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DYSTOPIAN HOUSING AND FUTURE IMAGINARIES: A DESIGN STUDIO APPROACH

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ABSTRACT

Future ecosystem changes and resource shortages make the transformation of residential spaces inevitable. This transformation will not be limited to physical structures; it will be shaped by economic, social, and political factors. Prioritizing sustainability, flexibility, and social harmony in residential designs is critical to adapt to future living conditions. In this context, developing innovative and inclusive solutions will contribute to creating more livable and durable residential spaces. The approach of researching possible residential spaces by constructing different scenarios for the future, which forms the basis of the study, is of critical importance in profoundly understanding the effects of ecosystem changes on residential design and developing alternative solutions. This process was combined with the interior architecture student studio experience, and the design and steps of the future residential image in a dystopian environment were analyzed. This study provides a comprehensive approach to deeply understand and apply the process of researching different scenarios and housing spaces for the future. It also offers a different approach to the design studio experience while evaluating the effects of ecosystem changes and dystopian scenarios on housing designs.

The basis of the study is to investigate possible housing spaces by constructing different scenarios for the future. This study questions where the current ecosystem and physical environment can go in the medium-term future and how housing spaces in this new ecosystem may change. Considering the change in the physical environment and the future state of the ecosystem, alternative future scenarios and concepts are examined from a dystopian perspective. In this context, reinterpreting the current system and constructing possible scenarios constitute one of the important steps of the study. These scenarios form the basis of alternative space constructions and address alternative housing spaces that will meet people's sheltering needs. While making suggestions for housing spaces that will transform with the change of the ecosystem, it is also important to question these transformations.

KEY WORDS: Housing image, Dystopian future, Housing design in the dystopian future

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1. Introduction

Throughout history, the Earth has been regarded as the most extensive domain of human habitation and a fundamental "living space." Yet, this space has been shaped by significant environmental, social, economic, and political transformations over time. In particular, the process initiated by the nineteenth-century Industrial Revolution produced unprecedented alterations within the global ecosystem. These transformations triggered far-reaching consequences, including environmental crises, economic instabilities, and social conflicts. Today, the global climate crisis stands as the most striking manifestation of these changes, posing a profound threat to both ecological systems and the future of human life. In this regard, dystopian and apocalyptic perspectives offer a critical theoretical lens through which such transformations may be understood and evaluated.

Dystopia is not merely a projection of future catastrophe; it also provides a critical framework for examining present-day social, economic, and environmental challenges. While dystopian perspectives draw attention to issues that jeopardize human existence, they also open up space for constructing alternative scenarios and speculative solutions. In this sense, the concept of dystopia presents a compelling foundation for both design education and design practice. The interior architecture design studio examined in this study constitutes an ideal setting for exploring the critical and creative dimensions of this concept. Interior architecture studios serve not only as environments where design processes unfold but also as interdisciplinary learning platforms in which students develop creative thinking, critical inquiry, and innovative problem-solving skills.

The primary aim of this study is to understand how global ecological transformations may influence future residential spaces and, within this framework, to construct alternative scenarios. The research was conducted within an interior architecture design studio, enabling students to design speculative future living environments informed by dystopian narratives. The pedagogical process sought to enhance students' awareness of potential environmental, social, and economic crises, while encouraging the development of sustainable, resilient, and innovative design responses.

Methodologically, the study is grounded in the theoretical and design-oriented analysis of data derived from student projects. This analytical process entailed the reassessment of existing systems and the formulation of alternative future scenarios. Dystopian environmental narratives served as the primary conceptual framework, providing students with a basis for developing original spatial design proposals. Students drew inspiration from science-fiction cinema and incorporated artificial intelligence tools—such as ChatGPT and Midjourney—into their scenario development and visualization processes, thereby enriching the study with both theoretical and aesthetic depth.

The design proposals generated within the studio not only envisioned future residential environments but also critically engaged with themes such as sustainability, resilience, and social cohesion. The projects emphasized modular systems adaptable to changing environmental and social conditions, strategies for efficient resource management, and spatial arrangements aimed at fostering social and psychological resilience. Notably, sustainable water and energy management systems, protective shell structures responding to external threats, and community-oriented spatial solutions emerged as significant outcomes of the studio process.

By employing dystopia as a design framework, this study proposes an innovative pedagogical model within the context of interior architecture education. Its overarching aim is to cultivate students' sensitivity to future environmental and social crises, to support the development of critical and creative design responses, and to contribute a multilayered perspective to the design process.

2. The Transformation of Housing in Dystopian Environments and Apocalyptic Futures

Dystopia, derived from the Greek words dys (bad) and topos (place), literally refers to a "bad place" (ÜLGER, 2018). However, this literal definition falls short of capturing the concept's deeper theoretical foundations. Rather than merely representing the antithesis of utopia, dystopias constitute conceptual frameworks that critique the deficiencies of social, environmental, and political systems while proposing alternative scenarios. According to Kumar (2006), dystopias emerge as distorted or failed iterations of utopian ideals, arising from misguided attempts to construct an ideal society. In this sense, the relationship between utopia and dystopia is not solely oppositional but also indicative of a process of transformation and distortion.

Bauman (2020) characterizes utopia through the metaphor of "weeds growing at the gardener's feet," suggesting that dystopia exists as an inherent potential within utopian aspirations. Prakash et al. (2020) argue that the true opposite of utopia is either an unplanned society or one subjected to excessively rigid planning. Dystopia thus represents a misdirected utopia or a system that serves only a particular segment of society. From this perspective, dystopias not only critique the failures of existing social and environmental systems but also function as tools for questioning the limits of idealized societal structures.

Dystopian narratives are shaped by critiques of social structures, power relations, and environmental challenges. Michel Foucault's concepts of biopolitics and the "microphysics of power" provide a valuable theoretical lens for understanding how dystopias address authoritarian structures and mechanisms of individual control (FOUCAULT, 1977). In modern societies, the focus of dystopian critique extends beyond overtly totalitarian regimes to the subtle mechanisms that regulate individual behavior. Likewise, Bauman's notion of "liquid modernity" offers insight into the ways dystopias reflect the uncertainties and instabilities of contemporary social systems (BAUMAN, 2000). In this regard, dystopias serve as powerful analytical tools for exposing the complexities and contradictions of modernity.

Technological dystopias critically examine the influence of science and technology on individuals and society. Haraway (1987) highlights the ethical boundaries of technological development and questions its implications for personal autonomy and social structures. The potential of technology to limit individual freedoms or reinforce authoritarian control constitutes a central critique within technological dystopias. Environmental dystopias, on the other hand, explore humanity's relationship with nature and the destructive consequences of ecological disruption. As Latour (2017) argues, contemporary environmental dystopias address not only ecological disasters but also the underlying causes of these crises and the consequences of human intervention in natural systems. Viewed through this theoretical lens, dystopia emerges as a critical framework for analyzing social, environmental, and political problems—one that becomes particularly relevant when examining the ongoing transformations within global ecosystems.

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Global climate change, resource scarcity, and environmental degradation constitute core themes of dystopian discourse. Since the Industrial Revolution, rapid population growth and intensified consumption patterns have accelerated ecological decline. The use of fossil fuels has increased the emission of harmful gases into the atmosphere, contributing to global warming. This process manifests in rising sea levels, melting glaciers, and increased frequency of extreme weather events (UN ENVIRONMENT, 2019). Consequences such as agricultural losses, water scarcity, and waves of migration exacerbate social inequalities, particularly in low-income regions (AKAY, 2019). The physical impacts of climate change are deeply intertwined with social and economic structures. According to UN-Habitat (2020), by 2030, 60% of the world's population will reside in cities, with 90% of this urban growth occurring in low- and middle-income countries. Yet this urbanization process also intensifies inadequate living conditions in informal settlements, making existing social inequalities more visible.

Global climate change and escalating environmental degradation affect not only the physical environment but also the fundamental dynamics of social systems. These challenges become most pronounced in urbanization processes; limited resources, rapid population growth, and economic disparities create substantial adaptation pressures at individual and societal levels. Within this context, housing emerges as a focal point for both environmental challenges and broader socio-economic contradictions. Addressing these issues in future urban development requires multidimensional approaches that extend beyond physical design to incorporate social cohesion and environmental sustainability. Such dynamics provide critical insights into how housing and residential environments may transform within dystopian contexts.

In dystopian frameworks, housing is not merely a physical necessity but also a crucial component for maintaining social cohesion and strengthening resilience against crises. In this regard, "Coffin Homes" in Hong Kong—shown in Figure 1—constitute a striking example of modern dystopian living conditions shaped by extreme population density and constrained resources (URL-1).

Figure 1. "Coffin Homes," Hong Kong (Source: URL-1)

Another example is presented in Figure 2, which illustrates housing segregations based on income disparities in Mumbai, Mexico City, and Tembisa. These urban-scale comparisons reveal the spatial manifestations of social inequalities (URL-2). Within a dystopian context, such cases provide concrete references for understanding how housing needs may evolve under increasingly challenging conditions.

Figure 2. Housing Structures from Left to Right: Mumbai, India; Mexico City, Mexico; Tembisa, South Africa, Johnny Miller (Source: URL-2)

In the context of housing design, projects grounded in dystopian scenarios tend to focus on objectives such as sustainability and resilience. OPEN Architecture's MARS Case prototype addresses the challenge of creating sustainable living conditions in environments with limited resources, while the Cocoon BioFloss and Domestic Replica projects represent alternative housing models developed with innovative materials (BÖLÜKBAŞI, 2022).

Figure 3. From Left to Right: MARS Case, 2018, OPEN Architecture; Cocoon BioFloss, 2018, Maria Vergopoulou; Domestic Replica, 2018, Superficium Studio (Source: Adapted from Hobson, as cited in Bölükbaşı, 2022)

Modular systems such as Dwelly aim to address future housing demands by providing rapid and flexible solutions. These types of projects offer an innovative approach to the adaptation of living environments under dystopian conditions. However, the effectiveness of such designs can only be achieved when economic, social, and environmental contexts are taken into careful consideration.

Figure 4. From Left to Right: Dwelly, 2018, Jasmax and Beca; Hour

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Glass, 2018, Studio Mcleod and Ekkist; Personalized Creative Capsules, 2018, SomePeople; Sky Nuclei, 2018, Nicholas Stafford and Melody Won; Kentish Town, 2018, D*Haus Studio (Source: Adapted from Hobson, as cited in Bölükbaşı, 2022)

Dystopias possess not only a critical function in addressing present crises but also the potential to propose forward-looking solutions. In this sense, dystopian design approaches aim to generate adaptable spaces at both individual and societal levels. In the future, the impacts of the climate crisis and environmental change will become increasingly pronounced. Rising temperatures, extreme weather events, and resource scarcity threaten both humanity and natural systems (IPCC-AR6, 2021). Therefore, designers and policymakers must acknowledge dystopian scenarios as a basis for developing more inclusive and sustainable solutions.

Within this context, dystopias serve as a critical instrument that highlights social and environmental problems, providing a valuable perspective for understanding current crises and formulating innovative responses for the future. In the realm of housing design, dystopias not only examine the manifestations of crises but also create a fertile ground for developing creative approaches to sustainability, equity, and social cohesion. The reconsideration of housing design in relation to crises arising within dystopian environments constitutes a key dimension of this study.

Housing design in dystopian settings involves questioning traditional design paradigms and necessitates innovative solutions. The dynamic and creative nature of the interior architecture studio enables the translation of theoretical knowledge into practice, supporting students in developing sustainable and user-oriented design proposals. Design studios function as critical platforms—not merely concerned with aesthetics or functionality, but with generating innovative and flexible spatial solutions that respond to the evolving needs of individuals and society.

In housing design intended to enable life in dystopian conditions, the foregrounding of critical thinking and problem-solving skills, the use of innovative materials, approaches that prioritize energy efficiency, and strategies supporting social resilience become essential. Within this process, the use of artificial intelligence–based tools can enhance students' creative capacities by offering functions such as analyzing complex environmental and social problems, simulating alternative scenarios, and rapidly testing design solutions. For example, AI tools can facilitate detailed analyses of climate conditions, resource availability, and social needs, thereby supporting the development of suitable housing typologies informed by such data.

In this regard, the study aims to examine the role of AI-supported design processes in interior architecture studios in fostering students' creative and critical thinking skills, while also revealing the innovative solutions artificial intelligence can offer in response to complex problems such as housing design in dystopian futures. Housing proposals developed within dystopian contexts should not merely address basic shelter needs; rather, they should strive to create living environments that are sustainable, secure, and conducive to social cohesion.

3. Method and Materials

3.1. Research Model

This study aims to understand how global ecosystem transformations may influence future residential environments and, within this context, to develop alternative scenarios. The central point of departure is the question of how the existing physical environment and the evolving ecosystem might change in the medium term. It is anticipated that ecosystemic shifts may reach a level requiring the reinterpretation and redesign of residential spaces. Within this process, fundamental spatial needs and design approaches are subject to reconfiguration.

The primary data of the study were obtained from student projects conducted within an undergraduate interior architecture design studio. The research adopts a theoretical and design-based analytical approach to these projects. This analysis encompasses both the reassessment of existing systems and the formulation of alternative future scenarios. By examining the projects developed from dystopian environmental narratives, the study aims to derive insights into how future residential spaces may transform.

This study approaches housing not only as a physical environment but also as a construct of image and atmosphere. The design fictions developed through future scenarios were inspired by science-fiction cinema. These dystopian narratives, derived from science-fiction references, enriched students' design processes and enabled them to develop original approaches. Such cinematic examples contributed to the generation of unique spatial atmospheres and visual languages within the projects, thereby supporting the creation of innovative and sustainable design solutions. By designing spaces capable of adapting to dystopian conditions, participants cultivated a critical perspective on future environmental challenges.

The design projects evaluated the impact of ecosystemic change on residential spaces while addressing the spatial, economic, and social implications of these transformations. These projects aimed not only to produce physical arrangements but also to put forward a holistic design approach encompassing sustainability, flexibility, and social cohesion. In addition to discussing the effects of current ecosystemic issues on housing environments, the study also seeks to propose innovative solutions.

Figure 5 summarizes the overall process of the study in four fundamental phases. The first phase, Definition of the Conceptual Framework and Methodological Tools, establishes the theoretical foundations and identifies the methods to be employed. The second phase, Alternative Future Imagery and Scenario Development, involves constructing dystopian scenarios concerning potential future environmental and societal conditions. The third phase, Possible Housing Image and Design Development, focuses on generating design concepts for residential environments aligned with the developed scenarios. The final phase, Implementation Outcomes and Evaluations, consists of analyzing the design proposals and providing a comprehensive assessment of the results.

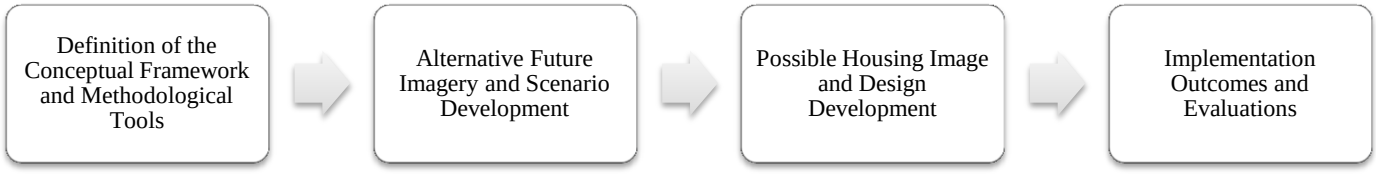

Figure 5. Summary Schema of the Applied Methodology (Source: Authors)

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The modules and general structure of the fieldwork integrated into the research model are presented in Figure 6. Accordingly, during the Spring semester of the 2022–2023 academic year, a total of 60 third-year undergraduate students from the Interior Architecture and Environmental Design Department at Istanbul Sabahattin Zaim University participated in a 14-week application-based studio composed of three modules, conducted within the course Interior Architecture Project III.

In the first module, introductory studies on fundamental concepts, conceptual relationships, and future imagery and scenario development were conducted. Following the initial discussions on dystopia, the film list provided in Fieldwork – Module 1 was distributed evenly among the student groups. Participants were asked to evaluate the dystopian physical environments, spatial atmospheres, and character structures depicted in the films they watched. Subsequently, they were instructed to construct their own narratives and main characters within a designated site and future time frame. After preparing character cards and storyboards, students defined the physical environment of their scenarios and conducted analyses of the possible future setting.

Module 2 involved the development of core design concepts and proposals for a possible housing image. Preliminary studies on the spatial components of the newly created physical environment—such as concept maps, conceptual proposals, and collage works—were completed. Upon finalizing the conceptual framework, students developed design programs, organizational diagrams, and initial structural ideas for the proposed future housing scenarios, while also presenting the relationship of the proposed structures to the site and physical context.

In Module 3, the final stage of the process, students advanced their preliminary work into complete design proposals for future housing environments. Technical drawings were produced in accordance with professional standards, and the design of interior spaces was finalized through 3D visualizations and comprehensive presentations.

Throughout the 14-week application process, interim and final evaluations were conducted through Pin-Up 1 following the first four-week module, Pin-Up 2 after the second module, and an open jury at the end of the third module, allowing for ongoing critique and assessment of the design work.

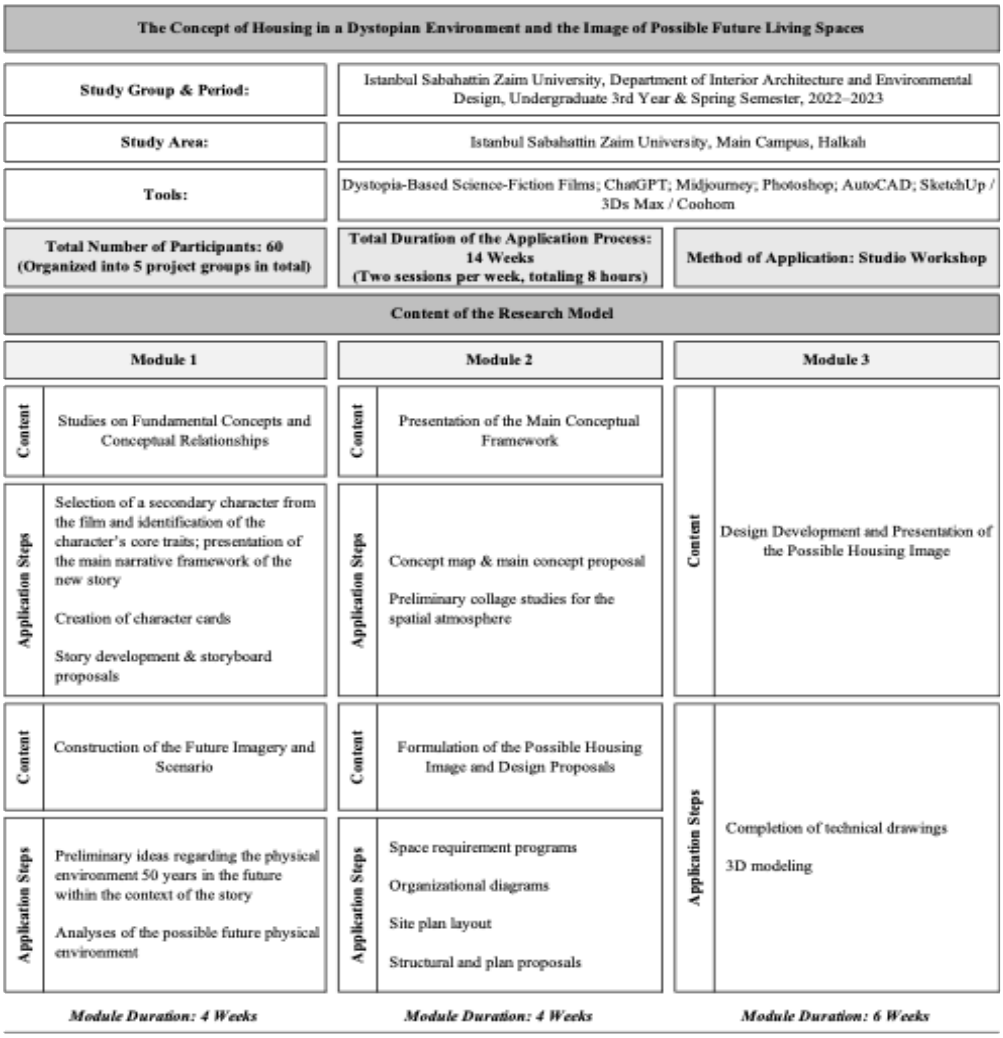

Figure 6. Research Model (Source: Authors)

3.2. Design Studio Study

The field study conducted within the conceptual framework developed for producing the notion of housing and the possible image of future residential environments in a dystopian context was carried out during the Spring semester of the 2022–2023 academic year within the course Interior Architecture Project III at Istanbul Sabahattin Zaim University, Department of Interior Architecture and Environmental Design. The study was completed with a group of 60 third-year undergraduate students and consisted of 14 weeks of work, conducted through two sessions per week, each lasting four hours.

The 14-week process consisted of three modules:

Module 1, covering the first four weeks, involved the formulation of

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the conceptual framework, narrative structures, and the context of the future physical environment;

Module 2, conducted during the second four-week period, focused on developing conceptual approaches for the projects and generating the first proposals for future housing;

and Module 3, spanning the final six weeks, centered on the design development, including technical infrastructure, and the presentation of the proposed future housing environments, based on the work completed in the earlier stages.

3.2.1. Modules 1 & 2: Conceptual Framework and Concept Design Process

Modules 1 and 2, which constituted the first eight weeks of the study, involved the development of the foundational conceptual context of the project proposals. In Module 1, the conceptual groundwork was introduced around key themes such as dystopia, climate crisis, the transformation of the physical environment, and the future. These themes formed the theoretical basis upon which the students constructed their design narratives.

To support the construction of future imagery and scenario development within this conceptual framework, the film list presented to participants is provided in Table 1. The selected films and documentary were chosen for their engagement with critical themes such as global ecosystem transformations, climate crisis, shifts in social structures, and the reshaping of the physical environment. The selection criteria were based on their capacity to offer dystopian and future-oriented perspectives by addressing elements such as post-apocalyptic settings, extinction, technological advancement, adaptation processes, and spatial constructs. These works not only dramatize the consequences of environmental crises but also examine their multidimensional effects on social systems, resource usage, and individual lives. Moreover, they offer a conceptual foundation for future living scenarios through their spatial configurations and innovative design depictions. Thus, these films and the documentary contributed theoretical and visual value to the study's processes of constructing dystopian environmental scenarios and generating alternative housing images.

Table 1. Films Used in the Development of Future Imagery and Scenario Studies (Source: Authors)

Material	Material Name	Director	Year	Conceptual Framework Selection Criteria
Movie	Oblivion	Joseph Kosinski	2013	Post-Apocalyptical Environment Exticntion Spatial Configuration Exticntion Spatial Configuration Technology Adaptation Climate Crisis Critical Treshold Change of Ecosystem Transformation of Social Structure
Movie	Snowpiercer	Bong Joon-Ho	2014	
Movie	Interstellar	Christopher Nolan	2014	
Movie	Mad Max: Fury Road	George Miller	2015	
Movie	Finch	Miguel Spochnik	2021	
Documentary	Breaking Boundaries: The Science of Our Planet	John Clay	2021	

From the list, each participant selected a secondary character and reinterpreted this character as the protagonist of their own scenario. Students then constructed narratives around this central character, integrating events and new characters of their own creation.

Examples from the participants' character development work, narrative construction, and studies related to the future physical environment are presented in Figure 7.

Character cards in which the essential traits of the created characters were defined; narrative structures set approximately 100 years in the future; and analyses of the physical environment—reinterpreted by participants according to their story conditions and within the boundaries of the assigned site—collectively formed the outputs of Module 1 and established the conceptual and physical groundwork necessary for Module 2. In this phase, the ChatGPT artificial intelligence interface was used for narrative writing, while the Midjourney AI interface was employed for generating character visuals and storyboard scenes.

The storylines, character cards, storyboard sequences, and spatial proposals developed by each participant reveal both the conceptual and spatial dimensions of the design process. These projects analyze, from various perspectives, how spatial transformation may be addressed within a dystopian context.

Through the creation of character cards and narrative structures, participants designed original characters as a means to understand dystopian scenarios and constructed stories addressing the social, economic, and environmental challenges encountered by these characters. The demographic and psychological attributes of each character demonstrated how they adapted to future environmental conditions and how they confronted these challenges. This approach supported a user-centered perspective within the design process.

Storyboard studies served as a significant tool for visualizing the narratives constructed by the participants. Each storyboard not only illustrated spatial solution proposals but also made explicit the impacts of environmental conditions on living environments. For example, Participant No. 1's storyboard visually represents struggles for collective solidarity and individual survival in a post-apocalyptic physical setting.

In terms of physical environment and spatial design, participants transformed their narrative structures into spatial design proposals, developing original concepts for future living environments. For instance, Participant No. 2's project foregrounded an environmental design aimed at restoring ecological balance, whereas Participant No. 4 designed innovative spaces incorporating sustainable energy systems in response to the climate crisis.

The integration of AI-supported design tools significantly enriched

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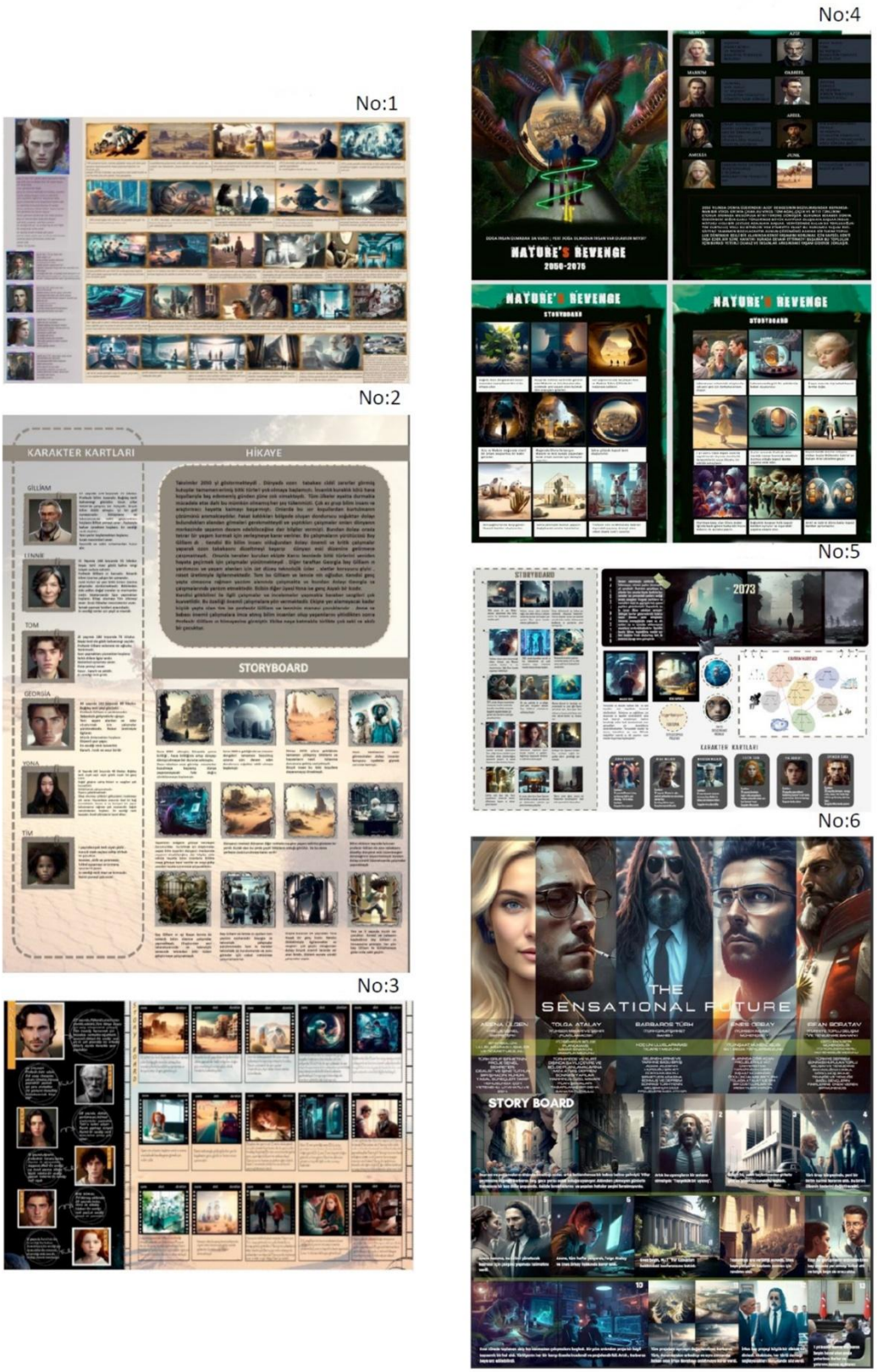
the narrative and visual production processes. Creative narratives were developed using ChatGPT, while Midjourney was employed to produce character visuals and environmental representations. This approach provided both theoretical and aesthetic depth to the design works.

Collectively, the projects offer a multilayered understanding of how spatial design may be approached in a dystopian context. The development of characters and narrative structures established a strong foundation for user-oriented design, while storyboard sequences and spatial proposals introduced creative solutions to future environmental challenges. The diversity of participant approaches demonstrates the wide range of design strategies applicable within a dystopian framework. These works not only contributed to the spatial design process but also enabled the development of original perspectives on potential ecological and societal challenges of the future.

Figure 7. Examples from Participants' Narratives, Character Cards, and Storyboard Studies (Source: Authors)



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Following the studies conducted in Module 1, the framework established for each project was used as the basis for transitioning into Module 2. In this stage, Module 2 focused on presenting the main concept of the project—constructed through the narrative, characters, and future projections—and on formulating the initial design proposals for future housing. Accordingly, participants first developed concept maps and main concept proposals for their projects, followed by preliminary studies related to structural systems and spatial atmospheres. In these processes of structural and spatial formation, participants used the Midjourney artificial intelligence interface as a visualization tool. After completing these studies, the participants proceeded to design housing environments for user groups ranging from one to four individuals, based on the primary and secondary characters defined in their narratives. At this stage, they developed needs programs, organizational diagrams, site layout proposals, and initial structural concepts tailored to the selected users and the newly imagined physical environment. Examples of participant presentations produced within Module 2 are shown in Figure 8.

Participants elaborated the future physical environment and user needs through concept maps that guided their design processes. For instance, Participant No. 1's concept map combined ecological balances with technological solutions, while Participants No. 2 and No. 3 structured their maps around migration and climate-crisis-driven spatial organization models. These concept maps addressed, in a comprehensive manner, how users would meet their basic needs and adapt to environmental conditions in a dystopian future.

In designing the physical and spatial characteristics of future housing structures, participants utilized the Midjourney AI tool to generate visualization studies. These visual outputs detailed the aesthetic and functional components of the proposed housing structures, while also demonstrating innovative design approaches aligned with dystopian environmental conditions. For example, Participant No. 4 focused on housing models integrated with natural systems, whereas Participants No. 5 and No. 6 explored ideas related to minimal energy consumption and sustainable material use.

At this stage, housing designs were developed for user groups of one to four individuals according to the living conditions established for the main and supporting characters within the narratives. Participants defined functional spaces based on user needs and produced needs programs, organizational diagrams, and site plans accordingly. For example, Participant No. 3's study proposed solutions for integrating individual and communal living spaces within a scenario involving drought and social stratification, while Participant No. 2 emphasized flexible spatial arrangements adaptable to seasonal changes.

In formulating the initial structural proposals, participants prioritized energy efficiency, environmental sustainability, and user needs. For instance, Participant No. 5's structural proposal envisioned a modular living model supported by renewable energy systems, whereas Participant No. 6's project contained innovative solutions related to urban density and limited resource use. These structural strategies demonstrate an approach aimed at enhancing the resilience and functionality of living spaces under dystopian environmental conditions.

Overall, Module 2 provided a detailed exploration of both the conceptual and physical dimensions of future housing design within a dystopian context.

Figure 8. Examples from Participants' Concept Proposals, Needs Programs, and Organizational Diagrams (Source: Authors)

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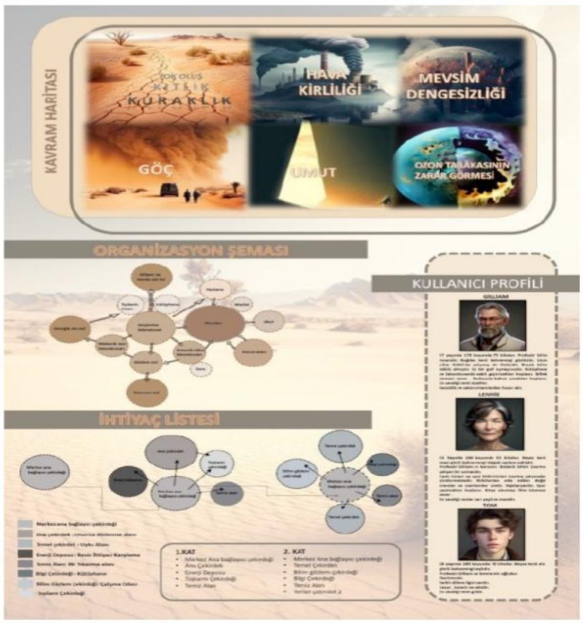

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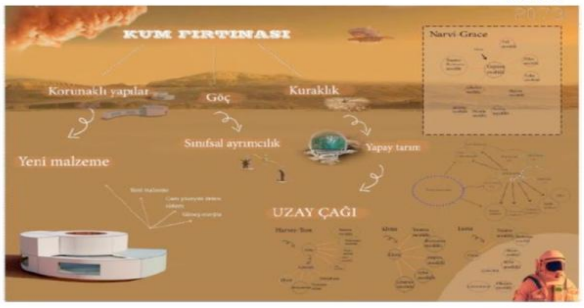

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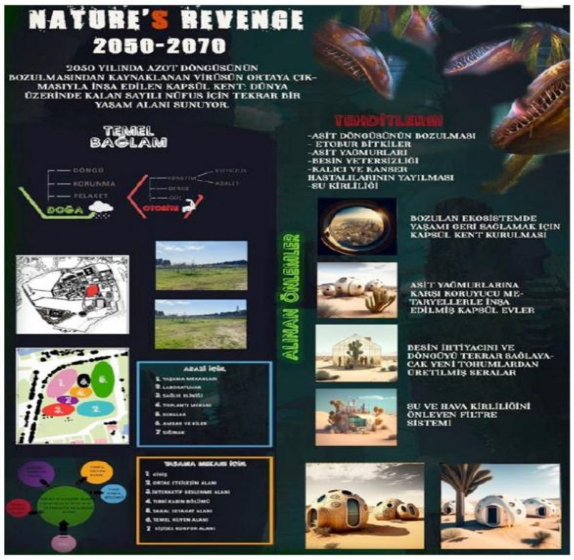

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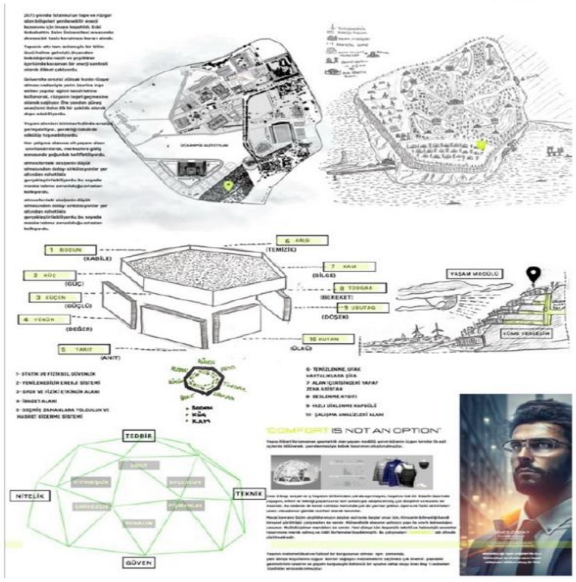

3.2.2. Module 3: Design Development

In Module 3, the final phase of the study, the participants developed fully elaborated design projects that synthesized all previous stages. As the final output, the envisioned housing environments for a dystopian future—constructed within their narrative scenarios—were designed as modular systems, as reflected in the project visuals.

In a post-apocalyptic context, transformed ecosystems often present scenarios in which the challenges of the physical environment and the fulfillment of basic human needs become paramount. In such a world, concepts such as drought, scarcity, and extinction represent conditions in which survival, rather than aesthetics, takes precedence. Within this framework, the need for shelter emerges as one of the most critical elements of the new world ecosystem. In short, post-apocalyptic housing design prioritizes functionality and security over aesthetics. This approach provides solutions essential for meeting basic human needs and resisting the adversities of the transformed physical environment.

The depletion of fundamental energy resources and the escalation of environmental pollution are among the critical issues shaping post-apocalyptic scenarios. In this context, ecosystem changes brought about by the climate crisis heighten the reliance on technology. Technology is expected to play a central role in humanity's survival and continued progress. To address challenges such as diminishing energy resources and environmental degradation, digital technologies and smart systems become vital tools for ensuring essential living conditions. In such settings, spatial design and operational systems are conceived to maximize the opportunities

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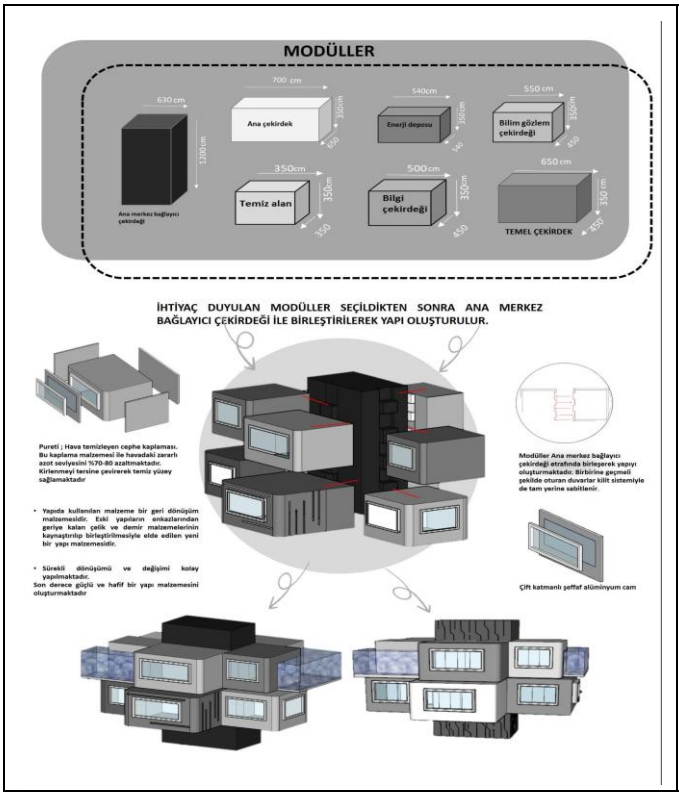
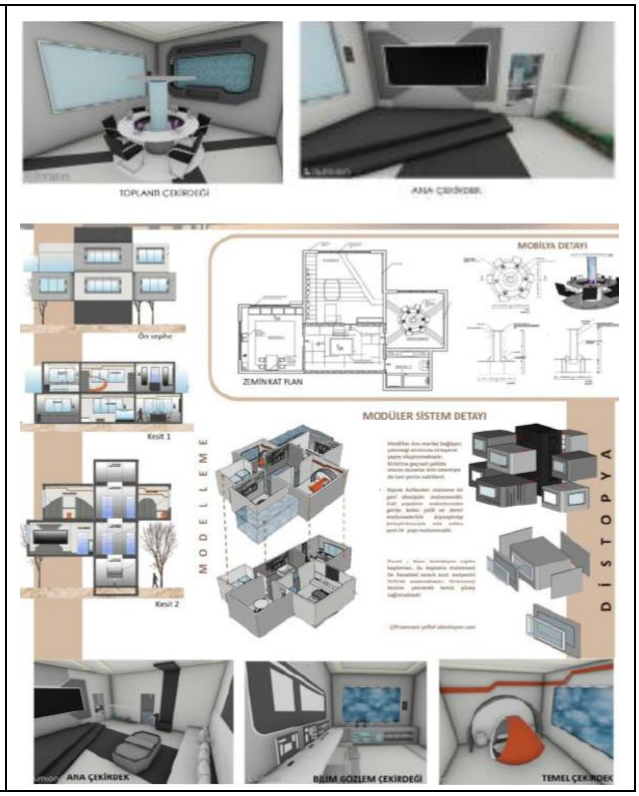
provided by technological advancements.

In post-apocalyptic housing design, the concepts of surface/interface, material, and envelope/shell take precedence. These elements play a critical role in defining the atmospheric qualities and identity of the space. Structures characterized by a protective, closed external shell not only provide security against environmental threats but also aim to establish a functional and aesthetically coherent spatial identity.

Examples from participant applications related to these housing design explorations are presented in Figures 9 and 10.

Figure 9. Sample Design Proposals for the Future Housing Developed by Participants (Participants No. 1–3, respectively) (Source: Authors)





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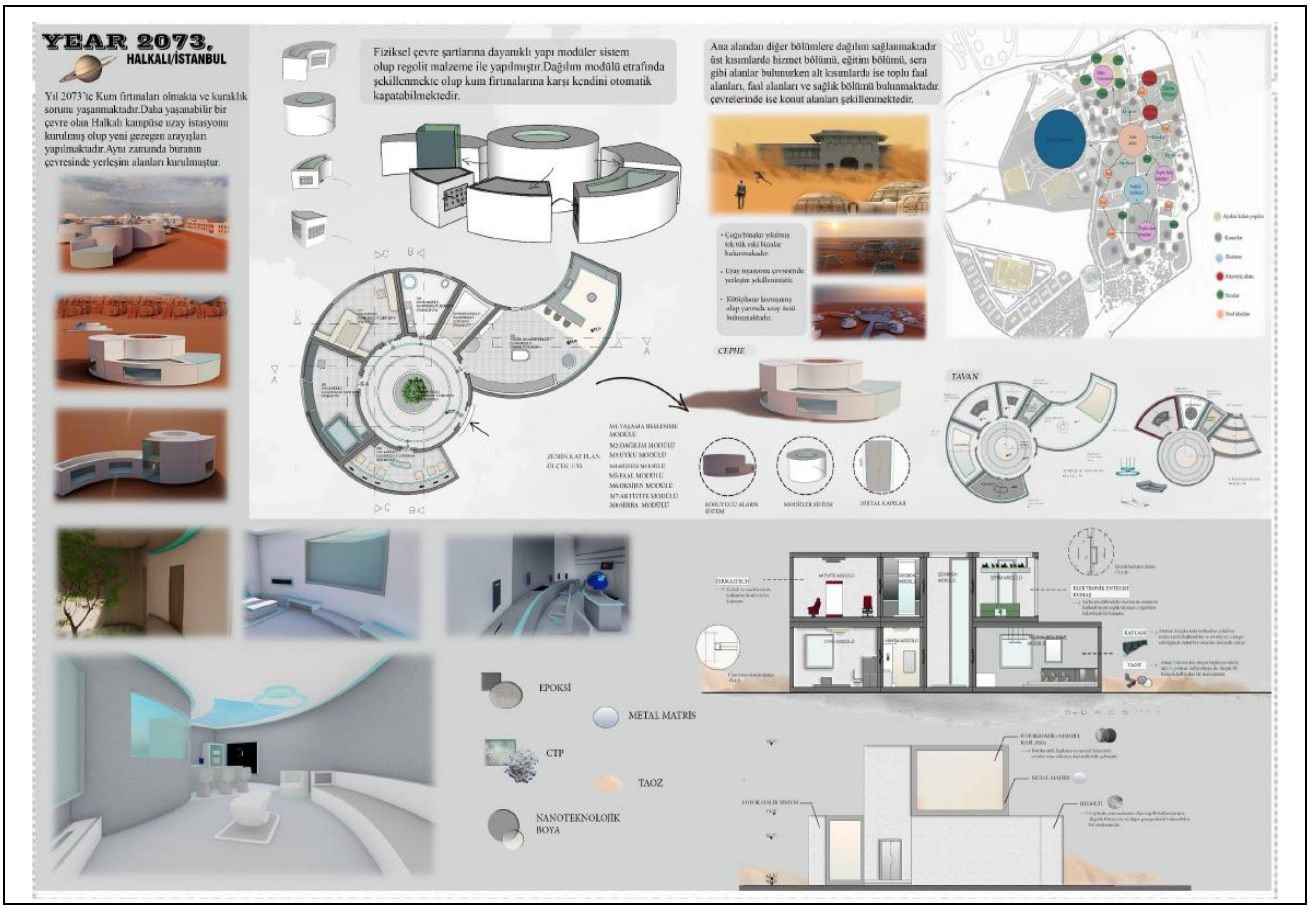

Figure 10. Sample Design Proposals for the Future Housing Developed by Participants (Participants No. 4–6, respectively) (Source: Authors)

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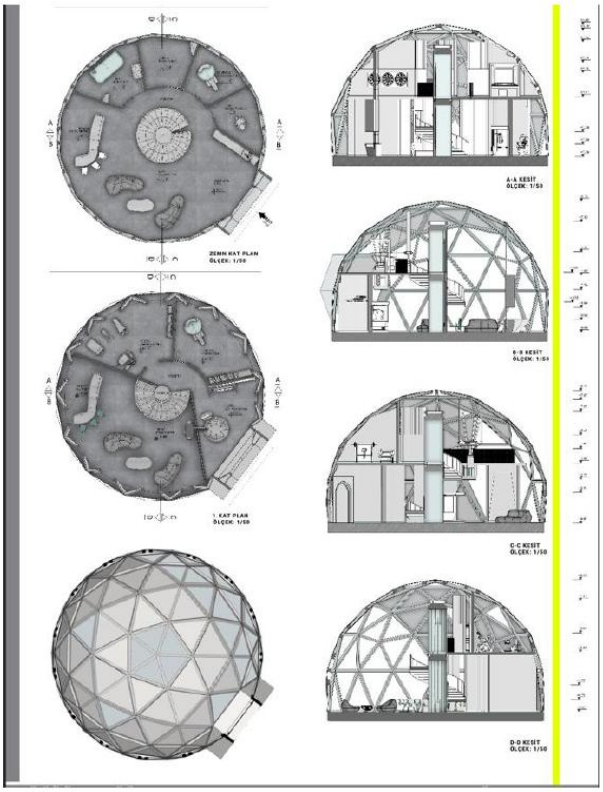

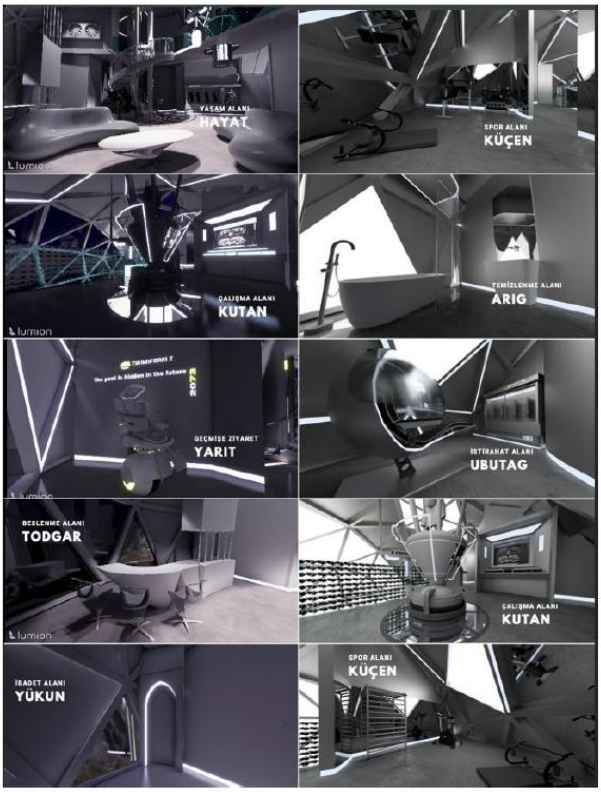

3.3. Findings

Housing structures designed within a post-apocalyptic ecosystem primarily exhibit resilient and highly functional characteristics that address basic survival needs. Developed in response to extreme conditions such as drought, scarcity, and extinction, these housing proposals prioritize survival and security-oriented solutions. In these designs—where aesthetic considerations are subordinate to functionality—protective and sustainable shelter solutions appropriate to the harsh physical environment have been emphasized. The key findings from the project studies can be summarized as follows:

Importance of Modular Systems:

Modular structures provide rapid adaptation to changing environmental and social conditions, making them ideal solutions for post-apocalyptic contexts. Their flexibility—enabled by the addition or removal of various components—allows for a wide range of uses. Their ease of assembly and portability offers effective solutions in resource-scarce and environmentally challenging conditions. The modular designs used in the projects provided customizable structures tailored to user needs, while simultaneously producing solutions aligned with sustainability and resilience principles.

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Basic Needs in a Post-Apocalyptic Framework:

Shell structures that protect against external environmental threats constitute a fundamental element of survival. Under conditions of drought and scarcity, the preservation of water and other vital resources becomes a priority. Accordingly, systems for water collection and recycling, as well as solutions for energy production and storage, were developed as critical design components. Effective water management and the sustainability of energy sources formed the core of the housing proposals.

Structural and Aesthetic Approaches:

Enclosed structures that provide insulation from external conditions offer protection against temperature fluctuations, dust storms, and extreme weather events. These designs, which prioritize functionality, evolved into durable and protective structures where aesthetic values were approached minimally. Aesthetic considerations were employed not only as a means of reinforcing spatial identity but also as a functional tool to ensure resilience under hostile environmental conditions.

Primary Functions of Housing:

Energy-efficient systems are essential for sustainable living in a post-apocalyptic future. Solar panels, wind turbines, and other renewable energy sources used in the projects supported independent energy production while minimizing environmental impact. Water collection systems, rainwater recycling, and greywater management practices enabled efficient use of water resources—especially under drought conditions—and were effectively integrated into the projects.

Social and Psychological Effects:

In post-apocalyptic scenarios, social resilience and the strengthening of communal bonds are crucial. For this reason, communal spaces and shared living environments were integrated into the designs. In addition to private areas, interior arrangements included elements supporting comfort and psychological well-being. These approaches aimed to foster social cohesion and enhance psychological resilience, even in extreme conditions.

Overall, the student projects combined principles of modularity, resilience, and resource management to enable sustainable living for individuals and communities in a post-apocalyptic context. Operating within a dystopian framework, these projects prioritized functionality while offering sustainable and innovative spatial solutions. At the same time, they contributed to a design vision that promotes sensitivity to social and environmental change.

4. Conclusion and Recommendations

This study aims to understand how future ecosystem transformations may affect physical environments and residential spaces within the conceptual framework of dystopia, and to enhance students' creative and critical design skills within the context of interior architecture studio education. To explore how future living environments may evolve, current trends and potential shifts were evaluated, and various scenarios were constructed to generate insights into transformations in both the ecosystem and the physical environment. Utilizing the creative and practice-based setting of the interior architecture studio, the study sought to strengthen students' critical thinking and innovative design capabilities.

Dystopia is not merely a prediction of a "dark future," but a theoretical tool that provides a critical lens through which current social and environmental challenges can be analyzed. In this study, dystopia was adopted as a design framework, enabling students to develop spatial solutions addressing potential environmental, social, and economic crises of the future. This approach allowed theoretical knowledge to be integrated with hands-on processes within the interior architecture studio.

Throughout the study, students developed post-apocalyptic scenarios inspired by science-fiction cinema and formulated design propositions aligned with these narratives. The use of artificial intelligence tools—ChatGPT for narrative development and Midjourney for visual production—enhanced students' creative processes and added theoretical and aesthetic depth to their projects. These tools enabled participants to approach both storytelling and spatial design more effectively.

The projects addressed critical issues such as meeting basic needs, effective resource management, and maintaining social and psychological well-being in dystopian futures. Modular structures emerged as a recurring theme, providing flexibility and adaptability in response to changing environmental and social conditions. Sustainable water and energy management systems, protective shell structures against external threats, and community-oriented spatial arrangements were among the innovative approaches developed by the students.

The projects prioritized functionality over aesthetics, proposing protective and durable structures suited to harsh conditions. At the same time, emphasis was placed on communal and personal spaces to strengthen social bonds and support psychological well-being. These strategies aimed to enhance resilience at both individual and social levels.

Conducting the study within the context of interior architecture studio education allowed students to integrate a critical perspective into their design processes. By combining theoretical frameworks with applied studio practices, this educational model enhanced students' awareness of environmental and social issues and guided them toward more conscious design approaches. Rather than acting as a restrictive constraint, the dystopian framework encouraged creative thinking and alternative design strategies.

By integrating the conceptual context of dystopia with interior architecture studio education, this research presents an innovative approach to designing future residential spaces. The projects developed within a post-apocalyptic framework demonstrated how concepts such as sustainability, resilience, and social cohesion can be integrated into spatial design.

In conclusion, this study highlights the potential of using dystopia as a critical tool for generating resilient spatial solutions in the face of future uncertainties. The applied nature of interior architecture studio education facilitated the development of original design solutions and enhanced students' sensitivity to environmental, social, and economic crises. In this regard, the study offers an important model for creating sustainable and innovative spatial solutions.

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