



2550 JOURNAL OF SKETCHLE



JOURNAL OF SKETCHLE

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WHILE STARTING

We are proud and happy to announce the first issues of The Journal of Sketchle, the fourth academic journal of Eskişehir Technical University. The Journal of Sketchle offers an innovative approach to distributing knowledge by its content creation and knowledge representation style. Hence, it is going to receive attention from the scientific community. The journal is going to contribute to the transmission of scientific thought, which has been represented in primarily written form, into carefully and meaningfully designed text supported visual representations. The approach is familiar to individuals who interacted with the mass media visuals and designed environments such as television, magazines, newspapers, internet publications and other virtual platforms. The Journal of Sketchle allocates visual thinking strategies and methodologies to produce visual representations that allow scientific studies to be presented with a diverse perspective in the field.

Understanding, interpreting, and producing visual information is considered one of the conditions for effective communication. The studies from diverse disciplines, particularly design, have revealed that visual thinking enhances creativity in general and the creative problem-solving processes. Among many, the act of sketching, an essential visual thinking tool, has been predominantly valued and regarded as a sophisticated instrument, an environment to understand how individuals purely think and represent the way of their thinking. In this sense, the act of sketching focuses on the process to reach a final result. Having named Sketchle –portmanteau, the combination of "sketch" and "article" concepts– the journal allocates the act of sketching as the primary catalyst to represent scientific thinking and processes in a visual-first form of communication. Consequently, the journal is going to accept research articles, reviews, in-class studies by experts, academicians, teachers, and students from diverse disciplines to support and expand the research culture on the campus.

The first issue of the Journal of Sketchle reflects the belief that visual thinking is an effective learning and teaching tool. The Journal of Sketchle founded upon the main principles expected from a scientific journal and publishing by all means. However, besides the forms of expression existing in a scientific publication, it primarily aims to include studies that support visual thinking and representation. Hence, visuality has been considered a driving force for communication and production in the journal, not as a consumption tool today. The scope of issue expands from undergraduate and graduate students' work to engage them with the scientific procedures through visual thinking strategies to expert researchers

I want to express my gratitude to our university's academic staff, who came up with the first idea of ESTU the journal of Sketchle. They believe in its original aspect and have developed and prepared its publication. I also would like to thank all the authors and colleagues who contributed to this process. I wish success in its publishing life.

Prof. Dr. Tuncay Döğeroğlu Eskisehir Technical University's Rector



CONTENT



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The title page should include;

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Journal article from the internet

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Sillick, T. J., & Schutte, N. S. (2006). Emotional intelligence and self-esteem mediate between perceived early parental love and adult happiness. *E-Journal of Applied Psychology*, 2(2), 38–48. Retrieved from http://ojs.lib.swin.edu.au/index.php/ejap/article/view/71/100

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Patton, G. C., et al. (1996). Is smoking associated with depression and anxiety in teenagers? *American Journal of Public Health*, 86, 225+. Retrieved November 20, 2001, from ProQuest.

Book

Christian, D. L. (2007). Finding Community: How To Join An Ecovillage Or Intentional

Community. Canada: New Society Publishers.

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E-Book

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Chan, C. F. and Lee, K. H. (1986). Organisational culture and salesperson's ethical position. In R. T. Hsieh and S. Scherling (eds.), Proceedings of the Academy of International Business SEA Regional Conference (pp. 3-9). National Chiao Tung University, Tapei.

Doctoral dissertations

Glover, S. H. (1991). The influences of individual values on ethical decision making. Unpublished doctoral dissertation, University of South Carolina, Columbia, SC.

Doctoral dissertations from the web

Wilson, P.L. (2011). Pedagogical practices in the teaching of English language in secondary public schools in Parker County (Doctoral dissertation). Retrieved from http://drum. lib.umd.edu/bitstream/1903/11801/1/Wilson_umd_0117E_12354.pdf

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Explaining, Structured, **Methodological**

Sketches Not Published, Creative, Artistic. Intuitive



Explaining, Creative, Intuitive, Methodological

Any form, information, process, theory can be explained better in sketchle format. Articles are lineer. On the other hand sketchle are non-lineer and holistic. Sketchle inspire author & reader, helps them to boost their creativity and change their perspective.





SKETCHLE PUBLISHING PROCESS

Any kind of research; laboratory studies, post-graduate studies (dissertations, assignments, projects), social studies, undergraduate assignments & projects







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- Introduction
- Methodology
- Findings
- Discussion
- Conclusion
- Further Research
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Guidance Through Empathy: Are You an Architecture Student? (a)¹

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Keywords: Architectural Education, Empathy in education, Being Architecture Student, Digital Education, Thinking Visual

Abstract Architecture deals with not only visible concrete values but also invisible abstract concepts. This nature of architecture liberates its education in the context of its tools, methods and relationships and renders it unique. It is observed that high school students in Turkey, who go through a multiple-choice based education system, have difficulty in thinking through visual images and imagining. When the basic and widespread problems are presented through empathy two groups of suggestions can be made. The first group of suggestions that provide solutions to the problems are about the mental transformation. The second group is behavioral and performative activities. It should be emphasized to the prospective architects during their undergraduate education that the school is not the place where ways are found, but rather where they are taught how to find them. The question of how to prepare architectural education for the digital age is also important.



1. Introduction

Architecture deals with not only visible concrete values but also invisible abstract concepts. Architecture is an art. However, it has technical, economical, legal, political and functional dimensions. As an artist, a painter can draw a square wheel, but as an artist, an architect's wheel should be able to turn even if it is square. Architecture offers molded forms and spaces that provide pleasure, but at the same time incorporates and integrates mental constructs. This nature of architecture liberates its education in the context of its tools, methods and relationships and renders it unique. Architecture is an eternal process of education so there is no ideal formula. Efforts aimed at formulating architectural education are meaningless in the face of branched, multi-layered and fuzzy ontology of architecture. The challenging and stressful nature of the architectural education, the demanding characteristics of the training program structured with theoretical and practical content brings unique problems and difficulties for all actors involved in education (Erman, 2000). Problems and expectations of students should be determined in order to establish a healthy learning-teaching environment. Empathy is to understand and internalize the motivation in someone else's situation or behavior. This study aims to reveal through empathy the fundamental and common problems and guiding ideas that could serve as solutions to those problems. Developing a common language through empathy will increase fluidity between the learner and teacher. In this study, defining architecture students as owls and coding them with the symbol (ϕ) was preferred to underline the concept of empathy.



The night is a time to hide and sleep for many creatures. However, for owls and architects, nights are time periods when life begins. Owls' eyes, placed in front of their heads, constitute five percent of their body weight in some species. The sense of sight is existential. In other words, owls and architects have superior viewing angles. whereas owls have been believed to be the symbol of friendship, protection and wisdom and thought to bring good luck in Western culture, they have been regarded as ominous in Anatolia through their association with death. Owls and architects are similar in this sense, too. In some cases, architects have been regarded as friendly some other case dangerous due to their tendency for objection, disobedient stances and unruly and intractable natures. The intricate discipline of architecture generates awe-inspiring fear.

2. Focus of Research

The main focus of this study is to understand through empathy the problems which Φ encounter in Turkey and to serve as a guide for basic mental, behavioral and pragmatic ideas.



2.1. Spirit of the age; nomads teach the natives

Today's φ are digital natives because they have been using the internet since infancy. They perceive technology as a natural standard of living. On the other hand, those who teach them are digital immigrants. Generation X, now in their 40s and 50s have witnessed many of the technological inventions and have learned to use at the same time. Generation Y, in their 20-30 years old nowadays, has internalized the digitalized world not only with its technological dimensions but also with its social dynamics. Generation Z, who was born after the 2000's, has the ability to handle different issues simultaneously and consumes ideas, objects and relationships faster than generation X-Y (Csobanka, 2016). Generation Z grasps technology quickly, performs their activity within a short time, uses the latest communication tools and prefers to maintain relations with their friends through social media. Generation Z chooses the path of digital learning, has fun digitally, and lives a creative and innovative lifestyle with less productivity, but more consumption. Therefore, the state of the experienced X-Y generation instructor who knows a lot, dictates, shows and teaches the right way to the little-knowing generation Z student does not work anymore. Unfortunately, generation X and Y lag behind the φ in terms of adaptation to technology.

2.2. Distorted Perception of Definition

Defining architecture with concreate values and criteria such as money, prestige and social status, which capitalism glorifies, and choosing this profession on the basis of those criteria constitute a problem. Moreover, glorification of the definitions suggested by popular culture in the media and social media through capitalistic values causes ϕ to begin the school of architecture with a distorted perception. It is not adequately recognized that architecture is an occupation of pleasure, humanism and aesthetics that generates a life scenario. Indeed, there are reductionist approaches that associate architecture with the ability to paint pictures or see it simply as constructing buildings. Architecture is the profession of asking questions and questioning. Architecture is first and foremost about our ability to find answers that no one else can see and in fact to ask new questions in response to those answers. Therefore, questions are asked in architectural education not to seek answers but to seek ways to generate new questions. Questions are a means of gaining new awareness rather than finding the answers.



2.3. From Multiple-Choice to Visual Infinity

It is observed that high school students in Turkey, who go through a multiple-choice based education system, have difficulty in thinking through visual images and imagining. During their adolescence, they constantly did tests, memorized texts, were programmed to respond with similar answers to certain types of questions. They are evaluated using tests that include clear questions from a maximum of four or five options and with only one correct answer (Figure 4). When they marked one of the given choices without even understanding the question, they now had an answer. This mindset has encompassed the mental states and ways of thinking of $\boldsymbol{\varphi}$.

2.4. Concrete to Abstract Thinking Paradigm

The most challenging issue in architectural education is perhaps the ability to switch from precision to contextual and from concrete to abstract thinking paradigm. A thinking method based on patterns develops in multiple-choice curriculum, but in architectural education, one should be prepared to give open-ended, flexible and multi-dimensional answers by being sensitive to the differences in perceptual paradigms.



The obvious, linear and sequential perceptual paradigm of 2 + 2 = 4 should be gradually replaced with a spiral, fluid and variable flexibility that evolves into the multiplicity of $2 + 2 = 0 \pmod{2}$ and $2 + 2 = 1 \pmod{3}$. The mind, accustomed to thinking with a clarity of 2 + 2 = 4, must evolve to comprehend with contextual facts. Our way of thinking must acquire perceptual flexibility by being predisposed to the probability. It is difficult for $\boldsymbol{\varphi}$ to leave aside the piecemeal, singular, rigid and constrained dogmatic approaches and learn to reach a holistic, inclusive, spiral, fluid and flexible way of thinking.

2.5. Problems Stemming from the City, Institution and Instructors;

Architectural education cannot be confined to the border of university. The life in the city itself is a kind of education. The city trains the designer with its managers, employers, architects, faculty members. If the city cannot cater to the prospective architects with its lifestyle and culture, this is a problem for Φ . Schools offering architectural education have many dilemmas stemming from the institution's facilities, educational programs, administrators and academic staff. The absence of a studio environment results in failure to comprehend three-dimensional design thinking capacity which is also influenced by the space where it is produced. An even more unfavorable factor than insufficient physical conditions, spatial problems, lack of technological tools and equipment and their implications on architectural programs is the absence of a motivating and exciting environment.



2.6. The Impact of the Turkish Family Life

One of the major problems faced by $\boldsymbol{\varphi}$ in Turkey concerns the family codes and widespread interventions in family relations. Here, one encounters difficulties associated with delayed adulthood caused by cultural codes in contrast with universal criteria. Individuals receiving university education are put under pressure by their parents' expectations. The high cost of architectural education, working for long hours uninterruptedly, tools that have not been encountered in the previous education periods such as model making, technical trip, and staying at school at night worry some families. Seeing their parents' worried state in turn makes $\boldsymbol{\varphi}$ more anxious.

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3. Method

In this study, the basic research problem and the proposed solutions to this problem are presented with the idiographic method. The epistemological assumption seeks the causal relationships and regularities between the parts that constitute the whole in architectural education. Hypotheses created according to the current state of things can be confirmed or falsified by empirical research programs suitable for them (Burrel and Morgan, 1979). The present study handled and examined the generalization and validation principles in epistemological dimensions. Collection of data and analysis and interpretation of data involve observations, memoirs, case studies and experience transfers covering a period of 24 years obtained from different architecture schools². There are observed and latent variables depending on the observability of the variables. In order for the observations to be safe, valid and gain scientific merit, individual experiences should be recorded and systematized and general principles related to these should be discovered with experience, consensus and expert opinion.

4. Findings and Discussion

According to Rogers et al. (2014), the first rule to form an interaction through empathy is to understand. The second rule is to prepare the environment according to what is understood. In order to empathize with φ and provide a healthy learning experience, it is important to know the problems they face. Accordingly, suggestions were made concerning the problems stated above, which are commonly observed in architecture schools in Turkey.

4.1. Meta - Thinking

It is important to acquire the skill of "thinking about thinking". The questioning mind, called "meta-thinking, will lead to constant dialogue, review, critique and re-questioning about our thoughts, and generate creative solutions in architectural thought. Higher order thinking skills will bring one closer to abstract rather than concrete, asymmetry rather than symmetry, and simplicity rather than complexity. Designers should return to the very origin, the most basic, the essence. Nature is the best teacher and inspirational. Higher awareness will give us the ability to think outside the box.



4.2. Learning from Encounters

The city one lives in should be considered as an architectural laboratory and seen as an extremely important opportunity. Travel is so vital to create encounters. ϕ can be travelers in the city they live in with the urban idleness called flaneur (Benjamin 1999). ϕ is a person who generates ideas with the impres sions of the environment while walking around on foot and can make new discoveries with the spirit of a traveler.



4.3. Studio Culture and Peer Learning

The design studio is a collective environment designed to learn the application of architectural education, with its own truths, materials, tools and language (Schön 1985). In the studio, instructors often do not say clearly what they want. This is the nature of architectural education, because truths and ways must be discovered in the process of architectural design. Exercises done in the studio are not expected to be perfect. What is important here is to learn to develop a design method. With peer learning and approaches that put learning at the center rather than the educator, anxiety and defense will give way to communication and dialogue.



Journal of Sketchle

4.4. Killing the Butterfly

Transformation occurs, in a sense, with the death of the caterpillar in the cocoon and its rebirth as a butterfly. If the theme of the design does not get approval, the process of accepting the mistake and starting again in a labored project requires a serious emotional effort. The spirit of design is to always stop at one point during the development phase, give up and succeed in killing the butterfly by crossing the emotional threshold.





4.7. Taking Photographs Enriches Our Visual Memory

Looking is an activity that the brain performs when the eyes are open. Seeing, on the other hand, is effectively sending what is looked at to the brain. To grasp the dimension of architecture that explores the world visually, \$\Phi\$ should learn how to take photographs. Photography is a state of constant exploration by a person who has visual ability. The art of photography develops basic design skills and knowledge such as composition, lines, color, tone, texture, light, perspective and harmony with a mysterious insight like balance.



4.8. Reading Broadens the Perspective

The most classic way of using and opening the mind is through reading. Reading requires effort and is a matter of discipline. The act of reading expands the scope of comprehension, interpretation, understanding, criticism, asking questions, establishing new relationships or perceiving relationships that already exist. Reading books increases the power of imagination. A person who does not read perceives the world through a frame with sharp corners. Tradition and generalizing assumptions are safe for the non-reader. For the reader, on the other hand, it is important to reproduce by questioning themselves with contextual and conceptual perceptions.

4.5. Architecture Transform Everyday Life

Architectural education involves some vital changes in the process of mental transformation and awareness. Everyday life is intertwined with architecture. Everyday life we perceive as ordinary, is full of principles of basic design. Φ should keep a special diary in which they keep visual records of their architectural perceptions and experiences. Architecture diary has a triggering and accelerating effect on learning. When the details that seem ordinary are noted in the diary with a certain level of awareness and sketched, they are retained in the mind.



4.6. Sketch Is as Unique as Our Fingerprints

Sketch improves the brain's ability to perceive, observe and think. With visual cues, memory is motivated, which increases the ability to think flexibly. Taking an interest in the environment, trying to grasp instead of looking meaninglessly, memorizing visual messages by sorting them out, noting the first perceived visual effect with a few lines, and improving hand-eye-brain coordination will increase with the frequency of sketching. Sketch is a kind of mental seed of what is imagined.



4.9. Watching Movies Provides Inspiration

Movies are a guide for architects who want to rediscover buildings and cities. Both cinema and architecture create experimental scenes, situations and spaces in life. The common terminology and methodological similarities such as visualist, movement, montage, frame, cutting, composition, light, space, sound, perspective, symmetry, texture, shadow used by cinema and architecture make it inevitable for the two arts to interact with each other in the products generated. Films have the ability to make visible imagined but not constructed, fantastic and futuristic buildings and spaces of the future cities visible. With this aspect, they are an important data source for $\boldsymbol{\varphi}$.



4.10. Time management

The design process does not end, but the deadline to submit ends. Being productive is all about efficiency as well as time management. It is not necessary to work hard, but to work smartly. When φ cannot manage time, they suffer from sleep deprivation and insomnia becomes a problem area. Excessive insomnia prevents proactive and positive thinking, leading to instantaneous responses so managing time and learning to work efficiently is important for φ .





4.11. Standing Upright

We experience the world with our bodies. Our body and architecture complement and define each other. We reside in architectural products, and architecture in turn resides in our bodies. While spending long hours in front of the computer drawing, we should notice our spine, and precautions should be taken against spine disorders triggered by posture disorder.



4.12. Digital Revolution

With the concepts of virtual design/online/cyber studio, remote collaboration design and web-based design, distance learning is becoming a part of daily life due to Covid-19 epidemic. Design critiques were given on the screen through images and sound. This revolution has replaced face-to-face interaction in urban gathering areas with digital social formations. Distance education has provided advantages such as flexibility in time and space, equality of opportunity, removal of borders, reduction of costs by being liberated from the building-classroom-studio-workshop-space, cheap and effective communication and rapid feedback. While the instructor has the role of mentor in the digital environment, $\boldsymbol{\varphi}$ learn by themselves, analyzing information and control the learning process.

The codes of the virtual environment have also removed the borders. Distances have decreased. Academicians from different schools across Turkey and abroad and self-employed architects in the private sector have easily joined the studios. Although e-learning is not compatible with the nature of architectural education, it has been seen that it has the potential to support face-to-face education if effective communication is provided with the use of the right methods and technologies. $\boldsymbol{\Phi}$ should be ready for new developments to come with the digital revolution.



5. Conclusion

Architecture seeks to improve human life through buildings and cities. If values such as pleasure, humanism, creativity, usefulness, firmness and aesthetics cannot be offered to people, and if people do not encounter an aura that seduce their thoughts and bring their emotions and thoughts into contact with space, then there is no such thing as architecture there. Instead, there are forms and buildings. Architecture is not taught, but learned over time. When the basic and widespread problems which high school students coming from a predominantly multiple choice-based education system encounter in the field of architecture, which offers a predominantly visual communication education, and the ideas that could serve as solutions to those problems are presented through empathy two groups of suggestions can be made. The first group of suggestions that provide solutions to the problems faced by φ are about the mental transformation. The second group is behavioral and performative activities. $oldsymbol{\varphi}$, with a mindset for multiple-choice exam systems, should evolve into multiple and alternative thinking systems. It should be emphasized to the prospective architects during their undergraduate education that the school is not the place where ways are found, but rather where they are taught how to find them. Architecture is a biochemistry to establish a link between the shape, color, form, function, material, structure, detail and emotion. This biochemistry must have new learning dynamics in the face of the new world order and spaces brought about by the digital revolution. In order to be able to empathize with generation Z, it is crucial to learn thought patterns, behavioral forms, daily practices, the technology they use and even the language they have developed.

6. Further Research Question

Architecture evolves every day dealing with smart cities/homes, vertical cities, living affordable community, nomad micro homes, organic roof, immersive virtual reality, big data, Building Information Model, parametric architecture, 3D printer, internet of spaces, wearable technologies, chatbots, dialogue-based artificial intelligence software, robots, space age technologies. How should prepare for themselves when architecture is headed for a world where it may lose its punction as a professional practice owing to artificial intelligence?

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A Model Proposal for Raising Awareness and Spreading of Emergency Architecture

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Keywords: Emergency Architecture, Migration, Sustainability, Eco-village, Digital Library

Abstract This study primarily explores the phenomenon of migration and causates the need for emergency architecture. Migration derives from the fact that communities want a better "place". 3 different groups who had to move away from their current places and migrate for different reasons were defined in the scope of the study. These groups are; (1) earthquake victims, (2) refugees, and (3) seasonal agricultural workers. Emergency architecture offers solutions in response to the desire of these three groups to live in better conditions. The model proposal, which is the main focus of the study, was developed in this direction. The model proposal focuses primarily on basic needs and includes solutions to this problem. In addition, the social needs of the communities were also evaluated and sustainability principles were observed. In the preparation of the model proposal, ecovillage setup was also used. In order to increase the widespread impact of emergency architecture awareness, the necessity of a digital library was also emphasized and the contents & structure that the digital library should have was mentioned.



1. Introduction

With the emergence of agricultural societies, the nomadic order left its place to a settled order. Human beings made immigration movements based on basic needs such as natural disasters, climate, religion, nutrition and shelter in ancient times. The emergence of industrial societies triggered migration due to health, war and / or economic reasons (Önal & Keklik, 2016).



The phenomenon of migration triggers the human need for a better living condition. Therefore, in mass movements such as migration, space is one of the dominant concepts that should be discussed and emphasized. At this point, emergency architecture, which deals with the housing and regular life of disadvantaged groups, comes to the fore. The problems faced by groups who have to leave their comfort zones due to necessity can be overcome by architectural solutions and these groups can continue their lives in hygien-ic, well-organized and designed spaces. Within the scope of this study, a model proposal has been presented in order to raise awareness of emergency architecture and the issues that can be done in order to spread this awareness are mentioned.

2. Focus of Research

Among the basic situations that emergency architecture is related to, the most striking is natural disasters. Earthquakes take the first place in terms of damage. The percentage ranking of natural disasters according to the damage they cause is as follows; 61% earthquake, 15% landslide, 14% flood, 5% rock fall, 4% fire and 1% avalanche (T. M. M. Odası, 2010).



Actions and policy of interest contrary to engineering, science and rational thought have caused our country to turn into an earthquake and disaster country. Each year, 3% and 7% of GNP is used to compensate the damage caused by natural disasters. Earthquake, landslide, avalanche, rock fall, flood etc. events are natural and damaging. This damage increases in cases such as wrong location decisions, not using engineering-based data in development plans, and low-quality building production. The natural disasters and earthquake problem in the country should be handled within this framework and evaluated as a whole (Anonymous, 2010).

In this study, as a transformation and development movement in which sustainable development is directly related to human and environment, a model proposal has been put forward that includes social, economic and ecological elements as well as physical elements. It is anticipated that this proposal will benefit the re-participation of different disadvantaged groups in society such as refugees and earthquake victims, in social life after the disaster. In addition, it is planned to develop an "Immigration and Natural Disaster Digital Library" to raise awareness about emergency architecture. Therefore; the model proposed in this study can be considered as the first step taken for digital library. It is suggested that the digital library will be an important material for the awareness of emergency architecture and its spread. Accordingly, the digital library is expected to contain the following items; (1) outputs related to emergency architecture and ecological architecture, (2) the education-training system designed to popularize the model, (3) possible symposiums, workshops, webinars to increase the widespread impact, and finally (4) an architectural model proposal.





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National Science and Technology Policies, Energy Efficiency Law, Energy Efficiency Strategy Document and Energy and Environmental Technologies Strategy were prepared in line with the Rural Development Plan and 2023 targets. In these documents prepared, attention is drawn to the social, economic and ecological dimensions of development (Anonymous, 2015). Development, planning, design and production models to be developed for urban and rural areas are important in achieving the 2023 goals.

The proposed model is primarily for basic needs. A certain level of social needs is also included in this model. The model proposal in the study has three different target groups. The first of these is earthquake victims. Basic requirements such as nutrition, shelter and health after natural disasters can be overcome with emergency architecture solutions. In addition, emergency architecture can be used to address the problems of other disaster-affected communities, especially earthquake victims.



Another target group is refugees. Refugees, one of the important problems of our country as much as natural disasters, are directly related to emergency architectural solutions. The main difficulties experienced by refugees are related to communication, financial difficulties, psychosocial problems and health services (Cenkci & Nazik, 2018). With the developed model proposal, solutions can be brought to the mentioned difficulties from the architectural framework. For this reason, refugees have been chosen as another target group of this study.



The final group is seasonal agricultural workers. Seasonal agricultural workers are people who have to migrate from one region to another during certain months of the year.



Solutions based on the model proposal in the study have a forward-looking content as well as responding to primary requirements. In this context, it has been considered to develop a suitable model for groups affected by natural disasters to contribute to the local economy. In addition to economic relations, social activity venues considered within the scope of the model proposal can also provide medium and long-term benefits in making the daily life dynamics of refugees work again.

3. Method

Within the scope of this study, the arrangements to be made regarding basic needs and social needs have been presented. Then, the design and production possibilities of ecological buildings were investigated. In addition; comfortable, economical and ecological building designs have been developed. These designs are based on the rapid production of structures. Since the proposed model will also be used for different policy objectives, the economic and ecological structure has been taken into account. For this reason, a village-city-like model proposal that has been tried to be implemented in the past years has been used as a reference. Drawing tools and sketches were used while developing the model proposal. In addition, as a requirement of the concept of accessibility, it is also an important issue to consider the post-disaster situations of disabled individuals in detail. The suitability of the developed model proposal for this situation has been discussed and it has been designed in a structure that can be transformed if needed. Thus, relevant changes can be made on the model proposal depending on the demands of different communities and for different reasons.

4. Findings and Outputs

The concept of eco-architecture on which the model proposal is based includes elements such as electricity generation from renewable energy, sewage treatment, recycling of waste materials and food production (Wu et al, 2011). For this reason, eco-architecture can be used for energy efficiency, infrastructure improvement, use of local building materials, solid waste recycling, and dissemination of organic agriculture activities. In addition, a program proposal for the 2023 goals and the Rural Development Plan can be achieved with eco-architecture principles. The eco-architecture concept, whose design and application criteria have been developed for years, brings a new definition of need for humanity. Eco-architecture is an alternative to consumption-based urban life and suggests a radical sustainable lifestyle based on harmony with nature (Lan, 2011). The disaster-resistant, environmentally friendly and easy-to-build building typology, which is planned to be developed with this study, has the following basic design principles:

- The water collected from rain and snow can be kept in the reservoir and it is possible to make it ready for use by passing it through a pressure pump and filter. This water can be used in bathrooms and sinks.
- Sewage treatment: Used water can be treated with natural techniques and reused as gray water in toilet flushing. Black water used in the toilet can feed the plants as fertilizer if transferred to the soil.
- Use of solar and wind energy: Eco-architecture, which aims minimum or zero fossil fuel use, proposes electricity generation based on natural energy resources. The linear current obtained from the sun and wind with the photovoltaic power system can be converted to alternating current and used in electrical tools and machines.
- Thermal / Solar heating-cooling: The thermal mass created by using compressed soil and recycled insulation materials provides coolness in summer and warmth in winter. Thus, the need to use electricity for heating and cooling is eliminated.
- Use of recycled materials: Disaster-resistant, natural, environmentally friendly, recyclable building materials that are planned to be designed can be shaped and used with minimum or zero energy consumption.

The design and production principles of ecological buildings are developed within the framework of the eco-architectural concept. These structures are based on the principle of harmony with nature and define radically sustainable living spaces. The ecological structures developed have qualities such as water capture, sewage treatment, electricity generation from solar and wind energy, use of recycled materials and food production.

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Thanks to these qualities, ecological structures are thought to support ecological development in rural areas. Eco-architecture has the potential for reaching social, economic and ecological goals that is related to the Turkey's 2023 vision. The design and production principles of ecological buildings are developed within the framework of the eco-architectural concept.





These structures are based on the principle of harmony with nature and define radically sustainable living spaces. The ecological structures developed have qualities such as water saving, sewage treatment, electricity generation from solar and wind energy, use of recycled materials and food production. Thanks to these qualities, ecological structures are thought to support ecological development in rural areas. Eco-architecture, Turkey's 2023 vision for the social, economic and ecological objectives has the potential to reach. Because low-cost structures that can be used in rural areas in our country can be produced with eco-architectural principles. While eco-architectural principles suggest compliance with local culture and materials, they allow the design and production of a fast-building typology. It is important that the model proposed here is both ecologically and economically sustainable. Buildings planned to be built with recyclable and waste materials are autonomous since they are independent of urban infrastructure systems. These structures, where renewable energy sources such as wind and solar will be used, can minimize the dependence on fossil fuel consumption. Living spaces of low-income segments should be modeled on the axis of eco-sustainability. Because structures designed in accordance with eco-sustainability;

- compatible with nature
- has effective solid waste management
- produces its own energy
- · access and mobility are at a level with the least harm to the environment
- built from recyclable and reusable materials

Eco-sustainability supports the creation of an important design model that can be used by decision makers, planners and implementers.

This model will be shaped as a settlement typology based on the approach of creating self-sufficient and independent housing units. As an example; 4 housing sub-units can be combined to create a home for a family with two children, or two housing sub-units can be used for families without children. These residences can later be turned into larger residences by adding new housing sub-units. 4 residences will combine to form the lowest unit of the settlement. Water harvest, electricity generation, decomposition and treatment of gray water will be carried out in this sub-unit. The sub-unit is aimed to be sustainable in terms of energy and water security. Especially, this lowest unit will be sufficient to solve the problems of seasonal agricultural workers mentioned above. When 250 of these four residential sub-units are combined, a district will be formed when five neighborhoods are combined. These numbers can be changed according to the needs. There will be an administrative structure similar to the neighborhood mukhtar at the neighborhood level, and an administrative structure similar to the municipality and district governorship at the district level. In addition, a sufficient amount of education and health units will be derived in the neighborhoods consisting of 1000 dwellings and 250 settlement sub-units. Likewise, a district will be able to fully meet its own electricity needs. In the basic city settlement consisting of the combination of 2 districts;

- Water needs will be minimized through water harvesting and separation of gray waters and waste management issues will be resolved,
- A self-sufficient system to the maximum extent in terms of agricultural production will be developed
- and employment problems will be minimized.

There will be an administrative structure similar to the neighborhood mukhtar at the neighborhood level, and an administrative structure similar to the municipality and district governorship at the district level. In addition, a sufficient amount of education¹ and health units will be derived in the neighborhoods consisting of 1000 dwellings and 250 settlement sub-units. Likewise, a district will be able to fully meet its own electricity needs. In the basic city settlement consisting of the combination of 2 districts;

• Water needs will be minimized through water harvesting and separation of gray waters and waste management issues will be resolved,

- A self-sufficient system to the maximum extent in terms of agricultural production will be developed
- · and employment problems will be minimized.

As a result, food, water and energy security will be ensured, as well as all necessary solutions in terms of employment opportunities, administrative and social needs. This solution will be especially beneficial for new cities to be created after mass migrations and major disasters.

Graphics regarding the model recommendation are given below and 4 phases:



¹The number of people who will study at the basic education level is calculated approximately to the rates of our country (one-eighth of the population). That is accepted that 10% at the pre-school level, 45% at the primary school level and 45% at the secondary school level of the educated population.



5. Conclusion

In addition to the accommodation and settlement solutions developed based on the concept of emergency architecture and sustainability explained above, the dissemination of the related subject is also within the scope of the study. In this direction, it is planned to create a digital library. Another step is the development of an education system that will support the creation of a digital library. In addition to the settlement model gathered under the digital library, the education-training system, webinars, symposiums and all other outputs resulting from the workshop can also be collected under this library and can be shared with relevant institutions and organizations by making them available for open access.

6. Further Research Question

Disadvantaged groups, especially refugees and disaster victims are considered one of the main problems in Turkey and the world. These groups, as well as any community, have the right to a comfortable and orderly life. With the ecological and economic life model suggested in this study, a solution-oriented step was taken for the masses who moved away from their places for various reasons. Thus, more livable "places" can be designed for the mentioned social classes and a more fair social order can be created.

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Tradition to Innovation Through Architectural Space: A Case Study on Turgut Cansever

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Keywords: Modernism, Tradition, Innovation, Turgut Cansever, Aga Khan Awards

Abstract This study aims to reveal the spatial interpretations born of tradition and headed for new in a world where modern thought still influences the way space is handled. Reaching a contemporary synthesis with innovative approaches by realizing social values on a local scale seems a potential. Here, tradition is considered as an indispensable source of contemporary expansions for the future with its original historical data of the past. Reaching original works in the fields of design requires going beyond the formal approach, which includes global repetitions disconnected from context and tracking historical clues forming the tradition. It is seen that the repetitions of the past forms today cannot function as a dynamic synthesis. Thus primarily starting point should be intellectual production instead of formal production. So, architect-intellectual Turgut Cansever, aiming the change, transformation, the forward-thinking, and known for his thoughts never conceding his dissenting identity, constitutes the sample of this study. Cansever, following Western thought's footsteps, but positing against the context reproducing it formally, is considered essential. Therefore he is evaluated with his intellectual background to create the original, and his projects deserved the Aga Khan Award.



1. Introduction

The main characteristic of modernity is that it offers a different way of life than the traditional systems before, and it is historically unique. This uniqueness also indicates a break from traditional systems. This rupture brings the concept of alienation that emerges with the speed of change. While science, technology, and industry are developing rapidly on a large scale, the socio-cultural structure is changing, and values are being lost. As a result of this, people become alienated from social life and it's places. This study primarily deals with criticizing modernity and alienation and evaluating the relationships between tradition-essence-innovation as a part of the solution. Cansever and his Aga Khan Award winner practices with his interpretation of the relationship between tradition- essence-innovation have been examined as tangible examples that exist with their universal values.

2. Method

This study is a review. Here, the data obtained from the international and national studies have been revealed using descriptive research and analysis techniques. Some of the visuals have been obtained from printed and electronic sources, and the others have been specially created as an analysis form for this study.

3. Findings

In the modern world, everything is alien to what existed before it. There is no organic connection between the old and the new. Due to the relationship with the existent before itself, the present moment is also suspicious and known to be alien in the future. The next moment is a series of nothingnesses. The future is an unpredictable, foggy area. In such a world, there is no value or meaning that can be taken as reference. Modern consciousness continually lives in a suspicious perception of the present time, and everyday life experiences take place in this emotion (Yırtıcı, 2005). In this case, in Harvey's words, if modern life is indeed so suffused with the sense of the fleeting, the ephemeral, the fragmentary, and the contingent, then a number of profound consequences follow. To begin with, modernity can have no respect even for its own past, let alone that of any premodern social order. The transitoriness of things makes it difficult to preserve any sense of historical continuity (Harvey, 1992). While this situation has the effect of alienation, in Connerton's statement, alienation transforms the past into a foreign country and makes the present increasingly similar (Connerton, 2009). On the other hand, alienation refers to being "alien" against the mechanical system and machine based on causation, which is the product of the human's own activity (Tunalı, 2002).



Today, as Delanty states, while alienation comes into question both within the self and in the relations between the self and the other (Delanty, 2003), the alienated human being, which is an abstraction, has lost its connection with everything that is specific to the human. The human is reduced to performing an undifferentiated work on indistinguishable objects (Ollman, 1976). In this context, modernist design has become the home of intellect and eye, but it has made our body, other senses, and also our memories, imagination, and dreams become homeless (Pallasma, 2005). With this feature, alienation gradually weakens the bond between old and new while transforming the future into an unpredictable, uncertain space. In such a world, it becomes increasingly difficult to find value and meaning that can be taken as a reference for space and human for design areas.

But in Wittgenstein's words, the only flaw of a perfect picture of the world, free of all prejudices, free of values, naked and defined in a precise language, is that it looks like a flat surface covered with ice and without any friction. The floor has been polished, everything has been defined, and a foundation has been created for the mind where it has functioned flawlessly. But it is not possible to walk on this ground for this reason. Even if a foundation free from prejudices is found, if this foundation is not wanted to be lost when it is found, it should be made to be walked on. (as cited, Armağan, 1998). In this situation, in Cansever's words, for change to be meaningful, there must be something constant. When everything changes, change loses its meaning, so an environment of chaos can occur (Cansever, 2007). In this case, even to create an opposing idea, a data to be taken as reference and ground to be stepped on becomes necessary. At this point, "tradition" is considered one of the sources containing this ground with its vital relationship with the past, present, and future.

3.1. Tradition Concept

Although there are many expansions regarding the definition of tradition in the historical process, it is seen that the most basic way to define tradition is to emphasize its "hand-to-hand" quality. In the words of Armağan, both the epistemology of the word tradition in Turkish "gelenek" (from word "gelmek", "gel-e-n-ek") and the less-used Arabic equivalent of the word "an'ane" emphasize enough that tradition is something "coming" from previous people in terms of time (Armağan, 1998). The point that needs to be carefully emphasized here is that if the tradition cannot come to the current era, cannot live in it, and becomes alienated from it, it cannot remain as a tradition. In this case, it is seen that the continuation of the tradition depends on staying away from "formal" references. Here, it becomes necessary to stay contemporary with new syntheses and come up with contemporary answers and solutions to today's problems.

Özer (1993) states that tradition corresponds to all the activities, events, ritual habits, and the objects produced by them, coming from the past in the historical process but still valid and current. In the words of Bektaş (1999), tradition corresponds to what survived from the culture of living, which belongs to a region, a climate, a community. Those that have not reached this state cannot be called tradition; they can only be the subject of history. To be a part of the tradition, they have to be ahead of it, not somewhere in the past. Extending the line of tradition to the future can only be possible by creating a contemporary approach.

At this point, Hobsbawm states that all traditionally called practices are actually intertwined with practices considered modern. Tradition is not an unchanging phenomenon or situation that occurs in a particular place. Traditions are continually being recreated (Hobsbawm, 2006). In short, tradition corresponds to the past in the present, in Shils's words (Shils, 2002). And McLean (2004) points out that one of the most fundamental problems of the tradition is its relationship with the present. If the present is simply a destructive repetition of what has already happened, life will lose its ability to move forward, progress will be denied in principle, and hopes will fade.

In this case, Gadamer refers to the relationship between tradition and free creation. According to him, although the tradition created by a great actor, director, or musician continues as a model, it is not the brake of free creation. On the contrary, it activates the "creative interpretative" powers of the artist (Gadamer, 2008). In this context, Cansever is evaluated with his interpretation of tradition with his discourse and practices that inspire those who come after him in architectural production. The architectural works that received the Aga Khan award are presented with the basic approaches behind their creations.

3.2. Turgut Cansever in the Relationship Between Tradition and Innovation

For Turgut Cansever, it is seen that every kind of tradition is more than a tool providing formal data. Cansever has interpreted the tradition to develop solutions for the future by benefiting from the historical experience with the essence and value system that constitutes it. As Cansever (2002) stated, tradition is not just about shape; the point is to develop a solution for the future, based on the "essence", "cultural content", "belief system" and "historical experience" that allow the tradition to form.

This effort of Turgut Cansever, who turned his direction to the West to understand it and traveled all over Europe, enabled comparison and cross-reading with the words of Sönmez and Selçuk (2016). It is primarily possible to see the effects of the East-West synthesis on his products created after these travels. What is meant by "product" here is beyond mere architectural work. There are many intangible and tangible products like architectural analysis, abstraction techniques, to establish his own representation system, to develop new methods on expression, to touch interdisciplinary fields with an archaeological approach by descending to the origin of the local and folkloric, to discover the power of cultural and sociological connections in modern architectural studies and to develop ways of looking and interpreting the world.

The basis of Cansever's mentality and the products he reveals are undoubtedly, his passion for painting, his architectural education from the Istanbul State Academy of Fine Arts after Galatasaray High School, the philosophy lessons he followed at the Istanbul Faculty of Literature, and his doctoral dissertation titled "Column Headings in Ottoman and Seljuk Architecture", his associate professor thesis on the fundamental issues of



modern architecture and the interdisciplinary thinking, working and synthesis ability he developed as a result of them. In this context, Cansever has been questioned the historical development of the form from part to whole, the place and structure of the form in the whole, and the meaning and values exist behind them.

Cansever, who uses his knowledge of art and architectural history to contribute to the intellectual dimension of his architecture, has always been interested in philosophical foundations and has been designed based on history, anthropology, theology, and so-ciology. In this context, with Kaplan's (2009) words, Cansever, who argued that people should have a deep-rooted but complete concept of existence, knowledge, and truth while creating work. In all theoretical and practical works, in life, science, thought, culture, art, politics, and daily life, he shows how a language, attitude, thought, and spirit can be produced not confrontational but liberating, not exclusionary, but embracing and also the principles, sources and horizons of those.

Cansever also exhibits an approach that sheds light on the present and the future by seeking ways to combine universal thinking with local solutions, except for the possibility of completely opposing or blindly devoted to tradition. This approach mainly contains a contradiction. As Cansever (2007) puts it, there is a fundamental contradiction in which all human enterprises are involved. The universal and the local, that is, the solution that will be valid forever, and the solution that is valid for a place and a time, can be thought of as if they have opposite purposes. But the resolution of contradictions is a human task. The greater the contrast in resolving the most opposing issues, the greater the solution emerges. Everything becomes meaningful with its contrast. The main point for human beings is to bring these contrasts together and to place both in a noticeable and resolved unity at the same time.

This is the state of being between history and the future and of being tied to the past and extending into the future. At this point, Cansever speaks of two responsibilities: Respecting the past experience and looking at how to find solutions to its teachings under current conditions, and also not forgetting that the solution to be brought forward is a responsibility for the future. In this context, Cansever believes that an architect has responsibilities (horizontal responsibility) towards art, people, his environment, and the world; He believes that this responsibility should be not only to today but also to yesterday and tomorrow (vertical-temporal responsibility). He makes these ideas visible with his words and projects in architecture and urbanism, which are the primary synthesis in practice. The most prominent of these projects on the national and international scale are the Aga-Han Awarded applications.

3.3. Aga Khan Approach and Turgut Cansever

Ağa Khan Architecture Awards are given from 1977 to today, with the transfer of the primary source AKDN (2021), mainly to create effects on the modernist discourse, to respond to the needs and wishes of societies, and to support and encourage the development of innovative solutions to the problems they encounter. Besides the Western architectural discourse, successful embodiments of the architectural discourse rising from the East are evaluated with its characteristics of sustainability, human scale, adaptation to the climate, and quality of life. In this context, the most important criteria for the projects that apply for the award are to use local resources and appropriate technology in innovative ways and to be a source of inspiration for other projects. Projects that are candidates for the award must be implemented and used at least for one year to be evaluated. Aga Khan Awards are given every three years to all types of projects that set new standards of excellence in architecture, planning practices, historic preservation, and land-scape architecture. These projects have been implemented in urban and rural contexts.

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They have a wide range from small-scale buildings to large complexes, from detached houses to bus stops, from rural school buildings to skyscrapers, from infrastructure and transport systems to residential groups, from education and healthcare buildings to new towns, from urban conservation projects to projects focusing the reusing of areas containing hazardous materials.



The projects are evaluated with detailed documentation on use, cost, environmental and climatic factors, construction materials, construction schedule, structural integrity and ongoing maintenance, and more importantly, design concepts, along with photographs, architectural drawings. It is also necessary to verify project data and to examine user responses on site. The jury has a multidisciplinary structure where architects, landscape architects, urban planners, and independent experts in history, philosophy, art, engineering, and architectural conservation come together.

Since a winning project's success can be a product of various individuals, groups, and organizations, the award is shared among those who contributed to the project's success, like architects, other design and construction professionals, craftsmen, customers, and institutions. Turgut Cansever's projects, which are evaluated within this framework and have caused him to be the only architect to receive the Aga Han Architecture Award three times in the world, are Turkish Historical Society Building (1980), Ertegün House Project (1980), and Demir Holiday Houses (1992). Here, these projects are teachings with their main design approaches.

Turkish Historical Society

Completed: 1966

Cansever, worried about the one-sided rise of western architecture in Ankara since the 1930s, did not reject all elements of international architecture in the design of the Turkish Historical Society building but used the combination of this style with technology. Cansever, in general, has aimed to adapt the culture of the region that he is designing his building to architecture and technology. He has made the plan features and layout of Early Turkish architecture available to a new use through modern technology. The madrasa planning was used as a model in the building of the Turkish Historical Society. Examples of Seljuk madrasahs in Anatolia were used as a source of inspiration here, and the design of the building was taken from the madrasa's interior character. Spaces and circulation towards this area are arranged around a central inner courtyard used as the focal point of all activities performed within the building, reflecting the introverted character of traditional buildings.





This courtyard can also be regarded as a continuation of the city space protected from the outside. Natural light is taken into this building in different ways, in the central courtyard, which is lit from the roof. While the light is used to apply the public character to the central space, more private and intimate values are used in the circulation spaces. Both industrial and handmade materials were used in the building's design, overlapping with each other, and the contrasts between their qualities were emphasized. For example, the use of Ankara stone as a local material, with shiny aluminum and reinforced concrete ... The feedback obtained from the building users, which emerges as a result of the harmony between the customer, the architect, and the user, is the evidence of user satisfaction, which is an essential factor in this building's award.



Residence of Ahmet Ertegün Completed: 1973

The Ertegün House Project is an approach that includes the restoration, reconstruction of the house initially named as Salih Efendi Mansion, and these projects aimed at expanding the living space in the form of adding two rooms on the garden side and re-opening it. High standard local materials and craft are used in the building, an example of Turkish Mediterranean architecture. The building incorporates all the style and construction technology of the surrounding local architecture at the highest level. Designing a house that can change, creating the possibility of change, enabling the building to be opened and closed according to time and season summarizes Cansever's basic approach in this project. Cansever has used many materials to distinguish the old and the new. He has avoided imitation and decoration and showed that an old structure can be transformed into a modern and functional home. The building's approach is essential in terms of being a beginning for its immediate surroundings and Bodrum and setting an example for the coexistence of old and new. In Cansever's words, when we say a building restoration, it is necessary to realize what is beautiful there. As an architect, there are points when you say, "I want to take a strong step," during a decision. Where are the places that the person or persons who built the structure say we have to take a decisive step on their own? As a result, it is essential to understand well "what exists" and its constituent truth and period, the process it has gone through, and also essential to be able to multiply its value with the new structure and to say the right word.





Exterior Entry
 Court, open to
 Lecture Hall
 Seminar Room

below

LEVEL

PLAN











Demir Holiday Villas Completed: 1987-1990

Demir Holiday Houses are the product of an approach that is compatible with the architectural heritage of the environment, namely the Greek, Byzantine, and Ottoman layers, by using appropriate local building materials and can be modern at the same time. The main concern of Cansever, who integrates the planning of twenty villa types, and the main issue he considers is to protect the environment and focus on the region's comfort. The harmony of the cultural and natural environment and the newly designed has been ensured. The residences are placed in a way that they do not cross each other's sea views and are not positioned on any grid. The houses' mass values have been controlled to capture the effect of a natural residential area. The combination of old and new materials is well balanced, and a forward-thinking approach has been adopted on the redesign of traditional forms of local architecture. Creating a suitable environment for the inhabitants and designing understated interiors, well-made, and skillfully placed residences are high standard architectural language suitable for the housing tradition of Bodrum, attention has been paid to the manifestation of values and behaviors such as composition, respect to the rules of nature, simplicity, clarity, neighborhood relations in architecture.





4. Results

As Baudelaire was very quick to see, if flux and change, ephemerality and fragmentation, formed the material basis of modern life, then the de notion of a modernist aesthetic depended crucially upon the artist's positioning with respect to such processes, The individual artist could contest them, embrace them, try to dominate them, or simply swim within them, but the artist could never ignore them (Harvey, 1997). With his identity as an artist and a designer. Cansever was able to make all these inquiries aimed at creating the original and made his synthesis open to us, the readers, through the projects mentioned above. What makes Cansever valuable is that he can create a "work" based on solid foundations without losing the connections with the tradition and, after all, reading the tradition and the era deeply. With the words of Turgut Cansever, what is wrong today is that we have closed our eyes to most of history. Conversely, it will be possible to see how small a place western modernism occupies in human history. Instead of confining ourselves to that small place, we should look at history's integrity and see that modernism also has points to be overcome. We should perceive it not as an unchangeable goal but as a stage, a new realization point. With the integrity of all of these, like our own historical experience, we should offer complete and continuous solutions to humanity.

5. Discussion

It is seen that different people and studies are questioning what the place and importance of Turgut Cansever in Turkish architecture is. Some of them argued that Cansever was an interpreter of modern and Islamic architecture. Some of them asserted that he was one of the essential representatives of regionalism discussed in the post-modern period or a part of the historicism movement. The study has been handled with the awareness of all these discussions on Cansever. Here, his way of creating, which sheds light on the present and the future by seeking contemporary ways of combining local solutions with universal thought, except for the possibility of blindly loyal to the tradition or complete-ly opposing it, especially examined. With the discourse of Kuban (2015), creation takes place in thought or art. Creation is revealed in the synthesis where the present, not rebelling against tradition but absorbed the past, melts the contrasts. Isn't a sensitivity that has moved away from prejudices a characteristic of the real artist?

6. Suggestion

In this study's scope, it is essential to consider historical data in the field of culture as a source that feeds contemporary inspiration and to consider tradition as an indispensable area of data specific to a dynamic background and future expansions. With the words of Cengiz Bektaş, it is evident that the tradition must first be contemporary to continue, and the way to do this is to avoid making formal copies (Bektaş, 2016). In the creation of innovation, the view that tradition constitutes the basis for new interpretations and that it always contains valuable data for today and the future has been tried to be put forward. In this direction, Cansever's views and the projects that received the Aga Khan award have been evaluated with an exemplary approach in ensuring historical continuity with contemporary interpretations fed by tradition in our country. It is expected that the obtained data will form the basis for raising awareness on the subject.

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Parametric Design in Interior Applications in Terms of Design and Ease of Production; The Example of Parawave

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Abstract In today's rapidly developing technology; computers have become indispensable tools in many art, design and engineering fields. Computers' ability to communicate with production machines bring speed, precision and stability to production processes. The parametric design concept provides maximum efficiency from the computer's potential, and the designer has great benefits in many processes, from design to production. This scope of work; the concept and history of parametric design has been addressed. Within the Parawave application; the problems encountered in the process from design to the last minute of the application and the solutions to the problems of parametric design have been experienced and explained.



1. Introduction

Interior design applications have also been affected by the developing digital world. Computers and CAD software are actively used in the interior design discipline. This study focuses on parametric design applications in interior spaces. To understand the process and the final product, it is necessary to firstly understand the concepts of parameter, algorithmic thinking and parametric design. "Although computational thinking approach or algorithmic thinking model emerged in the mid-1900s, its active use in the field of design dates back to the recent past. The computational thinking approach has a long history in computer science. This thought systematic, known as algorithmic thinking in the 1950s and 1960s, means a mental orientation to formulate problems as the transformation of some inputs into an output, and to search for algorithms to perform transformations (Eryarar, 2017:15)". Computers and parametric CAD software have many benefits such as speed, versatility and precision in the design and production processes. These benefits form the basis of the methodology behind the final product. In this context, this article accepts parametric design and manufacturing processes as a methodology for reaching the final product.

2. Focus of Research

In this study, computer aided manufacturing is exemplified on an interior design artifact, to discover the benefits and shortcomings through the process of design and production. This article begins with the definition of the term parameter and the parametric design concept, then touches on the relationship between parametric design and Sagrada Familia church, one of the first architectural examples of parametric design. Next, the methodology, design and production processes of the Parawave application, which is the final product of the article, are explained.

2.1. Understanding Parameter as a Term

The etymological origin of the word parameter is based on the Ancient Greek era. Parameter is the combination of the prefix para- "beside, subsidiary", and the word metron "measure". Oxford Dictionary defines parameter as "something that decides or limits the way in which something can be done". Parameter also can be described as a measure that changes depending on another value or set of values. At the present time parameter is mostly used as the meaning of variable.



2.2. Parametric Design

Parametric design is a system with data inputs and data outputs that can create design areas and mechanisms to achieve results. Data inputs are parameters, data outputs are variations that occur as a result of changing parameters (Glymph, et al. 2004:187-189).

"Parametric Design is the process of designing in environment where design variations are effortless, thus replacing singularity with multiplicity in the design process. Parametric design is done with the aid of Parametric Models (Hernandez, 2006:310)". Every parametrically designed product or space is a system design in its background. This system actually determines the geometric boundaries of the final product. "Boundary determination process based on the design parameters of the parametric geometry and the shape of the final product must be constructed capable of diversifying the desired level (Burry & Murray, 1997:4,15)". In short, parametric design is the geometric expression resulting from the relation of variables to which data input in a defined volume. According to Nonell & Burry (1992:22-25), Sagrada Familia Church, designed by Antonio Gaudi between 1883-1926, is described as the first known parametric design. The design of many structural elements such as the columns, arches and domes of the church is based on Gaudi's parametric models. While Gaudi was designing the domes of the church, he hung ropes from the ceiling, tied different weights on these ropes and tried different design options by moving these weights on the ropes. The values of the weights and their positions on the ropes were variables of this design. Gaudi did not have the current technological possibilities in his time. Yet he was the owner of the first architectural work that designed parametrically by using the possibilities of his time and the force of gravity. The reason why the work stands out so much is that the parametric design makes Sagrada Familia different from the examples of its period.



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2.3. Benefits of Parametric Design

Parametric design has become a rising value with the developing technologies and computers whose processing capacity has expanded in recent years. Goldberg (2009), explained the development of high-performance computing platforms in the early 1990s parametric design began to be perceived as different from its traditional understanding of manually managing variables on a linear plane.

In many different design disciplines, designers are going through a difficult period in the early stages of the design process about deciding the form. Parametric design allows these processes to be overcome more easily, and the various variations of the design can be visualized very quickly in digital environment. According to Hensel & Menges (2006), Geometry has always played an important role in architectural di scourse. Architectural designs have transformed into dynamic & geometric relationships using parametric modeling and digital calculations as tools.

"Calculations in parametric modeling do not have a static geometry setup as in traditional design and construction processes (Özdemir, 2016)". Every changing parameter can appear as a different design alternative in the final product. It is possible to obtain many variations of the design in line with the change of parameters entered in the parametric design setup. In this way, efficiency in design increases and design becomes open to innovations.

Although understanding and setting up the system required for parametric design is complicated and takes time at first, once the system is installed, the final product can be changed very quickly. The parametric model can be modified and analyzed. According to Terzi (2009), different uses of existing geometries emerge with parametric design technologies. Kaya Kızılkaya (2011), compared traditional CAD software and parametric CAD software in the table he prepared as follows;

Traditional CAD Software	Parametric CAD Software
Offer only one solution.	Offer a range of multiple (Complex) solutions.
They are stable systems.	They are variable systems.
Design develops hierarchically.	They do not require hierarchy in multiple design with the concepts of components and database.
It is necessary to go back to the beginning to change the design.	The design changes simultaneously.
It cons ists of one piece.	It consists of components that are inte- grated with each other.
The design study is partly intuitive.	The design study is done more rationally.
Data are brought together analogously.	Data are entered systematically.

As seen in Kızılkaya's table, parametric design software provides a great advantage over traditional software. In addition to its multi-solution range and variable structure, it does

not operate in a hierarchical order and the simultaneous reflection of changing parameters on the final product is one of the most striking advantages of parametric design.

3. Method

In this study, an interior facade application has been made to experience the design and production processes of the parametric design concept. A traditional CAD software Rhinoceros 3D and a parametric CAD plug-in Grasshopper were used in the design process. After the design phase was completed, corrugated cardboard was chosen as the material and laser cutting was used as the production method. The methodological path between the idea and the final product is examined under two separate headings as the design phase and the production phase.

3.1. Parawave Application



Parawave is an interior facade application designed and manufactured parametrically. Parawave's field of application is the entrance area of the Department of Interior Architecture, Eskişehir Technical University.

3.2. Design Phase

The design phase for this study starts with the determination of the application surface and area. For this, 3-dimensional modeling of the application area and its surroundings was prepared by making survey drawing. In the design phase of this study, Rhinoceros 3D and Grasshopper were used as CAD software. Rhinoceros 3D is recognized as a traditional CAD software. Grasshopper is a parametric design plugin which developed for Rhinoceros 3D software.



Afterwards, idea sketches were drawn to determine the rough form of the final product. The predicted resulting product has an undefined geometry and free form.

3.3. Production Phase

The last processes of the design phase and the first processes of the production phase are intertwined. Preparation of the final version of the design for production in computer environment is examined under the title of the production phase. While the design was prepared for the production phase, the technical drawing of each part was created and numbered. Precision in production is provided. Part numbers follow each other in sequence. This provides speed and convenience in production and assembly processes. The main and only material of the product is 4mm corrugated cardboard. Laser cutting is preferred as the production method. All parts were cut out from 800x1200mm plates. Since most parts of the design are larger than the plate dimensions, they are divided into two pieces than connected with assembly parts. All the assembly parts and alignment holes also designed and prepared for production in Grasshopper. After all the main, assembly and spacing parts cut out with the laser cutter, they moved to application area to assembly on-site. All parts were combined and assembled according to their numerical order. Fast glue is used while combining the parts. Finally, all the parts were assembled and the design was completed and hung on the railing.

Due to the parametric design software and the sectioning method, it has become possible to produce a form with a large volume, fluid and complex geometry with planar material. Generally, various molding techniques and techniques such as engraving from cast materials or block materials are required to produce such an amorphous structure. Neither plate material nor a 2-axis production method is suitable for such a form. However, the parametric design concept provides designers with the opportunity to evaluate different alternatives in production method and material options, while offering many variations for the form.



After this point, the parametric design process begins. As mentioned earlier, the things that make up the parametric design are fixed and variable values. It is a design decision to hang the product on the handrail instead of being mounted on the application surface. In addition, the width of the surface on which the design will be applied is certain. The handrail which the product will be hung and the width of the product constitute fixed values of this design. Studies to be done within the length and depth of the product also constitute the variable values of the design.

While starting the modeling, firstly the curves that will define the rough form were drawn. Afterwards, maximum and minimum values were determined for the length and depth of the product. Design variations have been tried within the specified values. After the final form was decided, the form was sliced. The distance between each sliced piece is also a variable value. Variations in the distance between the parts have been tried and the appropriate spacing has been decided in a way that does not disturb the perception of fluidity in the final form.

4. Findings

Before the design was completed and the production phase started, in order to check the accuracy of the design, the cross-sectional parts that coincide with the key points were produced and tested on site. As a result of the trial, it was determined that the survey drawing was wrong and the design was corrected. The correction process took about half an hour. If the design process was done with a non-parametric software and an error is encountered in this way, it would have meant repeating all the modeling steps from the beginning rather than correcting a portion of the design. One of the benefits of parametric design is the non-hierarchical design system. In the system, only the parameters of the relevant section were changed and this change was simultaneously reflected in the final product. Parametric design has provided a great gain in time, energy and workload.



Making the product ready for assembly parametrically during the design process can be considered as another advantage of the parametric design. The numbering each part of the product sequentially and the determination of all assembly points parametrically during the design process made it possible to work systematically during the assembly and application phase of the design and provided saving time. All the pieces that bring together the final product are positioned exactly where they should be, just like a puzzle.



5. Conclusion

The path opened by today's technologies, parametric design has reached high levels and the benefits for the designer are great. Creating forms, one of the most challenging processes of a designer, becomes easier. In the concept of parametric design, the designer designs the system that goes to the final product, rather than the final product. In this case it provides the opportunity to visualize the possible variations of the design faster than ever. In addition, the design of the system ensures that the parameters in the system can be changed easily, retrospectively and the changes are reflected on the final product simultaneously. Considering the situations that may require revisions after production tests, it saves a great deal of time, energy and workload. Another feature of parametric design is that it increases different material choice and production method options for the designer, especially in designs with large volumes. In short, the parametric design concept has evolved to a very important point for the designer in terms of producing and optimizing the form in addition to time and workload gains.

6. Further Research Question

It is foreseen to work on different materials and different production methods in the future. Plate wood types, sheet metals and plexiglass are considered as materials. The contribution of different material potentials to design is intriguing. Laser cutting method was as production method on Parawave. More complex designs can be produced with the support of 3D printers in the future and different production methods can be combined.

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