Folklor", 20: 77; Atatürk Kültür, Dil ve Tarih Yüksek Kurumu Atatürk Araştırma Merkezi. (2006). 5th ed. Arsan, N. Atatürk'ün Söylev ve Demeçleri, Atatürk Kültür, Dil ve Tarih Yüksek Kurumu Atatürk Araştırma Merkezi, Atatürk'ün Söylev ve Demeçleri, Vol: I, Ankara: Divan Yayıncılık Ltd. Şti.

2　Hasirci, D., & Tuna Ultav, Z. (2020). "The multiple stories behind the modern ceramic coffee tables of the Grand National Assembly of Turkey," Journal of Design History, 33(3): 225-242; Hasirci, D., & Tuna Ultav, Z. (2019). "Mid-century modern furniture representing modern ideals in the grand national assembly of Turkey", Journal of Interior Design 45(2): 11-33.

3　Ekici, S. (2008). Türk Müziği Devlet Konservatuvarlarının Bugünü Üzerine Düşünceler, "Millî Folklor", 20: 77; Asatekin, M. 2021. Online communications by Deniz Hasirci, archived by DATUMM: Documenting and Archiving Turkish Modern Furniture, http: linktree/datumm, datumm.org.

4　Asatekin, M. 2021. Online communications by Deniz Hasirci, archived by DATUMM: Documenting

Following these years, modern design always reflected these interpretations and adaptations. Each coffee table designed by the modernist SİM Mobilya furniture company was unique as they carried interpretations of local patterns and textures of the working women at the production factory (Figure 2).[5] SİM Mobilya had carried this interpretive modernism to everything from their paperwork to the architecture of their headquarters and practice. Although this particular company does not exist today, this was a general trend in all fields of design, as both producers and consumers demanded that they see recognizable features in the ever-changing world around them at great speed.

Figure 2. Localized interpretations of modern Turkish furniture, SİM Mobilya furniture company, 1960s.[6]

Defining Design Studies in Turkey

Defining Design Studies in Turkey requires this back and forth movement in time and scale, with the need to connect to Turkish roots as well as current events such as the distinct experience of the Covid-19 pandemic and devastating earthquakes of the past years; but at the same time, following fast-paced developments at the international scale, in the most visionary and advanced manner possible. For this book, quality papers were collected from authors from different Graduate Programs related to the field of design. The book mainly discusses responses to the following questions:

• What role does design play in the light of these challenges and developments?

• How do these realities bind and unbound the designers?

• What are the new limits and/or horizons of design?

• How is the field of design expanding?

• Within the context of these facts, what happens to other design-related subfields?

and Archiving Turkish Modern Furniture, http: linktree/datumm, datumm.org; DATUMM: Documenting and Archiving Turkish Modern Furniture, http: linktree/datumm, datumm.org; Tuna Ultav, Z., Hasırcı, D., Borvalı, S., & Atmaca, H. (2016). DATUMM: Documenting and Archiving Turkish Modern Furniture İzmir: İzmir Ekonomi Üniversitesi.

5   DATUMM: Documenting and Archiving Turkish Modern Furniture, http: linktree/datumm, datumm.org.
6   DATUMM: Documenting and Archiving Turkish Modern Furniture, http: linktree/datumm, datumm.org.

- What are the current dilemmas in these subfields and what are the new approaches?

- Are these also defined by boundaries? Or, have past boundaries been broken?

- How do digital technologies (AI, VR/AR/XR, metaverse etc.) influence our expectations of design?

- How do disasters inform design?

In terms of context; the aim within the framework of the book is to bring together opinions from various design and/or disciplinary backgrounds develop a common and integrated design understanding through philosophy, culture, history, theory and contemporary discourse, and also by considering the interactions between arts and science fields.

In our book, we put the post-pandemic era at the focus. The pandemic, earthquakes, fires, elections, large threats, carry great significance in reminding us of community with its various levels and of the reasons for which we do what we do in design academia, especially after/during a devastating time for our planet. Now, we face yet another era where AI will be actively and increasingly be present. I do not mean this in the sense of Terminator or the Matrix, where AI is immediately labeled as the evil forces. I mean this in the most objective way; this is here, how will we choose to integrate it in design practice and discourse? The issue will not be about the use of Chat GPT in research papers in academia; it will be on a larger scale and affecting our whole lives, bringing an end to organic life on earth. Studio Snoop presented the "world's first AI designer" at the Milan design week. This report introduces the world's first AI designer developed by Studio Snoop. This AI designer, with its powerful machine learning and generation algorithms, is able to automatically and quickly create designs with a unique style.[7]

Recently, in the face of AI design, designers and practitioners are really looking forward to and afraid of being hurt, maybe designers can hold a "if you can't fight it, join it" attitude, and learn more about the ability and future development of AI design. This can be done by thinking of AI as a partner rather than a competitor: The advent of AI designers does not mean that designers will be replaced, but rather provides a new model of collaboration. Designers should learn to work with AI and make good use of AI technology to enhance their design abilities. Understand the application scenarios and limitations of AI and see it as a powerful tool to work with AI to create better designs. Moreover, one will need to adopt an attitude of continuous learning and updating skills: The rapid development of AI design techniques requires designers to maintain an attitude of continuous learning. Designers should be actively informed about the latest AI techniques and tools and apply them in practice. At the same time, one will need to continuously update design skills and develop the expertise and skills needed to work with AI in order to stay competitive. There will also be an emphasis on creativity and humanistic care: While AI can deliver efficient and fast design solutions, designers have unique creativity and emotional connection as well as hands on experience,

7   Kamalov, Firuz, David Santandreu Calonge, and Ikhlaas Gurrib. 2023. "New Era of Artificial Intelligence in Education: Towards a Sustainable Multifaceted Revolution" Sustainability 15, no. 16: 12451.

that AI cannot replace (at least for now). Designers will need to focus on cultivating their own creative mind and humanistic care, using design as a way to express and connect human emotions, conveying values and social meaning through design.

Design Sciences

In the design fields, science appears to be a candle in the dark that makes one uncomfortable at first, but provides a solid basis in design processes with related meaning attached. Design sciences helps one understand and predict. Oftentimes, science creates more questions rather than answers. We depend on science. If one were to be in a dire situation, such as choking, would they wish for a prayer or a Heimlich maneuver? I respond to the trivializing attitude some show regarding design sciences with bafflement. Design research cannot be understood as a matter of individual profit and/or loss. It is, rather, for the collective good; it is important voluntary input into the wider system of contributing to knowledge and academic publishing upon which the contemporary academic profession is symbiotically dependent, as well as inform good design that is not only neutral to, but beneficial for the health of our planet. In the "scientification" of design and the search for truth in design, quantification has increasingly become a requirement. The instrument is almost the first discussion in several PhD meetings I have attended. We are often drowned in data that is devoid of meaning.

In a comparison of Aldous Huxley's Brave New World to Orwell's dark prophecy in 1984, Neil Postman states;

> Orwell feared those who would deprive us of information. Huxley feared those who would give us so much that we would be reduced to passivity and egoism. Orwell feared that the truth would be concealed from us. Huxley feared the truth would be drowned in a sea of irrelevance.[8]

In this case, not ideally, method almost becomes more important than the questions and ideas. I believe that the current approach to Design Studies needs to continue to be unique in that sense. Design studies communications also includes close contact with publishers, authors, readers, and reviewers (our students). It appears we will need to put communications at the heart of the program. Communication is defined as[9]; a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior; information communicated: information transmitted or conveyed; a system (as of telephones or computers) for transmitting or exchanging information.

Furthermore, enriched communications require; reading (understanding the main argument, but also analyzing the structure of the book and where the book stands in relation to oth-er academic work and to the author's own work); evaluation (weakness and strength); and

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8   Postman, N. (1985). Amusing Ourselves to Death: Public Discourse in the Age of Show Business. USA: Penguin Books.
9   Merriam-Webster. An Encyclopædia Britannica Company (2024). https://www.merriam-webster.com/. 1.4.2024.

writing (in a way that brings an insightful approach to the work at hand). Naturally, science communication necessitates both written and oral communication; word, the rhetoric, oral communication; writing in both a scientific way, but also a clear and understandable way, where application not only includes research, but also in design, there is also the visual communication. As one is not the ornament of the other, and the search for truth and critical curiosity are involved in all, critical discussion is a key feature in design studies.

In Conclusion

Thus, here, Design Studies has been defined as; not a practical overarching name, but one with definition and purpose. A significant aspect of design, and design studies is perhaps its adaptability, flexibility to the needs of the times. The discussions aim to contribute to designers developing their own creative, theoretical and practical abilities for developing a critical and interdisciplinary insight into design; extending their design knowledge and understanding within an interdisciplinary approach; familiarize themselves with a wide range of interdisciplinary research; analyze and discuss the history, theory, philosophy and discourse of different design disciplines together at an advanced level. The topics include; design thinking; design and science; design ethics; mixed methods; equality, social justice, participatory design; user-experience design; and experiential design. Hopefully, the critical discussions in this book are a step in that direction and young design researchers have gained insight from this experience. We leave the word to them today.

As a final word; the disasters of the past few years have taught us one thing in particular, and that is to see that everything is finite. Therefore, let us rejoice in being alive and what we produce, and to cherish the time we have on this earth.

Richard Dawkins, Unweaving the Rainbow (1998) book intro:

> We are going to die, and that makes us the lucky ones. Most people are never going to die because they are never going to be born. The potential people who could have been here in my place but who will in fact never see the light of day outnumber the sand grains of Arabia. Certainly, those unborn ghosts include greater poets than Keats, scientists greater than Newton. We know this because the set of possible people allowed by our DNA so massively outnumbers the set of actual people. In the teeth of these stupefying odds, it is you and I, in our ordinariness, that are here. We privileged few, who won the lottery of birth against all odds, how dare we whine at our inevitable return to that prior state from which the vast majority have never stirred?[10]

I love this book and its message. We have won the lottery and have the privilege to explore, change and adapt within the increasingly exciting and expanding field of Design Studies. Together with Tuba Doğu, Deniz Avcı, Gözde Damla Turhan, and Aybüke Taşer who have been a wonderful support with several of their initiatives embedded in the preparation of this book, we welcome you to the Design Studies discussions and hope that you will enjoy what you may find inside.

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10   Dawkins, R. (1998). Unweaving the Rainbow. London: Houghton Mifflin.

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PART I
DESIGN STUDIES WITH TURKISH ROOTS

RETHINKING FASHION: BIO-DESIGN APPROACH TO ENHANCE WELL-BEING

FILIZ ÖZBENGI USLU

Introduction

In an era of growing environmental concerns, a reconsideration of the complex relationship between fashion, sustainability, circularity, and holistic well-being is at the forefront of the current discourse. Historically characterized by rapid trends and mass consumption, the fashion industry now faces the urgent need for transformative actions that address both planetary boundaries and societal well-being. As sustainable textiles emerge as an important response to environmental challenges, their impact on promoting well-being is becoming a central inquiry.

Wellbeing and Fashion: Significance of Well-being in the Context of Planetary Boundaries

The concept of planetary boundaries is essential in exploring a refined understanding of well-being, as it interweaves the well-being of humanity with the delicate balance of our natural environment. The basic premise of the concept of planetary boundaries lies in the complex link between human well-being and the proper functioning of the natural environment. This perspective suggests that by consciously adhering to and operating within the defined boundaries set by planetary boundaries, we have the capacity not only to sustain but also to enhance human well-being.[1] This perspective goes beyond ecological concerns to include dimensions of social justice, and the aim is to create a safe ecological space for all living beings. In the face of global ecological crises and the rapid decline of biodiversity, conventional frameworks often fail to bridge the gap between environmental restoration and the wider quest for equitable well-being.

In exploring the relationship between well-being and planetary boundaries, the concept of well-being has been linked to economic growth, particularly in Western societies. Criticisms of subjective interpretations of well-being highlight the unsustainable emphasis on material criteria, driven by limitless human desires. To address these challenges, the discussion shifts towards ecopsychology, which advocates for a paradigm shift towards achieving genuine well-being through our deep connection with nature.[2] Maintaining the integrity of the Earth system and the vital ecosystem services requiresa considered definition in which the

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1   Will Steffen et al., "Planetary Boundaries: Using Early Warning Signals for Sustainable Global Governance," in Planetary Boundaries and Human Opportunities, ed. Steve Carpenter (Edward Elgar Publishing, 2013), 259–275.

2   Duane D. N. Winter and Susan M. Koger, The Psychology of Environmental Problems, 2nd ed. (Lawrence Erlbaum Associates, Inc., 2004).

persistence of species and populations is protected to the extent that they are able to persist into the future. Within this framework, organisms are given the opportunity not only to exist, but to thrive and achieve a comprehensive state of well-being.

In exploring this discourse, it becomes clear that a broad understanding of well-being goes beyond the mere survival of species. It encompasses the dynamic processes that allow organisms to adapt, evolve and coexist harmoniously within the complex pattern of the Earth system and includes the flourishing of life in all its different manifestations.

Review of Well-being Through the Perspective of Body and Clothing

The dynamics between human well-being and this broader environmental context are broad and diverse, encompassing physical and mental health as well as subjective well-being, a realm in which individual happiness and satisfaction find expression. Tracing the historical roots of defining well-being, eudaimonical well-being is a concept rooted in Aristotelian philosophy.[3] As opposed to a constant outcome, eudaimonia is the pursuit of realizing one's essential nature, promoting virtues, and living in harmony with oneself. Hedonic well-being, a parallel definition, offers a contrasting perspective on well-being by focusing on human emotions.[4]

The concept that bridges these dimensions is the concept of 'flourishing' which defines positive emotions, engagement, relationships, meaning, and achievement as the five elements of flourishing according to PERMA theory.[5] Considering the connection of well-being with the body and clothing, well-being, which is no longer limited to the fields of philosophy and psychology, has emerged as an important movement in recent decades, intertwined with the fashion industry. The industry's interest in well-being stems from the rejection of unrealistic body ideals and the global health crisis that catalyzed the financial recession of the early 2000s.

Within this consumer-centered view, clothing becomes an important factor in the well-being narrative that can contribute to psychological well-being in two ways: hedonic well-being, where clothing evokes pleasure and positive emotions, and eudaimonic well-being, where clothing provides a sense of fulfillment or meaning. The psychological impact of clothing is also emphasized as a process of transforming socially approved conventions into self-approved values. Conformity to social norms is seen as crucial for psychological well-being as it fosters feelings of belonging and competence. Beyond its social context, the integral link between body and clothing is widely recognized and fashion is defined as an embodied practice. Clothing is not just an outer layer; it is a tool that shapes emotions and influences

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3   John Moran, "Aristotle on Eudaimonia ('Happiness')," Think 17, no. 48 (2018): 91-99.
4   Richard M. Ryan and Edward L. Deci, "Self-determination theory and the role of basic psychological needs in personality and the organization of behavior," in Handbook of Personality: Theory and Research, ed. Oliver P. John, Richard W. Robins, and Lawrence A. Pervin (The Guilford Press, 2008), 654–678.
5   Martin E. P. Seligman, Flourish: A Visionary New Understanding of Happiness and Well-Being (Free Press, 2011).

cognitive experiences. Autobiographical memories associated with clothing play an important role in the creation and maintenance of a coherent narrative identity deemed essential for psychological well-being.

A significant issue emerges in this connection between well-being, body, and clothing; do the practices of the fashion industry enhance these effects or create an illusion? In delving into this issue, the complex relationship between individual well-being, environmental concerns, and the impact of the fashion industry on our sense of self-image comes to the forefront, prompting a deeper reflection on the symbiotic relationship between our well-being and the choices we make in fashion.

Integrating Well-being: A Focus on Fashion Design and Industry

In the world of fashion design and industry, the concept of well-being needs to extend beyond aesthetic concerns to embrace ethical practices throughout garment production. From design to distribution, there is a growing discourse exploring new materials and economic models to reduce the ecological impact of fashion. However, the roots of the global fashion industry go into the deep and are entangled with the history of human-environment interactions affecting ecosystems. Today, the fashion industry is at the forefront of an environmental crisis that negatively impacts nature and humanity. The fashion industry contributes significantly to climate change, biodiversity loss, and social justice concerns.[6] The extensive use of water, chemicals, and excess energy usage in the supply chain is impacting the planet, especially the developing countries. Recent efforts to reduce the negative impacts of the fashion industry have focused predominantly on the supply side, focusing on changes in products or outcomes. Product-oriented strategies aim to improve the environmental sustainability of production processes by incorporating measures such as the use of more sustainable materials and energy sources. Alternatively, outcome-oriented approaches address how products are marketed, distributed, or disposed of. However, the generalised categorisation of all natural materials as inherently safe and all synthetic materials as harmful overlooks and oversimplifies the multiple environmental and social externalities associated with textiles, which include both natural and man-made varieties. In this case, a paradigm shift is imperative. The emphasis on well-being through alternative economic models, such as the post-growth approach, is compatible with a circular fashion economy that addresses both social and environmental factors. This requires material innovation in fashion design and production, with a focus on circular materials that reduce waste.[7]

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6   Ellen MacArthur Foundation, "A New Textiles Economy: Redesigning Fashion's Future," [Online]
     Available at: https://www.ellenmacarthurfoundation.org/publications/a-new-textiles-economy-
     redesigning-fashions-future.
7   Kate Fletcher, Craft of Use: Post-growth Fashion (Routledge, 2016).

Accordingly, how can material innovation be seen as a remedy to the problem of waste generated by the fashion industry, before addressing consumption patterns, and can textiles promoted as 'sustainable' and 'green' meet this challenge?

A Brief Examination of Sustainable Textiles and Their Influence on Well-being in Fashion

Marked by rapid trend changes, the world of fashion is constantly giving birth to new garments, leaving a significant impact on the economy and the global environment. However, the wave of 'fast fashion', synonymous with disposable, affordable clothing, has led to reflections that require close examination. This fast-paced fashion paradigm has become a major contributor to environmental and social degradation, with the sector's notorious water consumption, chemical pollution, and significant carbon emissions.[8] The consequences, ranging from resource exploitation to negative impacts on workers and complex supply chain intricacies, underscore the urgent need for environmentally friendly and socially responsible alternatives.

Textile production, which has historically relied on synthetic fibers derived from non-renewable resources such as petroleum, increases environmental damage. The high carbon dioxide emissions and energy consumption associated with synthetic fibers, combined with the release of non-biodegradable microfibers into the environment during washing, have negative impacts on aquatic ecosystems and biodiversity. In response to this ecological crisis, it has gained importance in response to the call for sustainable textiles. Natural fibers such as organic cotton, bamboo, hemp, jute, and ramie are emerging as signifiers of sustainability on this transformative path. However, even with textiles derived from these natural fibers, which are considered sustainable and included in the scope of bio-based textiles, challenging problems remain. Although these materials have long been considered sustainable, the extensive industrialization of the sector creates its own challenges. While bio-based textiles have the potential to reduce greenhouse gas emissions, they often require significant water and land use.[9] In the case of cotton, a densely grown natural fabric that requires a significant amount of water consumption. The textile industry's impact on the world's clean water supply, with 20% of pollution attributed to fabric dyeing, processing chemicals, and pesticide use, further underlines the urgency for change. Moreover, the textiles that are often associated with sustainability can carry hidden complexities. Textiles such as viscose and modal, which are often touted for their comfort, can contain synthetic and chemically processed components, challenging the narrative of their sustainable impact unless their production processes are transparent.[10]

Given all these complex but interconnected problems, it is clear that the fashion industry

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8   Valentina Jacometti, "Circular Economy and Waste in the Fashion Industry," Laws 8, no. 4 (2019): 27.

9   Ming Zhao et al., "Virtual Carbon and Water Flows Embodied in Global Fashion Trade—A Case Study of Denim Products," Journal of Cleaner Production 303 (2021): 127080.

10   Subramanian S. Muthu and Miguel Angel Gardetti, eds., Sustainability in the Textile and Apparel Industries (Springer, 2020), 163-187.

requires innovative materials that can be maintained in a closed loop, where raw materials based on renewable resources replace those using non-renewable resources, and that can continue this loop with minimal waste.

Bio-design and Fashion

As the fashion industry continues to evolve and adapt, new approaches are emerging that combine the worlds of biology and design. These innovative approaches, known as bio-design, have added a new dimension to the ecological and social challenges created by fashion, drawing inspiration from the natural world and incorporating biological principles to create innovative and circular fashion design solutions.

Addressing New Materials in Fashion Within Bio-design

In an era of increasing awareness of environmental crises fostered by unsustainable practices in the fashion industry, bio-design is emerging as a source of promise toward a more circular and innovative future. Located at the intersection of biomimicry, bioengineering, and synthetic biology, bio-design represents a transformative design approach that integrates basic biological principles and extends to the construction of structures, objects, and tools.[11] Bio-design challenges the status quo in the fashion industry by emphasizing regenerative production models, the use of biodegradable materials, and circular economic models. The move away from traditional carbon-intensive practices opens avenues for rethinking and redefining the relationship between planetary boundaries and human well-being. Bio-design is at the forefront of the development of a range of materials derived from plants and organic systems and is evidence of the industry's commitment to circular practices. Since this study focuses on the material part of bio-design and concepts including 'bio' are often confused with each other, Figure 1 shows how bio-based and bio-fabricated materials are positioned in literature.

From reusing agricultural or food waste to producing yarn from unusual sources such as orange peel, seaweed, and even leather from grape or apple skins, the possibilities are expanding. Innovations like Flora Fur, a sustainable, biodegradable fur made from milkweed (Figure 2) and Algiknit, a seaweed-based, entirely biodegradable material (Figure 3), exemplify the fusion of creativity and circularity in fashion.[12]

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11   William Myers and Paola Antonelli, Bio Design: Nature, Science, Creativity (Thames & Hudson, 2012).
12   Claudia Del Gesso, "Sustainable Fashion: From Material to Immaterial through Biodesign," PAD 14 (PAD# 20 Fashion and Textile Design Reconstruction) (2021): 130-151.
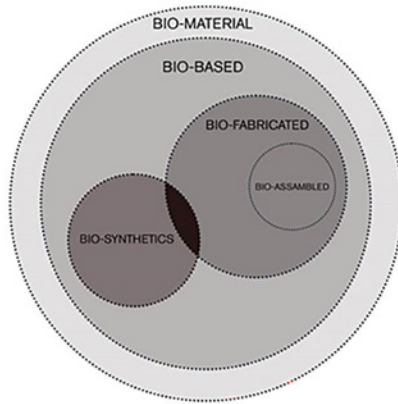
Figure 1. Positioning 'Bio' Terms (Adapted from Biofabricate and Fashion for Good, 2020)

Figure 2. Flora Fur, Milkweed Based Fur (Source: circumfauna.org, 2021)

Figure 3. Algiknit, Bioyarn Molded From Algae (Source: www.materialdriven.com, 2020)

Taking bio-design to the next level, some designers are creating fashion products produced by living organisms. Roya Aghighi's Biogarmentry collection (Figure 4), for instance, is made from algae that photosynthesize the air, requiring care akin to tending to a plant.[13] These initiatives are reshaping the market, with even luxury fashion brands investing intensively in this transformative space.

Figure 4. Biogarmentry, Clothes Made From Algae (Source: dezeen.com, 2019)

While many bio-design and fashion collaborations may seem like speculative material experiments, advancements in technology and ongoing research suggest a transformative role in the fashion design process. The functional capabilities of bio-designed materials not only cater to aesthetic and functional needs but also indirectly contribute to the well-being of planetary boundaries and human flourishing. When we consider the material in the relationship between bio-design and fashion, textiles, defined as bio-based and bio-fabricated materials are not only experimental but also reshape the circularity of fashion. Derived from biomass such as plants or animals, bio-based textiles offer an environmentally friendly alternative to traditional petroleum-based textiles. Often produced using living organisms, these materials offer an opportunity to challenge the linear economy model of the fashion industry.[14] However, it is crucial to recognize that not all bio-based materials are produced ethically, as their environmental impact depends on factors like raw material sources, cultivation practices, and processing methods.

Apart from bio-based materials, bio-fabricated materials, a term originally associated with the medical sector, have expanded to include the production of complex living and non-living biological products. With their biological origin and circular potential, bio-fabricated materials

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13   Reza Aghighi, "What if Our Clothes Were Alive and Photosynthesized?" APRIA Journal 1, no. 1 (2020): 120-128.
14   Biofabricate and Fashion for Good, "Understanding 'Bio' Material Innovation: A Primer for the Fashion Industry" (2020).

are attracting significant research. These materials not only offer an alternative to traditional production models but also contribute to social transformation by reducing labor exploitation, which is particularly prevalent in global textile production. While bio-based and bio-fabricated materials often aim to replicate existing alternatives, there's a need to appreciate their unique qualities. From vitality to impressionability and responsiveness, these emerging materials possess distinctive characteristics that extend beyond mimicking properties of traditional counterparts. Future research in this realm should broaden its scope, delving into the experiential aspects and the nuanced environmental and social impacts of these innovative materials.

The Need for Bio-design to Create a Circular Fashion System

Understanding the interconnectedness of all life with nature and with other life is to realize what it means to design in a genuinely biological and circular way. Criticized for its environmental damage, the fashion industry is undergoing a transformative shift towards circular fashion. This paradigm seeks to minimize resource dependency and water consumption, recognizing the urgent need for change in an industry that is responsible for 63% of garment fibers derived from plastics.[15] As a response to this crisis, bio-fabricated materials are emerging as a promising solution, in line with the ethos of the circular fashion paradigm to responsibly close the production loop. At the center of this evolution is the garment production process, a crucial stage where designers traditionally favor materials with significant environmental impacts. This decision shapes the final products on the market, perpetuating the ecological consequences of the industry.

Bio-design, in particular, challenges the entrenched pillars of fast fashion, proposing a departure from the relentless production schedules dictated by current economic models and seasonal fashion trends. In terms of materials that are grown or fabricated with a bio-design approach, circular design revolves around the creation of regenerative systems that minimize waste, optimize resource efficiency, and promote the well-being of both the environment and societies. While circularity also suggests a system in which materials are continuously reused, the principle of continuous reuse of materials is in contradiction with the fact that materials in bio-design are often produced to be short-lived and highly biodegradable. This biodegradability and compostability principles encourage the development of bio-based and bio-fabricated materials that naturally degrade without harming the environment. These can be organisms that do not require land use or pesticides as they grow in salty seawater such as brown algae, food waste that goes to landfills such as citrus or eggshells, ethically harvested oyster shell waste or plants, or myceliums that are grown through fermentation and decomposition process and require far less energy, water and other resources than conventional material production. However, as we embrace the potential of bio-design, questions arise about its ability to effect social and ecological transformation. Critics argue that for bio-design to fulfill its promise, it needs to lead us toward diverse, equitable models that prioritize the

15 European Environment Agency (EEA), Plastic in Textiles: Towards a Circular Economy for Synthetic Textiles in Europe (Brussels: European Commission, 2021), [Online] Available at: https://www.eea. europa.eu/publications/plastic-in-textiles-towards-a

flourishing of all biologies, not just human well-being.[16] This raises an important question about the role of the fashion designer within this evolving circular system.

As the industry moves forward at the intersection of innovation and social responsibility, the fashion designer becomes a key actor tasked with shaping a future where circular fashion is not just a buzzword, but a tangible and transformative reality. The shift towards a circular paradigm through bio-design is forcing both the industry and its practitioners to embrace a more responsible, interconnected vision.

Examining Bio-designed Textiles from a Well-being Perspective

In the current quest for well-being and environmental sustainability, bio-design seems to have emerged as a pioneer, offering innovative solutions that go beyond traditional pharmaceutical approaches. The fashion industry is witnessing an increase in products and processes designed not only for aesthetics but also for technical functionality. When exploring the field of well-being and bio-designed textiles, much of the existing literature revolves around smart textiles and wearable technologies.[17] Among these, medical and paramedical textiles are notable, attracting attention in applications ranging from cosmetics to skincare and the improvement of thermal comfort.

An outstanding example is Mi Terro, which specializes in probiotic-infused textiles by converting agricultural waste into high-quality, low-cost, and scalable textiles (Figure 5). This innovative approach not only challenges microplastics but also maximizes the use of biomass through a blend of biopolymers and natural fibers. When it comes to incorporating herbs, SmartSilk produces bedding with a blend of silk and Aloe Vera fibers (Figure 6). Aloe Vera is known for its skin-soothing properties. Infusing these fibers into sheets and pillowcases creates a sleep environment that nurtures skin health and overall well-being. It is a good indication that this type of textile can have an industrial counterpart in terms of being quite commercial.[18]

16   Alexandra Daisy Ginsberg and Natsai Audrey Chieza, "Editorial: Other Biological Futures," Journal of
      Design and Science (2018).
17   Yvonne van der Meer, "Sustainable Bio-Based Materials: Opportunities and Challenges," in Proceedings
      of the Biotech France 2017 International Conference, Paris, France, June 28, 2017, pp. 1-5.
18   Paolo D'Olivo and Elvin Karana, "Materials Framing: A Case Study of Biodesign Companies' Web
      Communications," The Journal of Design, Economics, and Innovation 7, no. 3 (2021): 403–434.

Figure 5. Mi Terro, Bioplastic from Bio-mass (Source: www.miterro.com, 2021)

Figure 6. SmartSilk, Bedding From Silk and Aloe Vera (Source: smartsilk.com, 2022)

Venturing beyond traditional textiles, Vollebak, an avant-garde clothing line, integrates algae into its fabrics (Figure 7). The photosynthetic feature of algae enables these garments to actively contribute to air purification, fostering a microenvironment that supports respiratory health.

Figure 7. Biodegradable T-shirt Made From Plants and Algae (Source: www.fibre2fashion.com, 2020)

The scope of bio-design extends to bio-pigment production, utilizing organisms like bacteria, yeasts, fungi, and algae to naturally synthesize pigments. These pigments find applications in various industries, from textiles to cosmetics, pharmaceuticals, and food, offering novel properties beneficial for both human health and the environment.[19]

The most prominent example of this innovation continues with new dyeing applications in textiles exemplified by the new technology of the Living Colour bio-design initiative. In collaboration with ArtEZ CoE Future Makers, Wageningen University & Research and designers, they have carried out studies to improve the growth conditions and patterns, pigment quality and colour spectrum of bacteria (Figure 8).

Offering an alternative to artificial textile dyes, which are extremely harmful to the planet and human health, textile dyes derived from bacteria are used in collaboration with sportswear brand Puma to produce a collection of various moisture-absorbent natural fibres that change colour according to the season of the garment, emphasising environmental concerns as well as user experience (Figure 9).

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19   Hajiya Maryam Usman et al., "Bacterial Pigments and Its Significance," MOJ Bioequiv Availab 4 (2017):
     285–288.

Figure 8. Bacteria Dye by Living Colour (Source: livingcolour.eu, 2019)

Figure 9. Design to Fade, Living Colour & Puma (Source: designtofade.puma.com, 2020

In the field of bio-design, it is possible to analyze the social and cultural factors involved in the creation of medical and therapeutic textiles. Moreover, exploring these factors within the bio-design can reveal ways of incorporating these new-generation textiles into everyday life as a means of promoting biodiversity at a local dimension. With a better understanding of bio-design, creating new materials using scalable and responsible technologies could indirectly provide a valuable collaborative strategy for reassessing biodiversity.

Conclusion

The concept of well-being in fashion design has been closely associated with ethical and socially responsible practices. This paper argues for a comprehensive reassessment of fashion practices, addressing issues such as overconsumption, the problem of waste and material innovation. It emphasizes the need to move from a growth-oriented fashion system to one that values post-growth principles and actively promotes individual and societal well-being. The discourse extends to bio-based and bio-fabricated materials, emphasizing their importance in reshaping the fashion industry towards circularity, while the evolving role of the fashion designer is portrayed as a key player in the symbiotic relationship between design and biology. As envisioned in bio-design, to establish a collaborative working relationship with a living organism, designers need to provide a suitable growth environment. In return, the living organism will produce a material or perform a function. Designers can now grow their materials and manipulate their morphology as they grow, rather than relying on existing pre-fabricated materials.

Fashion designers in particular are demonstrating that it is possible to go beyond the traditional boundaries of their discipline in testing materials, hybridizing them with science, engineering, and biotechnology, and adopting an increasingly transdisciplinary approach. Fashion designers are now interested in the conceptualization of the material and it is becoming a real driving force and collaborator. Furthermore, exploring the scalability and responsible application of bio-design technologies in the fashion industry remains a critical area of research. Understanding how these inventions can be efficiently incorporated into everyday life by promoting biodiversity is a promising direction for further research.

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DESIGN CHALLENGES IN THE SUSTAINABLE USE OF PROPS IN SCENIC DESIGN

ELIF KARAKUŞ, DENIZ HASIRCI

Introduction

This chapter discusses the scenic design process regarding the use, transportation, and storage of props and to discuss how to apply sustainability to scenic design. In this context, there are several challenges and solutions to these challenges. The design process, the main actors in this process, design elements; selection, making, transportation, storage, and recycling of props are discussed through this paper with the help of existing literature and guidance by professionals in different fields related to scenic design.

According to Brako and Gilbert,[1] designing and building of scenery backgrounds for theatre, film, and television is called, scenic design. Theatre, film, and television scenic design have similar approaches, similar techniques, and aesthetic requirements.

The existing publications lack research on the current issues and the problems of the scenic design process in live performing arts, the use of props in contemporary performances, the challenges of the use, transportation, storage of props, and possible solutions with the help of various design strategies, and scenic design in the world and Türkiye. New insights are required in using design solutions to deal with these issues, particularly in the context of Turkish and international scenic design in performing arts.

Therefore, this paper aims to focus on scenic design in Türkiye, to discover the challenges regarding the use, transportation, and storage of props in scenic design, and to suggest several solutions such as modular design, reuse and storage of props, and the use of digital technology in design under the name of sustainability. The study focuses on the challenges regarding the use, storage, and transportation of the design materials and possible solutions to avoid the waste of materials, and how to apply sustainability to the scenic design process. Methods include interviews with professionals in this field such as digital artists, scenic designers, theatre organizations, and municipal theatres; and a survey applied to the selected scenic designers. The outcomes of the interviews explain the scenic design process in Türkiye and how it works, the challenges dealt with during a scenic design process, existing solutions for the challenges and how effective they are, the problems to be solved, and suggested solutions from the interviewed professionals and how effective they can be, individuals that are responsible during the process, the possible scenic design developments such as to find the most suitable material use for each prop, to get the lowest cost during the scenic design

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1   Daniel Kofi Brako and Samuel Johnson Gilbert, "Elements and Principles of Design in Scenic Design in
     Ghana's Most Beautiful Reality TV Show: An Aesthetic Evaluation," Journal of African History, Culture
     and Arts 2, no. 2 (2022): 83–93.

process in the most efficient way and to apply the sustainability to the scenic design focusing on modular design, reuse-storage, and digital technology in Türkiye.

Findings from meetings with municipal and private theatres and interviews with scenic designers and digital artists show that there are challenges related to the lack of professionals that are working and the budget problems in municipal theatres. Solutions, such as, work shared between existing members of a production team, to select plays with low costs, making props in the workshop of the theatre, and reuse them by storing or modifying them are created by the head of the municipal theatre and other individuals. In addition, private theatres have similar challenges, including the transportation of props. Budget, storage, and reuse of props often present difficulties that are common for both municipal and private theatres. There is lack of awareness of sustainable scenic design in Türkiye, as well as digital technology use and awareness in scenic design mainly caused by the cost.

With the help of sustainability, design strategies and digital technology, alternative solutions for material use and design process in scenic design are suggested and these solutions are compared to find the most effective solution with the help of professionals and articles. It is aimed that solutions to be gained from this study may benefit scenic designers, producers and performing artists.

Scenic Design

Scenic design is visualizing a specific scene of a performance for the audience by using design strategies. The expression that is aimed to be given to the audience is designed by a scenic designer with the help of production team members.

According to Bergfelder, Harris, and Street,[2] scenic (set) design provides a movie its unique appearance and places it in historical, social, and cultural settings. Sets help with character identification and psychological expression in addition to offering material details and environmental conditions. Sets create mood and atmosphere by working in harmony with lighting and sound design to evoke feelings that either support or contradict the story. The storytelling is greatly impacted by the perspective of scenic designer, which also affects audience perspective, spatial dynamics, color, materials, and temporal components for improved narrative coherence and flow.

Wolf and Block,[3] point out that each theatre form has its own needs. If the form is literary where the spoken words play an important part in the performance, the design visualizes the atmosphere where the event is happening at that point when the actors are having a conversation. The musical forms, including musicals or dance performances, have a scenic design which has to be comfortable for the movement of the performers. Because of the bigger

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2   Tim Bergfelder, Sue Harris, and Sarah Street, Film Architecture and the Transnational Imagination: Set Design in 1930s European Cinema in Transition (Amsterdam: Amsterdam University Press, 2007).

3   R. Craig Wolf and Dick Block, Scene Design and Stage Lighting (Stamford, CT: Wadsworth, Cengage Learning, 2014).

moves the musical performers have than the literary form theatre performers, the space has to be designed as the props will allow the performers to move freely. However, literary formed theatres also need a perfectly designed space for each movement of the performers; each second of the performance will be thought wisely and the props will be designed as they will not cause trouble with the movement of the performers. Scenic design includes stage lighting, decoration, costumes, set construction, and set placement.[4] It is the process of visualizing the script or a visual way of storytelling. There are several challenges before the design process, during the design process, and after the design process. This thesis discusses the process of the design, the actors and the elements of the design process, the challenges, the issues, and possible solutions to several problems.

Elements of Scenic Design: Props and Flats

The word "prop" is the short term for 'property' and is any object used in a performance. "Prop is defined as "any portable article, as an article of costume or furniture, used in acting a play: a stage requisite, appurtenance, or accessory.[5] The Oxford English Dictionary finds the first usage of "props" in 1841, while the singular form of "prop" appeared in 1911.

A wide variety of items essential to scenic design and performances are referred to as props. They consist of props used by actors, furnishings, and structural components of the stage like the walls and floors. These materials, which can be divided into three categories: hand props, personal props stored in costumes, and action props, all add to the overall mood, enhance actor interactions, and improve the visual story.

Props can be bought from auctions, consignment shops, retail stores, thrift shops, salvage yards, garage sales, or online marketplaces. Using pieces from a collection or stock is generally referred to as pulling.[6] Even though buying pieces may be the easiest option, the props still might need to be repainted, resized, or adapted to fit within the overall design concept and contribute effectively to the storytelling.[7] Utilizing their own inventory of a theatre can save money and give quick access to the needed props and costumes.[8] However, if an item is modified, added, or removed, the inventory needs to be updated to avoid confusion and misleading those searching for those items. If theatres build a relationship with each other, it will be beneficial for both sides since they can borrow props from each other. Collaborative prop and costume sharing among theatres, especially for smaller ones with budget constraints, reduces costs, enhances creativity, and promotes idea exchange among designers during the pulling process.

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4   J. Michael Gillette, Theatrical Design and Production: An Introduction to Scene Design and Construction, Lighting, Sound, Costume, and Makeup (Palo Alto, CA: Mayfield, 1987).
5   Andrew Sofer, The Stage Life of Props (Michigan: University of Michigan Press, 2010).
6   Amy Mussman, The Prop Master: A Guidebook for Successful Theatrical Prop Management (Colorado: Meriwether, 2008).
7   Sandra J. Strawn, The Properties Director's Handbook: Managing a Prop Shop for Theatre (Burlington, MA: Focal Press, 2013).
8   Chuck B. Gloman and Rob Napoli, Scenic Design and Lighting Techniques: A Basic Guide for Theatre (Amsterdam: Elsevier, 2007).

Gloman and Napoli,[9] examine flats by their forms: vertical and horizontal. Flats are vertical pieces that serve as backdrops or walls, while platforms are horizontal structures that provide a surface for performers to stand on. Basically, there is a need for a horizontal element for people to stand on and something vertical behind them in order to create an ideal space to tell the stories. Flats are simpler versions of walls with less structure, less cost, and less time to build. But there is more to the use of flats. To create scenery that is lighter and more portable than a wall, flats are built. Meanwhile, walls are built where they are meant to be built, flats are constructed somewhere else than they will be used, and they are stored and set up when it is required.

The process of designing a prop begins when the scenic designer closely examines the script to understand the needs for both practical and aesthetic props. Determining the quantity and significance of props for the story is guided by an extensive understanding of the script. A consistent design language is ensured by efficient communication throughout the design team. Durability, safety, authenticity, and aesthetic are all considered while choosing materials. If building is needed, the designer works with craftspeople; otherwise, props might be rented from prop houses. To guarantee operation and safety, performances are followed by extensive testing.

Props must be transported safely to avoid damage while being moved between storage, rehearsal areas, and performance sites. Prop size, quantity, and features all have a role in the choice of vehicle; little cars work well for smaller plays, while trucks or vans work well for larger ones. Careful loading and unloading are ensured by specialized personnel to prevent damage. Temperature and humidity control during transportation are essential. To avoid any delays, loading, unloading, and transportation must all be completed on time.

The storage of props is highly required to avoid the waste of stage materials and keep them for reuse in other productions. Therefore, it decreases the unnecessary use of materials to build a new prop every time. The Turkish scenic designer Serkan Kavurt (the scenic designer of the "Tatavlada Son Dans / Last Dance in Tatavla" play) states that each production has its own storage of props. The production stores the props considering the reuse of the props or the materials that the props are made of, such as fabrics, metal structure and more. The organization of the storage has to be well designed for easy access to the needed props. The other purpose of the prop storage is to avoid the mess of materials in working fields. Props are stored in a variety of sizes, from the smallest ones to huge flats. There are different ways of storing. The most common storage type is the shelf system for each type of prop or the box.[10]

Props waste is the term used to describe the incorrect treatment and disposal of props used in theatrical productions in the context of scenic design. This may involve storing an excessive amount of unneeded or extra props, as well as treating and throwing them improperly after

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9   Andy Wilson, Making Stage Props: A Practical Guide (Ramsbury, Marlborough, Wiltshire: Crowood, 2003).

10   Punished Props Academy, "How to Build a Material Storage Shelf for Prop & Costume Making Supplies," Video File, YouTube, https://www.youtube.com/watch?v=UkFaiX7aAQs, 2018.

use. The waste of props can be caused by several reasons. Scenic designers can decrease waste, lower resource consumption, and encourage more eco-friendly approaches to theatrical productions by using sustainable techniques and conscious management of props.

Sustainable Design

Shedroff [11] states that an approach to design and development known as sustainability sets a focus on environmental, social, and economic factors. Sustainable solutions aim to improve the various systems that support our way of life, including the effective use of natural resources, efficient use of capital and markets, and reduction of pollution and waste in the environment, all without negatively impacting people all over the world. Sustainability highlights practical, cost-effective solutions that benefit people, the environment, and companies. According to Shedroff, sustainability can be examined under five main topics which are reduce, reuse, recycle, restore, and process. The methods for reducing material and energy use are the focus of the reduction part. It starts with designing or redesigning process because reducing the use from the very beginning has a big impact on sustainability. Reuse focuses on methods that make products, services, environments, and mechanisms last longer to avoid unnecessary production. The life span of these elements can be extended by using smart design and engineering strategies. In order to develop products that are more easily recycled helps to prevent the unnecessary use of raw materials. However, something being recyclable does not mean that it is recycled. This process needs to be controlled to make sure the production process is suitable recycling the product. The use of a sustainable product or service is impactful; however, the storage is just as important. There is still a lot of work to do in order to make changes for the effects we have had in the past, in addition to reducing the impact the actions will have in the future. Once awareness of the methods is provided, it has to be known how to include them in the daily processes.

Hart, [12] approaches sustainability as an essential requirement in stage design. In many ways, the field of props is currently environmentally friendly. The props that would be thrown away are mostly kept and stored for future use, and especially for those who are working in low-budget productions or educational settings, recycling, reusing, repurposing, and upcycling materials are required.

Understanding Practical Applications in Türkiye

According to Schwarz and Sudman, [13] the quality of a survey depends on the answers the survey respondents provide, and through an online survey was selected for this study, it was easier to reach the needed number of participants from different places in Türkiye in a short time. The survey responses were supported by meetings and interviews with professionals to get more detailed information.

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11   Nathan Shedroff, Design is the Problem: The Future of Design Must Be Sustainable (Brooklyn, NY: Rosenfeld Media, 2009).
12   Eric Hart, The Prop Building Guidebook: For Theatre, Film, and TV (New York: Focal Press, 2017).
13   Norbert Schwarz and Seymour Sudman, Answering Questions (Hoboken, NJ: Jossey-Bass, 1996).

As a first step, the meetings with municipal and private theatres were arranged with the intent of getting general information about the production team, the scenic design process, and the challenges they face during this process. Interviews with one selected digital artist and scenic designers followed the meetings. It was aimed at getting practical information from professionals who work actively in the field.

Meetings

Municipal Theatres

Meetings were the first step of the study, so that the raw data collected from previous studies and literature determined the questions for the meetings. The first aim was to contact the municipal theatres to explore how the scenic design process is handled and who the authorities are in this process. Additionally, it was aimed to ask the challenges and their solutions if any exists. Meetings with the provincial director of culture and tourism and the head of the city theatres were arranged. The related municipality chose not to disclose its name due to privacy issues.

After the meeting, I was informed that it is a hard process to get permission to get budget information. It is stated that there is a lack of financial support for the city theatres and because of budget problems, plays with a minimum royalty rate have to be chosen, or they write their own plays that will cost the minimum. Usually, at least two plays are arranged per year, and each member of the team deals with each issue during the process. The municipal theatre of the city that is chosen for this study commonly chooses theatre plays for children since its scenic design process is the easiest and the cost is the lowest. It is also discussed that there is not a professional design team, as discussed in previous chapters. After the play is chosen by the head, with the help of a craftsman and other team members, the scenic design gets completed. Previous props are mostly stored backstage or in the prop rooms downstairs. There is not enough space for all of the properties; therefore, even the backstage is used as storage. The main issues arising from the discussion with the municipal theatre including insufficient financial support, leading to the selection of plays with the easiest and least costly design processes, a lack of a qualified and professional design team, and inadequate storage spaces for props.

Private Theatres

The status of municipal theatre directed the study to private theatre organizations. Hasan Özkaya Organization is chosen for the study. After contact with the owner of the organization, permission was given to witness the process of installation of two plays, Muhteşem İkili (The Great Duo, directed by Atilla Şendil), and Tatavlada Son Dans (Last Dance in Tatavla, directed by Berfin Zenderlioğlu). Hasan Özkaya, the owner of the organization, discussed the process for private theatres and stated several problems.

Hasan Özkaya mentioned some of the problems, such as budget limitations, lack of materials and equipment in theatres, transportation, and more. Due to the lack of financial support, the

organization has a limited budget for each theatre play. It is arranged to use a minimum of vehicles for transportation; in fact, sometimes even the actors use the same vehicle with the scenic design equipment. The technician also mentioned that the lighting designer has to consider each situation and design lighting according to it because the lighting equipment may not be enough.

The first example of an assessed theatre play is Great Duo, and the main material that is used in the play is theatre flats. Each flat has a different size, a different design, and different openings. Even though the main idea behind each flat is the same as a framed wooden flat, each piece has a unique design and gathers to create the whole background of the scenic design (Figure 1).

Figure 1. Muhteşem İkili (The Great Duo, directed by Atilla Şendil)

The process of the installation begins as the props and design elements are brought by the vehicle. Firstly, technicians measure the stage and adapt the design according to the measurement. The reuse of the scenic background of this play is possible since the materials are theatre flats, which are basically wooden frames with coverings. If the coverings are removed, it is possible to reuse the wooden frames for future plays (Figures 2, 3).

Figure 2. Muhteşem İkili (The Great Duo, directed by Atilla Şendil)

Figure 3. Muhteşem İkili (The Great Duo, directed by Atilla Şendil)

The Last Dance in Tatavla play has a political topic, and the design concept is a collapsed construction. The background of the stage was made of pieces that have a more complex design than traditional theatre flats. They have the same purpose, yet the joints are more complex.

The structure has a stone texture to represent the era when the buildings were damaged and people were forced to migrate (Figures 4, 5, 6). The damaged texture is supported by lighting to create the feeling. The designer, Kavurt, stated that this structure has a detailed calculation to keep it balanced. He also mentioned that it is hard to reuse this design considering the removal process for the elements. It has to be done wisely to use some of the elements for recycling.

Figure 4. Tatavlada Son Dans (Last Dance in Tatavla, directed by Berfin Zenderlioğlu)

Figures 5 and 6. Tatavlada Son Dans (Last Dance in Tatavla, directed by Berfin Zenderlioğlu)

The illuminated structure behind the main design represents undamaged buildings. The designer mentioned that even though it is hard to reuse the tyrofoam structure, the metal frames in the background can be used for similar purposes (Figures 7, 8). The lighting also supports the design (Figure 9).

Figure 7. Tatavlada Son Dans (Last Dance in Tatavla, directed by Berfin Zenderlioğlu)

Figure 8. Tatavlada Son Dans (Last Dance in Tatavla, directed by Berfin Zenderlioğlu)

Figure 9. Tatavlada Son Dans (Last Dance in Tatavla, directed by Berfin Zenderlioğlu)

The owner of the organization, Hasan Özkaya, faces several challenges, including a lack of financial support, insufficient materials and equipment in the theatre halls, and the need to minimize the use of vehicles due to transportation costs.

Interviews

The research questions of the study aim to find out the challenges regarding the use of props in sustainable scenic design and possible solutions to the challenges with the help of the understanding of Shedroff (2009), which is that sustainability can be examined under five main topics, which are reduce, reuse, recycle, restore, and process; digital technology use and alternative design strategies.

The first interviewee was a digital artist, Can Büyükberber, who has widely known works. The aim of the questions was to acknowledge the artist and his works, his approach to digital technology use in art and scenic design; his understanding of sustainability, and the use of digital technology in sustainable design.

According to Büyükberber, in a design process, dates are determined by the places where the art will be held, such as venues, galleries, and the like the preparation process is also considered. If the artwork is custom designed, it requires time for design, rendering, and sound design. Mutual understanding, transparency, and consensus with curators or brands are also important factors in the communication between the artist and the client. If there is a budget limitation for a new design, licensing an existing work shortens the timeline and costs less.

Through the technology called StageCraft, developed by Lucasfilm, the large-scale LED screens allow artists to create backgrounds with various environments, such as deserts or poles. Thus, once the LED screens are provided, it requires less material than a scenic design created with physical props and costs less in the long term. It also provides realistic camera movements, various reflections on actors, and real-time lighting opportunities.

Digital technology also provides communication speed. It significantly reduces logistical challenges and energy inefficiencies associated with the transportation of physical materials from one place to another.

The idea of modular design in sustainable design was inspired by the scenic design of the theatre play "Evlat" (Child). The second interview was arranged with the scenic designer of this play, Sıla Karakaya, who actively takes part in important projects in Türkiye. The questions were created in order to find out the challenges of the scenic design process, the solutions if any exist, the sustainable design approach of Karakaya, and her opinion on modular design.

The design concept was determined by the needs of the producer. According to Karakaya, It is not ethical to use one of the designs of a designer by other designers; therefore, it is not possible to create a modular design that will be utilized in different designs. However, an efficient modular design could help sustainability if it is designed wisely.

Although LED screens provide dynamic visual possibilities, because of the high cost of long-term renting, their use during theatrical tours may not be economically advantageous. However, using LED panels for one-off projects like movies and commercials seems to be more advantageous. The highlight of the discussion was the storage of the theatre flats. She suggested that a storage system for theatre flats could be efficient for sustainable design and reuse.

Survey

The survey questions are prepared in order to support the research questions of the thesis. It has nine multiple-choice questions, one with check boxes, and ten open-ended questions, for a total of twenty questions. The first question aims to find out their approach to sustainability and sustainable scenic design. The purpose of the question two through eight is to discover how aware they are of sustainable design and to what extent they implement sustainability in their design process. The following questions are aimed at getting detailed answers for sustainable design challenges and solutions.

A solution proposal that emerged from the survey results is to educate team members about sustainability and promote strong and effective communication among team members. Additionally, as mentioned by Bordelon,[14] members of the design team should be skilled in order to propose solutions for sustainability, enabling them to use materials and equipment more consciously and efficiently. Collaboration within the design team, as highlighted by Jonīte,[15] is also a crucial factor. The stronger the communication within the team, the faster sustainability recommendations can be identified, implemented, and thus, time can be saved.

Discussion and Conclusion

The primary challenges in scenic design emanate from financial constraints and a shortage of qualified professionals, resulting in restricted quality, design, and sustainability practices. Budget limitations inadvertently guide designers towards sustainable methods like reuse, recycling, and efficient storage. However, communication issues, time constraints, and restrictive guidelines impede designer's ability to fully integrate sustainability into their creations.

Storage-related challenges include inadequate space, material congestion, and a lack of systematic storage systems, leading to repeated production of items and unnecessary waste. Transportation challenges include cost constraints that encourage designers to minimize vehicles and employ lightweight, easily installable designs. While designers exhibit sustainable choices, the extent of their conscious decision-making remains uncertain, often driven by budget, supply, and space considerations. To enhance sustainability, organizing awareness events and establishing systematic storage, rental, and borrowing systems are recommended.

Survey findings and interviews underscore challenges in fitting entire play designs onto stages and ensuring stability and durability of stage elements for crew and actor safety. Custom designs can limit reusability, but exploring modular or adaptable designs is suggested for increased sustainability. However, ethical considerations regarding design limitations may arise.

The use of digital technology in stage design, particularly LED screens, is posited as a sustainable alternative, reducing material consumption and transportation energy. Nonetheless, concerns about cost and feasibility in theatre productions on extended tours temper enthusiasm for widespread adoption. The digital environment allows quick transmission of designs to distant locations, aligning with sustainability goals.

In brief, scenic design faces multifaceted challenges, necessitating a balance between financial constraints and sustainable practices. Recommendations include awareness initiatives, systematic storage solutions, and judicious exploration of digital technologies to foster a more sustainable future in scenic design.

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14 Grace Bordelon, "What Does an Art Producer Do?" Chronicle, Available at: https://work.chron.com/art-producer-do-17636.html (Accessed June 8, 2023).

15 Dita Jonīte, "Horeogrāfija Vai Scenogrāfija? Dejotāju Koris Latvijas Nacionālā Teātra Iestudējumā "Pūt, Vējiņi!"" (Choreography or Living Scenography? The Dancers' Chorus of the Production "Blow, in the Wind!" Staged in the Latvian National Theatre), Aktuālās Problēmas Literatūras Un Kultūras Pētniecībā Rakstu Krājums (Current Issues in Research of Literature and Culture) 26, no. 1 (2021): 296-309.

This study focusing on scenic design process in performing arts, dwelled particularly on the design challenges regarding the sustainable use of props in scenic design to answer the following research questions;

1. To what extent do scenic designers in Türkiye possess awareness regarding the utilization of sustainability in scenic design?

2. What design strategies do scenic designers in Türkiye employ, and what types of materials do they prefer to utilize in order to incorporate sustainability and recycling into scenic design?

Applied research method was selected for this study, which aims to find a solution for an immediate problem facing a society or an industrial or business organization.[16]

The study, initiated to address prop wastage in scenic design, sought sustainable solutions amid a lack of detailed studies in the field. Existing literature formed the basis, supplemented by data collected from professionals. The research focused on identifying reasons for the scarcity of literature and studies on the topic in Türkiye, highlighting challenges such as budget limitations, professional shortages, and issues related to prop use, transportation, and storage.

Data from literature, interviews, and surveys identified main problems as financial constraints, lack of sustainability education, theater equipment, and insufficient prop storage space. Proposed solutions involved integrating sustainable design practices, considering the historical development of scenic design, and exploring the potential of digital technology, modular design, and sustainability in the field. Meetings with theaters and professionals, including scenic designers revealed shared challenges and provided insights into the stage installation process. Sustainable solutions, including modular design, digital technology usage, and sustainable prop creation and storage processes, were recommended based on gathered data. Survey results indicated positive attitudes toward sustainability among scenic designers, despite challenges like financial constraints and inadequate storage. Suggestions included documenting stage materials, education on sustainability, effective communication, and collaboration within design teams. Digital technology and modular design were proposed as potential solutions, but their effectiveness varied based on performance requirements.

The study aimed to fill knowledge gaps in scenic design sustainability awareness. It proposed practical solutions, emphasizing documentation, education, communication, and collaboration. The findings could benefit professionals in the field and guide future research, urging a broader exploration of sustainable practices, technologies, and materials in scenic design.

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      International (P) Limited, Publishers, 2004).

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OPENING UP THE DESIGN SPACE OF THE BASIC DESIGN STUDIO

SELEN ÇIÇEK AND MINE ÖZKAR

Introduction: Hermeneutical cycle of the basic design studio

The concept of design space holds a crucial position in the theoretical landscape of computational design and engineering, yet its diverse assumptions—ranging from a mere display medium for solution alternatives to a potential interactive platform between designers and design problems—remain enigmatic. The chapter delves into the unexplored territory of the design space within educational frameworks, with a specific focus on the challenges posed by basic design studios for novice designers. By reframing the design space within the context of the basic design studio and revisiting its theoretical foundations, this exploration aims to unravel the creative potential inherent in design space as a medium for to "see-move-see" by reconstructing design problems and representing solutions. The potential strategies for generating the design space are contemplated, especially in the dynamic realm of evolving generative AI. This chapter delves into the uncharted possibilities of the design space, picturing it as a conceptual tool woven into the context of the basic studio process—a medium fostering the "see-move-see" dynamic.

Basic design studio stands as the foundation for all design related disciplines for teaching novice designers how to reason for design. Despite its crucial role, first year of design education is generally conceived as the most challenging phase of whole curriculum, when it is asked to fellow graduates. The reason behind this statement can be extended into a variety of different factors in the studio. However, the main reason and the underlying cause of previously mentioned situations might be the "design reasoning" concept, which novice designers have not been acquainted with, yet. Since the novice students have no previous design experience, to solve ambiguous design problems that are not well- defined, guiding them is significantly important in the journey of understanding the rationality behind the design process.

In a conventional studio setup, there is an inherent hermeneutical cycle between the actors: students, peers and instructors. The students, novice designers, generally lack contextual knowledge about the set-up and the content of the studio. Tacit knowledge brought by the previous education stages are not helpful enough for them either, since they usually trained to solve well-defined problems, which are often structured with singular goal and seeks for absolute truth or one-way valid answer. Having been accustomed to deriving instant solutions to those problems through pre-established methods and formulas in primary and secondary education, students are not used to question the nature of design problems or developing methodologies to address them (Figure 1).
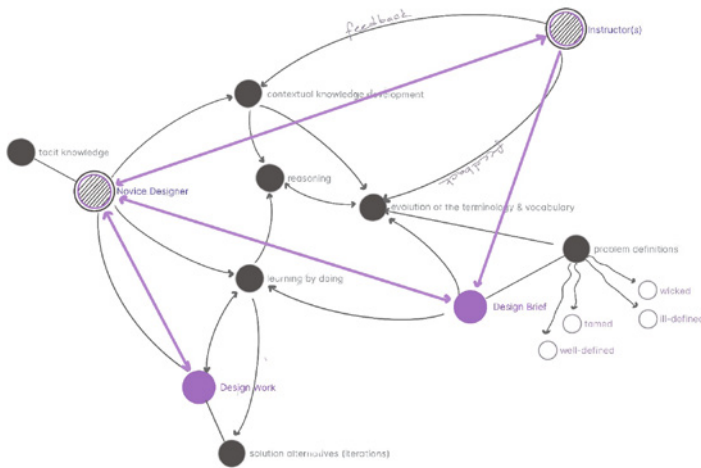
Figure 1. Proposed hermeneutical sketch of the basic design studio.

During the process of solution generation, the novice designer learns to reconstruct the design problem by the two-fold of reflective action practiced in the studio: feedback sessions with the design instructors; learning-by-doing paradigm. The design problem definitions given in the form of assignment briefs generally inherits both ill- and well-defined problems at the same time. Although the problem definitions remain same, the implicit statements delivered by the briefs get explicated by the interactions with the studio instructors during the panel critiques that held after the initial solutions are generated. Besides, the points that need to be reconsidered in those solutions get highlighted during this feedback session, which enables students to learn from their own solutions by developing them. Hence, student's tacit knowledge in the beginning, evolves into a buildup contextual knowledge by the end of the term by the explicit usage of terminology and vocabulary. This corresponds to the one of the main learning outcomes of the studio as teaching the key concepts and principles of design.

In that context, we believe that the "Design Space" might be a conceptual tool in the basic design studio set-up, for representing the reasoning process of the novice designers, not only by the generated solutions but also through the reflective practice of the studio process. Therefore, by revisiting the definitions in the concept in wide range of computational design and engineering literature, we tend to reframe the concept in an educational framework to underline the implementation potentials of the concept in the basic design studio.

Reconstruction and representation of design problems

The definitions of design as an ill-structured or wicked problem highlight distinct characteristics. However, both share a common initial conflict: the formulation of the design problem arises after specific intents or actions by the designer. This is because the ambiguous nature of the problem prevents the clear revelation of its goal and intermediate stages before any

solution attempts are made.[1] The design object and medium undergo changes as a result, with these alterations becoming apparent only through the designer's attempts. These changes extend beyond modifications in material properties that can be sensed on the design medium; they also influence the designer's perception, allowing for the recognition of new characteristics in the existing material.

Stiny[2] further explores these changes and their impact on the process within the context of shape grammar. He emphasizes the significance of change, which goes beyond visual implications, encompassing perceptual shifts introduced by the introduction of seemingly useless rules. Integrating perceptual changes into the process introduces an additional layer of ambiguity, emphasizing the need to reconstruct design problems both perceptually and visually for representation.

Design problems, characterized by ambiguity and uncertainty, are deemed essential for fostering creativity and innovation in the design processes.[3] While other fields aim to eliminate such ambiguities in the solution delivery process, design-related realms view them as creative resources for emerging applications, urging designers not to overlook or suppress them.[4] Despite this, there is recognition that designers play a crucial role in controlling these ambiguities throughout the process to systematically address the given design problem.[5] Thus, the primary objective for designers becomes the production of coherent and internally consistent design outputs, achieved by developing new methodologies to exert control without leaving room for coincidences.

Herbert Simon's approach to design as a problem-solving activity proposes a mechanism for addressing ill-defined design problems. He suggests breaking down the complexity of such problems into "smaller, more manageable sub-problems that can potentially be well-defined."[6] In Simon's terminology, the "representation" becomes pivotal for delivering solutions to ill-defined problems.

His initial assertion emphasizes that explicitly representing each stage of the interrelated design process on a visible medium enables the development of corresponding solutions. However, the limited cognitive abilities of humans hinder the representation of intermediate stages on the visual medium. This limitation prevents the easy anticipation of potential alternative answers after specific moves have been made. He illustrates this situation with the familiar analogy of an ant trying to find its way home:

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1   Newell, A., and Simon, H. A. (1972). Human Problem Solving. Englewood Cliffs, NJ: Prentice-Hall.

2   Stiny, G. (2015). "The critic as artist: Oscar Wilde's prolegomena to shape grammars." Nexus Network Journal, 17(3), 723–758. doi:10.1007/s00004-015-0274-4.

3   Goldschmidt, G., and Weil, M. (1998). "Contents and structure in design reasoning." Design Issues, 14(3), 85–100. doi:10.2307/1511899

4   Gaver, W. W., Beaver, J., and Benford, S. (2003). "Ambiguity as a resource for design." Conference on Human Factors in Computing Systems - Proceedings. doi:10.1145/642611.642653

5   Cross, N. (1993). "Science and design methodology: A review." Research in Engineering Design, 5(2). doi:10.1007/BF02032575

6   Simon, H.A. (2019). The sciences of the artificial. Ed. John E Laird. 3rd ed. Cambridge, MA: The MIT Press.

Whoever made the path, and in whatever space, why is it not straight; why does it not aim directly from its starting point to its goal?... He has a general sense of where home lies, but he cannot foresee all the obstacles between them. He must adapt his course repeatedly to the difficulties he encounters and often detours uncrossable barriers. His horizons are very close so that he deals with each obstacle as he comes to it; he probes for ways around or over it, without much thought for future obstacles. It is easy to trap him into deep detours.[7]

The ant's deviation from its path, prompted by obstacles and environmental changes, presents a dual challenge. The obstacles initially defined and those arising during the journey due to environmental shifts are key factors influencing the ant's altered route. However, these are not the sole contributors. The ant's constrained cognitive capacity to foresee future disruptions caused by the environment also significantly contributes to the deviation in its course.

Drawing an analogy from Simon's ant to the design education framework, novice designers can be likened to ants attempting to solve design problems in the basic design studio. Much like the ants, the cognitive abilities of these students are limited, hindering their ability to foresee the upcoming stages of the design process due to a lack of prior experience. The assignment briefs, serving as the design problems in the basic design studio, constitute the defined task environment. These briefs introduce disruptions on the fly, altering the designer's perception and the expected solution delivery process. Consequently, students might encounter significant detours during the process, as their learning of design is primarily experiential, lacking a structured foundation.

This strategy often defined in the educational frameworks as "learning by doing" paradigm in terms of achieving knowledge and experience through trial-and-error mechanisms which represents a crucial form of reasoning.[8] Schön defines the overall educational context of the design studio as a reflective practicum, where students learn design by actively engaging in it with guidance from the design studio instructor:

Studios are typically organized around manageable projects of design, individually or collectively undertaken, more or less closely patterned on projects drawn from actual practice. They have evolved their own rituals such as matter demonstrations design reviews desk critics and design juries all attached to the core process of learning by doing.[9]

The reflective conversation between the student and the design object gains strength through dialogue and critiques from the coach. The student becomes more adept in design reasoning during reflection-in-action. The definition of design as a reflective practice or act of making

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7   Simon, H.A. (2019). The sciences of the artificial. Ed. John E Laird. 3rd ed. Cambridge, MA: The MIT Press, p.51.

8   Schön, D. A. (1987). Educating the reflective practitioner: Toward a new design for teaching and learning in the professions. Jossey-Bass.

9   Schön, D. A. (1987). Educating the reflective practitioner: Toward a new design for teaching and learning in the professions. Jossey-Bass, p.12.

may initially appear contradictory to the problem-solving perspective of design, particularly in terms of attitudes toward the design problem-solution process. Since Simon attempts to decipher the design problem and its solution process explicitly through rationalization, whereas Schön elaborates on design as an act of making, corresponding to an implicit understanding of the essence of the design problem. Schön criticizes the neglect of essential aspects of the problem, such as inherent ambiguities and uncertainties, cautioning against reducing designing to a "process of optimization":

> (Herbert Simon's) view ignores the most important functions of designing in situations of uncertainty, uniqueness, and conflict where instrumental problem solving- and certainly optimization- occupy a secondary place if they have a place at all. In contrast, I see designing as a kind of making.[10]

Despite the initial divergence in the perspectives of two influential design researchers regarding the design process, viewed from the design education context, both attitudes towards design problems can be seen as converging. The common ground is the need for explicit or implicit clarification of design problems during the process. This clarity is crucial to empower novice designers in representing and reconstructing problems on the design medium, providing visibility for informed decision-making as in a form of "see-move-see" pattern. However, the specific medium for this convergence remains unidentified, posing a challenge in leveraging it as a tool in design education for teaching novice design students how to reason for design.

In this context, the concept of Design Space emerges as a promising medium for representing the reflective action of design occurring within the design studio, shaped by the contributions of actors in the hermeneutical cycle of the studio including students and instructors. The definitions of the design space concept exhibit significant variability across a broad spectrum of computation-related literature. Some perspectives view it solely as a display case for generated design solution alternatives, while others interrogate it as a design tool in generative application processes.[11] Despite extensive discussions on the computational structures of the concept, particularly regarding its construction and exploration, there is a scarcity of research focusing on the abilities it provides for the designer.[12]

Yet in the basic design education framework, the design space term barely finds itself a place; besides the role of it mere as a solution space, in few applications held in courses that focuses on computer-aided design. Revisiting the concept of Design Space, we navigate through its varying definitions in computational literature, emphasizing its potential as a medium for representing the reflective action of design in the studio.

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10 Schön, D. A. (1987). Educating the reflective practitioner: Toward a new design for teaching and learning in the professions. Jossey-Bass, p.41.

11 Goldschmidt, G. (2015). "The pagoda design space: extending the scope of design." In Taura, T. (Ed.), Principia Designae - Pre-Design, Design, and Post-Design. Springer, Tokyo. doi:10.1007/978-4-431-54403-6_5

12 Woodbury, R. F., and Burrow, A. L. (2006). "Whither design space?" Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 20(2), 63–82. doi:10.1017/S0890060406060057

On the Design Space

The concept of design space is characterized by imprecise metaphors and unspoken assumptions, manifesting in various forms within the design research field 10. Traditionally defined as "the aggregation of all possible design solutions in a given task," it also encompasses the evolving space of potentialities created by a designer during the design process.[13] Additionally, the design space concept is portrayed as a network representing the structure of related designs explored during the design process.[14]

While often considered a "descriptive metaphor" for collections of design ideas,[15] the concept assumes various roles across design and computation-related literature, spanning engineering, architecture, visual communication, and interactive design realms. In this context, the conceptual network graph of the design space is presented in Figure 2, with nodes corresponding to keywords found in revisited publications.

Figure 2. Graph of design space concept related contexts and keywords found in revisited publications. (Author nodes are depicted in blue, while articles written collaboratively are highlighted with light blue edges.)

13 Goldschmidt, G. (2015). "The pagoda design space: extending the scope of design." In Taura, T. (Ed.), Principia Designae - Pre-Design, Design, and Post-Design. Springer, Tokyo. doi:10.1007/978-4-431-54403-6_5

14 Woodbury, R. F., and Burrow, A. L. (2006). "Whither design space?" Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 20(2), 63—82. doi:10.1017/S0890060406060057

15 Halskov, K., and Lundqvist, C. (2021). "Filtering and informing the design space: Towards design-space thinking." ACM Transactions on Computer-Human Interaction, 28(1). doi:10.1145/3434462

In various contexts, the design space concept is emphasized with different characteristics, yet the central focuses remain largely consistent. These include capturing the activities of a designer in interacting with the conceptual space, along with generating alternative solutions for revisitation and the creation of new designs. However, recognizing the sub-spaces within the concept reveals deterministic differences regarding the role of design space in the design process, specifically whether it enables the display and interaction with the process.

One perspective considers the design space concept as a combination of problem space and solution space, viewing the design process as a binder for these subsets.[16] Conversely, another group of researchers perceives the term as exclusively forming from the solution space of alternatives generated under the design brief. Therefore, to guide the reader's understanding, it is crucial to revisit previous works in the literature dealing with the design space conception under two main groups of understandings: first, the design space as merely solution space, and secondly, design space as the reciprocal formation of problem and solution spaces (Figure 3).
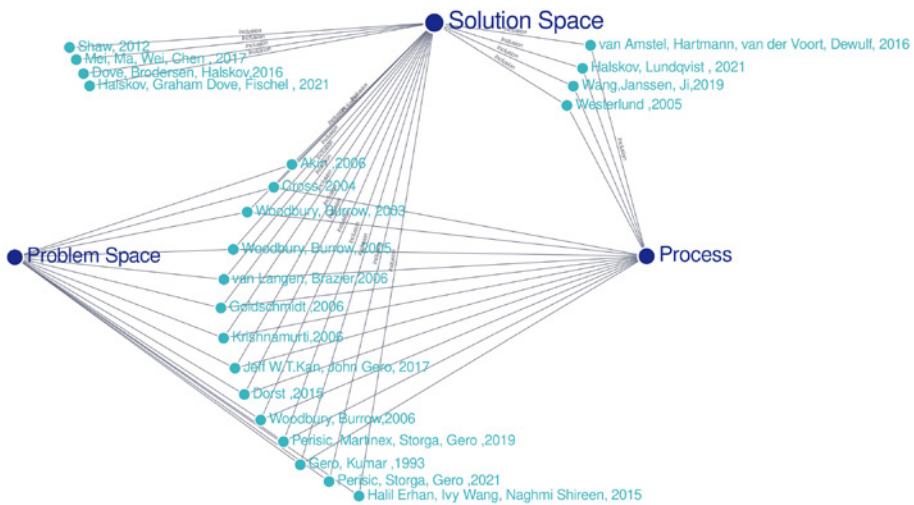
Figure 3. Inclusion of problem and solution spaces in the definition of design space concept.

16   Krishnamurti, R. (2006). "Explicit design space?" AI EDAM, 20(2), 95-103. doi:10.1017/
      S0890060406060082

Design space as mere solution space

We now dissect the dichotomy in understanding Design Space, beginning with perspectives that perceive it solely as a solution space, focusing on the display and analysis of alternative solutions.

Westerlund[17] defines this understanding as a conceptual tool for designing an explorative and experimental design process with the generated solutions. He excludes the problem space from the concept, arguing that the wicked nature of design problems prevents full exploration of the problem space even if represented in the design space. Instead, the solutions displayed in the design space encompass a variety of characteristics to articulate the essence of the design work.

In a similar vein, recent research by Halskov, Dove, and Fischel builds on the concept of design space as a display case of alternative solutions. In this research, the design space serves as a tool to construct and analyze precedent design challenges within the knowledge process.[18] They present a case study of a design space constructed with fifty-four examples from the Media Architecture Biennale. These examples are deconstructed to identify inherent common patterns of characteristics, creating a holistic design space for viewing, navigating, and filtering purposes.

Similarly, Mei et al. reconstruct the design space concept as a tool for visualizing a literature review on information visualization tools.[19] They classify cases in the literature, constructing the design space medium based on predefined dimensions such as degree of abstraction, presentation medium, supported data source, and action type.

Design space as combination of problem and solution spaces

Shifting our focus, we explore perspectives that incorporate both problem and solution spaces within Design Space, aligning with the iterative nature of design problems and the coevolution of solution spaces. Dorst[20] notes that since the process aims to deliver a design solution, the solution space coevolves with the problem space. Design research theorists suggesting the problem space as inherent imply that the defined problem's iterative reconstruction alters or enhances the generated set of alternatives in the solution space in terms of quantity and quality.

17   Westerlund, B. (2005). "Design space conceptual tool – grasping the design process." In Binder, T., & Redström, J. (Eds.), Nordes 2005: In the making, 29-31 May, Royal Danish Academy of Fine Arts, Copenhagen, Denmark.

18   Halskov, K., Dove, G., and Fischel, A. (2021). "Constructing a design space from a collection of design examples." She Ji: The Journal of Design, Economics, and Innovation, 7(3), 462–484. doi:10.1016/j.sheji.2021.07.001

19   Mei, H., Ma, Y., Wei, Y., and Chen, W. (2018). "The design space of construction tools for information visualization: A survey." Journal of Visual Languages & Computing, 44, 120–132. doi:10.1016/j.jvlc.2017.10.001

20   Dorst, K. (2015). "Frame creation and design in the expanded field." She Ji, 1(1), 22–33. doi:10.1016/j.sheji.2015.07.003

Cross[21] ties the ambiguous nature of design problems to the difference between expert and novice designers. Novice designers, lacking experience, struggle to deliver solutions to unclearly formed problems, limiting the solution space. Cross explains the designer's exploration and discovery process in exploring the problem space and generating initial ideas for the solution space.

Woodbury and Burrow[22] align with Cross's perspective, emphasizing the importance of representing the problem space in their keynote article on understanding the structure of the design space. They underscore the significance of enabling designers to generate new designs by navigating among previously discovered ones in the network. This involves moving among examples in the problem space to create new solutions, aligning with the see-move-see pattern of understanding the design process. Designers often build upon previous moves during reflection-in-action, so seeing a variety of alternatives in the problem space expands the solution space when both are represented. Computational structures aid in representing the vast set of alternative problem reconstructions in the design space.
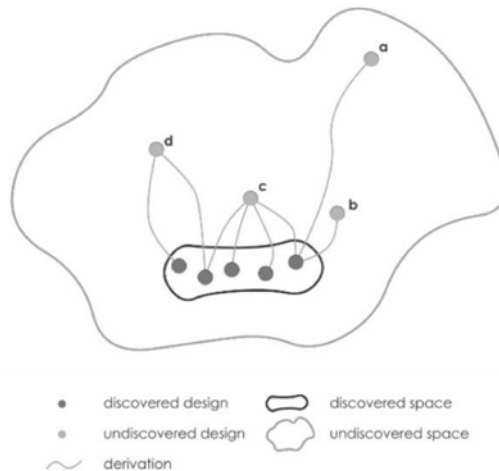
Figure 4. Boundaries of the design process. (Woodbury, R. F., & Burrow, A. L.; 2006)

Dennet[23] clarifies that this vastness is valuable when designers can access "unsound" designs from potential points in the contingent historical accounts defined in the space. In this context, "unsound" refers to ambiguities arising in the process due to perceptual and visual changes. These ambiguities, challenging to represent clearly, might be valuable in the design space concept for reaching unsound, creative, undiscovered solutions. (Figure 4).

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21   Cross, N. (1982). "Designerly ways of knowing." Design Studies, 3(4), 221-227. doi:10.1016/0142-694X(82)90040-0
22   Woodbury, R. F., and Burrow, A. L. (2006). "Whither design space?" Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 20(2), 63–82. doi:10.1017/S0890060406060057
23   Dennet C. Daniel. (1995). Darwin's Dangerous Idea: Evolution and the Meanings of Life. Simon & Schuster.

As both researchers suggest, amplifying the number of solutions is possible by viewing design space as inseparable from the problem space.

Goldschmidt[24] adds that the designer's movement among previously generated solutions in the design space not only offers crucial feedback on solutions but also highlights the design process. Emphasizing design reasoning and interconnected links, Goldschmidt underscores the need to consider non-represented actions in both problem and solution spaces for a comprehensive understanding of the design space, including the process.

In agreement, Ömer Akın, responding to the same keynote article, points out tasks still incomplete in the design space framework drawn by Woodbury and Burrow.[25] He highlights that the non-graphic content of a design, often considered in the context of design requirements, which we can recall as design problems, are not yet adequately represented on the medium itself.

Van Langen and Braziers elaborate on the design space concept, incorporating problem and solution space under three subsets of the design process: partial descriptions of design artifacts, the space of design requirements, and the space of design objectives.[26] 20. Design requirements and design objectives can be viewed as outliers of the problem space, defining characteristics of the given design brief, while partial descriptions of generated design artifacts align with the solution space.

Beyond theoretical debates on the design space concept, practical research in the literature aims to establish a solid connection between problem and solution spaces. Erhan et al. propose a methodology for discovering "unsound" alternatives by enabling designer interaction with many alternatives in the design space through similarity-based exploration.[27] They model a task environment encompassing both problem and solution space, allowing dynamic alterations in the problem space, leading to an immediate expansion of the solution space.

Perisic, Martinec, Storga, and Gero present results from a computational design experiment on design teams, demonstrating the effects of experience in exploring problem and solution spaces.[28] Aligned with Nigel Cross's perspective, they assert that accumulated experience in design space exploration aids in developing solutions to design problems more efficiently, and ongoing collaborative work enhances the design situation. Their agent-based simulation experiment provides solid evidence for the process of design space expansion.

24   Goldschmidt, G. (2006). "Quo Vadis, design space explorer?" AI EDAM, 20(2), 105–111. doi:10.1017/
       S0890060406060094

25   Akin, Ö. (2006). "The whittled design space." AI EDAM, 20(2), 83–88. doi:10.1017/
       S0890060406060069

26   van Langen, P. H. G., and Brazier, F. M. T. (2006). "Design space exploration revisited." AI EDAM, 20(2),
       113–119. doi:10.1017/S0890060406060100

27   Erhan, H., Wang, I. Y., and Shireen, N. (2017). "Harnessing design space: A similarity-based exploration
       method for generative design." International Journal of Architectural Computing, 12, 217-236.
       doi:10.1260/1478-0771.13.2.217.

28   Perisic, M. M., Štorga, M., and Gero, J. S. (2021). "Computational study on design space expansion
       during team collaboration."

Gero and Kumar address the introduction of new design variables and constraints to the problem space, showcasing how new solution spaces emerge.[29] They illustrated this through various design experiments in contexts like mathematical problem spaces conducted on Cartesian geometry, small-scale housing design, and structural beam design. These experiments demonstrate the expansion of solution spaces by adding new constraints to the problem space.

Discussion: How to generate the design Space of the basic design studio?

In exploring the intricate perspectives surrounding the concept of Design Space, our journey aligns with the iterative nature of design problems and the coevolution of solution spaces. As we delve into this intrinsic connection between problem and solution spaces, particularly emphasized in delivering a design solution, its paramount relevance surfaces in the context of basic design education. Novice designers, reminiscent of Simon's ants navigating uncertain terrains,[30] grapple with unclearly formed problems, amplifying the significance of understanding and navigating the problem space to expand the solution space.

The struggle faced by novice designers underscores the pivotal importance of representing the problem space. This becomes indispensable in creating a dynamic network for designers to move among examples, fostering a see-move-see pattern. This journey, navigating from theoretical discussions to practical applications, reinforces the role of design space as a crucial medium for enriching design thinking and enhancing the reasoning skills of design students in the foundational stages of their education.

As we draw a framework for the design space concept in the basic design studio context, the inevitable need arises for its definition as a combination of problem and solution spaces. However, this reframing not only highlights forthcoming inquiries but also raises intriguing questions. How do we create this design space, and on which medium? What could be the instruments for generating the design space in the context of basic design studio practices in the age of generative and computational design? Assuming it would contribute to the process of the student's reasoning during the studio procedure; would it be possible also contribute to the individual processes in the studio collectively?

Various applications could potentially represent the problem and solution spaces of a basic design studio computationally during the process. Rule-based systems like shape grammar prove effective in generating complex forms and patterns, making them suitable for educational design studio setups. However, their limitations become evident when design problems lack explicit rules or objectives. Additionally, they often confine novice designers to a single visual domain, presenting challenges in reconstructing design problems into a visual medium through their own interpretation.

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29   Gero, J. S., and Kumar, B. (1993). "Expanding design spaces through new design variables." Design Studies, 14(2), 210–221. doi:10.1016/0142-694X(93)80048-Hesign variables. Design Studies, 14(2), 210–221. doi:10.1016/0142-694X(93)80048-H

30   Simon, H.A. (2019). The sciences of the artificial. Ed. John E Laird. 3rd ed. Cambridge, MA: The MIT Press.

In the current state of the art, generative AI models might offer more potential in our context. These models can generate novel solution instances by analyzing and synthesizing hidden patterns in diverse data domains, without requiring a predetermined structure of rules or algorithms. Text-to-image generative AI models, such as diffusion models (DM), could efficiently reconstruct and reinterpret the ambiguities of design problems while representing solutions. The computational architecture of natural language processing (NLP)-based text-to-image DM aligns with the assignment-based, learning-by-doing educational model of the basic design studio.

To conclude, generating a design space that not only represents combinatoric outputs of solutions but also inherits the given design problem inputs can aid novice designers in acquiring design reasoning strategies. The implementation of generative AI holds potential that have not been fully estimated yet. Imagine the AI model as a computational peer in the basic design studio, interpreting design problems faster than the "ants," iterating a vast set of solutions. Regardless of the performance of solution alternatives in answering the design problems given in the briefs, it would expand the solution space of the basic design studio. With a controlled selection of solution alternatives for discussion in panel sessions led by design instructors, individuals can learn by observing a myriad of solutions to the same problem. Hence, they can move on to their organic solution generation processes, according to see-move-see pattern,[31] guided by the collective interpretation gained through exposure to the expanded design space of the basic design studio.

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DESIGN FACTORY MODEL BASED ON DESIGN THINKING A LOCAL CASE: IZMIR DESIGN FACTORY

HANDE YILDIZ ÇEKINDIR

Introduction

The dynamic landscape of collaborative innovation between academia and industry finds a poignant reflection in the inception and evolution of Design Thinking, culminating in the establishment of Design Factories. This paper provides an extensive exploration of the historical roots, theoretical foundations, and practical applications of Design Thinking in higher education, particularly within the context of Izmir Design Factory. Izmir Design Factory, stemming from a thorough examination of university-industry collaborations in Izmir, aspires to bridge the gap between academic pursuits and practical needs, steering towards a culture of collaborative production. By drawing upon the principles of Design Thinking, Izmir Design Factory catalyzes a co-creation ecosystem, emphasizing inclusivity, sustainability, and innovation. The paper delves into Izmir Design Factory's comprehensive framework spanning education, research, and design initiatives, showcasing its endeavors in fostering interdisciplinary collaboration, skill development, and problem-solving. Furthermore, it elucidates Izmir Design Factory's unique positioning, its evolution, and its vision to forge local-global partnerships that empower regional development while driving global competitiveness. Amidst the global network of Design Factories, Izmir Design Factory stands as an exemplar, leveraging its unique model to catalyze impactful change and cultivate a culture of innovation, collaboration, and sustainable growth.

Design Thinking

The recognition of design as a formal discipline and the inception of design thinking traces back to the 1960s. Initially rooted in architecture, design, and art, the concept gradually expanded into management practices. In academic circles, the term gained prominence roughly thirty years ago, initially associated with the cognitive processes of designers. The phrase "design thinking" was first employed by Rowe in 1987 in his book titled "Design Thinking," though Simon's analysis[1] of design's nature predated this terminology introduction by eighteen years.[2] Cross delved into "Designerly Ways of Knowing" in 1982 and 2001, outlining disparities among design, science, and humanities-based on phenomena, methodologies, and values. He characterized design as a discipline and delineated five facets of designerly ways of knowing: addressing 'ill-defined'[3] problems, adopting a 'solution-focused' problem-solving

1   Herbert A. Simon, The Sciences of the Artificial (Cambridge, MA: The MIT Press, 1969).
2   Ineta Luka, "Design Thinking in Pedagogy," Journal of Education Culture and Society 5, no. 2 (2014): 63-74, https://doi.org/10.15503/jecs20142.63.74.
3   Nigel Cross, "Designerly ways of knowing," Design Studies 3, no. 4 (1982): 221–227, https://doi.org/10.1016/0142-694x(82)90040-0.

approach, employing 'constructive' thinking patterns, utilizing 'codes' to transform abstract requirements into tangible entities, and employing these codes for both 'reading' and 'writing' in 'object languages'.[4]

Design Thinking's theoretical perspectives have been classified into five distinct sub-discourses: firstly, design thinking is perceived as the creation of artifacts; secondly, it is viewed as a reflective practice. Schön[5] criticized Simon's perspective of a 'science of design' for its focus on resolving well-defined problems, highlighting the discrepancy with the practical complexities encountered in design and technology fields, emphasizing the need for coping with 'messy, problematic situations.' Cross characterized design as a "reflective practice," navigating uncertainty, instability, uniqueness, and conflicts in values.[6] Thirdly, design thinking is seen as a problem-solving endeavor; fourthly, as a mode of reasoning or sense-making; finally, design thinking is regarded as the generation of meaning.[7]

Design Thinking, in essence, involves a process encompassing problem identification, creative solution generation, and implementation.[8] Tim Brown, CEO of IDEO, defines it as a human-centered innovation approach leveraging design tools to integrate people's needs, technological possibilities, and business requirements.[9] This method begins with diverse individuals collaborating to explore problems empathetically, fostering a shared mindset through varied perspectives. It aims to uncover optimal ideas through iterative prototyping and testing, subsequently planning and executing the chosen idea's implementation, and offering innovative solutions via creative thinking techniques.[10] Design Thinking serves as a fundamental innovation mindset, reflecting the evolving cultural landscape of corporations, governmental bodies, and organizations.

As seen in the historical, theoretical, and business background of "design thinking," the term encompasses different definitions. These definitions include design thinking as an education approach, an educational model, a learning model, and a metadisciplinary concept. However, despite the variations in terminology, all of these definitions share a common focus on the use of multidisciplinary teams and the active involvement of diverse perspectives.

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4   Donald Schön, The Reflective Practitioner: How Professionals Think in Action (New York: Basic Books, 1982).
5   Nigel Cross, Designerly Ways of Knowing: Design Discipline Versus Design (2001).
6   Ulla Johansson-Sköldberg, Jill Woodilla, and Mehves Çetinkaya, "Design Thinking: Past, Present and Possible Futures," Creativity and Innovation Management 22, no. 2 (2013): 121–146, doi:10.1111/caim.12023.
7   David Kelley and Tom Kelley, Creative Confidence: Unleashing the Creative Potential Within Us All (IDEO, Crown Business, 2013).
8   Tim Brown, Change by Design (IDEO, Harper Collins, 2009).
9   IDEO, Design Thinking for Educators (IDEO, 2012).
10   Ingo Rauth, Eva Köppen, Birgit Jobst, and Christoph Meinel, "Design Thinking: An Educational Model towards Creative Confidence," First International Conference on Design Creativity, ICDC 2010, 29 November - 1 December 2010, Kobe, Japan, 2010.

Design Thinking in Higher Education

In education circles, design thinking is sometimes termed as "design-based learning," recognized as a model that enhances creativity, engagement, endurance, and innovation. Its pedagogical benefit lies in empowering students to effectively collaborate in multidisciplinary teams, instigating positive, design-driven change globally. Design thinking, perceived as a problem-solving approach, addresses everyday challenges.[11] Within the realm of education, Design Thinking (DT) emerges as a valuable tool, fostering the development of twenty-first-century skills during the teaching and learning process. It emphasizes collaborative problem-solving, integrating real-world considerations, user experiences, feedback, and the application of creativity, critical thinking, and communication.[12]

Alongside the widely recognized 4C's (Collaboration, Communication, Critical thinking, Creativity), the '7Cs' framework proposed by Trilling and Fadel in 2009 encompasses crucial skills including Critical thinking and problem-solving, Creativity and innovation, Collaboration, teamwork, and leadership, Cross-cultural understanding, Communications, information, and media-literacy, Computing and ICT literacy, Career and learning self-reliance. This comprehensive framework offers a holistic suite of skills vital for success in today's rapidly evolving and interconnected society.[13]

The inclusive approach of the Design Thinking mindset has been applied across diverse disciplines for years to address global challenges comprehensively. Universities have increasingly established design thinking institutes to equip students with essential skills in creative problem-solving and collaboration, aspects often underemphasized in traditional education.[14] Notably, institutions like Stanford and Potsdam established d.schools, with Stanford originating the concept in 2005 and a sister institute in Potsdam, Germany, opening in 2007, spurred by Hasso Plattner's sponsorship. Initially, both institutions collaborated with IDEO, a design consultancy, to instruct design thinking, emphasizing education tailored for non-designers.[15]

Leveraging design thinking in higher education is a logical choice due to its myriad potential benefits. Universities offer rich collaborative environments, fostering multidisciplinary teams that amalgamate diverse perspectives, allowing for both competitive and complementary approaches to problem-solving.[16]

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11   Luka, "Design Thinking in Pedagogy".
12   Bernie Trilling and Charles Fadel, 21st Century Skills: Learning for Life in Our Times (San Francisco, CA: John Wiley & Sons, 2009).
13   Jan Von Thienen, Alexander Royalty, and Christoph Meinel, "Design Thinking in Higher Education," in Handbook of Research on Creative Problem-Solving Skill Development in Higher Education, Advances in Higher Education and Professional Development, 306-328, doi:10.4018/978-1-5225-0643-0.ch014, 2017.
14   Rauth, Köppen, Jobst, and Meinel, Design Thinking: An Educational Model towards Creative Confidence.
15   Tua A. Björklund, Teo Keipi, Sine Celik, and Kalevi Ekman, "Learning across silos: Design factories as hubs for co creation," European Journal of Education 54, no. 4 (2019): 552–565, https://doi.org/10.1111/ejed.12372.
16   Tua A. Björklund, Teo Keipi, Sine Celik, and Kalevi Ekman, "Learning across silos: Design factories as hubs for co creation," European Journal of Education 54, no. 4 (2019): 552–565, https://doi.

The Design Thinking approach has an iterative process consisting of basic five steps: empathize, define, ideate, prototype, and test. The process has divergent phases for creating choices and convergent phases for making choices. Students from different disciplines develop solutions to real-life problems by using a certain set of processes and methods. In this process, learning is created through reflection. Thanks to its application-oriented structure, it is aimed that the participants will be able to define this mindset and DT process by themselves and apply the methods to their personal and professional lives at the end of the process.

The Place for Design Thinking in Higher Education: Design Factory Model

Amidst evolving interdisciplinary challenges and competitive landscapes, contemporary universities seek to address stakeholder complexities through collaborative innovation. Innovation hubs exemplify the public sector's response, including higher education, in embracing new methods and perspectives to stimulate intra-institutional change. Models like the Design Factory epitomize these platforms, employing design thinking as an approach, tool, or cultural framework. They aim to foster user-centered creative problem-solving and innovation through experimental methodologies. These initiatives aim to enhance collaboration efficacy across organizational silos, empower innovative units with autonomy, and promote unconventional creative strategies beyond traditional institutional structures.[17]

The foundations of the Design Factory are based on the establishment of the structure, which was initially called Innovation University, but later named Aalto University, which was established by the three best universities of the country in Finland at the beginning of 2010. This structure, formed by the union of Helsinki University of Technology (HUT), Helsinki School of Economics (HSE), and University of Art and Design Helsinki (UIAH), is based on the development of multidisciplinary and interdisciplinary education and research.[18] The global Design Factory models, which provide education with various programs in this field by bringing the academy and industry together, especially at the undergraduate and graduate levels, are becoming more widespread. In the Design Factory model, students from different disciplines develop alternative solutions to the real problems of companies in multidisciplinary teams with the active support of both academic coaches and mentors from the industry. Here, with the facilitation of the design factory structure, knowledge is transformed into applicable products, services, or systems, and a different learning experience is developed for students.[19] Design Factories serve as hubs that enable intricate networks involving diverse stakeholders such as students, educators, researchers, administrators, and leaders across various disciplines, departments, and educational institutions. These networks extend to external stakeholders,

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org/10.1111/ejed.12372.

17   Esra Gönen and Can Güvenir, "Tasarım Odaklı Düşünce ile Üniversite Sanayi İşbirliği Modeli," Business and Organization Research Izmir (International Conference), 4th-6th September 2019, Yaşar University, 2019.

18   Esra Gönen and Can Güvenir, "Tasarım Odaklı Düşünce ile Üniversite Sanayi İşbirliği Modeli," Business and Organization Research Izmir (International Conference), 4th-6th September 2019, Yaşar University, 2019.

19   Björklund, Keipi, Celik, and Ekman, Learning across silos: Design factories as hubs for co-creation.

encompassing entrepreneurs, industries, NGOs, governmental bodies, funding agencies, as well as other educational and research entities.[20]

Along with applying Design Thinking as a mindset to the education system in diverse institutions worldwide, global networks have been created in the DT focus, which enables common applications, and thus, similar approaches have been spread around the world. Design Factories, that have adopted the common Design Thinking approach, are gathered under three main networks worldwide: Design Factory Global Network (DFGN), Global Design Thinking Alliance (GDTA), and Sugar Network. The Design Factory Global Network (DFGN) comprises 37 innovation hubs located within universities and research organizations worldwide. The participating members range from research and applied science universities to research institutions and infrastructure. The network's objective is to drive transformation in learning and research by cultivating a culture centered around passion and promoting efficient problem-solving. Through a shared understanding and standardized approach to their work, the Design Factories within the network collaborate effectively across diverse cultures, time zones, and organizational structures to foster groundbreaking innovation.[21] The HPI D-School, in collaboration with ten international educational institutes, establishes the Global Design Thinking Alliance (GDTA). This alliance consists of a network of institutions dedicated to teaching, researching, and advancing the methods and mindsets of Design Thinking. With 32 member institutions across 22 countries and five continents, the GDTA fosters collaboration and innovation on a global scale.[22] SUGAR is a worldwide network that facilitates collaboration between corporate partners and students from 24 universities across four continents. This cross-international setting enables students to learn human-centered design tools through a hands-on, practice-based approach over the course of an academic year. Working in global student teams, they engage in prototyping, testing, and iterative processes to address real design challenges presented by multinational corporate sponsors. Emphasizing the importance of knowledge sharing and education, SUGAR organizes global events that create an ideal environment for students and corporate sponsors to exchange ideas and experiences.[23]

The members of the network operate under a shared philosophy and principles, offering a familiar Design Factory environment to their respective local communities. These Design Factories have their home institutions and play a crucial role in higher education by addressing the challenges of integrating new approaches within well-established organizations. They act as change agents, promoting design-based learning as a means to drive innovation in higher education. By embracing the principles of Design Thinking, these institutions foster a culture of creativity, collaboration, and problem-solving. According to Jessop et al., the concept of "place" symbolizes the local and traditional, while "location" or "space" represents the global and modern.[24] Agnew also suggests that place can be seen as a node within space,

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20   Design Factory Global Network, n.d., https://dfgn.org/.

21   Design Factory Global Network, n.d., https://dfgn.org/.

22   SUGAR Network, n.d., https://www.sugar-network.org/network/.

23   Bob Jessop, Neil Brenner, and Martin Jones, "Theorizing Sociospatial Relations," Environment and Planning D: Society and Space 26, no. 3 (2008): 389-401, https://doi.org/10.1068/d9107.

24   Agnew, John, and David Livingstone. "Space and Place." Handbook of Geographical Knowledge. London: SAGE Publications Ltd., 2011. https://doi.org/10.4135/9781446201091.

emphasizing the interconnectedness between the local and the global.[25] In the context of
Design Factories, DFs can be considered local places, serving as specific physical locations
where innovation and learning take place. On the other hand, the network of Design Fac-
tories represents a global space, connecting these local places and enabling collaboration
and knowledge exchange on a broader scale. This combination of local DFs and the global
DF network highlights the significance of both place and space in fostering innovation and
education (Figure 1).
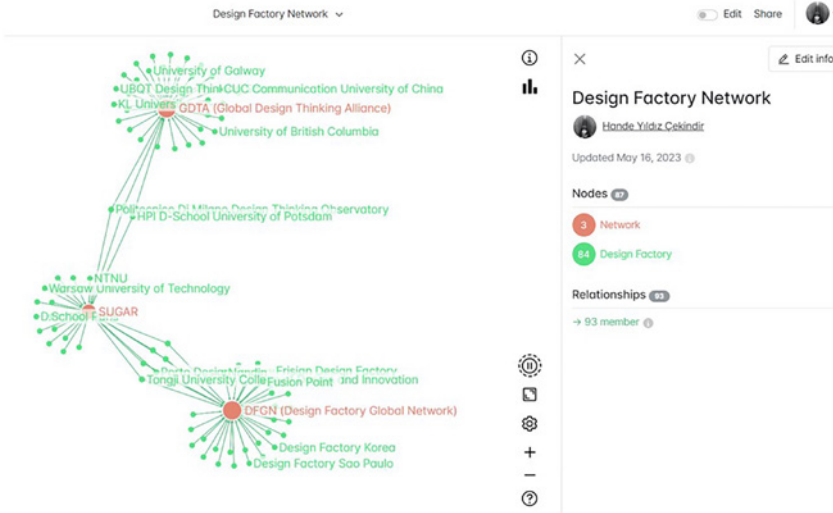
Figure 1. Design Factories (local places) as nodes in Global Networks (global spaces), created by author

Design Factories function as central hubs facilitating complex networks that engage a wide
array of participants, including students, educators, researchers, administrators, and pro-
fessionals across multiple fields, departments, and academic organizations. These networks
also involve external stakeholders such as entrepreneurs, industries, non-governmental orga-
nizations (NGOs), government entities, funding agencies, and additional educational and
research institutions.[26]

A Local Case: İzmir Design Factory[27]

The formation of Izmir Design Factory was the result of interviews and research conducted
with industry and university representatives in Izmir. These studies revealed that the number
of university-industry collaborations in Türkiye is low and the success rates are low. The reason
for this is the lack of a common production culture and the difference between academic

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25   Björklund, Keipi, Celik, and Ekman, Learning across silos: Design factories as hubs for co   creation.
26   The information in this chapter is mostly compiled by the author, who has been working as a researcher,
     facilitator and assistant at Izmir Design Factory since 2019.
27   Gönen and Güvenir, Tasarım Odaklı Düşünce ile Üniversite Sanayi İşbirliği Modeli.

and practical perspectives and expectations. Design thinking was identified as an important approach to meeting changing technology needs. It was thought that this approach could bring a productive culture to stakeholders from different disciplines and expectations. For this reason, the Design Factory model, which is built based on design thinking, was brought to the agenda as a proposal for improving the production culture of university-industry collaborations. Within this framework, literature research was conducted on university-industry collaborations in Türkiye, the Design Factory model, and the design thinking education structure. In addition, interviews were conducted with Izmir Industry and University units to identify local needs and problems. In addition, field research and interviews were conducted with Aalto and Porto Design Factories for the Design Factory model. As a result, the Izmir Design Factory model, which is localized with a global perspective, was proposed as a model that aims to create a collaborative work culture, develop market-oriented products and project ideas, and industrial development in Izmir. This model aims to increase collaboration and productivity between Izmir's industry and universities.28[28]

In 2019, following the visit to Aalto Design Factory (ADF) and Porto Design Factory (PDF) in 2017, Izmir Design Factory was established as an EU-funded project by localizing the design factory model, which is a university-industry collaboration model. It aims to be an interface for initiating collaborations based on Education, Research, and Design to fulfill the qualified workforce needs and project needs with high-added local stakeholders to strengthen competition in the global market through local and international partnerships. Izmir Design Factory aims to ensure the active contribution of the knowledge in the academy to the industry and to reinforce the current knowledge of the students and the academy with the current experiences in the industry with the training to be organized in collaboration with the university and the industry (Figure 2).

The model, which is aimed to be a catalyst for the formation and dissemination of a regional co-production culture, is thought to be in a neutral position, equidistant from every university, industry, and institution, and also to be able to offer global solutions to local needs by creating regional and local design factory models instead of creating a center in the dissemination strategy.[29] For this reason, Izmir Design Factory is an important local example that has not yet taken its place in the global network and distinguishes it from other global examples by not using a specific physical space. Izmir Design Factory is a flexible platform associated with

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28   Gönen and Güvenir, Tasarım Odaklı Düşünce ile Üniversite Sanayi İşbirliği Modeli.

29   The information in this chapter is mostly compiled by the author, who has been working as a researcher, facilitator and assistant at Izmir Design Factory since 2019.

universities, the private sector, professional chambers, and non-governmental organizations in Türkiye. It has a multi-stakeholder structure with various national and international collaborations with institutions such as: Originn Coworking, EFTA, Porto Design Factory, Yaşar University, Matera Hub, ESİAD (Aegean Industrialists and Business Association).

The core values of Izmir Design Factory, rooted in the Design Thinking mindset, revolve around co-creation, life-centeredness, and inclusiveness. Izmir Design Factory fosters a community where individuals contribute while embracing cooperation, participation, and a culture of sharing. It aims to inspire innovation by sharing knowledge and experiences and nurturing a curious and creative atmosphere. Not limited to human-centric concerns, Izmir Design Factory holds responsibility towards all living beings and the environment. Sustainability and environmental consciousness are pivotal, ensuring a focus on future value creation. Under Izmir Design Factory 's umbrella, everyone acknowledges their responsibility towards themselves, the team, the community, and the world. As a collaborative platform, Izmir Design Factory emphasizes coordination, unity, and shared action. Its adaptable and flexible structure allows rapid adaptation, inclusivity, and growth. Drawing from diverse disciplines and experiences, Izmir Design Factory maintains a constantly evolving structure rather than a rigid one, believing in the collective strength of local elements.

Activities of Izmir Design Factory: Education, Research, And Design

Through its activities based on education, research, and design, Izmir Design Factory provides collaboration opportunities, allowing universities to integrate into a broad industrial network while contributing to students' applied learning by offering practical experiences and research opportunities. At the same time, it diversifies job opportunities, while for stakeholders, it strengthens the corporate image and provides benefits such as innovative collaborations and increased user experience. It provides easier access to human resources and offers advantages such as target audience analysis and creative network expansion.

Education

İzmir Design Factory adopts Design Thinking (DT) as its fundamental approach, applying it extensively within educational experiences. DT, an interdisciplinary, human-centered creative methodology, addresses diverse educational goals, becoming increasingly prevalent globally due to its adaptability to contemporary needs. Izmir Design Factory doesn't limit itself to specific design realms; instead, it integrates design principles into broader frameworks. It emphasizes empowering participants to tackle problems and enhance existing conditions.

Izmir Design Factory designs and executes interdisciplinary training programs, aiming to introduce DT to local and wider audiences, enabling individuals and institutions to integrate DT into their professional and daily lives. Collaborating with universities and industries, Izmir Design Factory focuses on co-designed educational programs to create a shared language accessible to people of all ages and fields.

Through university-industry collaboration, Izmir Design Factory ensures the exchange of knowledge between academia and industry while enhancing students' experiences and knowledge. In-house training fosters a motivated workforce, empowering their solution-oriented abilities and collaborative skills, thereby contributing to regional development.

One significant initiative by Izmir Design Factory is an undergraduate Design Thinking course in collaboration with Yaşar University and Originn. This learner-centered course adopts a hands-on, participatory approach to foster self-awareness, problem-solving skills, and teamwork within a diverse community. Participants engage in projects addressing both daily and stakeholder-related issues, exploring various perspectives, and proposing solutions. The course covers 15 weeks consisting of an exercise project and a partner project with the team-facilitator-partner collaboration.

The course has adapted the Design Thinking mindset in terms of people, place, and process approach. While 'people' -students, facilitators, instructors, research assistants, partners, mentors- and 'process' -non-linear Design Thinking process- have been stable during the course, 'place' is different as physical and virtual environments. The one-semester inter-disciplinary Design Thinking learning process in higher education, designed as a part of an EU-funded project has been applied in three different places: university campus, coworking space, and virtual environment in the 2019-2020 spring term. The course process started on the university campus. It continued in a local co-working space to experience the Design Thinking process in a more creative environment rather than the regular space for education. In the pandemic period, it turned completely digital as a result of not being able to use the physical space, and the learners completed the process using different online platforms (Figure 3).

In the inaugural 2019-2020 academic year spring semester, the course engaged 54 participants from 13 disciplines across 3 universities, completing several practice and partner projects. The subsequent course in the 2020-2021 academic year fall semester involved 29 participants from 8 disciplines across 5 universities, focusing on sustainability-related projects for stakeholders like Viessmann Germany and local food communities in İzmir and Istanbul. These projects targeted diverse challenges such as sustainable air conditioning and food community sustainability.

Research

Izmir Design Factory, born from comprehensive research, aims to address challenges prevalent in university-industry collaborations. Key elements like communication, collaboration, inquiry, and creativity were identified as crucial for sustainable partnerships. It fosters a flexible, inclusive, and community-driven structure catering to individuals and institutions to ensure enduring value. Operating in a non-hierarchical, ever-evolving environment, Izmir Design Factory encourages engagement among students, educators, researchers, and professionals. Emphasizing multidisciplinary efforts, it serves as a hub for design, education, research, and academic inquiry. By bringing together diverse researchers, Izmir Design Factory F contributes to regional development by fostering an R&D culture. By uniting professionals from varied fields, Izmir Design Factory aims to merge practical expertise with theory, continually evolving its offerings. This amalgamation of diverse expertise ensures Izmir Design Factory 's sustained growth and development.

Design

Izmir Design Factory prioritizes communication, collaboration, inquiry, and creativity within its creative community, emphasizing the need for a skilled workforce capable of self-awareness, problem-solving, and communal production. Design serves as the primary vehicle for developing these skills, seen as the process of problem-solving and proposing solutions. Izmir Design Factory 's goal is to cultivate competent projects, train a skilled workforce through university-industry collaboration, and innovate various business models by engaging professionals.

Izmir Design Factory serves as a platform uniting professionals and learners to address issues within companies, institutions, and organizations. It provides a space for individuals to showcase their potential, fostering creative growth through cross-disciplinary experiences. Izmir Design Factory has designed and led different co-design processes such as co.creathon and design marathon, as well as the interdisciplinary Design Thinking course it has run for two semesters at the university.

The Co.Creathon, a 10-day service design process, emerged from Izmir Design Factory alumni's desire to create local value, focusing on sustainable fashion awareness. In the first session, 21 participants from diverse disciplines developed projects for Notion Collective.

Similarly, the Design Marathon condenses the DT process into a 3-day format. The Circular Design Marathon, in partnership with ESİAD (Aegean Industrialists and Business Association), involved 7 participants from various disciplines working on resource efficiency in the textile industry. Izmir Design Factory Internship, a 3-week program at Porto Design Factory, serves as a follow-up to the Design Thinking Course. In a recent internship, 10 Izmir Design Factory alumni from different disciplines collaborated on sustaining Izmir Design Factory in Izmir, conducting research under the guidance of coordinators at Porto Design Factory (Figure 4).

Figure 4. Izmir Design Factory Interns at PDF (Porto Design Factory), created by Izmir Design Factory alumni

Izmir Design Factory celebrated its 3-year project adventure with the final hybrid event Izmir Design Factoryair at Originn and brought together its interdisciplinary network formed with national and international connections based on university-industry collaboration (Figure 5).
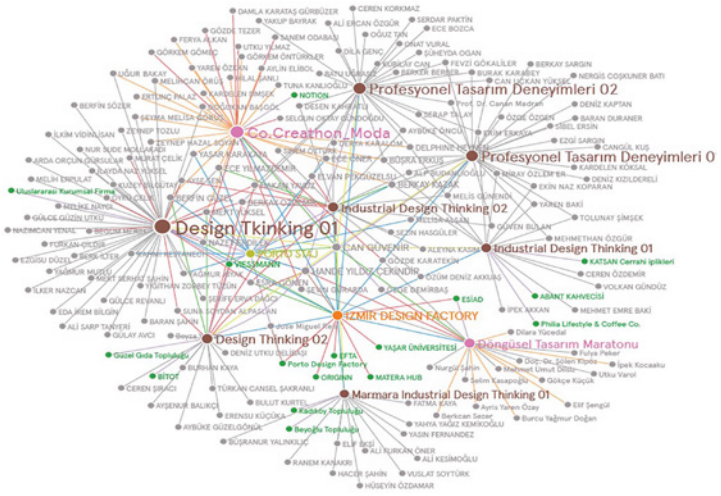
Figure 5. Izmir Design Factory network, created by author

Conclusion

The university-industry collaboration model, a globally accepted approach for developing competitive products, is exemplified by Design Factories. However, studies across Türkiye show limited numbers and success rates in implementing such collaborations. METU Design Factory, established in Ankara in 2015 and part of the DFGN global network, pioneered this model in Türkiye, supported by the Ministry of Development. In response to the need for a similar collaboration model in İzmir, the İzmir Design Factory emerged under the guidance of the city's creative industries. Distinct from METU Design Factory and global examples, Izmir Design Factory aims for independent operation while fostering university collaboration. With an EU project's conclusion in December 2021, Izmir Design Factory gained increased autonomy while maintaining stakeholder collaborations. It aspires to focus on design, education, and research, aligning with global networks, spearheaded by Originn Creative Hub, the project coordinator.

Izmir Design Factory emphasizes a localized response, prioritizing trust, sharing, and creation. Its core objective is to cultivate a co-production culture, harnessing existing potential and internal solutions. This model envisions a project-based culture rooted in Design Thinking, bringing diverse disciplines together to address current technological demands and market competition. Sustainable development will pivot on the culture of collaboration fostered within Izmir Design Factory. Projects will cater to SMEs' needs, nurturing an R&D culture and bolstering regional development. Joint training initiatives by universities and industries aim to bridge academic knowledge with industry experience. By enhancing local human resources, Izmir Design Factory targets the creation of high-value, qualified projects. Positioned as an intermediary organization, it strives for a neutral stance among universities and industries, proposing regional Design Factory models to meet local needs globally. The ultimate goal is to establish an organization focused on design, education, and research, addressing local stakeholder demands for skilled human resources and high-value projects to bolster global competitiveness through local development and international partnerships.

Acknowledgments

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VISUAL VIOLENCE IN TURKISH CINEMA: PERSPECTIVES FROM SOUTHEASTERN ANATOLIA (1960-1990)

GÖKÇE ÇAĞATAY, TUBA DOĞU AND DENIZ AVCI

Introduction

Cinema, either directly or indirectly, presents the truth through its narrative, and does this through representations of realities in any society. In certain respects, cinema is a series of selected truths from reality,[1] while on the other hand, violence of all kinds is immanent to it.[2] As such, cinema allows us to evaluate the extent of practices of violence that people are subjected to in the society they live in and the spaces where it takes place. One might than ask: Is the representation of violence on screen simply a reflection of reality or fiction? If so, what kind of architectural representation does this "fictitious reality" in cinema find?

When exploring the cinematic dimension of violence, it is important to look at the spaces and gender linked to violence.[3] Space is not merely a physical entity but a social production[4] hence acquires an emotional meaning through perceptions. Space than becomes a constitutive element for understanding the social and cultural construction of violence. Since space is inseparable from everyday practices and social relations, violence is a hierarchical representation to interpret and control people through space. Drawing on this intertwined relationship between space and violence in the context of the films, this study looks at rural life in Southern Anatolia in the second half of twentieth century Turkey. The study aims to examine the representations of women in spaces where they encounter violence and how in turn, the practices of violence in these spaces are portrayed in cinema.

Articulated in the form of a visual essay, the study will illustrate how women, subjected to violence through exposure to abuse and silencing in the public realm, internalize the domestic space. However, since the violence continues in the domestic space in the selected films, women remain trapped in the cycle of domestic violence and domestic practices impose their own limitations. When analysing in the context of women's spaces, the selected films thus provide a context for exploring the role of domestic and public violence, along with psychological abuse.

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1   Ivone Margulies, ed., *Rites of Realism: Essays on Corporeal Cinema* (Durham: Duke University Press Books, 2003), https://doi.org/10.1215/9780822384618; Richard Rushton, *The Reality of Film: Theories of Filmic Reality* (Manchester: Manchester University Press, 2011).

2   Henry Bacon, *The Fascination of Film Violence* (London: Palgrave Macmillan, 2015), https://doi.org/10.1057/9781137476449.

3   Maud Ceuterick, *Affirmative Aesthetics and Wilful Women: Gender, Space and Mobility in Contemporary Cinema* (Cham, Switzerland: Palgrave Macmillan, 2020), https://doi.org/10.1007/978-3-030-37039-8.

4   Henri Lefebvre, *The Production of Space*, trans. Donald Nicholson-Smith (Oxford, UK: Blackwell Publishing, 1991).

For this study, eleven films[5] set in Southeastern Anatolia have been chosen from a wider collection of films analysed for larger research. The choice of Southeastern Anatolia is not accidental, as the transition from feudalism to capitalism, terrorism, coup, smuggling as well as social elements such as culture and traditions between 1960 and 1990[6] were only a few among the long list of critical socio-political and socio-cultural issues that the region witnessed in the twentieth century and that are represented in cinema. These upheavals in society were directly reflected on women and their abuse, so that in reality and as reflected in the cinema, women have become subjects of violence, trapped both inside and outside, indoors and outdoors. Such confinement or restriction was not only evident as a physical experience, lived in and acquired through space, but also carried symbolic meanings with bodily consequences. As reflected in cinema, the abuse silenced women as others tried to control their perceptions and their voice. Examining this aspect of violence against women in film narratives belonging to a particular culture, customs and traditions is important in terms of observing women's place in any given setting; in this case, the domestic realm – as the house – and the public realm – as communal spaces – of rural Anatolia. This study attempts to unfold these issues via the support of visuals prepared from striking scenes from films depicting violence, abuse and silencing of women in architectural space. The visuals accompanying the essay were treated as "text," often stronger than any written word.

At Home: Violence in Architectural Space

The interaction between women and domestic space is directly related to the domination of the woman's body; women is a mere signifier in space.[7] The home as the domestic space thus becomes a cultural construct and the meaning of home reflects the identity of a family as part of the larger social and communal order. In this regard, domestic space in films incorporate various meanings. Although the architecture in domestic cinematic scenes varies, the woman's relationship with domestic space remains similar across different cultures. It is the place where her identity is assimilated and her role is reduced to performing domestic service, ensuring the continuity of the home and the family. When this role is analysed within the patriarchal system, it is no surprise that this is a result of ownership; more specifically, firstly the ownership of the house, and secondly the ownership of what is inside the house considered as objects that belonged to men, including women.[8] This masculine understanding of authority, which reinforced the patriarchal sys-

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5   The films analyzed here are as follows alphabetically: *Bedrana* (1973) directed by Süreyya Duru, *Berdel* (1990) directed by Atıf Yılmaz, *Ezo Gelin* [Ezo the Bride] (1973) directed by Feyzi Tuna, *Hazal* (1974) directed by Atıf Yılmaz, *İsyan* [Rebellion] (1979) directed by Orhan Aksoy, *Kara Çarşaflı Gelin* [The Dark-veiled Bride] (1974) directed by Süreyya Duru, *Kuma* [The Second Wife] (1974) directed by Atıf Yılmaz, *Son Darbe* [The Last Revolt] (1985) directed by Halit Refiğ, *Sürü* [The Herd] (1975) directed by Zeki Ökten and Yılmaz Güney, *Yol* [The Path] (1981) directed by Yılmaz Güney, Şerif Gören, and *Züğürt Ağa* [The Poor Landlord] (1985) directed by Yavuz Turgul.

6   The films in this period do not address the problem of ethnic conflict. Although these problems are known to exist, they were not included in the narratives of the selected cases and were therefore excluded from the scope of this study.

7   Michel Foucault, *The History of Sexuality: An Introduction* (Knopf Doubleday Publishing Group, 1990).

8   Relli Shechter, ed., *Transitions in Domestic Consumption and Family Life in the Modern Middle East:*

tem, became more complex as violence was introduced to this dynamic which shaped the long and complicated social history of "women's role in space", or more simply interwoven relationships between women and space.[9] Therefore, the dominance over the domestic space is identical with the dominance over the body, resulting in the "domestic violence". For a better understanding of the representation of domestic violence in films depicting the rural areas of Southeastern Anatolia, it is important to recognize the perception of Anatolian women and roles which were defined for them. One of these roles is that of a female offspring, considered from birth as an asset which will eventually bring money to the father in control of the family's capital through marriage with the *başlık parası*, translated as the bride-price.[10] Thus, female member of the family is a temporary member in the family from the moment of her birth. After marriage, the woman assumes a similar role as an asset. This time woman becomes a "permanent" member of her husband's family, a domestic worker responsible for all the chores. Moreover, women assume the role of both wife and domestic worker who has no option of returning to her father's house. As embedded in social codes, her new home is now her destiny, and chains. This relationship that the woman establishes with the house ensures that she is under the control of the property owner, be it husband or father.

Looking at the narratives of the selected films, this is evident in all of them. For instance, in the film Hazal (1979),[11] Hazal's (portrayed by Türkan Şoray) husband dies on her wedding day. By tradition, Hazal is married off to her husband's younger brother, who is around 10 years old (!). Since the new bride Hazal's husband is a child, Hazal is abused by her mother-in-law in many aspects. The mother-in-law (she represents a woman who is adopting patriarchal perspective, norms and persist) treats Hazal as her own property and Hazal is the subject all the misgivings and thus subjected to domestic violence (Figure 1).

Houses in Motion (New York: Palgrave Macmillan, 2003), https://doi.org/10.1057/9781403982698.

9   Judith Butler, "Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory," *Theatre Journal* 40, no. 4 (1988): 519–31, https://doi.org/10.2307/3207893; Linda McDowell, *Gender, Identity, and Place: Understanding Feminist Geographies* (Minnesota: University of Minnesota Press, 1999); Jane Rendell, Barbara Penner, and Ian Borden, eds., *Gender Space Architecture: An Interdisciplinary Introduction* (London and New York: Routledge, 2000).

10   A payment given by or on behalf of a prospective husband to the bride's family in many cultures (www. merriam-webster.com, n.d.). For a detailed analysis, see: Isabelle Chort, Rozenn Hotte, and Karine Marazyan, "Income Shocks, Bride Price and Child Marriage in Turkey.," *IZA Discussion Paper No. 15288*, 2022, https://ssrn.com/abstract=4114873 or http://dx.doi.org/10.2139/ssrn.4114873.

11   *Hazal* (Umut Film, 1974), https://www.youtube.com/watch?v=Hl4IOEoqabU.

Figure 1. Hazal (1979)

As reflected in films, leaving a first home is either through marriage or death for women. Another dimension of psychological violence in the film Hazal (1979) can be observed in the character Beşo (portrayed by Keriman Ulusoy). Beşo is the sister-in-law who considers marriage as her only option of escape from her house of birth. However, she could not get married because of the bride-price demanded by her father and her faith was thus sealed. Therefore, one day she hangs a cloth to a wish-tree (an offering in Anatolian and other cultures with shamanistic roots), then commits suicide and dies. Considering that suicide is another sin among many encoded deep in the roots of bigoted culture, a proper funeral is not organized, and she is hastily buried (Figure 2).

Figure 2. Hazal (1979)

A similar scenario takes place in the film Kara Çarşaflı Gelin (1975).[12] The main character Gülüşan (portrayed by Semra Özdamar) is "sold" to another family at a young age in consideration of blood money.[13] From the beginning, she is seen as an income with her bride-price (as a return of blood money), thus an object, subjected to all kinds of violence in the house she was sold to. In these scenes, she is confronted with gender-based violence (Figure 3). Suppressed, she cannot even imagine an escape.

Figure 3. Kara Çarşaflı Gelin (1975)

In the following two films, Züğürt Ağa (1985)[14] and Berdel (1990),[15] violence occurs when woman has no voice at home. While this violence is physical in the film Züğürt Ağa, it is psychological in the film Berdel. The film Züğürt Ağa is about the transition from feudalism to capitalism. The film tells the story of a landlord who is deceived by his villagers, loses all his money, and migrates to Istanbul. In the film, the first wife[16] does not consent to her husband's second marriage and becomes a victim of violence. This film portrays violence against women in a humorous(!) way (Figure 4).

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12   *Kara Çarşaflı Gelin* (Murat Film, 1974), https://www.youtube.com/watch?v=aeKt-IDZykA.
13   Money paid (as by a killer or the killer's clan) to the family of a person who has been killed (www. merriam-webster.com, n.d.)
14   *Züğürt Ağa* (Mine Film, 1985), https://www.youtube.com/watch?v=_wFa6mIewFo.
15   *Berdel* (STM Yapım A.Ş., 1990), https://www.youtube.com/watch?v=i94BOaRQV7E.
16   Second wife represents polygamy in marriage, which has long lost its relevance in secular Turkey since the 20th century. However, even today, this can still be observed in villages or rural areas. For a detailed analysis, see. Nur Vergin, "Social Change and the Family in Turkey," *Current Anthropology* 26, no. 5 (1985): 571–74.

Figure 4. Züğürt Ağa (1985)

Sürü (1978)[17] is a film about the transformation of a nomadic family living in the rural areas and subsisting on animal husbandry in the changing conditions of the period. The domestic violence on women is narrated via stories of different women. With a wider perspective, demonstrating this as a socio-cultural issue, the film focuses on protagonist Berivan (portrayed by Melike Demirağ). Berivan, who cannot stand the pressure exerted on her body, becomes silent, refuses to speak, and becomes violent as a reflection of her abuse (Figure 5). This is one of the rare portrayals where women search for a self-expression against violence.

Figure 5. Sürü (1978)

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17   *Sürü* (Güney Film, 1975), https://www.youtube.com/watch?v=WEpOxTOfDHw.

In the film Yol (1981),[18] when the convicted Seyyit Ali (portrayed by Tarık Akan) on leave visits his house, he learns that his wife Zine (portrayed by Şerif Sezer) has been unfaithful to him. During his imprisonment, his wife became a sex worker. After her family finds out, they keep her in a storage room in the house. She is chained to the house with iron bars, and customary demands keep her there until her husband kills her. She harms family's *namus*, meaning honour,[19] that's why she is imprisoned until she is sentenced to death because of *namusu temizlemek*, translated as cleansing of honour (Figure 6).[20]

Figure 6. Yol (1981)

Another representation of women at home is death. Home is the place where they die (!) or get killed, as demonstrated in the films Bedrana (1974),[21] Son Darbe (1985),[22] İsyan (1979)[23]

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18   *Yol* (Güney Film, 1981), https://www.youtube.com/watch?v=r92jcOepRmk.
19   "Namus" can be translated as honour. In Middle East, *namus* is one of the important social norms. Mostly it is related with morals and women sexuality. For a detailed analysis, see. Nuray Sakallı Uğurlu and Gülçin Akbaş, "Namus Kültürlerinde Namus ve Namus Adına Kadına Şiddet: Sosyal Psikolojik Açıklamalar" [Honor and Honor Violence against Women in Honor Cultures: Social Psychological Explanations], *Türk Psikoloji Yazıları* 16, no. 32 (2013): 76–91.
20   For a detailed analysis, see. Robert Ermers, *Honor Related Violence: A New Social Psychological Perspective* (Routledge, 2018).
21   *Bedrana* (Murat Film, 1973), https://www.youtube.com/watch?v=eIk4S7QjFJc.
22   *Son Darbe* (Topkapı Film, 1985), https://www.youtube.com/watch?v=FJKOzsLNYwU.
23   *İsyan* (Arzu Film, 1979), https://www.youtube.com/watch?v=j9SQdhmmOMQ.

and Ezo Gelin (1973).[24] In the film Bedrana (1974), the character (portrayed by Perihan Savaş), who also lends its name to the film, experiences social exclusion following a sexual assault and is sentenced to capital punishment. Her husband wants to execute her in line with the local custom. Upon realizing this, Bedrana takes her own life (Figure 7).

Figure 7. Bedrana (1974).

Whereas in the film Son Darbe (1985), a woman (portrayed by Nilgün Akçaoğlu) who had been subjected to sexual abuse while her husband was in prison, tragically took her own life after their last encounter. The soldiers discovered her demise (Figure 8).

Figure 8. Son Darbe (1985).

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24   *Ezo Gelin* (Uğur Film, 1973), https://www.youtube.com/watch?v=ZnXsAH5fIIM.

In the film İsyan (1979), a woman (portrayed by Melike Zobu), who was coerced into a marriage against her will (forced marriage being a kind of violence), is murdered by her father in the name of *namus* (Figure 9).

Figure 9. İsyan (1979).

Similarly, in the film Ezo Gelin (1973), Ezo's (portrayed by Fatma Girik) spouse was taken into the military shortly after their wedding. Due to a misinterpretation of her husband's death, she is compelled to wed her deceased spouse's sibling. Upon her husband's return, she commits suicide (Figure 10).

Figure 10. Ezo Gelin (1973).

In Village: Violence in Public

In the film narratives, the relationship of the female characters with the outside world is realized to the extent permitted by the societal order observed in the Anatolian rural. Women's experience with the external environment are therefore limited, and reflected in the films, women either work as unpaid labourers in agriculture and/or use the public space to support domestic duties once again (impossible to image women without domesticity!) such as carrying water from the well or washing clothes by the river. Apart from these duties, women are not welcome in public space because they belong "home".

In the film Berdel (1990), the woman is subjected to violence for going out without her husband's permission (Figure 11). In Ezo Gelin (1973), a woman who goes out to carry water is warned by her brother to stay in the house because she attracts attention in public which — in his opinion — harms family's *namus*, which harms families good name in the village (Figure 12).

Figure 11. Berdel (1990). The first wife protects the second wife (kuma) against violence.

Figure 12. Ezo Gelin (1973)

Another dimension of violence in the film narrative is the harassment faced by women in public spaces. The reason for this harassment is because the public sphere is considered belonging to the men, and thus in a religious/bigoted culture, it is not safe. For safety, women had to travel in groups excluded from men or had to be accompanied by a male relative. In the film İsyan (1979), the protagonist Ayno (portrayed by Melike Zobu), alone in the public sphere of the village, is physically harassed by a man on her way home (Figure 13).

Figure 13. İsyan (1979)

In the film Kuma (1974),[25] the protagonist Hanım (portrayed by Fatma Girik) is harassed and assaulted when she goes to the wishing tree to pray to fulfil another one of her domestic duties, to have a child (Figure 14).

Figure 14. Kuma (1974)

25   *Kuma* (Erman Film, 1974), https://www.youtube.com/watch?v=Oz-qiHE9mT4.

Harassment of women in public spaces is not limited to the issues discussed so far. It further includes the act of forcibly removing a woman from her home. It is a situation where at the age of marriage, the men of the village believe they have the authority to compel a woman to marry against her will and thus remove her from her house of birth. The ultimate consequence of this situation is rape. In Bedrana (1974), as punishment for an act, the protagonist women is unwillingly subjected, the woman is murdered by her family for once again honour. The victim is further victimized when the criminal walks free (Figure 15).

Figure 15. Bedrana (1974)

Public form of violence conducted against women is not only an individual act, but maybe conducted as groups, for instance angry mobs. Representation of women characters in film narrative in public spaces is the reflection of the social form of violence. In the film Kuma (1974), the woman is accused of unfaithfulness and slandered by her husband's other wife. The accusations result in her being tied to a tree in the village square and stoned by the angry villagers by her "so-called" sins; a depiction of group violence against women is as manifested in its cinematic form (Figure 16).

Figure 16. Kuma (1974)

In public sphere, which ultimately becomes the man's space, the woman is shown through her dead body. In the film Hazal (1979), the murder of the protagonist in the village square as a punishment for her escape with her lover, can be read as an acceptance of the social norm between women, public sphere, and violence (Figure 17).

Figure 17. Hazal (1979)

Violence on Screen: A Tragic End?

The films reveal that brutal reflections of real life in twentieth-century Southeastern Anatolia became a set of clichés for romantic storytelling and melodramatic performance. These can be summarized accordingly: Death was often portrayed as the only escape for women characters in the face of violence or associated with psychological coercion of women to commit suicide in domestic space or public execution as a means of punishment. In the former, the act of suicide becomes a response to violence against women in cinematic representation.

As a popular tool of expression, the act of suicide and violence is in harmony with cinematography which exploits this suicidal reality. In the latter, it was expressed by the public execution of women as a communal punishment. The spatial dimension of violence incorporated meanings parallel to the social construction of space in cinema. Spaces, whether domestic and public, have been attributed symbolic meanings. The space embodied not the identity of the abuser, but the identities of the abused women. These implications suggest that violence is an important component in the shaping of space not only in real life but also in cinematic representations of space, and is directly linked to the formation of gender based spaces which is a much deeper topic to be covered here.[26] While cinematic narratives portray the perpetrator as a victim, those who perpetrate violence justify their reasons for this as social norms, tradition and the social pressure that comes with it. This discussion ends with a question: Is the visual depiction of violence in films a reflection of societal realities, or is it the tip of the mountain that is disseminated via mass media, unconsciously exploited for cinematic storytelling without any consideration of social implications? A deeper investigation might reveal that this in fact is the case.

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26 Christine Gledhill, ed., Home Is Where the Heart Is: Studies in Melodrama and the Woman's Film (London: British Film Institute, 1987); Hille Koskela, "'Gendered Exclusions': Women's Fear of Violence and Changing Relations to Space," Geografiska Annaler. Series B, Human Geography 81, no. 2 (1999): 111–24; Janice Loreck, Violent Women in Contemporary Cinema (London: Palgrave Macmillan, 2016), https://doi.org/10.1057/9781137525086; Rachel Pain, "Whither Women's Fear? Perceptions of Sexual Violence in Public and Private Space," International Review of Victimology 4, no. 4 (1997): 297–312, https://doi.org/10.1177/026975809700400404.

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RE-CONCEPTUALIZATION OF PRODUCTION/ CONSUMPTION IN CONTEMPORARY VALUE- CREATION ECOSYSTEM: THE RISE OF MAKERS & PROSUMERS

CANBERK YURT

Introduction

From the beginning of modernism, the patterns of production and consumption have been challenging due to some changes in stakeholder dynamics and social cognition. The dualities of production/consumption, and supply/demand have been changed constantly due to the revolutions in the value-creation ecosystem. With the emergence of postmodernism, the collective creativity has challenged the conventional economic patterns. The power of representing individual or social preferences in daily life products and systems activated bottom-up creative practices. The proliferation and democratization of self-production, DIY, and Maker movements, and advancements in realization technologies like additive manufacturing and crafting equipment, have enabled this social change and support consumers to be creators; makers, and prosumers.

The phenomenon of the constant value creation cycle has always been one of the most central concepts along the journey of civilization. Based on anthropomorphic realizations, humankind has created complex object/system clusters.[1] Social contracts and cultural dynamics have been developed upon these clusters. Culture has been developed mostly through the transfer and accumulation of the manmade material world and the knowledge related to it. This dynamic has defined the way we perceive and conceptualize the mysteries of life. As a result of this continuous value transfer, we have transformed the habitat into an anthropocentric realm with the cognitive boundaries of the human mind.[2]

Through this transformation that mostly depends on the transformation of virgin resources into manmade objects, humans have created another value transfer phenomenon; economy. Initially, the concept of the economy was positioned as "the management of the house (mother-earth)". However, through time, parallel to the dominant anthropocentric transformation, it turns into "the management of material resources".[3] This anthropocentric perception of the economy has been operated through a cyclical flow of a duality: production/consumption. Regardless of the form of output, humans manage the material world through the production and consumption of value clusters, and so, the economy is mostly constructed upon the dynamics of this duality. The value transfer phenomenon depends on the responsive activities of the representatives who trigger the constant motion of production/consumption. These responsive actions refer

1   Tristan Garcia, Mark A. Ohm, and Jon Cogburn, Form and Object: A Treatise on Things (Edinburgh University Press, 2014), http://www.jstor.org/stable/10.3366/j.ctt1g0b74h.

2   Helen Kopnina, "Anthropocentrism: Problem of Human-Centered Ethics in Sustainable Development Goals," in Encyclopedia of the UN Sustainable Development Goals (Cham: Springer International Publishing, 2021), 48–57, doi: 10.1007/978-3-319-95981-8_105.

3   Y. O. S. Shoppe, "Economy," Etymology Online, https://www.etymonline.com/word/economy (Accessed January 6, 2024).

to another crucial duality: supply/demand.[4] Supply/demand is the driving force of constant value creation by multiplying the transformation of resources into artifacts. Through time, the rhythm of supply/demand has accelerated due to the advancements in technology, scientific explorations, and social structure.

Regarding the various phases of value transfer that have been getting complicated more and more, some new roles in society have been created as parallel to changing socio-economic structures. More than producer and consumer, roles like engineer, designer, economist, trader, extractor, and advertiser have changed the equation of value transfer and share. With the emergence of the Industrial Revolution, the concept of supply/demand has found new contextual clusters due to the perceptional changes in producer/consumer and sub-categories of stakeholder dynamics. Modernism and then post-modernism have redefined the roles of supply and demand by creating blurred boundaries between producer and consumer. Initially, the transformation started by redefining the positioning of consumers as users. Then, the democratization of the production tools enabled consumers to become more involved in the phases before the consumption and provided rights to navigate design and production processes. All these contemporary changes at the sociocultural level need to be evaluated and discussed to conceptualize the roles of production/consumption duality.

This study aims to provide a discussion on the current positioning of production/consumption and its sub-concepts. By analyzing the historical context of production/consumption, the concepts like making, prosumption, and collectivity are conceptualized regarding the roles of value creation and value transfer. In consideration of potential aspects of these concepts, supply/demand and profit-driven economy, some alternative statements of value creation and transfer are analyzed. As a result of the analysis, a conceptual framework for the maker and prosumer concepts is defined. Following these definitions, a characterization of value creation roles is made due to monetary, experiential, and intersectional considerations. In the end, a characterization diagram is created to make some further discussions.

Transformation of Production/Consumption Through Industrialization & (Post) Modernism

Along the historical journey of production and consumption, there was a critical step, the Industrial Revolution (1st), that radically changed the dynamics between the stakeholders, the volume of material transformation, the fundamentals of value creation, and the meaning of the product as an outcome. Before the Industrial Revolution and Proto-Industrialization,[5] the main economic activities are based upon agricultural production in commonly agrarian societies. Even the craftsmanship was driven by the raw materials produced by agricultural practices or operated to respond to the needs of agricultural practices and agrarian cultural patterns. The motivation for production was mostly dependent on answering the needs of consumers with a

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4   Peter Groenewegen, "Supply and Demand," in The New Palgrave Dictionary of Economics, 2012 Version (Basingstoke: Palgrave Macmillan, 2013), doi: 10.1057/9781137336583.1776.

5   Franklin F. Mendels, "Proto-industrialization: The First Phase of the Industrialization Process," The Journal of Economic History 32 (1) (1972): 241−261, doi:10.1017/s0022050700075495.

required function that was crafted with aesthetic interventions of local visual cultures. Based on artisanry, society constructed the value creation/value transfer mechanism on small-scale production due to the slow and small consumption patterns. So, the supply/demand duality was driven through a simpler equation and a controlled tension managed mostly just by the producer and consumer. However, with the emergence of industrialization, the tension between supply and demand has become complicated because of various transitions.

First, with the transformation of low-batch production into mass production, some intermediary steps have occurred. For instance, because of the increasing need for raw materials, raw material extraction practices have created their own global sector and dynamics. For standardization and automation, raw materials initially have started to be transformed into stock items that are processed to be new resources, ready for production.

Second, the huge amount of produced items must have been managed with the integration of new professions, expertise areas, sectors, and businesses. Rather than producers, traders have started to manage the market and the flow of the value from producer to consumer. The role of the craftsman, who had been the absolute value creator, has been distributed into different technical professions like engineer, foreman, worker, manager, human resources specialist, financier, economist, analyst, marketing specialist, salesman, retailer, logistics specialist, and more.

Third, monetary considerations and profit-driven competition have been more aggressive with the emergence of open market and capitalist economy strategies. The value transfer motivation has been concentrated more on getting a bigger piece of the profit pie. So, the triggers of value creation have changed. Supplying a product to the market considering a need has turned into production by imposition mentality.[6] "Supply for demand" has left its place to "supply before demand".

Fourth, the speed of consumption has also been accelerated. Long-term usage mentality has given its place to rapid consumption patterns.[7] "Throw away" and "single usage" strategies have been integrated into the value creation cluster, parallel to the strategies of rapid consumption. So, the quality-driven value creation dynamics have been turned into quantity-driven value creation systematic. The linear economy concept, "take, make, use and dispose", has been changed when compared to the Proto-Industrialized era. Modern humans have started to take, make, and dispose of more while reducing the period of use (Figure 1). Parallel to quantity-driven consumerism, the number of consumers has also increased due to the advancements in technology and better life conditions.[8] So, the capitalist production machine has extended the market, day by day, through consumer/consumption entanglement. Following these main transitions regarding production/consumption, the modernist era of value creation and transfer

6   George Ritzer and Nathan Jurgenson, "Production, Consumption, Prosumption," Journal of Consumer Culture 10 (1) (2010): 13–36, doi: 10.1177/1469540509354673.

7   John De Graaf, David Wann, and Thomas H. Naylor, Affluenza: How Overconsumption Is Killing Us--and How to Fight Back (Berrett-Koehler Publishers, 2014).

8   B. Fine and E. Leopold, "Consumerism and the industrial revolution*," Social history 15(2) (1990): 151–179, doi: 10.1080/03071029008567764.

has emerged. With the integration of structured design discipline, the modern lifestyle has been conceptualized and built upon daily life objects and consumer products. By designing new needs and experiences, aimed at improving the daily lives of modern society, the product portfolio of modern consumers has expanded. However, with the integration of some global sociocultural, socioeconomic, and sociopolitical incidents, the perceptions and perspectives of societies about consumption have started to change.
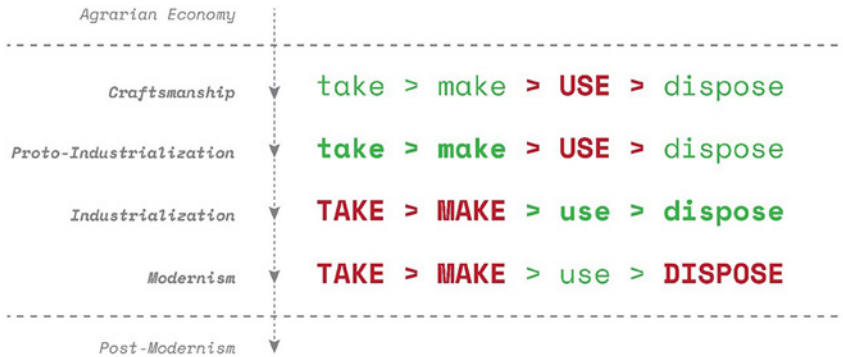
Figure 1. The changing inner dynamics of linear economy (prepared by the author)

Thus, post-modernism has emerged with a critical stance to modernism. Contrary to modernism, post-modernism has supported the democratization of value transfer, even in the case of a big scale of production/consumption. Through this bottom-up movement, there have been some transitions in consumer scale that affect the dynamics of supply/demand. These transitions have led to grounded changes in the perspectives and roles of consumers regarding value creation and transfer flow.

Transition From Consumer To User

In light of the post-modernist vision, consumers who had been steered in a passive role have started to question their status in these value creation and transfer processes. Parallel to that, on the other side of the equation, the postmodernist design discipline has been seeking alternative ways to better understand consumers and respond to their needs. Human-centered design[9] and user-centered design[10] approaches were proposed for conceptualizing the involvement of consumers in postmodern design practices. Highlighting the importance of experience and usability, design theory and praxis have started to integrate consumers as active stakeholders into the processes of designing.[11] Through empathizing with their experiences, consumers have participated in value creation.

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9   9. Joseph Giacomin, "What Is Human Centered Design?" The Design Journal 17, no. 4 (2014): 606–623.

10   Ji-Ye Mao et al., "The State of User-Centered Design Practice," Communications of the ACM 48 (3) (2005): 105–109, doi: 10.1145/1047671.1047677.

11   Arnold M. Lund, "Post-modern Usability," Journal of Usability Studies 2 (1) (2006): 1–6.

Through that change, the positioning of consumers has shifted towards "users". With a post-modernist mentality, the important part of the human-object interaction has become the usage rather than the consumption. Through methods like crowdsourcing, focus groups, and user journey mapping, user experiences, insights, and feedback have been gathered to be analyzed for further design processes (Figure 2). With the emergence of new digital technologies like internet forums, online shopping platforms' product reviews, digital diaries, and user experience questionnaires, the involvement and contribution of users have been diversified.[12] Even users have been integrated into design processes for maximizing democratization[13] within various enabler design methods,[14] co-design structures, and collective decision-making sessions. All these changes have contributed to the social contract and collective creativity of society.
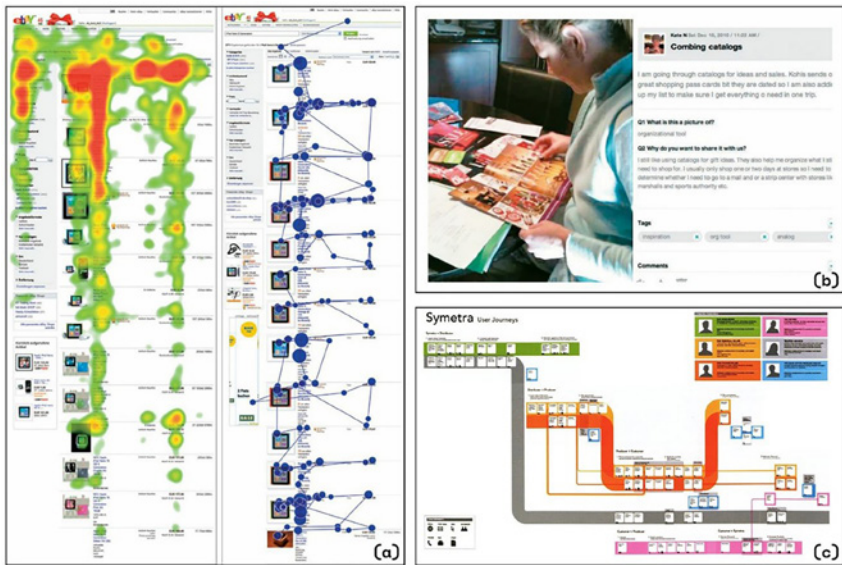
Figure 2. Some user-integrated design research methods (Martin and Hannington, 2012). (a) Eyetracking; (b) Digital diaries; (c) User journey map

Through these social innovations, the boundaries between production and consumption have been blurred, and the interaction level in cyberspace between the stakeholders has been developed. With the reconceptualization of consumers as users, the dynamics of supply/demand duality have also changed. The acceptance of users as active stakeholders in value-creation processes by producers has directed them to empathize with and answer to the needs, expectations, and demands of the users, more. On the other side, the internalization of value transfer by users makes them more confident about their rights regarding consumption preferences

12   Bella Martin and Bruce Hanington, Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions, Digital ed. (Rockport, 2012).

13   Henry Sanoff, Democratic Design: Participation Case Studies in Urban and Small Town Environments (Saarbrucken, Germany: VDM, 2010).

14   LUMA Institute, Innovating for People: Handbook of Human-Centered Design Methods, 1st ed. (LUMA Institute LLC, 2012).

and making their opinions heard about their experiences. Producer-dominant value-creation dynamics are transformed into user-centered design processes that focus on the user experiences. Again, with the rapid integration of digital technologies, the experience of a user is less on tangible objects. The experience of a product depends on experiential value rather than material value. So, the negotiation between producer and user becomes more than the exchange of products and money. And the tension between the exchange value and use value[15] has become more arguable.

Considering all changes in value creation and transfer, participation and involvement, experience, and production/consumption, the conceptualization of the user concept has triggered a cultural transformation that stresses the boundaries between production/consumption. With the widening impact area of users, some newer social movements have occurred that aim to improve the democratization of production and the decentralization of the value creation and transfer practices.

Transition from User to Maker & Prosumer

Following the postmodernist vision, some collective movements led to some conceptual changes in the involvement of users in production. These conceptual changes are commonly focused on enabling value creation with the independent interventions of users and their actions for forming an alternative production culture. With the collective creativity and commoning of certain user groups, some concepts like "maker culture" and "prosumption" have been born. Parallel to the philosophies and motivations of these concepts, users have created a small loop of value creation and transfer cycle that depends on the benefits of users, again (Figure 3)

Figure 3. Various value creation practices of some maker and prosumer concepts. (a) Coccon Evo Rome Pavillion by Mediterranean FabLab + Co-de-iT + PicernoCerasoLab;[16] (b) Community garden initiative in Shangai, China;[17] (c) Rooftop PV panels for energy prosumption by Cooperativa de Energie, Romania.[18]

15   Karl Marx, Capital: A Critique of Political Economy; The Process of Capitalist Production, Classic Reprint (London, England: Forgotten Books, 2022).

16   Arch2o, "Cocoon Evo," Arch2O, accessed January 6, 2024, https://www.arch2o.com/cocoon-evo-mediterranean-fablab-co-de-it-picernocerasolab/.

17   Huaiyun Kou, Sichu Zhang, and Yuelai Liu, "Community-Engaged Research for the Promotion of Healthy Urban Environments: A Case Study of Community Garden Initiative in Shanghai, China," International Journal of Environmental Research and Public Health 16 (21) (2019): 4145, doi: 10.3390/ijerph16214145.

18   Antoanela Ionita, "Growing 100x in the Past 3 Years, Are Prosumers Key to the Energy Transition in

Based on the DIY culture, maker culture has emerged with the rise of digital and electronic technological advancements. Following the disappearing doctrines and praxis of craftsmanship, artisanry, and vocations, maker culture has resurrected the distributed value creation. Makers have activated the self-production mentality[19] and triggered the decentralization of production that leads to collaborative innovation.[20] Unlike the neo-liberal economic concerns and motivations of conventional modernist production mechanisms, maker culture supports and gets supported by collective creativity, open-source knowledge and hardware transfer, and the commoning of assets and capital.[21] Rather than an inter-organizational competition, by sharing and distributing the resources, knowledge, and tools,[22] maker culture has supported pluralism and human-centered collective value creation processes.[23]

Parallel to the maker movement, an alternative approach to conceptualizing the reformation of value-creating communities is prosumption. Prosumption is the rediscovery, redefinition, and reinvention of functions and services by the tinkering practices of users[24] to improve their experiential values and maximize the capacity of the utility of those products. Based on the value co-creation,[25] prosumer society has been formed with the motivation of producing the content that they are willing to consume.[26] Through this vision, prosumers customize the products into an upgraded version, produce their resources like energy through small-scale production facilities like photovoltaic panels and wind turbines.[27] and share the outputs of these creations with the other members of the prosumer society.[28] Through these reciprocal interactions, interventions, and contributions to the value-creation and transfer ecosystem,

Romania?" Therecursive.com, The Recursive, available at: https://therecursive.com/growing-100x-in-the-past-3-years-are-prosumers-key-to-the-energy-transition-in-romania/ (Accessed January 6, 2024).

19 19. Francesco Mazzarella and Pier Paolo Peruccio, "Self-production: A Human-Centered Design Process. The Sustainable Future of Self-Production through a Humanistic and Participatory Process," in Diversity: Design/Humanities. Proceedings of Fourth International Forum of Design as a Process, edited by D. De Moraes, R. A. Dias, and R. B. C. Sales (Barbacena, 2013), 978-985.

20 Ignasi Capdevila, "Different Entrepreneurial Approaches in Localized Spaces of Collaborative Innovation," SSRN Electronic Journal (2014), doi: 10.2139/ssrn.2533448.

21 Melike Mühür and Canberk Yurt, "Experiencing FabLab without Boundaries: An Online Tool for Makers Community," Proceedings of the Fab 16 Research Papers Stream (2021): 191–205, https://doi.org/10.5281/zenodo.5169848.

22 Jeffrey Pomerantz and Robin Peek, "Fifty Shades of Open," First Monday 21 (5), retrieved July 31, 2021, from https://firstmonday.org/article/view/6360/5460.

23 Christian Fuchs and Marianna Obrist, "HCI and Society: Towards a Typology of Universal Design Principles," International Journal of Human-Computer Interaction 26 (6) (2010): 638–656, doi: 10.1080/10447311003781334.

24 Stephen Graham and Nigel Thrift, "Out of Order: Understanding Repair and Maintenance," Theory, Culture & Society 24, no. 3 (2007): 1–25.

25 C. K. Prahalad and V. Ramaswamy, "Co-creation Experiences: The Next Practice in Value Creation," Journal of Interactive Marketing 18 (3) (2004): 5–14, doi: 10.1002/dir.20015.

26 George Ritzer, "Prosumption: Evolution, Revolution, or Eternal Return of the Same?" Journal of Consumer Culture 14 (1) (2014): 3–24, doi: 10.1177/1469540513509641.

27 Katherine Ellsworth-Krebs and Louise Reid, "Conceptualizing Energy Prosumption: Exploring Energy Production, Consumption and Microgeneration in Scotland, UK," Environment & Planning A 48 (10) (2016): 1988–2005, doi: 10.1177/0308518x16649182.

28 Bodo Lang et al., "Prosumers in Times of Crisis: Definition, Archetypes and Implications," Journal of Service Management 32 (2) (2021): 176–189, doi: 10.1108/josm-05-2020-0155.

just like in the maker movement,[29] prosumption aims to challenge and stress the capitalo-centric economic and social patterns of production.[30]

Beyond the conceptual boundaries of maker and prosumer cultures, there is a common significant impact of these two concepts on the dynamics of production/consumption. Even their revolutionary aspects have shifted the conceptualization of the way of value creation and value transfer. As a result of the historical analysis, the emergence of the maker and prosumer cultures has redefined the transition of production/consumption. For analyzing and summarizing these long-term changes, an illustration has been prepared (Figure 4).
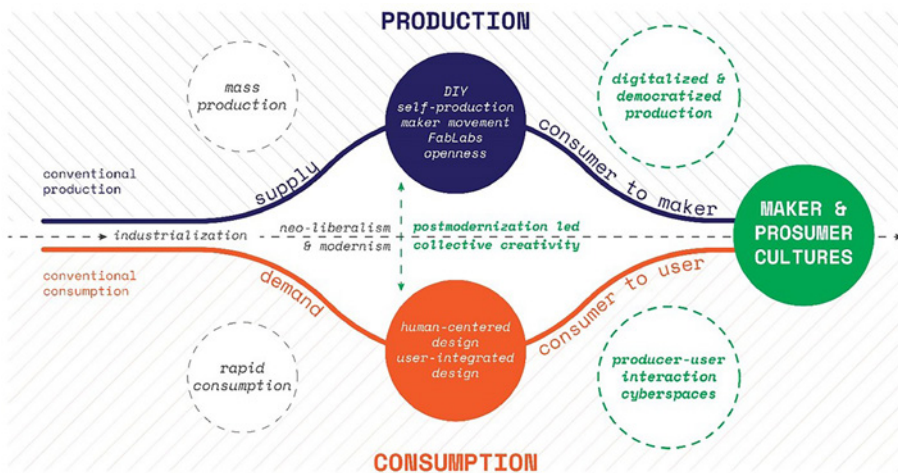
Figure 4. Transformation of production/consumption through industrialization & (post)modernism (prepared by the author)

In the light of these critical analyses and conceptualization of the transforming dualities of production/consumption, supply/demand, money/experience, consumer/user, user/maker, user/prosumer, and more, a further discussion is made.

Conceptualization of the Maker and Prosumer Concepts in Value-Creation

Following the historical, social, cultural and economic contexts of value creation, and literature review, maker and prosumer concepts are defined. To understand their relationship with other

29   Marco Bianchini et al., "Exploring Collaborative Processes between Maker Laboratories, Designers and Companies Moving from 3rd to 4th Industrial Revolution," in Cumulus Conference Proceedings Paris (2018), 302–328.

30   Sue Eden, "Blurring the Boundaries: Prosumption, Circularity and Online Sustainable Consumption through Freecycle," Journal of Consumer Culture 17 (2) (2017): 265–285, doi: 10.1177/1469540515586871.

stakeholders in the value creation ecosystem and make a comparative analysis interface, a complementary study is made. Considering all contextual relationships described above, and two dualities with polarized elements, a coordinate scheme is aimed to posit stakeholders due to the relevancies to certain axes. As the poles across the Y axe, supply/demand is selected, depending on the comparable aspects in the contextual frame, being a consistent element through time (Figure 4) and common importance for all stakeholders. For the X axe, money/experience duality is selected, considering the diversifying motivational aspects for various stakeholders, triggering specifications for the economic activities, and impacts on the way of creating value. For this duality, their proportional relationships are considered on the poles across the axe to emphasize the changes more. After this base coordinate scheme is designed, the clusters of stakeholders are conceptualized and positioned on the scheme due to the connections with relevant dualities and other stakeholders. With the integration and highlighting of maker and prosumer concepts, as stakeholder clusters, the scheme is created (Figure 5). For creating a comparative discussion in Figure 5, groups of stakeholders are evaluated. For that, groups are selected as designer, producer, and trader; consumer and user; and, maker and prosumer.
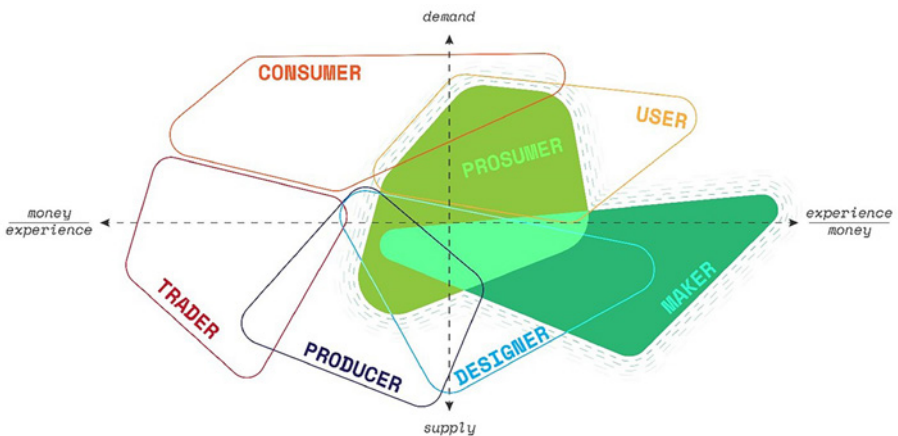
Figure 5. Positioning of main stakeholders of the value-creation ecosystem regarding the supply/ demand and money/experience dualities (prepared by the author)

Designer, Producer & Trader

All of them are mostly related to the supply side of the value-creation ecosystem, while they have a little concentration on demand from the user side of the value-creation ecosystem. When we make a comparison among them, designers are more focused on the experiential aspects of a product/service, while traders and producers are motivated by the monetary aspects, like costs, profits, shares, and investments. Designers consider experience, close to the demands of the users and the limitations and strategies of supplying. Almost on the balance between money and experience, the designer and producer intersect and collaborate to supply the product/service. There is a small intersection between trader and designer about

the demands of the consumers, mostly about monetary aspects. Following this direction, the trader is interested in demands and supplying requirements more related to financial issues. For almost all of the costs and profits, the trader and producer have an intersecting cluster for supplying the product/service.

Consumer & User

Both consumers and users are on the demand side of the value-creation ecosystem. Considering the historical context of production/consumption and the transition from consumer to user, users are more focused on the experiential aspects of the product/service, while consumers are triggered more by monetary concerns. Also, consumers have a more demanding position than users because of not being integrated into the value-creation practices as active stakeholders. On the other side, the unified cluster of consumer and user defines a wide range between the poles of money and experience and supports the grounded conceptual transition from consumer to user concept from monetary considerations towards experience.

Maker & Prosumer

As the maker movement is focused on the production side of the value creation, a bigger proportion of makers is related to the supply part. On the other hand, there is an obvious direction towards experiential aspects of value creation in maker practices. However, because of the initial costs of investment and requirements for the production tools, makers also have monetary considerations. When we come to the prosumers, there is an obvious concentration on monetary aspects in supplying. Prosumers are motivated more with the financial issues for producing, than makers. On the demanding side, experiential factors are more prioritized than monetary factors.

Plus, the relationship between the user and the prosumer is worth discussing. The main directional difference between the user and the prosumer is about the reasoning of supply/demand. While users demand products/services for experiential expectations, prosumers supply them with financial profit motivations. This situation shows that the prosumer concept is a negotiation between production and use, not between production and consumption. Different from the literature that defines prosumption as a combination of consumption and production,[31] prosumer is the hybridization of producer and user in practice.

Together, makers and prosumers define a widened cluster that has a vertical diversity between supplying and demanding, horizontal accumulation towards experiential aspects. This characteristic presents an original conceptual frame for the value-creation ecosystem by being less dependent on financial motivations, neo-liberal strategies, and capitalist impositions. This postmodernist attitude creates a critical stance to the conventional economic understanding and stresses the future of a linear economy that depends on the financial capital and central economy. With the rise of the maker and prosumer movements, decentralization of economic activities, and the power of collective creativity based on intellectual capital become crucial

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31   Alvin Toffler, The Third Wave (New York: Morrow, 1980).

for the value-creation ecosystem. Through the integration and condensation of the maker and prosumer mentality, the transition from linear to circular practices can be enabled because of the active involvement of users in the circular value creation practices. So, continuity and circularity of value creation are promising considerations for maker and prosumer concepts to analyze through further studies. Besides, being positioned far away from the monetary considerations creates economic concerns about the expansion and viability of the maker and prosumer concepts in the long run. Within financially dominant economic patterns, the acceptance and density of maker and prosumer concepts can be misled or downsized. So, questioning the distribution of economic share is another consideration to discuss for further studies about maker and prosumer concepts.

Conclusion

Constantly changing dynamics of the social structure challenge how we manage the value creation processes and their impacts on society. Parallel to the sociocultural, socioeconomic, and sociopolitical incidents, the transformation of the roles and the interaction among them is crucial to conceptualizing and comprehending the ongoing tendencies and further possible scenarios for value creation practices. This research proposes a conceptual framework for contemporary production/consumption duality by tracking the historical context and cause-effect relationships. Along this direction, maker and prosumer movements are discussed regarding their conceptual positioning within the contexts of production/consumption, supply/demand, experience/money, etc. Following the literature on maker culture, prosumption, collective creativity, and user-centeredness, a comparative structure is created to process the discussions about the current and possible future scenarios of the maker and prosumer concepts.

Considering the theoretical discussions and comparative analysis from the point of the stakeholder of value creation, there is a need for further research to ground these discussions and characterize the maker and prosumer concepts. For questioning and testing the statements in this research, a case study based on real-life experiences and insights is aimed to be planned and applied. Parallel to the collective and democratic structure of the maker and prosumer cultures, a case study will be designed to gather diversified insights from the most common maker and prosumer sub-concept practitioners. Within the structured research design, the insights will be assessed through some predefined considerations to reach some tangible outputs to define characteristics of the maker and prosumer concepts. As a result of this characterization, some statements and provisions about the future of maker and prosumer concepts can be identified and presented in the literature.

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FROM SOCIAL INNOVATION TO OPEN INNOVATION: A FRAMEWORK ON OPEN PARADIGM CLUSTERS IN DESIGN RESEARCH ON PROVIDING SYSTEMIC CHANGE THROUGH CROWDSOURCING

ANIL DINÇ DEMIRBILEK

Introduction

As an ever-evolving field, design has become the main driver for innovation, development and change for the society. From a conventional perspective, design has been considered to operate between the intersection point between "industrial" and "artistic" expressions, which altered for desired outcomes. It has been observed that throughout the years this evident connection between two spectrums has loosened and design itself has become an openly accessible medium for anyone to utilize for varied purposes and interventions. Within this shift from closed and exclusive systems to open and transparent structures, open paradigm (OP) has emerged within the design field to signify the openness ideology on both theoretical and practical approaches. Throughout this paradigm shift, design has been considered as a vital tool to enhance social innovation and its related deliveries as design outputs to propose the framework of open innovation. Having placed within the fundamental clusters of OP, open innovation suggests the utilization of crowdsourcing approach within the design discourse to include varied actors within the innovation ecosystem on product and design development processes.

The design discipline has become the primary force for progress, innovation, and new results for society since it is a constantly changing field that is closely linked to industry and mass production. Considering the term as a unification between artistic expressions and manufacturing technologies, design alters the way we think, create and diffuse[1] .Although, the bond between these two points within the innovative spectrum is strong and evident, its integrated connection has loosened throughout the years and progressive developments.[2] Regarding the emerging issues and topics revolving around design research field, introduction of critical thinking about design, its goal and its foundational positioning within the society have been altered as a paradigm shift.

Regarding these developments, the literature dedicated to this framework has developed significantly throughout the years.[3] Related terminologies like co-creation, co-design,

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1   F. Celaschi, E. L. E. N. A. Formia, and L. Mata Garcia, "Creativity and Industry: A Difficult Integration. The Role of Design as a Bond Between Emotional Genius and Organized Rules in the Innovative Development of Products and Services," *REDIGE* 1 (2010): 62–78.

2   Silvia Gasparotto, "A Framework Analysis of the 'Open Paradigm': Four Approaches to Openness in the Field of Design," in *Design Revolutions: IASDR 2019 Conference Proceedings*, 2019, 467-487.

3   Silvia Gasparotto, "A Framework Analysis of the 'Open Paradigm': Four Approaches to Openness in the

participatory design, open design, crowdsourcing and open source are only brief examples from the general scope of this emerging area. This led into the definition of open paradigm (OP) in design field and more specifically OP in design research to signify this paradigm shift as a unified structure.[4]

Having placed as a vital concept under the discourse of the design profession, the paradigm itself suggest the need on contemporary perspectives towards the realization of systemic changes through innovation, especially within the social scales to enable holistic improvements and developments complimented by design. This specific need has become evident, since design has been considered as a vital factor which tackles social issues to provide innovation.[5] Thus, within the OP, it is possible to establish a concise perspective towards the influential dynamics which have the potential to realize social innovation (SI) and relevant outputs.

SI defines a specific process of change and alteration via the combination of existing assets through creative re-combination.[6] In a way, it is an explicit statement of innovation, which is for the social and public good.[7] But what happens if were to include the OP and its essential clusters within the SI frameworks, within the outlines of the design discourse, can be considered as an important question for the scope of this chapter. On a contemporary level, open collaboration and communication between multiple stakeholders have been proposed as a catalyst, which can improve the true impact of SI.[8] This proposition has been considered as a critical topic within the current global societies which have been affected through the political, environmental and economic structures. Therefore, and openly accessible and collaboratively shaped approaches within the concept of SI can foster sustainable growth and development.[9]

Referring to OP's main approach on considering multiple actors within design processes, it is also possible to acknowledge the large spectrum of innovation ecosystems through the set of people, communities, institutions, policies and resources.[10] Because of this nature,

Field of Design," in *Design Revolutions: IASDR 2019 Conference Proceedings*, 2019, 467-487.

4   Silvia Gasparotto, "A Framework Analysis of the 'Open Paradigm': Four Approaches to Openness in the Field of Design," in *Design Revolutions: IASDR 2019 Conference Proceedings*, 2019, 467-487; Tanja Aitamurto, Donal Holland, and Sofia Hussain, "The Open Paradigm in Design Research," *Design Issues* 31, no. 4 (2015): 17–29.

5   Victor Margolin and Sylvia Margolin, "A 'Social Model' of Design: Issues of Practice and Research," *Design Issues* 18, no. 4 (2002): 24–30.

6   Ezio Manzini, "Making Things Happen: Social Innovation and Design," *Design Issues* 30, no. 1 (2014): 57–66.

7   Anne Chick, "Design for Social Innovation: Emerging Principles and Approaches," *Iridescent* 2, no. 1 (2012): 78–90.

8   Robin Murray, Julie Caulier-Grice, and Geoff Mulgan, *The Open Book of Social Innovation*, Vol. 24 (London: Nesta, 2010).

9   Gabriele Santoro, Alberto Ferraris, and Demetris Vrontis, "Open Social Innovation: Towards a Refined Definition Looking to Actors and Processes," *Sinergie Italian Journal of Management* 36 (Jan-Apr 2018).

10   Francesco Domenico Sandulli, Alberto Ferraris, and Stefano Bresciani, "How to Select the Right Public Partner in Smart City Projects," *R&D Management* 47, no. 4 (2017): 607–619; Demetris Vrontis, Alkis Thrassou, Gabriele Santoro, and Armanda Papa, "Ambidexterity, External Knowledge and Performance in Knowledge-Intensive Firms," *The Journal of Technology Transfer* 42 (2017): 374–388.

SI demands the contributions across disciplines and sectors,[11] consisting of non-designer participants as well. Regarding this demand, OP within the social scale has the potential to become fueled by the crowd and data derived from their perspectives. Thus, as an essential cluster of OP, crowdsourcing approach suggests the further investigation towards the transition from SI to open innovation to realize systemically changes.

The Concept of "Openness" in Design Research

Considering design as an evolving and openly accessible medium within an emerging framework, advancements in new technologies and emerging digital tools have accelerated the general process of design to alter its boundaries, regarding the distribution of design-based knowledge and alternative methods. It has become possible to identify the influence of users and non-designer participants on the overall design processes and even manufacturing phases of both tangible and intangible outputs. New technological possibilities for ordinary people to collaborate are enabling new ways of performing creative actions and participating in design and production. This challenges our way of thinking design and production and affects the landscape of collaborative design research and practice.[12]

As a result, the openness ideology and the process of design itself, have begun to signify a larger term that defined as "open paradigm in the field of design or open paradigm in design research.[13] In the literature, it is also possible to focus on the identification of foundational aspects related to OP in design research field. According to the preliminary research, the general structure of the paradigm consists of the main aspects of *open products* and *open processes.*[14]

Open Products: The initial aspect mainly refers to the creation and proposition of new products and related development structures. Within the provided framework of OP, given aspect suggests the utilization of free and open-source seawares as well as the usage of open-source hardware, especially on manufacturing processes.[15]

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11   Alex Nicholls and Alex Murdock, eds., *Social Innovation: Blurring Boundaries to Reconfigure Markets* (Springer, 2011).

12   F. Celaschi, E. L. E. N. A. Formia, and L. Mata Garcia, "Creativity and Industry: A Difficult Integration. The Role of Design as a Bond Between Emotional Genius and Organized Rules in the Innovative Development of Products and Services," *REDIGE* 1 (2010): 62–78; Silvia Gasparotto, "A Framework Analysis of the 'Open Paradigm': Four Approaches to Openness in the Field of Design," in *Design Revolutions: IASDR 2019 Conference Proceedings*, 2019, 467-487.

13   Silvia Gasparotto, "A Framework Analysis of the 'Open Paradigm': Four Approaches to Openness in the Field of Design," in *Design Revolutions: IASDR 2019 Conference Proceedings*, 2019, 467-487; Tanja Aitamurto, Donal Holland, and Sofia Hussain, "The Open Paradigm in Design Research," *Design Issues* 31, no. 4 (2015): 17–29.

14   Silvia Gasparotto, "A Framework Analysis of the 'Open Paradigm': Four Approaches to Openness in the Field of Design," in *Design Revolutions: IASDR 2019 Conference Proceedings*, 2019, 467-487; Tanja Aitamurto, Donal Holland, and Sofia Hussain, "The Open Paradigm in Design Research," *Design Issues* 31, no. 4 (2015): 17–29.

15   R. Vallance, S. Kiani, and S. Nayfeh, "Open design of manufacturing equipment," in *Proceedings of the CHIRP 1st International Conference on Agile, Reconfigurable Manufacturing*, May, 2001, 33-43.

Open Processes: Second aspect signifies the collective or collaborative efforts of multiple and varied actors from different professional backgrounds to provide desired outcomes, specifically for the development processes of new product and outputs.

Regarding these two main aspects, the paradigm mainly focuses on the democratization of decision-making processes, which allow the users and other participants to acknowledge their roles on providing long term innovative change and alterations.

The Four Essential Clusters of Open Paradigm

The four clusters of open paradigms provide a contemporary categorization regarding the two main aspects of the paradigm's overall structure.[16] Utilizing the preliminary approach provided by the literature,[17] following adapted table presents certain methodologies to further define the general scope of the paradigm. Within this scope, it is possible to acknowledge four main clusters as: OS (Open-source approach), CO (Collaborative approach), CR (Crowd approach), OM (Open manufacturing approach). Following adapted table 1. illustrates each methodological approach under the classification of two main aspects of *open products* and *open processes.*

Design Phase		Production Phase	
OS	**CO**	**CR**	**OM**
Open design	Co-design	Crowdsourcing	Open manufacturing
Open-source	Co-creation	Crowdfounding	Open distribution
Open hardware	Participatory design	Open innovation	Open production
Peer production	Design thinking	Decentralized	Distributed manufacturing
	Co-development	innovation	Open fabrication
	Co-innovation	Crowd production	Making
	User-creation	Crowd-creativity	DIY
	Community based	Crowd-innovation	Personal or self-fabrication/fabrication
	development	Horizontal	
	Meta-design	innovation	

Table 1. The four clusters of the "open paradigm". (Source: Gasparotto, 2019)

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16   Silvia Gasparotto, "A Framework Analysis of the 'Open Paradigm': Four Approaches to Openness in the Field of Design," in *Design Revolutions: IASDR 2019 Conference Proceedings*, 2019, 467-487.

17   Kenneth D. Bailey, *Typologies and Taxonomies: An Introduction to Classification Techniques*, Vol. 102 (Sage, 1994).

As it can be observed from the table, each cluster shape and define the general structure of the paradigm itself. Within the scope of this research, the crowd approach has been selected as a vital contributive cluster to further examine the transition from socially innovative practices to openly accessible perspectives and approaches from a business level perspective. Since crowdsourcing refers to the propositions of solutions to different issues, while utilizing the wisdom of the crowd,[18] given term selected as the main driver behind enhancing the process of providing systemic change as a long-term result. Following part ventures briefly through the cluster of CR and establish the main theoretical plane for the review on the effect of crowdsourcing method on providing open innovation.

Crowd Approach

CR approach refers to the inclusion of wide amount of people to development and production processes. However, different than any collaborative practice, CR signifies the integration of specific crow from respective ecosystems to alter and define a new step of proposing change and innovative acts. Through the emergence of digital platforms and infrastructures, CR approach has enhanced its scope on providing eventual systemic change, referring to the general scope of social innovation. On a contemporary level, it has become possible to realize the contribution of communities and certain group of users to propose ideas or solutions on multiple levels of product and service development, from a business level perspective.[19] Selected cluster further signifies the constant information provided by users and participants allow designers and companies to estimate the true issues regarding the operational aspects dedicated to various product-service and system structures. Through this process, it becomes possible to provide efficient and well-defined design solutions, regarding usage, distribution and dissemination of outputs both on physical and intangible mediums.

Open Innovation Through Crowdsourcing

Differing from the foundational and conventional approaches of social innovation, open innovation (OI) presents the ability to use external knowledge as an internal asset, derived from external organizations, users, partners, universities and research organizations for companies and businesses.[20] Having emerged as a new spectrum, especially on management studies, OI introduced as a new paradigm, which refers to the enhancement on innovative capabilities of a company through the interaction with other external organizations and actors.[21] As a complimentary yet an important factor regarding the realization of OI has been considered as

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18   Lobna Nassar and Fakhri Karray, "Overview of the Crowdsourcing Process," *Knowledge and Information Systems* 60 (2019): 1–24.

19   Barry L. Bayus, "Crowdsourcing New Product Ideas Over Time: An Analysis of the Dell IdeaStorm Community," *Management Science* 59 (1) (2013): 226–244.

20   Livio Cricelli, Maria Grimaldi, and Sabrina Vermicelli, "Crowdsourcing and Open Innovation: A Systematic Literature Review, an Integrated Framework and a Research Agenda," *Review of Managerial Science* 16 (5) (2022): 1269–1310.

21   Henry W. Chesbrough, *Open Innovation: The New Imperative for Creating and Profiting from Technology* (Harvard Business Press, 2003).

crowdsourcing.[22] Moreover, it has been stated that crowdsourcing has become one of the most frequently referred keyword within OI literature and research dedicated to the framework.[23]

Referring to the significance of the "crowd" for the realization of socially innovative outcomes, the bond between each of these main aspects has been defined as a widely accepted tool, especially for commercial and business level operations.[24] Referring to the CR from OP's main clusters, for constant innovation companies started to utilize the crowdsourcing method to open and eliminate their boundaries to gather external expertise for varied agendas, instead of collaborating or communicating with the only selected few of external collaborators.[25] Essentially this process refers to an alteration of a company's own management structure, since crowdsourcing enables the involvement of external actors to the development processes, instead of internal research and development steps.[26] Furthermore, OI and crowdsourcing are essentially in unison and derived from the same paradigm as the distribution of knowledge becomes an openly accessible process, thus eventually has the potential to provide competitive advantage for firms in terms of research and development processes.[27]

To provide a totally integrated view on the given spectrum, a new model which illustrates the intersection point of OI and crowdsourcing method has emerged within the given discourse.[28] Following adapted figure represents the overall structure through four main dimensions, revolve around this mentioned intersection.

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22   Sonja Marjanovic, Caroline Fry, and Joanna Chataway, "Crowdsourcing-based Business Models: In Search of Evidence for Innovation 2.0," *Science and Public Policy* 39 (3) (2012): 318-332; Björn Remneland Wikhamn and Wajda Wikhamn, "Structuring of the Open Innovation Field," *Journal of Technology Management & Innovation* 8 (3) (2013): 173-185.

23   Winfried Ebner, Jan Marco Leimeister, and Helmut Krcmar, "Community Engineering for Innovations: The Ideas Competition as a Method to Nurture a Virtual Community for Innovations," *R&D Management* 39 (4) (2009): 342-356; Mokter Hossain and Ilkka Kauranen, "Crowdsourcing: A Comprehensive Literature Review," *Strategic Outsourcing: An International Journal* 8 (1) (2015): 2-22.

24   Thomas Kohler and Henry Chesbrough, "Motivating Crowds to Do Good: How to Build Crowdsourcing Platforms for Social Innovation," *NIM Marketing Intelligence Review* 12 (1) (2020): 42-47.

25   Henry W. Chesbrough, *Open Innovation: The New Imperative for Creating and Profiting from Technology* (Harvard Business Press, 2003); Kevin Boudreau, "Open Platform Strategies and Innovation: Granting Access vs. Devolving Control," *Management Science* 56 (10) (2010): 1849-1872; Ellen Enkel, Oliver Gassmann, and Henry Chesbrough, "Open R&D and Open Innovation: Exploring the Phenomenon," *R&D Management* 39 (4) (2009): 311-316.

26   Jeff Howe, "The Rise of Crowdsourcing," *Wired* 14 (6), accessed December 25, 2023, http://www.wired.com/wired/archive/14.06/crowds.html.

27   M. Palacios, A. Miguel, A. Nisar, and M. Grijalvo, "Crowdsourcing and Organizational Forms: Emerging Trends and Research Implications," *Journal of Business Research* 69, no. 5 (2016): 1834-1839.

28   Livio Cricelli, Maria Grimaldi, and Sabrina Vermicelli, "Crowdsourcing and Open Innovation: A Systematic Literature Review, an Integrated Framework and a Research Agenda," *Review of Managerial Science* 16 (5) (2022): 1269–1310.
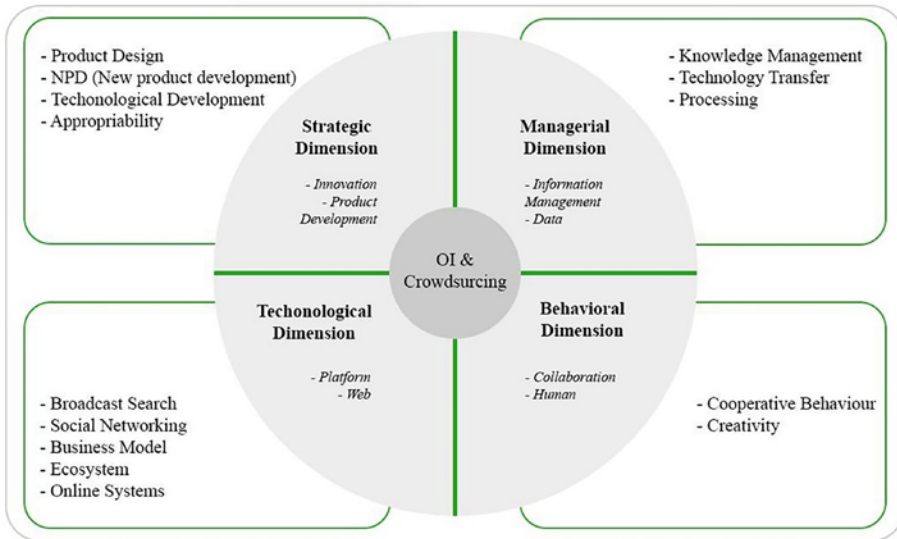
Figure 1. The main dimensions of open innovation and crowdsourcing (Source: Cricelli, Grimaldi and Vermicelli, 2022, p: 1297).

As it can be observed from the figure, the intersection points between OI and crowdsourcing consist of four main diverged dimensions as; *strategic, managerial, technological* and *behavioral*. This specific characterization provides the essential connection between these selected two main spectra. Furthermore, each sub-component under four main dimensions, tolerate the overall delivery and the realization of the main framework of crowdsourcing approaches.

Crowdsourcing for New Design Proposals

Referring to the overall scope of this chapter, following part provides a contemporary look and discussions on several examples as companies, which have been utilizing crowdsourcing method to provide innovative results, both tangible and intangible levels. Each case was selected from post 2000s to further analyze the usage of crowdsourcing approach under the main framework of OP to establish a contemporary framework within the methodology.

One of the significant examples for the utilization of crowdsourcing approach can be considered from Fisher-Price. The parent company of Fisher-Price, "Mattel" has been considered as one of the leading brands, which utilized crowdsourcing to develop new designs for their toy lines. Derived from their own social network structures, gathered ideas from varied user have helped the brand to come-up with new design propositions, as well as allowed them to realize this process with a more controllable budget.

Regarding the utilization of digital platforms, IKEA has launched its "Co-Create" platform back in 2018, which aims to gather new ideas from its customers and to collaborate with university students or novice designers to produce new product design propositions. As a

well-established furniture retailer, IKEA has also realized the potential contribution of the selected design method to further develop new solutions and innovative results, while also focusing on the involvement of non-designer participants within the process to gather relevant data and information.

For the realization of the open innovation and relevant approaches, a crucial example as a case can be provided through BMW's crowd innovation platform. The platform enables both internal and external crowds to develop, evaluate and share ideas, regarding the design propositions within the scope of the brand's main innovation line. According to BMW's approach, the platform prioritizes a swarm intelligence model, which focuses on the collective behavior to decentralize decision-making processes. Launched back in 2021, the Crowd Platform has been constantly promoting its own attitude towards the crowdsourcing approach and allowed other participants to become a part of ideation and developments phases, regarding new product development.

While innovation demands the need of varied stakeholder from both internal and external structures, another supportive case can be considered from the brand Nestlé. Through the InGenius platform, Nestlé aims to innovative within their own product line through the application of crowdsourcing approach within their own management structure. According to the main process of the platform, Nestlé has divided each development phases into four main pillars (*opportunities, incubation*, *co-innovation* and *deliverance*). The overall development process provides new opportunities to consumers on proposing ideas about desired product delivery methods as well as allows them to gain prizes in return to their collaborative efforts.

As it can be derived from each individual case, the crowdsourcing has been defined as a beneficial tool, especially when it comes to the openly accessible design delivery structures. In accordance with the OP's main framework, selected cases represent the potential utilization of the mentioned approach on altering the social innovation concept into open innovation as a final delivery channel.

Conclusion

As a conclusive statement, the general structure of OP and its essential clusters signify the need for new perspectives and practical applications, relating the distribution of design-based knowledge and data. Within the scope of this research, a small glance through the given clusters has been investigated to identify the contemporary applications of OP and how the shift within the total paradigm has influenced organizational structures. Within the given scope, crowdsourcing has emerged as an innovative method to gather relevant data for further design development stages contributed by users, actors and non-designer participants.

Having placed under the categorization of CR (crowd approach) of OP's main spectrum, crowdsourcing has been considered as a vital element within the overall flow of design and product development stages, thus for the total realization of systemic change as an openly accessible phenomenon. Regarding this consideration, the findings and the general investigation of this research suggests the apparent role of OP's main structure between the transition

of social innovation and open innovation practices. Crowdsourcing method under the design discourse has been considered the main path through the realization of this change and its overall dynamic within organizational structures has been defined through contemporary cases. For future research, the total structure of OP clusters provides potential research areas to further investigate the total process of how design is becoming an openly accessible and a transparent field for varied participants. Furthermore, it is also possible to consider crowdsourcing approach and its relevant practices on different scales as well, such as institutional and public usage levels.

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PART II
DISCUSSIONS AND FUTURE DIRECTIONS

DESIGN STUDIES: CONTEXT, CONTENT, AND DEVELOPMENT PARADIGM

ŞÖLEN KIPÖZ

Design Studies is a graduate program in which university graduates from many design disciplines and the creative industries can pursue master's and doctoral degrees to undertake research with a design focus. This article is based on my short talk, "Design Studies: The Curriculum of the Program and its Improvement" in the frame of the symposium called Design Studies Symposium DSS2023: Realities and Frontiers organized by Izmir University of Economics Design Studies program coordination in collaboration with Faculty of Fine Arts and Design.

To start the conversation, let's talk about how the program works structurally. The majority of graduate education strategies that are focused on design are built upon the infrastructure for undergraduate education. Is it possible to build master's and doctoral programs in design with a distinct academic framework which refers to an academic organization that is administered autonomously with its own staff, resources, curriculum, and administration? Many globally renowned academic institutions with great research credentials devote a different portion of their research expenditures to graduate education. Allocating a specialized staff and transforming the outputs of education into research theses and multi-stakeholder collaborative projects and publications that address current human and scientific problems appear as additional values for these institutions. The money for such a system can come from student tuition fees, scientific breakthroughs, and thesis research, all of which are financed in the framework of collaboration between universities and the industry. In order to produce such a structure at the research-oriented institute level, free from the burden of undergraduate education, first of all, the legal regulations in the country where the program is located must be appropriate, and this independent structure must be supported and promoted by the state or private sector, and its infrastructure must be established. On the other hand, considering that an education focusing on the design discipline is based on the experience and knowledge of the faculties of art, design and architecture, it is not always possible to make scientific discoveries that create economic value in these fields to the same extent as in the fields of science and technology.

There are numerous examples of independent art and design schools that are not part of an academic university structure; these include the Rhodes Island School of Design, Savannah College of Art and Design, Parsons School of Design in the United States, and the Domus Academy, Politecnico di Milano in Italy, Royal College of Art, London School of Design in England, and other schools with master's programs that last one or two years and have different curricula from their undergraduate departments. The work of the teachers and students is valued highly in these schools, and competition prizes, posters, and exhibitions are all highly regarded. Research universities are places where master's and doctorate programs are well-known and where research-oriented theses and disser-

tations are done for their outputs, which produce knowledge for research and education disciplines, while the number of practice-based studies is low.[1]

Continuity and interconnections with the curriculum of undergraduate university design departments provide the foundation of a master's and doctoral program in design within the university system. The PhD program is regarded as a continuation and improved form of the master's degree, and the master's level is regarded as a continuation and enhanced version of the bachelor's. All Turkish undergraduate and graduate programs focused on art and design are affiliated with the Higher Education Institution. Postgraduate education is associated with institutes, whereas undergraduate education is associated with academic faculties and departments. The coordination of graduate and doctoral education is under the purview of institutes, which are distinct academic divisions within institutions. However, as the individual academic units are responsible for creating the content, their staff members conduct the training. The students are the changing actors in this scenario; they are frequently graduates of the relevant faculty's undergraduate program; that is, they complete their thesis work and postgraduate coursework with the same faculty members they studied under during their undergraduate studies. The courses will probably cover the academic expertise of the faculty members they studied under. Without independent staff, resources, or funding, graduate education is provided inside the University's centralized organizational framework. Most students are young individuals who are studying or hope to pursue a career in academia.

IUE Design Studies Program Content and Structure

The Design Studies program, founded by the academic staff of the Izmir University of Economics Faculty of Fine Arts and Design, differs from similar programs in Turkey due to its interdisciplinary character. Although the program has an administrative structure affiliated with the Institute of Graduate School of the University as per the statute, the functioning and content coordination are carried out by the faculty. In this program, students enrolled in the program from design and other creative industries as well as from the positive and human sciences receive a mixed education with faculty members from different disciplines and areas of expertise. They graduate with a master's thesis prepared in accordance with academic standards in a period of two and a half years. The first thesis completed within the program was completed in 2008. While approximately two to six theses are completed each year, the number of theses completed in 2021 increased to nine. The doctoral program was later added to the graduate program structure of design studies, and the first dissertation of the PhD program was completed in 2019 in the field of waste management and circular design strategies in the fashion industry. In 2021, a second dissertation is completed on marine culture and service design. In the following years, the number of theses increased slowly, with two theses on bio-design and participatory design in 2022, a theoretical thesis on the relationship between literature and clothing in 2023, and two different theses on urban branding and culinary culture. There are currently 22 doctoral studies in progress; apart from design history, ideology and cultural studies, thesis topics that stand out in line with current design

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1   Meyer, M.W., Norman, D (2019). Changing Design Education for the 21st Century. http://doi. org10.10.16/j.sheji.2019.12.002 p.24, p.42.

paradigms are sustainable and circular design, bio-mimetics, biophilic design, bio-design, smart design with digitalization, digitalization in production, consumption and augmented reality, well-being and somatic design, slow design, participatory design.

The program's course curriculum and instructional framework are mostly theoretical in nature, drawing from design-oriented, multidisciplinary conceptual readings. Exceptionally, as part of the Ethics and Social Responsibility in Design course delivered since 2011, which has been offered as an elective for the past five years, an end-of-semester activist project has been developed and exhibited. In order to construct a conceptual idea, the Design Studio course has been a compulsory course since 2016. Classes for professionalized students from various fields are held in the evenings on weekdays in the master's program, but the doctoral program primarily targets those who have started or are planning to start their academic career.

While doing research, PhD applicants have begun to instruct undergraduate courses. A PhD is now required to become a faculty member, as it is currently the case in many globally recognized research universities. Apart from the academic title, this calls for knowledge of the nature of scientific research and the ethics of academic scholarship, appropriate referencing, familiarity with the background and body of publications in the field, and comprehension of the appropriate formats for proposals, discussions, and presentations in the research domain.[2] In this case, to become a PhD candidate after completing their master's degree, an academic applicant must pass the proficiency exam in the IUE Design Studies program and demonstrate their ability to conduct original research in this discipline.

The curriculum increasingly emphasizes elective courses, while research methods and seminar courses are positioned as common and compulsory courses. The elective courses in the master's elective course pool are designed to provide students with the opportunity to explore specific areas of interest within the field of design studies. These courses allow students to delve deeper into topics such as sustainable design, design theory, art, design, urban and spatial relations, artistic practices, design research methods, and material science.

At the doctoral level, in addition to the compulsory courses on design research and the relationship between design, art, culture, and history, the elective courses consist of interdisciplinary theoretical readings on the relationship between design, art, science, and technology and semi-practical courses focusing on smart design and textile arts. While the availability of instructors with the expertise to teach the courses determines the opening and selection process of the courses, it is possible to observe that some of the courses and instructors are effective in shaping the thesis topics of doctoral candidates.

The program's founding years saw a significant focus on design history, design education, design discourses, and design methods for master's theses. Meanwhile, prominent topics for master's thesis included social design, collaborative design, inclusive design, sustainable and ethical design, design management, the relationship between design and technology,

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2   Meyer, M.W., Norman, D (2019). Changing Design Education for the 21st Century. *http://doi. org10.10.16/j.sheji.2019.12.002* p.24, p.42.

bio-design, well-being, smart design, post-human design and design with AI. While students adhere to the current design paradigms when choosing their thesis topics, other consider-ations, such as the suitability of the faculty's specialized members for the subjects that interest them and their compatibility with the thesis professor they wish to work with, take precedence. Naturally, it is advantageous that thesis students and thesis advisors get along well, collabo-rate well, and allow thesis students to focus on the issues they choose for their thesis. On the other hand, it is crucial to consider how helpful these are, where they are used, and how much they challenge the status quo in design. All of these are, of course, preserved in university archives as well as library archives. However, assessing the external influence will also be helpful in determining their impact; an intriguing study on this topic from a while ago yielded data; 22% of the theses were finished without sharing the findings; 29% were presented at conferences; 17% were published as books; and 4% were shared online.[3]

It takes extra work to locate a postgraduate research space in the design industry and in the working world, or to work with local and non-governmental groups. Theses that involve vari-ous partnerships, fieldwork, workshops, and projects outside of academic institutions must set up the foundation for working with these organizations and communities while adhering to ethical committee regulations and protocol. Without a doubt, the industrial collaboration framework makes it more challenging to assess theses on design history, theory, and critique.

The Future Paradigm for Design Studies

At the initial stage of content development of the Design Studies program (2004), as in the rest of the world, design-oriented research problems or design innovation were object-oriented.[4] Over time, design began to be perceived as an innovation focused on service and knowledge production rather than an object-oriented mechanical phenomenon. The role of globalization, the information age, and the internet was undoubtedly evident in this. On the other hand, the interaction of design with social issues has led to the emergence of an understanding of design that cannot be defined by physical and geographical boundaries in a world that has turned into a global village, in Marshall McLuhan's words, design has evolved from being for people to being with people. The fact that "design problems" as we know them are not only related to design, or the possibility of solving problems not in the closed world of design itself, but through multi-actor, multi-stakeholder, and multi-disciplinary team play, has necessitated the development of an interdisciplinary design paradigm. When we look at how the interdisciplin-ary research process goes within the dissertation and the research process, we observe that more and more doctoral students come together with experts from different disciplines in the thesis monitoring committees. On the other hand, the majority of students prefer to work with advisors who are familiar with their field of study. Barriers caused by compartmentalization and recognition of the teaching staff as well as the PhD candidate--most likely working as a research assistant within the discipline--are significant. The challenges of Coordinating faculty

3   Davis, M. (2008). Why do we Need Doctoral Study in Design? *International Journal of Design*, 2(3). p.71-
       79.
4   Davis, M. (2008). Why do we Need Doctoral Study in Design? *International Journal of Design*, 2(3). p.71-
       79.

teaching loads, student enrollments, and financial issues[5] along with assigning co-advisors or collaborating with other faculties and universities need to be overcome.

Collaboration works in different levels; the traditional "lone scholar" model of academia replaced by the 'hybrid academic' who embodies the collaborative space between sectors and disciplines.[6] We see that the role of the academic is transformed, just as the roles of the designer intersect between science, art, ecology, and social sciences. An emerging 'hybrid academic' is not just inquisitive enough to do research, or able to write, but someone who is entrepreneurial, scientific explorer, artist who is connected with the real world and the industry. By crossing the boundaries between industry and academia "the agile academic "who transcends the ivory tower, adopts a practice based innovative research, engaging in real-world problems and contexts.[7] In regards to industrial collaborations within graduate studies academic priorities are expected to align with industrial expectations. There is a transition from an industrial understanding seeing the benefits of such collaboration as a recruitment strategy for future employees, or as philanthropic gesture[8] to a professional mindset that sees the research as a process of mutual learning and collaborative development. On the other hand, there are still shortcomings, in the context of such collaboration in Turkey, in terms of investment in research, both by the industry and academia.

Definitions of research within graduate studies vary; for some it refers to principles and more objective findings, for others it means subjective opinion. Anyway, research asks questions, selects appropriate methods, tests the questions, analyzes the results, and disseminates the conclusions unambiguously.[9] Design research, on the other hand, is an ideal context for embedding both practical and academic aspects of methodology, and as design practice has parallels with the more academic philosophical approaches, it requires an alignment of theory and practice.[10] Design research remains a controversial matter, a technical rationality has been challenged and importance was given to artistic, intuitive processes which practitioners bring to situations of uncertainty, instability, uniqueness and value conflict.[11] In terms of the interest in finding solutions to interdisciplinary problems faced by the current design paradigm,

5   Davis, M. (2008). Why do we Need Doctoral Study in Design? *International Journal of Design*, 2(3). p.71-79.

6   Murphy, E., Jacobs, N (2014). "Designing a New Design PhD?" 19th DMI Academic Design Management Conference: Design Management in the Era of Disruption, London, September 2014.p.3, 6, 11.

7   Murphy, E., Jacobs, N (2014). "Designing a New Design PhD?" 19th DMI Academic Design Management Conference: Design Management in the Era of Disruption, London, September 2014. p.3, 6, 11.

8   Davis, M. (2008). Why do we Need Doctoral Study in Design? *International Journal of Design*, 2(3). p.71-79

9   Durling, D (2002). Discourses on Research and PhD in Design. *Quality Assurance in Education,* Volume 10. Number 2. p. 81.

10   Murphy, E., Jacobs, N (2014). "Designing a New Design PhD?" 19th DMI Academic Design Management Conference: Design Management in the Era of Disruption, London, September 2014. p.3, 6, 11.

11   Joshi, A (2010). "Why Designers Do a PhD?" IHCI'10: Proceedings of the 2010 International Conference on Interaction Design & International Development. March 2010. p.1

the question of the nature of academic research and the fact that doctoral research is evolving in an increasingly practice-based structure raises the question of whether the thesis question is "worth doing research on." In this context, a definition of research emerges as "systemic inquiry for new knowledge" and "the implementation of credible and systematic modes of inquiry" by Australian Institute of Architects (2004).[12]

To conclude, the program's multidisciplinary nature is gradually evolving into a transdisciplinary one as a result of the need for academic instruction to address contemporary socioeconomic, cultural, social, technological and environmental issues. In this context, the global climate crisis, for instance, is a transdisciplinary issue that manifests at every social, economic, and industrial layer, requiring attention from a multi-actor field of knowledge and experience that includes industry, civil society, universities, local governments etc. The construction of an autonomous academic structure that prioritizes and supports value creation and the impact of the research will be inevitable for the sustainability of post-graduate academic programs.

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12   Davis, M. (2008). Why do we Need Doctoral Study in Design? *International Journal of Design*, 2(3). p. 71-79.

WHY DESIGN STUDIES? WHAT MAKES/SHOULD MAKE US UNIQUE TODAY?

ÖZGÜL KILINÇARSLAN

Introduction: The Interdisciplinary Approach and The Essence of Uniqueness

In response to the thought-provoking question posed by the Design Studies Symposium DSS2023[1] committee, themed "Realities and Frontiers," I embarked on an ontological journey. This journey began as a preparation for my presentation, where I contemplated the Symposium's diverse audience, the participating experts, the venue's significance, and the event's duration. This article serves as an extension of that talk, aiming to delve deeper into the core question: "Why Design Studies? What makes/should make us unique today?"

During the preparation phase, I was particularly inspired by a dialogue between two accomplished designers: brand designer and illustrator Micah Bowers and UX designer and lead editor of a design blog, Miklos Philips. Their discussion on the interplay between design and art[2] set the foundation for my exploration. My approach in this article is to extend the conversation from design to a broader artistic context, thereby making it relevant to contemporary discussions on creativity. The exploration of this wider context will guide us in evaluating the present-day requirements of graphic design and user experience design (UX). This analysis seeks to uncover how the concepts of design and art not only intersect but also influence each other in the modern era. Furthermore, it will assess the current and future dynamics of these creative fields, particularly considering new technological advancements and the growing applications of artificial intelligence.

A pivotal element of my approach is to trace and interpret thought pathways, exploring how contrasting ideas can coalesce to provide enlightening insights and aiming to systematize these findings. This exploration involves understanding the importance of Design Studies, defining the essence of uniqueness in our times, and discussing how such uniqueness can be attained. However, due to the impossibility of detailing the relationship between all these fields within the limits of this text, it points to certain reference points and leaves the further reading and analyses to the reader.

Reflecting on what it means to be unique today, my thoughts turned to the contrasting yet insightful critiques of modernity by two eminent 20th-century thinkers, Walter Benjamin and Martin Heidegger. Benjamin, in his 1935 essay "The Work of Art in the Age of Mechanical

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1   Design Studies Symposium DSS2023: Realities and Frontiers organized by Izmir University of Economics Design Studies program coordination in collaboration with Faculty of Fine Arts and Design.
2   Philips, M., Bowers, M. (2018). Art vs Design — A Timeless Debate. https://www.toptal.com/designers/creative-direction/art-vs-design

Reproduction," discusses the concept of "aura," epitomizing uniqueness. This concept leads to debates usually found in art history and art philosophy. Benjamin argues that the aura of art is compromised in an age of mechanical reproduction, suggesting that art production, in a time lacking traditional and ritualistic values, is inevitably connected to political praxis. Similarly, Martin Heidegger, in the same year and unbeknownst to Benjamin[3], gave a lecture titled 'The Origin of the Work of Art' at the Kunstwissenschaftliche Gesellschaft in Freiburg, presenting a contrasting viewpoint.

This exploration into the philosophical underpinnings of art's "aura" through the lens of Benjamin and Heidegger provides a profound understanding of how art, in its essence and representation, is intertwined with broader socio-political contexts and ideologies. The juxtaposition of these two philosophical standpoints offers a rich tapestry of insights into the evolving nature of art and its impact on society and culture, particularly in the context of modernity and its challenges. This in-depth analysis not only deepens our comprehension of the philosophical dimensions of art but also illuminates the potential pathways for the future discourse of Design Studies, especially in an era where the intersection of technology, art, and politics is increasingly prominent.

The Dual Impact of Technology on Art and Design

The emphasis on 'today' in the question 'What makes/should make us unique today?' redirects me to Benjamin's essay. In its introduction, Benjamin quotes Paul Valéry: 'For over twenty years now, neither matter, space, nor time have been what they used to be. We must be prepared for the fact that such great innovations will transform the technique of the arts, directly affect inventiveness, and ultimately, perhaps in the most magical way, alter the very concept of art itself.'[4] When recalling the early 20th century, marked by the introduction of new tools like photography and then cinema, these technological innovations changed the tools, language, and consequently the meaning of art. Today, this suggests the applications of artificial intelligence (AI) in the fields of art and design. The impact of changing technology on art and design can be assessed using branches of philosophy such as aesthetics and ethics.

Hubert Dreyfus, a philosopher deeply engaged in artificial intelligence research, articulated his philosophical analyses in the 1960s, drawing intellectual influence from Martin Heidegger and Maurice Merleau-Ponty. Merleau-Ponty's focus on perception and embodiment throughout his career provided a foundation to explore the relationship between mind and body, the objective world and the experienced world, as well as the expression in language and art, including considerations of history, politics, and nature. The title of the prologue section of the book "Mind over Machine" poetically encapsulates H. Dreyfus's philosophical discourses on knowledge: "The heart has its reasons that reason does not know".[5] Dreyfus's

3   Long, C. P. (2001). Art's Fateful Hour: Benjamin, Heidegger, Art and Politics. New German Critique, 83, 89–115. https://doi.org/10.2307/827790
4   Benjamin, W. (2004). Pasajlar, Çev. A. Cemal, Yapı Kredi Yayınları, İstanbul.
     Brey, P., Dainow, B. (2023). Ethics by design for artificial intelligence. AI Ethics. https://doi.org/10.1007/s43681-023-00330-4
5   Dreyfus, H.L., Dreyfus, S.E., Athanasiou, T. (1986). Mind over machine. Free Press, New York, NY

seminal work in the philosophy of mind is characterized by his firm assertion that the body is fundamental to all aspects of intelligent life. This stance challenges the formalist notion of a purely algorithmic, disembodied mind. Dreyfus argues that human intelligence and expertise extend beyond conscious symbolic manipulation, being deeply rooted in unconscious processes. He posits that these unconscious skills are elusive to formal rules, providing a critical perspective on the development of artificial intelligence. In his book "What Computers Still Can't Do," Dreyfus highlights the inherent limitations of artificial intelligence and the impracticality of total formalization. He maintains that human capabilities, interwoven with various types of human behavior, defy complete programmability. In "Alchemy and AI"[6] and "What Computers Can't Do"[7], Dreyfus encapsulates the history of artificial intelligence, critiques its progression based on flawed assumptions, and challenges the prevailing optimism in the field. Hubert Dreyfus's philosophical analyses gained an interdisciplinary dimension through his collaboration with his brother Stuart Dreyfus, who was significantly involved in numerous projects in computer science, mathematics, and artificial intelligence at MIT and the Rand Corporation. In today's world, where disciplinary boundaries are increasingly interwoven, adopting a collaborative approach to art, design, and philosophy, both in practice and theory, has become indispensable.

In the current landscape, artworks or design applications produced by AI, when isolated from the rich contexts of history and philosophy, often appear oversimplified yet striking. Looking ahead, we can anticipate these tools becoming increasingly adept at facilitating form generation. The ascendancy of AI tools is a central point of contemporary debate, sparking both intrigue and concern about their potential to supplant art producers and design practitioners. Recognizing artists and designers as cultural producers underlines the need for transformative changes in art and design education. This imperative mirrors our collective decisions regarding the type of world we aspire to shape and inhabit.

Given the interdisciplinary nature of the Design Studies program and the opportunities it presents for exploring design theories, what can we discern about the evolution of art and design in the context of today's technological capabilities? On one hand, we can examine the burgeoning field of biodesign, driven by sustainability and environmental crises. On the other hand, we can explore the transformative changes in design brought about by emerging tools like Augmented Reality (AR), Virtual Reality (VR), and artificial intelligence applications. My short talk, originating from the concept of "Aura" as discussed by Benjamin and the pursuit of uniqueness, aims to assess both the positive and negative impacts of these technological tools on design products and environments. In our quest to define the uniqueness of Design Studies today, it is crucial to incorporate the ethical dimension of design alongside the trajectories of history and philosophy. Therefore, I advocate for an approach that initially revisits the

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Exploring ways to regulate and build trust in AI,(2023). a project report in the RAND Europe's annual review 2022 -2023.

6   Dreyfus, Hubert (1965), Alchemy and AI, RAND Corporation. https://www.wikiwand.com/en/Hubert_Dreyfus's_views_on_artificial_intelligence#CITEREFDreyfus1965

7   Dreyfus, H.L., Dreyfs, S.E., Athanasiou, T. (1986). Mind over machine. Free Press, New York, NY Exploring ways to regulate and build trust in AI,(2023). a project report in the RAND Europe's annual review 2022 -2023.

milestones of modernist and postmodernist thought, placing them within a broader context. This reflective journey through the intersections of philosophy, technology, and design not only enriches our understanding of the dynamic nature of design but also underscores the need for a comprehensive, ethically informed perspective when navigating the challenges and opportunities presented by technological advancements in the fields of art and design. By integrating these diverse strands of thought, we are better positioned to address the complex question of what defines the uniqueness of Design Studies in today's landscape.

We often observe artifacts and products of the past floating in a visual landscape, disconnected from their historical context and discourse. Younger generations, typically unaware of this historical background, may perceive criticism of this landscape by older generations in an overly conservative tone. This may be due to the fact that previous generations often criticized AI applications without experiencing today's tools, and that younger generations are swimming in a sea of similar, ordinary, sometimes incomplete, pastiche-like images that they have not encountered better examples of. Therefore, listening more carefully to the thinkers of modernity and postmodernism, as well as the artists and designers of these periods, becomes essential for all generations today.

Recalling Benjamin's thesis on history, inspired by Paul Klee's painting (Angelus Novus), we should also consider the horrified expression of the "angel of history" being swept into ruins. It is crucial to impart the progressive approach of modernity, the impacts of the First and Second World Wars, and the trajectories of art philosophy and history to younger generations. In today's cultural landscape, where images drawn from a dataset and interconnected create meaning that is often subjected to randomness from the outset, there is a need to reassess the artwork-centered analyses of Benjamin and Heidegger in the context of the present. Such a reassessment may require us to reposition the role of the artist and the designer in contemporary society.

Repositioning Graphic Design: From Electronic Publishing to Artificial Intelligence

The widespread adoption of electronic publishing since the late 1980s, along with multimedia, web, and social media, has influenced graphic design. The advantages and disadvantages of computer-assisted graphic design and electronic publishing sparked much debate related with creativity in the 1980s and 1990s. Today, the use of artificial intelligence in graphic design software has enabled the automation of many design tasks, posing a risk of de-skilling the profession. This development, particularly in areas focused on rapid production and functional design, could lead to a division between professional and 'non-professional' designers. Research at the intersection of AI and graphic design is predominantly conducted by computer scientists rather than designers. This has resulted in a more functional approach in AI-enabled design software, rather than a pursuit of creative design. The evolving dynamics between AI and graphic design not only reshape the landscape of design but also raise fundamental questions about the future role and skill set of the designer. As AI continues to permeate the tools and methodologies of design, a critical examination of its impact on creativity, originality, and the essence of design becomes imperative. This interplay between

technology and creativity underscores the need for a thoughtful integration of AI in design practices, ensuring that these tools enhance rather than diminish the intrinsic value and human touch in design.

Currently, the implementation of artificial intelligence features in graphic design software has automated many design processes. However, this situation has led to the devaluation of the graphic design profession, the creation of a second layer consisting of non-professional designers, and the filling of today's visual culture space with less creative works. This imposes a responsibility for more active participation in AI and design on both design practitioners and researchers. Meron[8] suggests that hybrid intelligence approaches could offer new opportunities in this field, referring to specific studies in 2019 and 2020.

In his work "The Work of Art in the Age of Mechanical Reproduction," Walter Benjamin focuses on the transformation of traditional art in the 20th century and how this change diverges from traditional ideas. He attributes this largely to the reproduction of art and sees it as a negative change because it lacks the elements of "presence in time and space" and "unique existence," synonymous with the concept of aura. This brings us back to the issue of uniqueness and singularity. Explaining his ideas about the future of art, Benjamin, while describing an artwork devoid of the potter's handprint, opens a discussion that extends to today's AI debates about the human touch. The concerns he expressed in his time about modern technologies can still guide us today. Looking at the instances since the 19th century where machines have replaced humans, we can better assess the changes in the working world. I believe that instead of outright rejecting these technologies, experiencing them firsthand and critiquing them from within is a significant responsibility for art producers and design practitioners, as they can complement but never fully replace human creativity.

Art producers and design practitioners, when using the same tools and data inputs, can easily create homogenized designs that appear generic. Indeed, the cheapening of art and easy access to design products can be seen as a form of democratization. However, this issue needs to be re-evaluated considering Fredric Jameson's cultural analyses. When we consider artists and designers, and now curators as cultural producers, paying closer attention to the dynamics of rapid production and consumption becomes an intellectual responsibility. Unfortunately, when considering the casualties in sectors such as education, which are foundational to society, the failure to recognize this intellectual responsibility leads to the training of culture producers who merely create form and product, deepening the problematic structures of modernism in a world of postmodern proliferation. The contemporary art environment has been significantly affected by the advent of graphic design and photography software, leading to a high perception of ordinariness in many art products and their rapid consumption. On one hand, professional graphic design applications like InDesign and Illustrator continue to be complex and challenging for beginners and non-professionals. On the other hand, easily accessible online graphic design tools like Canva and Adobe's Spark, as well as AI-powered

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8   Meron, Y. (2022). Graphic design and artificial intelligence: Interdisciplinary challenges for designers in the search for research collaboration, in Lockton, D., Lenzi, S., Hekkert, P., Oak, A., Sádaba, J., Lloyd, P. (eds.), DRS2022: Bilbao, 25 June - 3 July, Bilbao, Spain. https://doi.org/10.21606/drs.2022.157

image creation applications like Dall-E and Midjourney, remind us of the statements by Marcel Duchamp and Joseph Beuys. In a world where the idea is art and everyone can be an artist, why shouldn't everyone design their invitations, posters, social media posts, and even, as we will encounter more frequently in the near future, their own applications and games? These user-friendly platforms, often supported by artificial intelligence and machine production technology, primarily offer template-focused creative tools. While democratizing design by making it more accessible, they contribute to the homogenization of design aesthetics and techniques, potentially leading to a saturation of similar, less innovative art works in the contemporary art environment. The dilemma within these new tools of art and design reflects a broader trend observed in the contemporary art world over the last twenty years; the ease of creating and disseminating art provided by technology sometimes comes at the expense of depth and originality.

Gradually, designers have critically assessed the situation arising from the advancement of computer-aided graphic design technologies since the second decade of the twenty-first century.[9] The development of graphic design technologies towards the end of the twentieth century facilitated the growth of in-house graphic design departments and the emergence of rapid, utilitarian, and less creative design products. In the 1960s, when the boundary between art and design began to blur, the works and discourses of Andy Warhol can offer a different perspective on today's debates. However, we often miss what these and similar works, reduced to formal analysis in art history classes, tell us about our cultural world. As many contemporary artists and designers eclectically use styles from the past without a grounding in art philosophy, as we enter the third decade of the twenty-first century, we have both too much and too little idea of what art and design are today.

Disengaged from creativity, producing quick sectoral solutions[10,11] an interdisciplinary field of art and design will inevitably blur the landscape we call culture, a form and result of our experiences. Accepting the challenges of interdisciplinarity and adopting and adapting methodologies specific to art and design practice can facilitate the preservation and defense of their creative, conceptual, and responsive aspects. We can comfortably say, looking at the last twenty years of cultural landscape, that the appeal of machine-generated solutions across different sectors has led to the emergence of more predictable, template-based, and less creative works and products. However, the integration of artificial intelligence into art and design processes offers advantages for professionals. With AI-supported tools, artists and designers can automate repetitive tasks like resizing images or creating layouts, allowing more time for their creative aspects. The integration of artificial intelligence into art and design processes has facilitated production for professionals. But at the same time, it has led to a detachment from embodied knowledge. AI algorithms can analyze large amounts of data, enabling designers to make informed decisions based on user preferences and trends. Moreover, AI can assist designers in creating personalized experiences for users. AI systems, using machine learning

9   Drucker, J., McVarish, E. (2013). Graphic Design History A Critical Guide. Pearson, New Jersey.
10   Duggan, B. (2013). The Rise of the In-House Agency. A. o. N. Advertisers.
11   Silk, A. J., & Stiglin, M. M. (2016). Build It, Buy It Or Both? Rethinking the Sourcing of Advertising
      Services. International Journal of Marketing Studies, 8(1), p.1-13.

algorithms, can understand user behavior patterns and adapt designs accordingly. This level of personalization increases user engagement and satisfaction. However, this acceleration, while serving as an assistant for professional artists and designers and reducing production costs, also leads to the indiscriminate distribution of outputs, detached from critical context and assessment, thus creating confusion at times. The outcomes added to our cultural landscape by design outputs and environments quickly produced for non-professional purposes and sectoral solutions with the support of AI, hint that we need to assess this situation not just as an aesthetic issue, but also as an ethical one.

The Ethical Implications of AI in Design: A Call for Responsible Innovation

Modern AI tools currently offer limited freedom for art producers and design practitioners to influence the direction of their work, resulting in outcomes that lack human touch and experiential depth. While it is currently challenging to express personal style or discourse in works produced by AI tools, this situation may evolve in the future. This optimistic view hinges on the hope that both artists and designers will pay close attention to ethics-one of the oldest sub-disciplines of philosophy-and act in accordance with the interdisciplinary perspective that we have both forgotten and rediscovered through new tools. Whether we engage with the Heideggerian problematic of knowledge, exploring fundamental philosophical ideas, or delve into the Benjaminian postmodern phenomena inherent in modernity, understanding the present and developing products and media requires us to go beyond formal solutions. We must venture into the forking paths of the garden of human nature.

In the field of industrial design, where my understanding of design history is less extensive compared to graphic design, I believe it is the collective responsibility of those who produce and consume culture to advocate for responsible innovation. The relatively new approaches of user experience design, participatory design and co-design can deepen and develop the ethical dimension. However, taking into account practical conditions, it is necessary to re-evaluate the concepts of human desire and need in today's context for potential deviations. Recognizing AI as a strategically important technology with societal and economic benefits, we must also acknowledge the serious risks, challenges, and unintended consequences it poses. In designing AI products and services, we should not solely burden the younger generations with the responsibility, but open historical examples and the trajectories of philosophical thought for discussion. The complexity of AI applications creates difficulties in developing and applying criteria for assessing ethical and legal principles. The societal impact of AI depends on both the technology and the goals of the system, and how they are embedded in an organization.[12]

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12 Exploring ways to regulate and build trust in AI. (2023). a project report in the RAND Europe's annual review 2022 -2023. https://www.rand.org/randeurope/research/projects/exploring-ways-to-regulate-and-build-trust-in-artificial-intelli.html

Ethics by Design (EbD)[13] represents a systematic methodology for integrating ethical consid- erations into technological development, particularly AI. Originating from European research in computer science, ethics, and responsible innovation, EbD has evolved from the concept of "privacy by design." This approach gained momentum in Europe following a 2019 European Parliament resolution advocating for inherent ethics in AI models. By 2020, despite recogni- tion in academia and policy, a comprehensive EbD methodology for AI had not yet been fully developed. The SHERPA and SIENNA projects, under the European Commission, aimed to establish a robust EbD framework for AI. [14]

Ethical Framework for AI Design: Core Values and Design Re- quirements

Adapting ethical principles to AI applications is challenging due to their abstract nature. Fun- damental ethical issues like explainability, fairness, privacy, and accountability lie at the heart of AI applications and debates. Broader ethical issues can be addressed through conceptual frameworks, guidelines, or process models.[15]

I will briefly outline the main items in Brey & Dainow's research framework for the EbD frame- work for AI:

Human Agency: Respects human rights such as freedom, autonomy, dignity. Prohibits AI from making final decisions on personal/moral issues and from manipulating or creating addiction.

Privacy and Data Governance: Ensures data subject rights during personal data processing. Supports data quality, accuracy, and rights, including consent withdrawal.

Fairness: Avoids algorithmic bias and supports diversity and inclusion. Ensures AI accessibility and avoids negative social impacts.

Individual, Social, and Environmental Well-being: Prioritizes safety, health, and psychological well-being. Considers environmental sustainability and societal quality.

Transparency: Requires clear communication about AI interactions and decisions. Supports auditability and explainability of AI decisions and operations.

Accountability and Oversight: Includes human oversight in AI operations and decision-making. Involves risk assessment and independent third-party auditing.

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13   For deeper insights into the subject, further readings on the EbD framework for AI and repot summary of Virtual roundtable on labelling initiatives, codes of conduct and other voluntary mechanisms to build trustworthy artificial intelligence (AI) systems are recommended.

14   Brey, P., Dainow, B. (2023). Ethics by design for artificial intelligence. AI Ethics. https://doi.org/10.1007/ s43681-023-00330-4

15   Prem, E. (2023) From ethical AI frameworks to tools: a review of approaches. AI Ethics, 3, 699–716. https://doi.org/10.1007/s43681-023-00258-9

Conclusion: Navigating the New Realities and Frontiers of Design Studies

As our exploration draws to a close, inspired by the pivotal question from the Design Studies Symposium DSS2023, "Why Design Studies? What makes/should make us unique today?", we stand at a significant crossroads. This journey, spanning design, art, and technology, leads us to a critical reevaluation of design in the era of artificial intelligence, marking new realities and frontiers. Stimulated by the dialogue between Micah Bowers and Miklos Philips, our discussion expanded from design to a broader artistic context, aiming to comprehend the evolving dynamics of these fields under the transformative influence of technology.

Our discourse, enriched by Walter Benjamin's perspectives on the 'aura' of art and Martin Heidegger's contrasting views, provided a philosophical foundation that underscored the intricate connections between art, design, and their socio-political contexts. This interplay highlighted the transformative impact of technology, especially AI, on art and design, reshaping their tools, language, and inherent meanings, thereby altering the very fabric of creativity and expression.

In this technological landscape, philosopher Hubert Dreyfus's skepticism towards AI's ability to replicate human intelligence and creativity becomes particularly pronounced. Dreyfus highlights the limitations of AI, focusing on the depth of human experience and expertise that computational algorithms cannot adequately capture. His philosophy delves into the realms of practical and embodied intelligence, shedding light on the non-formalizable aspects of human skill and intuition. He asserts that human expertise, particularly in creative fields like art and design or in any action honed over time, is deeply rooted in practical and embodied intelligence and therefore surpasses the capacities of artificial intelligence. At this intersection, Heidegger's and Ponty's insights into the essence of truth and knowledge in art converge with Dreyfus's critical perspectives on AI. This convergence crafts a narrative that acknowledges technology's transformative role in art and design while cautioning against overlooking the intrinsic human qualities that define these creative fields. This philosophical framework guides our understanding of the complexities of integrating AI into art and design, emphasizing the need to preserve the fundamental human elements in these disciplines.

As we venture into these emerging frontiers, the ethical implications of AI in design prompt a more holistic perspective that embraces human needs and our environmental responsibilities. The Ethics by Design framework, concentrating on ethical considerations in AI, now also stresses the interconnectedness of humans with their environment. This paradigm shift involves not just the implementation of principles but also a re-envisioning of our role in a world where human and environmental concerns are deeply interwoven. In this era, design evolves into a domain where technology, creativity, and ecological consciousness merge. This intersection demands a profound engagement with ethical dimensions, ensuring that AI's integration into design promotes a harmonious relationship between humans and their environment, enhancing creativity and nurturing our planet.

In conclusion, the essence of Design Studies today is defined by its adaptive nature amidst technological and ecological transformations. Embracing a commitment to ethical responsibility that encompasses respect for our interconnected world, our explorations in philosophy, technology, and design emphasize the necessity for a comprehensive, ethically informed, and ecologically aware perspective. Moving forward, Design Studies is well-positioned to lead in navigating these new realities and frontiers, evolving in an era of transformative change, and ensuring that the progression of design remains responsive to human needs as well as the health and well-being of our planet and its ecosystems.

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CROSSOVERS AND COLLABORATIONS: RECONSIDERING DESIGN STUDIES THROUGH 4TH GENERATION UNIVERSITY

OSMAN DEMIRBAŞ

The concept of university relies on the collaboration of people. It basically refers to coming together, learning together, discovering together, producing together. This approach could be enhanced with several different verbs however it is more important to understand what and/ or how this collaboration should be employed. First of all, it is very important to understand the realities, the frontiers and the possibilities. University as an institution has a rich history. It might be a good practice to start with understanding the concept of university, or in other words what university means. The origin of the idea refers to the concept of being universal as the word universe is embedded in it. What does it mean to be universal? What are the criteria of being universal? Simply, it can be claimed that universities are the institutions that seek universal truth, conduct universal science, and can accommodate all the ideas in the universe. The word university is derived from the Latin expression universitas magistrorum et scholarium, which refers to the community of students and teachers. In time, like all other life phenomena, inevitably the universities have been changing through the great changes and transformations in the world over the centuries and taking on new missions.

The history of education can be dated back to almost 5000 years back to 32nd BC where Sumerians invented the writing which could be considered as the establishment of a tradition of institutional and systemic education in history. This tradition was continued by different cultures for centuries, and by 3rd century BC, when the skeptic and scientific approach became an indispensable part of education, it was transferred to the ancient Greek tradition in the west, and to ancient Egypt's and Persian's Mesopotamian tradition in the east. For many western scholars, the beginning of universitas magistrorum et scholarium is the Athenian School in 335 BC that was founded by Aristotle (Figure 1). However, it is more the ancestor of scholastic guilds which was the cooperation of students and masters then it was modified as universitas magistrorum, or universitas scholarium, or universitas magistrorum et scholarium.[1][2][3][4]

1   Riche, P. (1976) Education and Culture in the Barbarian West: From the Sixth through the Eighth Century. Columbia: University of South Carolina Press.
2   Rüegg, W. (1991) Foreword: The University as a European Institution. A History of The University in Europe, Ed. Hilde de Ridder-Symoens. Cambridge: Cambridge University Press. XIX-XX.
3   Verger, J. (1999) The universities and scholasticism. The New Cambridge Medieval History V. Ed. David Abulafia. Cambridge: Cambridge University Press. 256-278. https://doi.org/10.1017/CHOL9780521362894.014
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Figure 1. Aristotle's School, a painting from the 1880s by Gustav Adolph Spangenberg (source: https://commons.wikimedia.org/wiki/File:The_School_of_Aristotle.jpg)

Figure 2. University of Bologna (iStock.com/Sedmak)

4th Generation University (Gen 4 Uni)

Bologna University founded in 1088 in present-day Italy is considered to be the first university.[5] Between the 12th and 15th centuries there are several medieval universities founded in Italy, France, England, Spain, Portuguese and Scotland in which the mainstream is teaching. In

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5   Loconte, J. (2021) Bologna: Birthplace of the University. The Heritage Foundation 50 Years. https://www.heritage.org/education/commentary/bologna-birthplace-the-university

these universities the education was mostly in Latin language and these are considered as the 1st generation university.

Until the 19th century the main function of the university hadn't changed too much, however by the 19th century there was a significant mission change which triggered the first revolution in the understanding of universities. Through this revolution the mission of the universities has been broadened by including the production of research together with teaching. Starting from the early 19th century till the late 20th century there were these 2nd generation universities which is also known as the Humboldtian model of education. It is also known as the Humboldtian education ideal.[6][7] The core idea was to integrate the arts and sciences with research in order to initiate a comprehensive learning together with developing a cultural knowledge. It is the holistic combination of research and studies to develop new knowledge rather than just teach the existing. Research university concept was influenced by and developed through the Humboldtian model. By this revolution research was a part of the university and it has become the responsibility of the scholars. By the late 20th century, the second revolution in higher education occurred. Once more, the mission has been broadened by encapsulating the economic development to research and teaching which is the emergence of the 3rd generation university. These are also known as entrepreneurial universities. Today a lot of the universities around the globe are still under this category. The entrepreneurial paradigm of the 3rd generation universities mostly relied on knowledge-based regional innovation systems and linear economic models. After the previous two revolutionary transitions between the 1st-2nd and 2nd-3rd generations, this time the transition from the 3rd generation to the 4th generation was more of a transformation. The 4th generation university (it will be referred to as Gen 4 Uni from this point on) mostly rely on a circular economy paradigm (Figure 2). It emerges as a response to the environmental concerns of our time. The new paradigm is related to growth and the new role of the Gen 4 Uni is being one of the main stakeholders to support societal change and transformation. Future and sustainability are the keystones of Gen 4 Uni. In that sense, while preparing the leaders of the future who will generate new knowledge to support a sustainable future through economic growth, Gen 4 Uni has undertaken to transform itself into a sustainable organization and to establish sustainability as a regional management approach. With this understanding, Gen 4 Uni is not only the center for teaching, research and innovation but also it is one of the main actors of the co-creation of sustainable development.[8][9]

6   Günther, KH. (1988) Profiles of educators: Wilhelm von Humboldt (1767-1835). Prospects, 18, 127–136. https://doi.org/10.1007/BF02192965)

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	Gen 1	Gen 2	Gen 3	Gen 4
Objective	Education	Education and research	Education, research and know-how exploitation	Education, research and open innovation
Role	Defending the truth	Discovering nature	Creating value	Enabling value creation
Method	Scholastic	Mono disciplinary science	Inter-disciplinary science	Multi-actor innovation (trans-disciplinary science)
Human Capital Development	Professionals	Professionals and scientists	Professionals, scientists and entrepreneurs	Professionals, scientists, entrepreneurs, artists, customers, ecosystem participants etc.
Orientation	Universal	National	Global	Ecosystem
Organization	Colleges	Faculties	Institutes and Centers	Innovation spaces

Table 1. Revolutionary transitions between 4 generations (adapted from Steinbuch, M., 2016, "Towards the 4th Generation University", https://maartensteinbuch.com/2016/07/23/towards-the-4th-genera-tion-university/).

A university does not need to be brand-new to be a Gen 4 Uni. Like in 3rd generation university, technology and innovation are indispensable elements of a Gen 4 Uni however it is not enough. The main characteristic of a Gen 4 Uni is how technology and innovation are utilized so it is all about the vision and mission. Any university which is aware of the current issues and act in that sense could transform itself to a Gen 4 Uni. One important characteristic of Gen 4 Uni is the fact that it is geographically embedded so the mission and vision will vary accordingly. Universities that are considered to be Gen 4 Uni have some extra qualifications suitable for the professions and structure of the future. These universities should have a vision and mission that ensures adaptation to the new order in which we are intertwined with technology. The role of technology and innovation for Gen 4 Uni is acquiring different ideas, adapting them to future industries and providing new horizons for students.[10] [11]

Gen 4 Uni is based on a system that values people and life more. The main objective is to provide various opportunities to meet people's needs in an everchanging industrial world. Through a human-centered approach, Gen 4 Uni glorifies the value given to people whose life conditions are constantly changing with advancing technology. The main goal of these

10   Tonga, M.Y. and Tonga M. (2022) Overview of Industry 4.0: The Future of The Industry. G. Ü. İslahiye İİBF Uluslararası E-Dergi. 6 (6). 40-60.

11   Von Scheel, H. (2023) Industry 4.0: Think Value, Not Tech. Nokia. https://www.nokia.com/thought-leadership/articles/industry-4-0/three-key-drivers-for-success/?did=D00000004947&gad_source=1&g clid=CjwKCAiA44OtBhAOEiwAj4gpOTSHfNB0yuwCiQeTE4y2ra6-WOK6rp7qt5Atsutkxa4yDh5OyjkAEho CJPEQAvD_BwE

universities is to keep up with the change and take all necessary steps to change and improve themselves along with the change without any hesitation. Keeping up with the developing and emerging technologies it is possible for 4th generation universities to determine the needs and lifestyles of future people. Therewith, these universities also provide a learning environment and a new educational model for new and future-proof job opportunities for individuals.
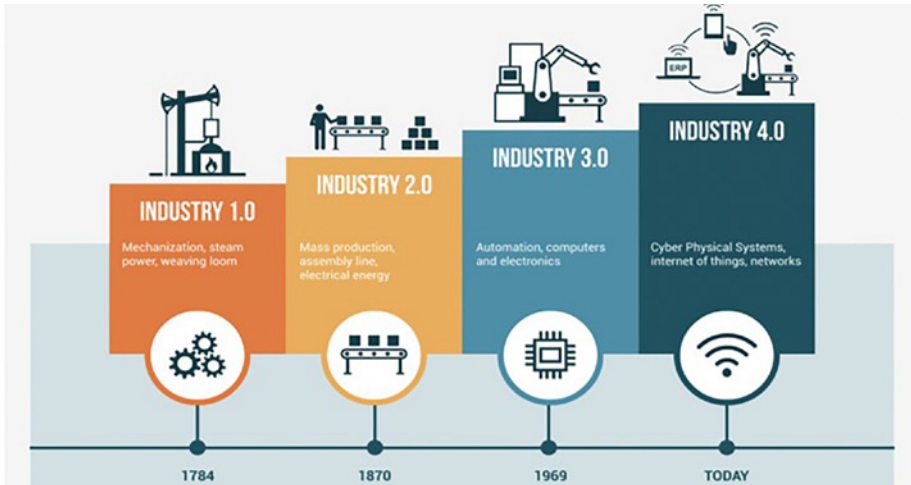
Figure 3. Historical development of Industry 4.0 (source: https://blogs.sw.siemens.com/valor/2021/02/15/revolutions-are-only-visible-in-retrospect/

After the first industrial revolution based on water and steam power, the second industrial revolution in which electrical energy came to the fore, and the third industrial revolution in which digital technologies took place, Industry 4.0 offers numerous advantages through the digitalization of the industry. However, this transition brings up some new challenges, it is inevitable that the need for manpower will decrease with the digitalization of the industry. By the progress of this process, some professional groups will lose their validity in time or will have to undergo major changes, which will cause the emergence of new definitions, new jobs, new professions.[12]

Industry 4.0

Gen 4 Uni concept is highly related with Industry 4.0, then what is industry 4.0? To put it simply, Industry 4.0 is the fourth industrial revolution, the new industrial vision of our age, in essence it is the renaissance of industry. The main element of this renaissance is the digitalization of industry, which is also the digitalization of life. In its simplest form, the main outputs targeted by Industry 4.0 are; ensuring resource efficiency, reducing costs and energy use, increasing the quality, and managing business processes via computer.

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12   Tonga, M.Y. and Tonga M. (2022) Overview of Industry 4.0: The Future of The Industry. G. Ü. İslahiye İİBF Uluslararası E-Dergi. 6 (6). 40-60.

This is the crossover where Industry 4.0 meets Gen 4 Uni. According to Henrik von Scheel Industry 4.0 has been the greatest structural shift for the last 250 years in which there is the transformation of the scope, scale and complexity that we have never experienced.[13] Artificial intelligence (AI), wearable technologies, quantum computing, additive manufacturing, internet of things (IoT) and more are the advancement of production and operations through digital technologies to bring data driven intelligent actions to real life in which technology is the means but not the end. According to Schell all these new technologies are for creating a value in which people are the main concern because people are responsible for guiding and implementing this big change.[14] For that reason, it is important to employ a new higher education system that meets the needs of this new era. It is important to train young people who will build the future. As mentioned above it is more important today to create a value rather than technology so as Scheel underlines human beings are in the center of manufacturing, operating, producing.

Design 4.0

In the light of the above discussion it is possible to coin Design 4.0. There is a need to improve the knowledge and skills of the designers also in the new industrial revolution, however this has its own challenges. It is useful to understand why industry 4.0 is important for designers and, in this context, to consider what the Gen 4 Uni concept offers for design education. Undoubtedly, this is a new time, a new design phenomenon and a new designer identity. A natural human response for any change is fight-or-flight. Designers are at a similar crossroad today, when it comes to deciding whether to embrace the change through this new understanding and use of technology or stick with the status quo. According to Rogers's "Diffusion of Innovation (DOI) Theory" there are five main elements influence the spread of a new idea:[15]

- the innovation itself,

- adopters,

- communication channels,

- time, and

- a social system.

This process is largely relying on a social capital and for self-sustainable innovation, this

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13   Öztel, H. (2019) Why 4th Generation Universities? 4th Generation University: Co-creating A Sustainable Future. Linkedn Newsletter. https://www.linkedin.com/pulse/4th-generation-university-co-creating-sustainable-oztel-sfhea-/?trackingId=crBkkcxlTnSJmG5K5ZBCrg%3D%3D

14   Von Scheel, H. (2023) Industry 4.0: Think Value, Not Tech. Nokia. https://www.nokia.com/thought-leadership/articles/industry-4-0/three-key-drivers-for-success/?did=D00000004947&gad_source=1&gclid=CjwKCAiA44OtBhAOEiwAj4gpOTSHfNB0yuwCiQeTE4y2ra6-WOK6rp7qt5Atsutkxa4yDh5OyjkAEhoCJPEQAvD_BwE

15   Rogers, E. M. (2003). Diffusion of Innovations (5th Ed.). New York: Free Press.

approach should be widely adopted. The biggest challenge is the persistence of the individuals and companies in their current paradigms missing the need to move forward. This claim is also valid for universities.

Design has been a natural communication medium for human beings since the beginning of time. It would not be wrong to look at it from the upside down and claim that the history of design continues until the very existence of man. However, major and rapid changes in the last 40 years have been seen and today, everything can be designed in an alternative virtual world, analyzed and simulated for real life conditions.

In the current discourse of the internet of things (IoT), artificial intelligence (AI), smart designs, big data, virtual reality and more, not only our ways of working, but also our lives, and even the whole society are in a rapid change, and this is inevitable. As discussed above, what needs to change in order for the industry to maintain its place in the internet economy is defined as Industry 4.0. It means uninterrupted support and regulation of value creation in production and ensuring that all stakeholders benefit from the digitalization of everything, the internet and all opportunities they provide as much as possible. Industry 4.0 opens the door wide open for a new understanding in design by enabling product development in all software and hardware, communication of production and service processes, real-time information exchange between machines, autonomous systems and optimization.[16]

Design as a universal communication medium, is also defined as the strategic planning for production. Since a world without design is inconceivable, in line with this great transformation in the industry, it is not possible to ignore the Design 4.0 approach for success. In parallel with the industrial revolutions, it is possible to talk about three different design periods with very different structures and effects. The first period was the longest one that starts with the action of design until 1960s where the computers began to be used in design. The second period was the invention of computer systems capable of 2D representation that could graphically display the design on the screen. In a short period of time by 1980s a new era started by computer aided system (CAD) technologies, which provide digital 3D designs. The 4th period which could be stated as Design 4.0 is the beginning of 3D design applications using design and automation systems over the internet by the beginning of 21st century. This new approach provides not only an uninterrupted communication between all stakeholders, but also new phenomena in design as digital fabrication, user interaction (UX), virtual reality, internet of things (IoT) and artificial intelligence (AI) in design (Figure 4).

From a different point of view according to another approach that considers the issue through the distinction between strategic and systemic design, the change and evolution in design is referred under four bounded domains. According to this approach, strategic design refers to what a designer does whereas systematic design is a way designer can do it. Where stra-

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16   Pei, E., Kim, S. J., Kim, S., Lee, D., Lee, S. and Self, J. (2023) Design education 4.0: Technology-driven design futures and the future of design education. IASDR Congress 2023 Life Changing Design, Politecnico de Milano. doi.org/10.21606/iasdr.2023.165

tegic design is associated with solving any design problem through a set of principles in the process of design action which addresses the profession, systemic design is a process of the combination of systems and design thinking for embracing wicked and complex problems. Systemic design requires a change that is spatial but at the same time temporal.[17] [18] It is a changemaking approach in design in which designers should take an important role in all social and environmental issues (Figure 5).
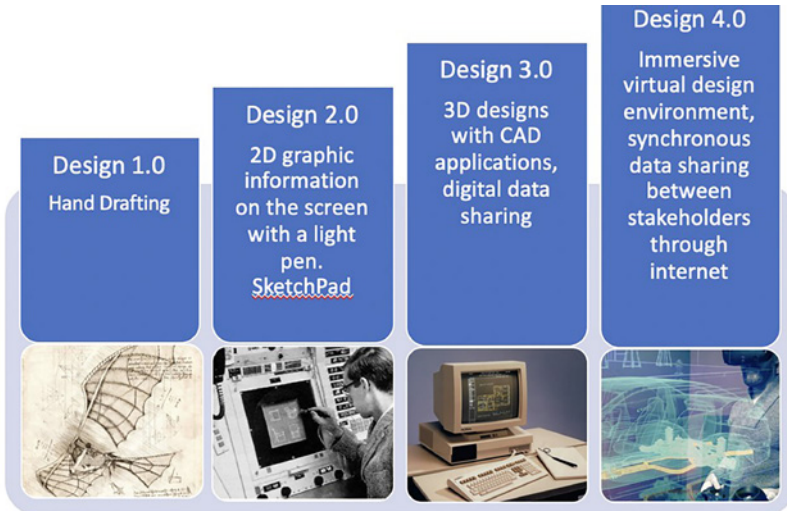
Figure 4. Four generations of design through drafting techniques and digital technologies

Figure 5. Strategic Design to Systemic Design, Design 1.0 – 4.0 (adopted from Jones, P. (2013) Design for Care)[19]

17   Jones, P. (2013). Design for Care: Innovating Healthcare Experience. New York: Rosenfeld Media.
18   Moggridge, B. (2006). Design Interactins. Massachussets: The MIT Press.
19   14. Jones, P. (2013). Design for Care: Innovating Healthcare Experience. New York: Rosenfeld Media

Design Studies and Research

In order to fit in the definition of Gen 4 Uni and fulfill the requirements of an education for Design 4.0, the programs should follow an integrated design understanding through an inter-disciplinary approach.

Integrated design brings different design professionals and experts on a single problem. A broader range of experts working and contributing as a team, rather than acting independently creates a multidimensionality. Comprehending current problems and understanding the needs of people multidimensionally and handling these problems in this respect are the key factors of this new approach. The responsibility of contemporary designers today is more than just creating unique designs but also providing a betterment for the environment and life. Grudin claims that good design tells the truth whereas bad design tells a lie, whereas a lie is usually unrelated.[20] As mentioned above, with this big change and transformation some disciplines will emerge soon and there will be new definitions and new professions. This is also true for design so design education should equip future designers with necessary skills of Design 4.0.

It might be tempting to stick into the existing design discourse, which could be understand-able especially if someone thinks that is the only truth. The main danger of such behavior is to become obsolete at the end and unfortunately it is unavoidable. Then what could be the alternative approach? It is crucial for the designers to identify extreme trends and changes. These people are the ones who are actively experimenting and experiencing. These people are more than just designers but active innovators. These innovators do not stick themselves just in the discipline of design (if it is possible to claim a sharp design discipline anymore), while they connect with other designers, they also communicate with other innovators in all other fields. It is not very simple to become one of these innovative designers and it is always challenging to encounter such innovators and, more importantly, to become one of them. However, it is like a wonderland, there is a lot to learn when you enter this direction. In order to get into this direction, one should break away from the solid thinking of the traditional idea of design and designer, and expose themselves to an interdisciplinary or even transdisciplinary thinking model. This transformation starts with questioning the existing paradigm of design discourse (Design 3.0) and to find out the possible opportunities. In order to achieve this, it is important to have absurd thinking, think about the different, unusual, not existing, like TV platforms that have changed the whole experience of television and cinema. In other words, think out of the box. In order to be able to do that the meaning of being a designer should be well-understood. This practice will help the individual to reframe the realities of themselves. At the end of the day, the purpose of designers will not change, but the processes will be different.

Design 4.0 seeks individuals with multi-skills, so each designer should figure out contrasting skills that fit with the current role as a designer. Metaphorically, this equips the designer with the skills of ambidexterity (to be able to use both hands) in order to find solutions to new extremes world problems. In the existing paradigm, moving from a multi-disciplinary

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20   Grudin, R. (2010). Design and Truth. Yale: Yale University Press.

approach to an inter-disciplinary approach is necessary but not enough, it should go further as a move from inter-disciplinary approach to a trans-disciplinary one. McGowan expands the understanding of trans-disciplinary mindset in which it is not merely an integration of human disciplines but it is also the integration of human and AI (Figure 5).[21] According to her model this integration is illustrated by an X shape on which the thinker (as McGowan refers) is in the middle together with AI. In our case X-shape thinker is the Designer 4.0 who thinks across disciplines, ready to embrace challenges, equipped with technological capabilities in order to create the new value.

The designer of the new era, eager to experiment is the key for the triumph. Instead of fearing challenges, designers should learn to embrace and adapt to the changing needs. Instead of just being an architect, designer, engineer or else, an individual should act like a scientist through cultivating a sense of intellectual humility by constantly treating their existing ideas as hypotheses worth testing as Grant refers.[22]

Conclusion

Today, programming and coding is commonly considered to be an effort of creating an application to fit for the purpose, often in an industrialized environment. During Industry 3.0, early computational work conducted by cumbersome and costly technology was focused on producing utilitarian results. Later, Molnar who is an artist and a technologist hypothesized that computational work could be a form of an artistic expression.[23] This hypothesis has paved the new way for the next generation to reconsider and redefine digital technologies in Industry 4.0. Today, expressions like new media art or new media design are very common but there is still a very dangerous distinction between traditional method and technology-based method. This way of understanding could be considered as one of the two significant threats for a contemporary approach in design education which has been referred to as Design 4.0. The second significant threat and another big challenge is still remaining trapped in a disciplinary distinction. Today it is very important for the new designer to equip themselves with multi-skills of the 21st century, handling problems from a trans-disciplinary approach and to be a good team member. Through a 4th generation university approach, design education should equip future designers with the skills of working in the intersection of emerging technologies and life by that means utilizing design expertise to find out opportunities for innovation.

21   McGowan, H. E. (2019). What If the Future of Work Starts With High School? Forbes. https://www. forbes.com/sites/heathermcgowan/2019/04/03/what-if-the-future-of-work-starts-with-high-school/?sh=5cafcd785964

22   Grant, A. (2021). Think Again: The Power of Knowing What You Don't Know. Ebury Publishing.

23   Molnar, V. (1975). Toward Aesthetic Guidelines for Paintings with the Aid of a Computer. Leonardo. 8(3). 185-189.
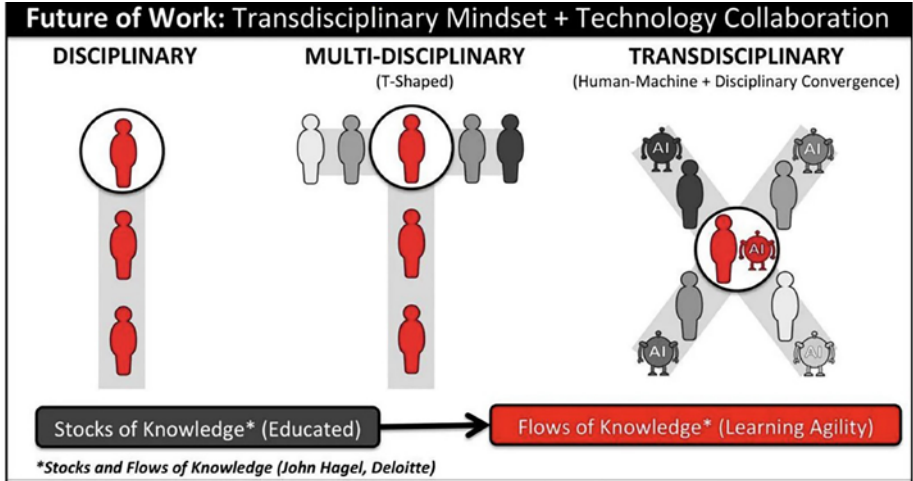
Figure 6. Trans-disciplinary mindset model of McGowan (source: McGowan, H. E. "What If The Future Of Work Starts With High School?")[24]

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LEARNINGS FROM IZMIR UNIVERSITY OF ECONOMICS DESIGN STUDIES PROGRAM

DENIZ AVCI, TUBA DOGU

This chapter presents an analysis of the Design Studies (DS) Program at Izmir University of Economics (IUE) and provides insights into the current curriculum, drawing on successful global and local Design Studies programs. Recognizing seminal discussions[1] on design studies and examining both national (Turkey) and international (USA) programs, the study utilizes the notion domain to define and explain the curricula of the selected programs. This approach is then applied to evaluate the curriculum of the IUE DS program, providing its strengths and areas for improvement. Consequently, the chapter is organized in two sections: (1) an overview of DS programs, and (2) an analysis of current IUE DS curriculum under three domains: subject, scale, and mediums.

A Look into Design Studies Programs

Following an overview of established Design Studies programs around the world, we structured this paper around a comparative analysis of successful approaches to provide a basis for a critical overview of the IUE DS curriculum. Given the scope of this study, it is not possible to evaluate each global and local program individually, so we present one of the most established design studies programs offered by Harvard University.

Harvard University's comprehensive approach to design education stands as a prominent model within the field, offering an extensive array of disciplines prior to 2021 (Figure 1). The Design Studies program at Harvard University encompassed seven distinct fields for the Master Program in Design Studies, which are: (1) Art, Design, and the Public Domain, (2) Critical Conservation, (3) Energy and Environment, (4) History and Philosophy of Design and Media, (5) Risk and Resilience, (6) Technology, (7) Urbanism, Landscape and Ecology. Among these distinct fields which were called the "areas of concentration", notable fields like risk and resilience, along with critical conservation, exhibit a high degree of specialization. Conversely, domains such as urbanism, landscape, ecology, art, design, and the public domain appear to adopt a broader scope.

Following Fall 2021, Harvard underwent a significant transformation in its approach, transitioning from the concept of "areas of concentration" to "domains," resulting in a more focused and refined representation of expression and content. These areas are proposed as (1) Ecologies, (2) Mediums, (3) Narratives, (4) Publics (Figure 2) and when we examine them, we

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1   Victor Margolin, "Design History or Design Studies: Subject Matter and Methods," *Design Issues* 11, no. 1 (1995): 4–15, https://www.jstor.org/stable/1511610; Alain Findeli, "Design History and Design Studies: Methodological, Epistemological and Pedagogical Inquiry," *Design Issues* 11, no. 1 (1995): 43–65, https://www.jstor.org/stable/1511615; Jilly Traganou, "Architectural and Spatial Design Studies: Inscribing Architecture in Design Studies," *Journal of Design History* 22, no. 2 (2009): 173–81, https://www.jstor.org/stable/40301436.

encounter a spectrum that covers both specific and general topics. It is intriguing to note that while the titles prior to 2021 hinted at disciplinary trends, the new titles do not provide any discernible references to particular disciplines. However, a deeper look into domains reveals that this situation changes.

AREAS OF CONCENTRATION

Art, Design, and the Public Domain

The program in Art, Design, and the Public Domain seeks creative and ambitious individuals from all backgrounds with a keen interest in contemporary issues of urban, historical, aesthetic and technological culture, and with a predilection for intervention, exhibition and public work.

Critical Conservation

The MDes program in Critical Conservation extends beyond issues of age, history and aesthetics to offer a framework of theory and research tools encompassing social, political and cultural meaning.

Energy and Environment

The Energy and Environments concentration focuses on buildings and landscapes as both small and large-scale thermodynamic systems that aim to optimize energy intake, use, and feedback, achieving broad design and ecological impacts.

History and Philosophy of Design and Media

History and Philosophy of Design is a platform for scholarly inquiry into design in the disciplines of architecture, urbanism and landscape architecture and in other aesthetic, spatial and technological practices.

Risk and Resilience

The Risk & Resilience concentration sets out to support novel approaches to socio-spatial planning through design, and prepares students to identify, articulate and propose preemptive forms of practice.

Technology

Coupling an intensive critical and theoretical approach with practical, lab-based projects, the Technology track allows post-professional students to pursue a broad spectrum of inquiries, including design computation, digital fabrication, robotics, and the exploration of responsive environments.

Urbanism, Landscape, Ecology

MDes candidates in the Urbanism, Landscape, Ecology concentration pursue advanced studies in topics related to contemporary urbanism, landscape, geography, or territory within the broader contexts of the global, social and natural environment.

Figure 1. Harvard University Design Studies Program Area of Concentration pre-Fall 2021

DOMAINS

Ecologies

Ecologies is the study of environmental and infrastructural systems and dynamics as they inform and interact with people, cities, and regions across a range of scales. Studies and research will explore the impacts of these interactions on climate, health, equity, culture, economics, politics, and the resultant shape of buildings, landscapes, and metropolitan areas.

Mediums

One of the remarkable developments in contemporary culture is the convergence of practices that once unambiguously belonged to either creative design or technological experimentation and empiricism, but that today share methods, means, and concerns, in different mediums.

Narratives

Narrative does not represent history "as it really happened," nor reveal to us the "true" meaning of culture. Narrative, rather, constructs the figures, both literary and spatial, that open cultures to our attention as sites of projection, dispute, and transformation.

Publics

Publics is the study of human groups and their roles, interactions, and experiences within the built and natural environment. This Domain within the MDes program sets out to support novel approaches to socio-spatial design, planning, and advocacy.

Figure 2. Harvard University Design Studies Program Area of Concentration after Fall 2021

To give a brief idea of the concept of "domain," in "Ecologies", the keywords such as climate, health, and equity stand out. The domain covers all scales of design under these keywords. Under each domain, there are two mandatory courses, and the others are offered as electives. The notion of domain, which then becomes an umbrella term, spans across and points to various specializations.

As the number of the main "domains" decreases, it is intriguing to note the emergence and increase of sub-domains within our examination. There are approximately 3 to 5 sub-domains under each, and before graduation, the students are asked to take electives from different

sub-domains. An illustrative instance can be found in the ecology field, where sub-headings such as cultures, atmospheres, geographies, publics, and projections are introduced. Under each sub-domain, there are theme-related courses. For example, under "Atmospheres", there are courses about "climate justice", "planning sustainable urban environments", "climate by design", "power/energy", and "confronting climate change". Among the various domains, the domain of "Ecologies" stands out as the domain encompassing the highest number of subdomains.

According to the program's statement, this area of study is particularly for individuals who might pursue careers in the areas of "critical, transdisciplinary design, management practices working in the public realm and relative to broader environmental issues; leadership in political, governmental, NGO, and non-profit realms, especially around public and environmental policy; research and teaching in and adjacent to the design and planning disciplines, including the development of pedagogy around environment, infrastructure, and equity".

The domain of "Mediums" appears to be more discipline-specific. After evaluating the sub-domains and course titles, it becomes evident that the program offers a multitude of diverse courses that cater to students' desire to specialize in specific areas. This encourages students to explore different perspectives and fosters specialization within the program. Hence, the program showcases both quantitative and qualitative diversity. In the domain of mediums, keywords such as "developments in contemporary culture", "creative design", and "technological experimentation" stand out among others; and sub-domains of architecture, landscape architecture, and urban planning and design are introduced. Comparatively, it can be inferred that this domain primarily focuses on the broader urban and architectural scale, contrasting with the preceding domain.

Even though the domain "Narratives" is also discipline-specific when compared to the domain of "Ecologies" and covers the same disciplines as the "Mediums" domain, its approach to the assessment of the fields is different. As explained by the program and summarized here, the domain of narratives has a different approach: "Narrative does not merely depict an objective account of historical events or provide a definitive understanding of culture. [...] Instead, narrative actively shapes and constructs literary and spatial elements that allow cultures to be perceived as dynamic arenas for 'projection, dispute and transformation.'"[2]

The domain "Publics" focuses on "human groups and their roles", "interactions", and "experiences within the built and natural environment." The domain once again [similar to the domains of "Mediums" and "Narratives"], has three subdomains of architecture, landscape architecture, and urban planning; however, the approach is different, focusing on socio-spatial design, planning, and advocacy. The listed courses cover a wide range of topics related to urban studies, design history, and social impact. These provide students with opportunities to explore heritage conservation, migration, housing policy, equitable development, climate justice, land policy, and sustainable planning. These courses offer a comprehensive and

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2   Harvard University Graduate School of Design, "Master in Design Studies - Narratives," accessed
     February 5, 2024, https://www.gsd.harvard.edu/design-studies/narratives/.

interdisciplinary approach to understanding the complexities of built environments and their social, cultural, and environmental dimensions. The program also emphasizes the importance of inclusivity, participation, and addressing social and cultural factors in landscape design. The program offers a wide range of courses that explore the intersection of architecture, public spaces, and societal issues.

To compare the Izmir University of Economics' Design Studies Graduate Program with one from home, we looked at one of the closest, the Izmir Institute of Technology.[3] The program presents a set of compulsory courses. There are three pairs of courses to choose from. All students must take one of these course pairs, the first functions as a design studio, the second focuses on research in the design field, and the third is more flexible with seminar courses. In addition, there is a thesis course and a specialized studies course that need to be completed.

The elective courses offered cover a wide range of topics, including specialized areas such as artificial intelligence, mechatronics, communication and design, consumption culture, craft and design, and cultural studies. The courses also explore critical design practices, design management, design patterns and methods, design thinking and innovation, the politics of representation, sustainability, and user interaction. This diverse scope provides students with the opportunity to gain expertise in various aspects of design and choose areas of specialization based on their interests and goals.

Analysis of Current IUE Design Studies Curriculum

To gain insights into the course scopes and contents of the IUE DS program curriculum, we have compiled the courses offered in the last two semesters in a table. The table meticulously captured the weekly contents of the courses offered on a semester basis. Our objective was to identify overlapping themes, topics, readings, and theories, both generally and specifically in relation to weekly readings. Reading through this table, we first classified the courses based across various (1) design disciplines and, secondly, categorized the courses in the (2) curriculum according to different domains. Rendering these two stages, three potential domains emerge: subjects, scales (both of which are covered by the courses), and mediums (of the courses).

The IUE's Design Studies appears to offer a diverse range of courses across various design (1) disciplines. In the field of industrial design, courses suggest an emphasis on understanding the relationship between design and everyday life, exploring innovative materials and their applications, as well as commitment to sustainable design practices. For architecture, the courses demonstrate an exploration of conceptual and interdisciplinary approaches to architectural design. The courses encourage students to think critically about the role of architecture in shaping our environment and cultural expressions. The interior architecture and environmental design courses appear to address various aspects of design discourse.

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3   See the curriculum of Design Studies program offered by Izmir Institute of Technology: Izmir Institute of Technology, "Tasarım Çalışmaları Ders Programı [Design Studies Curriculum]," accessed May 15, 2023, https://id.iyte.edu.tr/tasarim-calismalari-programi-2/.

Courses offer a theoretical foundation for understanding design principles, their application, and the exploration of spatial design strategies and their impact on human experiences. In the field of fashion design, the program largely covers the issues of ethics, social responsibility, and trend analysis, providing students with an understanding of the fashion industry and its societal implications. Finally, within visual communications design, the course likely encourages students to develop a strong narrative approach and visual storytelling skills in their design practice.

Within the (2) curriculum, when we categorize the courses according to their (2a) subjects, we acknowledge that these titles may not always provide a definitive delineation (Figure 3). It is worth noting that a course categorized under "urban" may also have relevance to the domain of "culture." In other words, a course has the potential to fall under multiple headings. Therefore, considering the contents as a means of introducing the work and adopting a comprehensive and categorical approach would be beneficial. This approach facilitates a thoughtful exploration of the courses offered.

Analyzing the same courses in terms of their (2b) scale of approach reveals a distinct perspective (Figure 4). Interestingly, the majority of the courses, in alignment with the program's objectives and scope, do not explicitly focus on a specific scale. It is possible that students are encouraged to select one of these courses that aligns with their own interests, mirroring the domain and sub-domain approaches observed in Harvard's program. However, among the courses, there are those that do engage with various scales, ranging from the urban scale to the object scale and encompassing everything in between. Topics span from domestic architecture to public architecture to photography. This diverse range of scales suggests a comprehensive exploration of design in different contexts, allowing students to develop a holistic understanding of design's impact on various scales of the built environment. By organizing the highlighted courses based on their scale of approach, we can categorize them according to their respective subjects. Upon careful examination of our program, we can observe a distinct pattern where certain courses within the same domain are offered on a semester basis, leading to an overlap in subjects.

RESEARCH / METHODOLOGY
FFD 501 - Design Research Methodology
FFD 511 - Research Methodology (Design Seminar)
FFD 507 - Design Project Research
FFD 510 - Individual Study (Design Seminar)
FFD 511 - Research Methodology (Design Seminar)

NARRATIVE
FFD 512 - Narrative Design and Practices in Photography
FFD 571 - Literary Spaces

ECOLOGY / TECHNOLOGY
FFD 557 - Ecological and Bio-climatical Design
FFD 569 - Advanced Materials in Design

URBAN
FFD 563 - Art, Design and City
FFD 515 - Discussions on Public Space: Design and Theory

CULTURE
FFD 514 - Design and Domestic Culture
FFD 509 - Ethics and Social Responsibility in Design

THEORY
FFD 513 - Discourses of Design and Architecture in the 20th Century
FFD 572 - Creativity and Design Management
FFD 551 - Spatial Practices
FFD 502 - Current Topics in Art and Design

FASHION
FFD 555 - Imaginary and Futuristic Design Studies
FFD 566 - Trend Catalogue Project
FFD 568 - Looking into The Past in Contemporary Fashion

Figure 3. Subjects covered by the courses of IUE's Design Studies Graduate Program

Scale

FFD 501 - Design Research Methodology
FFD 511 - Research Methodology (Design Seminar)
FFD 507 - Design Project Research
FFD 510 - Individual Study (Design Seminar)   **NA**
FFD 511 - Research Methodology (Design Seminar)
FFD 509 - Ethics and Social Responsibility in Design
FFD 572 - Creativity and Design Management
FFD 502 - Current Topics in Art and Design

FFD 571 - Literary Spaces
FFD 563 - Art, Design and City
FFD 515 - Discussions on Public Space: Design and Theory   ●
FFD 551 - Spatial Practices

FFD 512 - Narrative Design and Practices in Photography
FFD 557 - Ecological and Bio-climatical Design
FFD 514 - Design and Domestic Culture
FFD 513 - Discourses of Design and Architecture in the 20th Century

FFD 555 - Imaginary and Futuristic Design Studies
FFD 566 - Trend Catalogue Project   ●
FFD 568 - Looking into The Past in Contemporary Fashion
FFD 569 - Advanced Materials in Design

Figure 4. Scales (or Measures) covered by the courses of IUE's Design Studies Graduate Program

In our final categorization, we examine the (2c) mediums of assessment utilized in the cours-
es, revealing that only a limited number of courses incorporate a specific medium (Figure
5). Consequently, it appears that this approach may not be practical for establishing distinct
domains within our program.

Overall, the program seems to offer a broad spectrum of courses that address various aspects
of design studies. Such a diverse curriculum can provide students with a comprehensive
understanding of design theory and practice across different disciplines; however, it hinders
the development of any specialization on a certain path of design.

PHOTOGRAPHY
FFD 512 - Narrative Design and Practices in Photography
FFD 555 - Imaginary and Futuristic Design Studies

LITERATURE
FFD 571 - Literary Spaces

ART
FFD 563 - Art, Design and City
FFD 502 - Current Topics in Art and Design

MATERIALS
FFD 569 - Advanced Materials in Design
FFD 568 - Looking into The Past in Contemporary Fashion
FFD 514 - Design and Domestic Culture

NA
FFD 501 - Design Research Methodology
FFD 511 - Research Methodology (Design Seminar)
FFD 507 - Design Project Research
FFD 510 - Individual Study (Design Seminar)
FFD 511 - Research Methodology (Design Seminar)
FFD 509 - Ethics and Social Responsibility in Design
FFD 572 - Creativity and Design Management
FFD 515 - Discussions on Public Space: Design and Theory
FFD 551 - Spatial Practices
FFD 557 - Ecological and Bio-climatical Design
FFD 513 - Discourses of Design and Architecture in the 20th Century
FFD 566 - Trend Catalogue Project

Figure 5. Mediums covered by the courses of IUE's Design Studies Graduate Program

Concluding Remarks

In the evaluation made on the second day of the Design Studies Symposium 2023, the areas where workshop participants are currently working for or have been involved in the Design Studies program were conveyed by them through keywords via the Mentimeter word cloud (Figure 6). While this word cloud acknowledges the emergence of popular trends such as bio-design, artificial intelligence, or interaction design, it can also help to re-evaluate the areas chosen to analyze the DS curriculum.

Analysis of the IEU DS curriculum suggests that the most relevant potential domains in our university program are scales and subjects. Although the domain medium may not seem particularly relevant at first glance, it does not overshadow the fact that the design studies program is truly interdisciplinary in nature. While the discussion of the interdisciplinary nature of the program is beyond the scope of this article, it should nevertheless be noted that the background of the program candidates is not limited to the discipline of design.

The analysis carried out in this article with the domain approach sheds light on the current and potential future adjustments in the curriculum, thus providing a basis for a critical over-view of the IUE DS curriculum. Such an approach is intended to serve as a model for the IUE DS program as well as provide guidance for other design studies programs nationwide to reflect on their curricula. Whereas this article attempted to provide a general and outsider perspective on the DS program at IEU, the succeeding articles in this section will offer insider reflections on the DS curriculum.

Figure 6. A keyword cloud generated by symposium participants through Mentimeter

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Aybüke Taşer: Aybüke Taşer holds B.Arch. from Yasar University and M.Sc. degree in Architecture and Building Physics from Izmir Institute of Technology, where she initiated the first steps of her academic career. Taşer has several publications in indexed journals, conference proceedings, and symposiums. Her works focus on computational intelligence, building performance simulation, and optimization; she is currently a researcher in the Sustainable Hybrid Work (SUSHY) project funded by the Belgian Science Policy Office (BELSPO) as part of her Ph.D. studies at Université catholique de Louvain (UCLouvain). She is specifically interested in assessing the relevance between hybrid work its energy implications as the main focus of her doctoral thesis.

Canberk Yurt: Canberk Yurt graduated with a bachelor's degree in industrial Product Design from Gazi University (2014) and a master's degree in design studies from Izmir University of Economics (2019). Currently, he is a PhD Candidate in the IUE Design Studies PhD Programme. After five years of sectoral design experience, he has worked in academic roles as a research assistant (2020-2023) and lecturer (2023-…) at the Izmir Institute of Technology Industrial Design Department. He is also the coordinator of FabLab Iztech. As the co-founder of TORF Design Lab in Technopark İzmir, he provides consultancy services for design projects within a scientific framework.

Deniz Avci: Deniz Avci is Assistant Professor (Architectural Historian, PhD, 2018, METU) at Izmir University of Economics in Interior Architecture and Environmental Design. She specializes in the architectural historiography and conservation of twentieth-century Modern Movement architecture and its interiors in Turkey, especially housing and healthcare architecture. Committee member in 'docomomo_tr Interior Design,' she is currently co-leading two grant projects: 'Architecture of Convalescence: Mapping the Sanatorium Heritage of Turkey' (Turkish Architects' Association-1927) and 'Between Medicine and Architecture in Mid-Century Turkey: Ankara's Atatürk (Keçiören) Sanatorium' (VEKAM Ankara Research Awards). She is an active researcher in the projects 'DATUMM — Documenting and Archiving Turkish Modern Furniture' and 'Architects Who Left Their Traces in Ankara.'

Deniz Hasirci: Deniz Hasirci is an interior architect and studies Turkish modern interiors and furniture and environment-behavior. She is the head of the Design Studies Graduate program, and a member of the Dept. of Interior Architecture and Environmental Design, Faculty of Fine Arts and Design, as a Professor at Izmir University of Economics. She received her undergraduate, master's, and PhD from Bilkent University, Interior Architecture and Environmental Design. She is an NCSU Fulbright scholar, member of The Chamber of Interior Architects in Turkey, committee member of docomomo ISC-ID, founding member of docomomo_tr Interior Design Committee, and 4T Design and Design History Society; and project co-coordinator of the "Reading the History of Furniture and Interior Architecture in Turkey with the Oral History Method" and "DATUMM_Documenting and Archiving Turkish Modern Furniture projects.

Elif Karakuş: Elif Karakuş graduated from Izmir University of Economics with a bachelor's degree in interior architecture and environmental design, ranking third in her department. She pursued a master's degree in design studies with a full scholarship on a thesis named "An Analysis of Design Challenges Regarding the Sustainable Use of Props in Scenic Design." During her academic journey, she had the opportunity to intern at Chiba University in Japan, further enhancing her expertise in design. As a confident, innovative, dedicated, and solution-oriented interior architect and designer, she excels in design practices and collaborative team environments.

Filiz Ozbengi Uslu: After completing her first bachelor's degree in social anthropology, she completed a bachelor's degree in fashion design at İzmir University of Economics. Besides working as a fashion designer in textile manufacturing companies, she gained costume design experience at Hessische Landestheater Marburg, Germany. Since 2022, she has worked as a research assistant at Izmir University of Economics, Department of Textile and Fashion Design, while continuing her education at the IUE Design Studies Master's Program. Her research interests focus on design and well-being, design with living organisms, and circularity in fashion, with her work showcased in numerous national and international exhibitions.

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Mine Özkar: Mine Özkar is a Professor of Architecture at Istanbul Technical University. Collaborating with design professionals, computer scientists and art historians, her research focuses on visual, spatial and material aspects of design computation. In some of her previous work, she interpreted the history and theory of progressive pedagogy in art and design from a computational perspective. Mine is the author of Rethinking Basic Design in Architectural Education, and the co-editor of Shaping Design Teaching. She currently serves on the Editorial Boards of Nexus Network Journal and A|Z ITU Journal of the Faculty of Architecture, and chairs the Board of the CAAD Futures Foundation.

Osman Demirbas: Born in Ankara in 1973, Dr. Demirbaş earned his Bachelor's (1995), Master's (1997), and Ph.D. (2001) degrees from Bilkent University's Department of Interior Architecture and Environmental Design. He commenced his academic career as a Research Assistant in 1996, progressing to teaching roles since 1999. Specializing in design education and experiential learning, Dr. Demirbaş has published scientific works in various international and national peer-reviewed journals. He was teaching diverse courses at the undergraduate and postgraduate levels. Currently, he continues his academic career at Işık University in İstanbul.

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Selen Çiçek: Selen Çiçek, an architect and a computational design researcher, holds a bachelor's degree in architecture from Middle East Technical University (METU), and a master's degree from the Architectural Design Computing program at Istanbul Technical University (ITU). Currently a doctoral student in the same graduate program, she has delved into diverse research avenues encompassing generative design algorithms, machine learning, and the application of artificial intelligence in architectural design domains. Her primary scholarly pursuit revolves around elucidating the ramifications of AI technologies in design education.

Şölen Kipöz: Graduated from the Industrial Design Department, Middle East Technical University (1989), Kipöz gained her master's degree from Dokuz Eylül University Fine Arts Faculty, Textile Department, and PhD from the Communications & Public Relations Department in Aegean University (1998). Her post-doctorate research on Fashion Management took place at Bologna University through a scholarship from the Italian Government. Following her academic career in the Izmir Institute of Technology Industrial Design Master Program, in 2001,

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Tuba Doğu: Tuba Doğu received her B.Arch from Middle East Technical University and M.Sc. from The University of Sydney. She earned her Ph.D. in architecture from the Izmir Institute of Technology. Currently works as an Assistant Professor at Izmir University of Economics. Primary research interests include social interventions as a form of alternative spatial practices, centering on questions of human and material agency.

Localizing Design Studies: Perspectives on Turkey
Editors: Deniz Hasirci, Tuba Doğu, Deniz Avci, Gozde Damla Turhan-Haskara,
Aybüke Taşer

Localizing Design Studies: Perspectives on Turkey includes research that ranges from case/field implementation ideas to quantitative/scientific data surveys to social, theoretical, and historical studies from all subfields of design to address the countless parallel and overlapping realities of design in the post-pandemic era. The post-covid period and unprecedented earthquakes in Turkey have made us question the role of design in our everyday lives, while the advent of dynamic technologies in design has made us reconsider the design realities that surround us. Quality research showcases the state of graduate work in the various fields of design studies.

Since the early 2000s studies in design and design history in Turkey have been developing an increasingly strong profile. This visibility has been evidenced by the growing number of related international conferences, innovative research initiatives and book and journal publications. All of these have been sustained by a significant platform of innovative doctoral research which has in turn been informed by a wide and diverse range of contemporary theoretical and historical approaches. This edited book provides valuable insights to the complexities of design and its impacts from a variety of recent Turkish perspectives as articulated by a new generation of Turkish scholars.

— Professor Emeritus Jonathan M Woodham, Associate, Centre for Design History,
University of Brighton, UK

Since its inception nearly two decades ago, the design studies course has championed research fostering critical thinking and examining the ever-evolving dimensions of design. This includes diverse methodologies, from practical applications and empirical studies to theoretical and historical analyses. In a world increasingly fragile due to shifting political dynamics, environmental crises, ongoing conflicts and wars, the urgency for innovative design responses has grown. Turkey's devastating 2023 earthquake and global challenges like pandemics demand adaptive solutions, integrating technological advancements such as AI, blockchain, and the metaverse while redefining the designer's role. This book explores these pressing themes, offering a journey into uncharted territories where resilience, serendipity, and innovation intersect.

— Professor Tevfik Balcıoğlu

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