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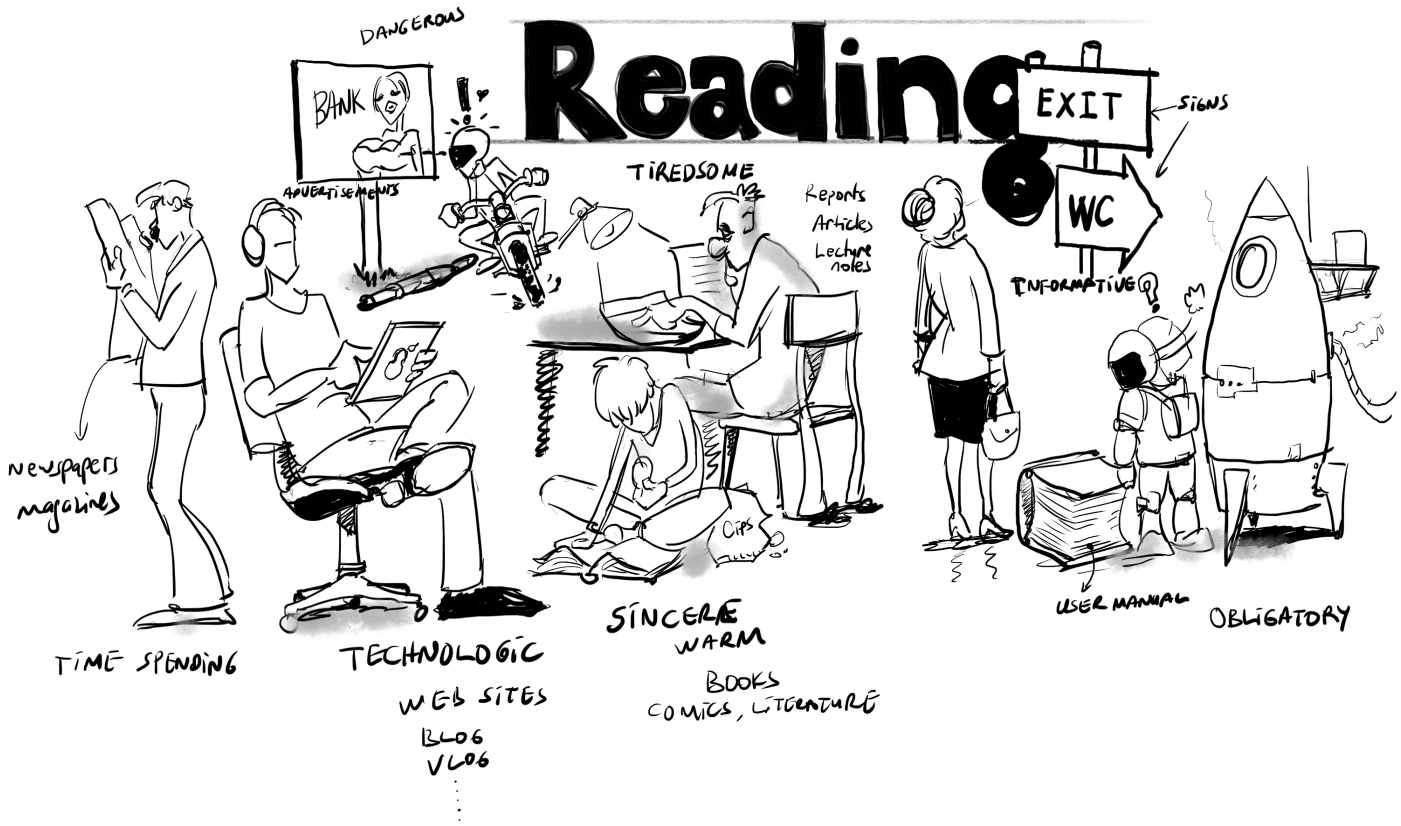
Editorial

Dear Readers,
As we proudly celebrate the 100th anniversary of our beloved Republic on October 29, 2023, we are equally delighted to present the sixth issue of The Journal of Sketchle. From our humble beginnings to this remarkable moment, our journey has been defined by a commitment to innovation and the relentless pursuit of knowledge in the visual realm.
The Journal of Sketchle has always strived to break new ground in the presentation of knowledge, and with each passing issue, we continue to push the boundaries of conventional academic publishing. Our approach has always been to embrace the power of visuals in disseminating knowledge, and this issue is no different.
In our ever-evolving world, visual information has become an integral part of effective communication. It fosters creativity and enhances problem-solving across various disciplines. Our belief in the transformative potential of visual thinking led us to name our journal 'Sketchle,' a fusion of 'sketch' and 'article.' We see the act of sketching as a profound catalyst for representing scientific thought and processes in a visual-first format. In this sixth issue, we once again open our pages to a diverse range of contributors. From young researchers passionately exploring the intersections of their fields through visual thinking strategies to seasoned experts advancing their research, The Journal of Sketchle is a platform where ideas flourish in the visual language. Our commitment to fostering a rich research culture on our journal remains unwavering.
While The Journal of Sketchle adheres to the core principles of a scientific journal, it also places special emphasis on the significance of visuality. We believe that visual thinking is not merely a tool but a driving force for communication and production. In this issue, you will find an array of research articles, reviews, and in-class studies, all unified by the common thread of visual representation.
As we celebrate to our Republic's centenary, let us also raise our expectations for the future of The Journal of Sketchle. We are excited to continue our journey with you, our dedicated readers, and to explore the endless possibilities of visual thinking in academic discourse.
Thank you for being a part of this remarkable adventure. We hope you find inspiration and new perspectives within the pages of our sixth issue.
Happy Reading!

Levent Burgazlı / Editor in Chief



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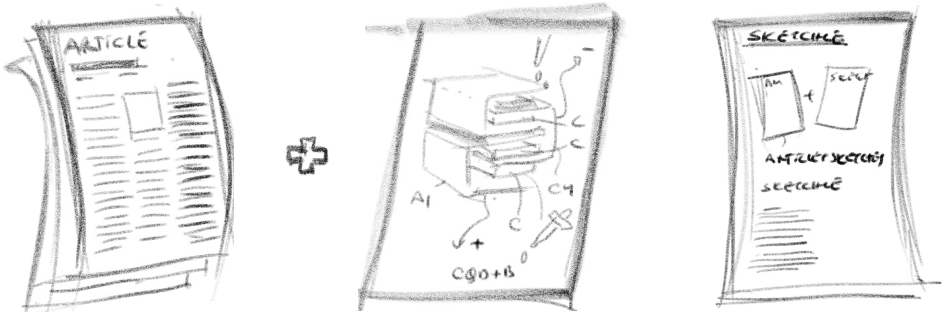

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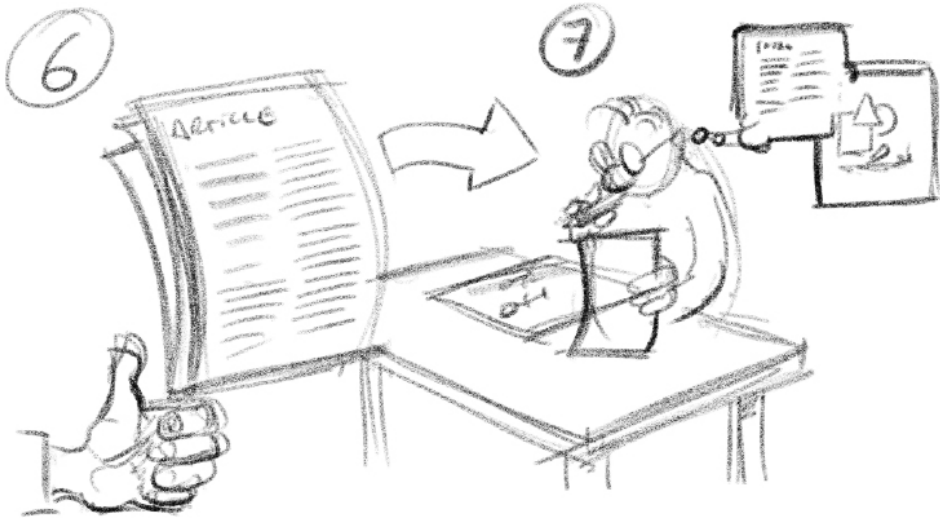

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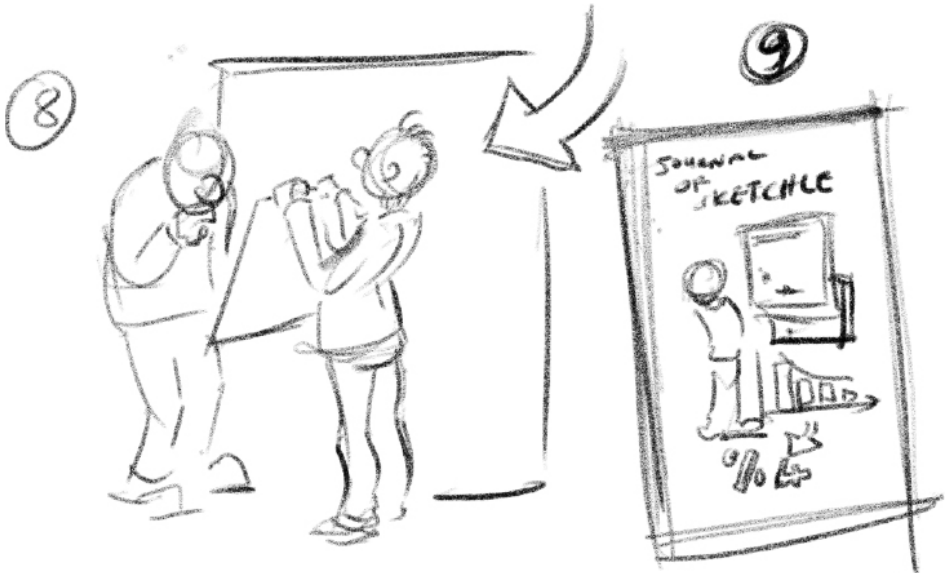

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CONTENT

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Design Diagrams in Industrial Design: A Cross-Disciplinary Perspective

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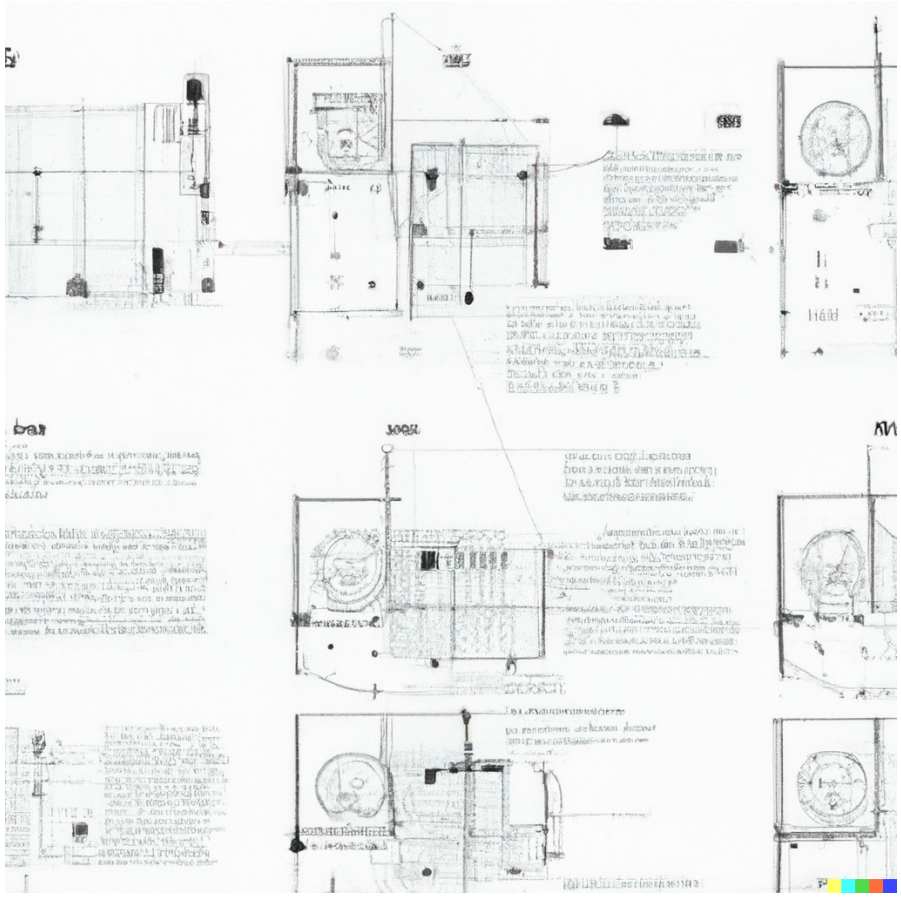
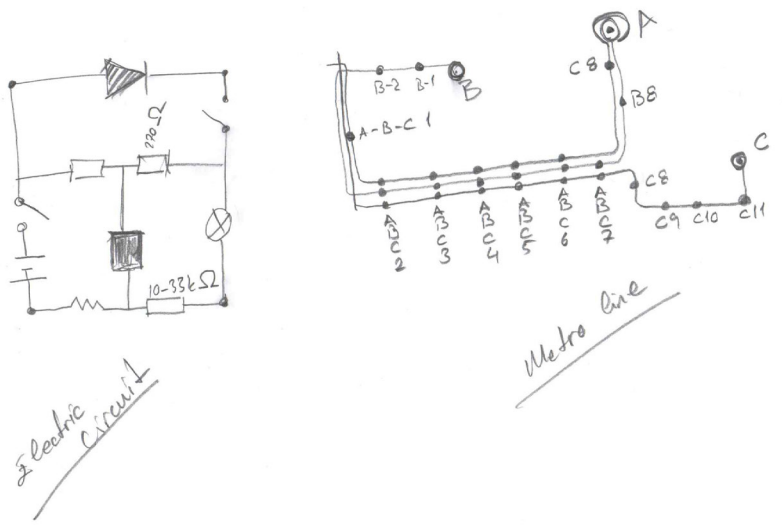
Keywords: Design Diagrams, Generative Diagrams, Architecture, Industrial Design



Abstract

This study examines how design diagrams can be used in industrial design through cross-disciplinary hermeneutical inquiry, drawing insights from architecture. While sketches are invaluable in the designer's toolkit, diagrams offer a distinct advantage as they are more straightforwardly structured and simple, particularly for those who face challenges with advanced sketching skills. Furthermore, design diagrams provide a holistic perspective on form, function, and interaction, convey critical information, and easily establish relationships between design elements. Despite their potential, diagrams are still underutilised in industrial design compared to architecture.

This study offers valuable insights into the significance of design diagrams in industrial design. It emphasises the need to acknowledge their potential as practical cognitive processing and problem-solving tools. The research investigates their application in architecture while considering industrial products' distinctive features, such as spatial attributes, human interactions, and functions. By adapting design diagrams to the industrial design process, a better understanding of the design's spatial elements, functions, and possible interactions can be grasped more comprehensively, resulting in increased effectiveness in idea generation and creating more user-friendly and efficient product designs.



Introduction

Design is intricate, requiring an ongoing conceptualisation, transformation, and evaluation. As designers navigate the problem and solution spaces, their design's complexity increases (Cross, 2008). Drawing, which includes sketching and diagramming, is crucial in framing and reframing both spaces. By facilitating the capturing and contemplation of implicit ideas, drawing stimulates the generation and advancement of problem and solution spaces for designers. According to Do et al. (2000), drawing enables designers to map out their thought processes and helps them explore design possibilities and make informed decisions throughout the design process. According to academic research, drawing iterates the design processes and thus enhances the design outcomes (Day & Orthel, 2016; Karaata, 2016; Self, 2017, as cited in Novica et al., 2023). In the early stages of a design project, designers must comprehensively understand the problem they are trying to solve. Sketches function as a cognitive tool, allowing designers to explore multiple design possibilities and refine their ideas (Nickerson et al., 2013). Sketch structures the problem and establish a strong foundation for effective problem-solving. However, effectively deploying sketches as a cognitive tool requires proficiency, which often requires completing drawing courses and practising a lot. As a result, design students may only fully benefit from sketches once they have honed their sketching skills. According to Booth et al. (2016), many design students find sketching challenging due to insufficient drawing skills, which can be problematic for novice designers who must express their ideas visually. Although sketching can be challenging, diagrams can be a helpful alternative, particularly for those who struggle with sketching. The advantage of using diagrams is that they do not demand advanced drawing abilities. When incorporated early in the design process, design students can more efficiently and comprehensively visualise their concepts with diagrams.

Diagrams offer a structured approach to exploring designs and breaking down complex problems into manageable components (Albarn & Smith, 1977). By creating simple visual representations to analyse a design problem's attributes, designers can better comprehend complex problems and better understand the target domain (Heiser & Tversky, 2004; Seveldson, 2020). Diagrams serve as a recognisable foundation for inferences, allowing designers to identify patterns in the target domain accurately and thus better understand the design data (Heiser & Tversky, 2004). For this reason, diagrams can communicate design information more effectively than sketches. Moreover, diagrams can foster unexpected discoveries and lead designers towards creative solutions when used with sketches (Dogan, 2013; Ghim, 2021). Despite their value, diagrams are less commonly used in industrial design discipline compared to other design disciplines, such as architecture. The lack of research on diagrams in industrial design literature can also indicate their limited usage in the field. The only research on diagrams in industrial design is carried out by Yong-Gyun Ghim (2021). His research focuses on the usage of flow diagrams for designing interactive products. According to him, design students can significantly benefit from using flow diagrams while designing interactive products. Flow diagrams help in understanding the sequence of interactions and required electronic components from the beginning. Additionally, when combined with sketching, they serve as a framework for storyboarding and improve visualization. In industrial design, it is essential to recognize the value of diagrams as a powerful tool for cognitive processing during design generation, as Ghim (2021) proved.

This research seeks to investigate the viability of incorporating diagrams in industrial design by means of an exhaustive scrutiny of their traits and employment in architecture. Drawing on this analysis, the research aims to derive meaningful inferences and insights that can help a better comprehend the potential of diagrams in industrial design and their significance in the field.

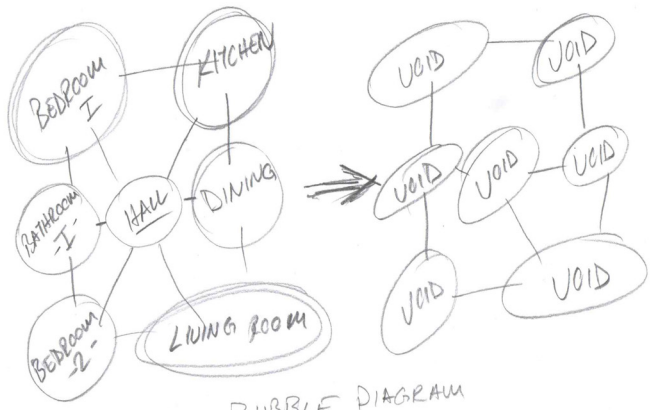
Method

This research employs cross-disciplinary hermeneutical inquiry (please see Klemm, 1986 for further information about the method).

Design Diagrams: Generative Functions

According to Pai (2010) and Lawson (2012) any abstract representation that includes a sign, signifier, and signified can be considered a diagram. In the literature, metro line maps and electric circuit schemes are typical examples of such representations. As a result, design researchers, particularly those in the Architecture, often attempt to differentiate between diagrams utilized for general purposes and those specifically used in the design process.

The differentiation of diagram types commences with establishing a sound definition of the purpose of a diagram in design. According to researchers in Architecture, the diagram in design is not a form of a mere visual representation but a dynamic tool (Eisenman, 1999; Corbellini, 2006). Therefore, it has specific functions. One of these functions is communication (Larkin and Simon, 1987; Do and Gross, 2001). Communication in this context goes beyond a simple meaning transmission of the signified. Rather, it embodies the reflective process described by Schön (1987), which involves a dynamic interplay between the design, designer, and peers. Therefore, the diagram's communicative function serves to convey ideas that can fuel further discussions on design. This brings with it the second function of diagrams, being an iterative force to think (Knoespel, 2000) and synthesize (Corbellini, 2006). Pai (2010) calls the latter as functional diagrams, Lawson (2012) calls as thinking drawings, Eisenman (1999), Corbellini (2006), Sevaldson (2020) and many others calls as generative diagrams.



The first characteristic of generative diagrams is reduction (Heiser & Tversky, 2004; Corbellini, 2006; Lawson, 2012). Generative diagrams can be a highly effective means of simplifying complex design problems. By reducing information to basic shapes such as circles, squares, and lines, the essential information needed to solve the problem is easily visualized. This approach is advantageous when dealing with complex design challenges requiring a clear and concise understanding of the problem. In architectural design diagrams, shapes commonly represent either spatial entities, such as rooms, buildings, or a bridge, and/or the functions of those spatial entities. On the other hand, lines represent the links between them. This way, a network between the spatial entities and the functions can be established. Representing a room or building as basic shapes simplifies the design representation by removing intricate details like shading. This approach allows the designer to focus on relevant information, such as the layout and dimensions, and avoid being bothered by irrelevant factors like ambient light. As a result, the design problem becomes easier to comprehend, and the overall complexity is reduced.

Generative diagrams' second function is establishing relations by conceptualizing an organization constituted with form and function variables (Allen, 1998; Corbellini, 2006). Revealing the interrelationships among form and function forces the designer to analyse the problem space further and thus iterate the design process (Corbellini, 2006). According to Allen (1998), the design diagrams are rhizomatic, thus revealing multilayered interrelationships of multiple forms and functions rather than dichotomies, making them a map of translational alternative realities. In this context, he highlights the dominance of function on form; although the form is an indispensable variable of a design problem, it is the inferior among two. A design diagram is closely tied to descriptive aspects of functions (Pai, 2010). Therefore, in a design diagram, the relations take shape based on explicitly identification of them. To do so, a designer should comprehensively consider the functions and related forms to establish connections that will forge a fresh epistemological layer within the design. Sevaldson (2020) calls this as soft programming.

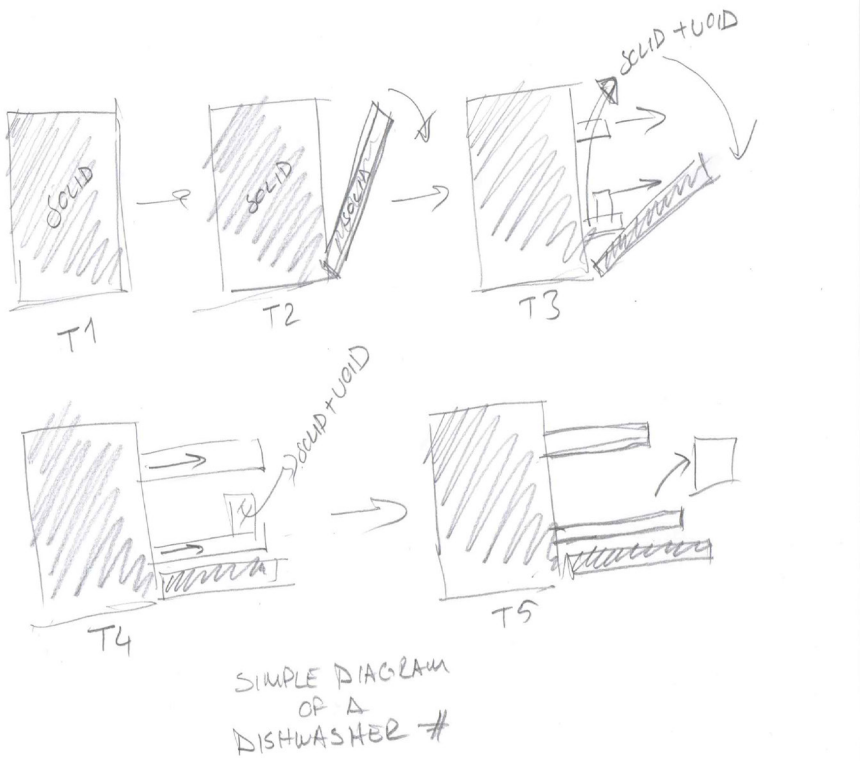
In design diagrams, the relations are represented with lines between shapes, and these elements can be communicated with basic design principles such as proximity, similarity, and grouping (Heiser and Tversky, 2004). By this way, each expression within the diagram not only conveys information about a specific point or component but also encapsulates details about its relationships with neighbouring elements (Larkin and Simon, 1987). Incorporating basic design principles can simplify comprehending function hierarchy and its relation-

ship to forms. Design diagramming can further aid in creating forms by utilizing functions as data and applying basic design principles to create potential forms instead of relying on arbitrary deformations like sketching.

According to explanations on the functions of diagrams above, technical drawings or exploded views of final designs, while classified as diagrams, cannot be regarded as "design diagrams" within the industrial design representation framework. In industrial design, those types of drawings are mainly used to convey the technical properties of the final design. By thoroughly analysing how design diagrams are utilized in architecture, insights regarding industrial design can be drawn.

Architecture and Industrial Design in Diagrammatic Perspectives

Although an architectural structure and a product are both designed objects, they differ in their relationship with humans. According to Krampen (1989), architecture is the built environment of humans while products are artifactual environments. In the built environment, humans are always smaller in size, and the design protects them from meteorological conditions while offering a functional space. However, products can either enclose people or be of such dimensions



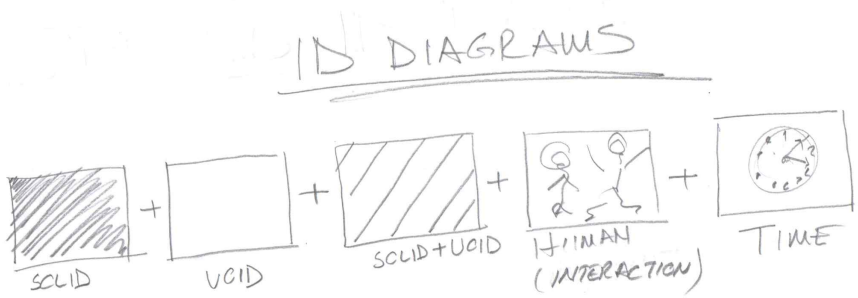
that they are embedded within people. In this context, an industrial product differs from an architectural product in terms of its relationship with human. This changes how they should be represented in a diagram. In architectural design diagrams, shapes always represent functional voids, whereas in industrial design diagrams, the meaning of shapes is influenced by their relationship with humans. For instance, while designing an automobile, whether the shapes represent void or solid depends on whether they enclose a thing, such as a human or pieces of baggage, or if the solid, such as a steering wheel, is enclosed within the void. In design diagrams, lines serve as a means of indicating the connections between different spatial entities that are represented by shapes. Regarding architectural design diagrams, lines are used exclusively to signify the relationships between voids. However, in industrial design, voids and solids can coexist in the same diagram and even overlap. Even more, connecting elements between two solids or voids can be either a solid or void. In such cases, lines might become differentiated in the context of semiotics.

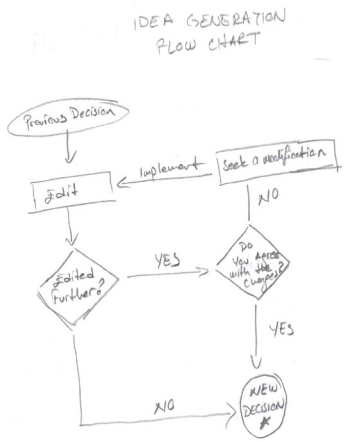
Architectural objects and products fundamentally differ in functionality- the former being static and the latter being dynamic (Krampen, 1989). An architectural design is stationary because it is fixed to the ground and serves a static function. For example, a kitchen or an exhibition hall does not require a change in its physical form to fulfil its purpose. The design of an architectural structure is only altered if its function is permanently changed. Therefore, design diagrams in architecture depict the current form-function organization, which is static in nature. These diagrams do not necessarily represent a change in form owing to a change in function. Products, on the other hand, are not static entities. Their structure may change depending on their intended function. For example, a dishwasher comprises multiple moving parts, each with a unique sub-function requiring the product to be in a specific form at any given time to fulfil its absolute function. Furthermore, a product may require several transformations to fulfil a particular function. That is why it is crucial for design diagrams to be used in the industrial design process to consider time as a parameter to accurately represent the various function-form configurations a product may have at any given moment. Incorporating the element of time into a design diagram can be achieved through diagram sets comprising multiple time-form-function organization layers instead of a single diagram commonly found in architectural design. By applying basic design principles to each constituent of the diagram set, the differentiation in the organization becomes more apparent and perceptible. Utilizing multiple time-form-function organization layers will transform the diagram from a singular exposition into a narrative that unfolds. In this way, the design diagram in industrial design not only organizes form and function but

also creates a series of form-function programs related to time variables.

Circulation is crucial in architecture and industrial design, particularly concerning human movement. Design diagrams can be used in architecture to represent form and function organization based on human movement patterns. As humans move through and interact within an architectural space, their whole body is in motion, which can significantly impact the design of the structure. However, in industrial design, the human being dominates the product. Thus, the design is influenced not only by the displacement of the body as a whole but also by the movement of individual body parts. Inclusion of body movements, both individual parts and the entire body, in design diagrams can significantly impact the organization of a design's time-form-function. Integrating motion into the design diagram may make it easier to design how users will interact with the product, including the placement of body parts and the entire body and how the product should respond to those movements.

As previously mentioned, the utilization of generative diagrams prompts designers to engage in thought-provoking analysis. By utilizing shapes and lines to visualize the void, solid, or both components of an industrial product, designers can thoroughly understand the design's elements. Introducing time as a layer



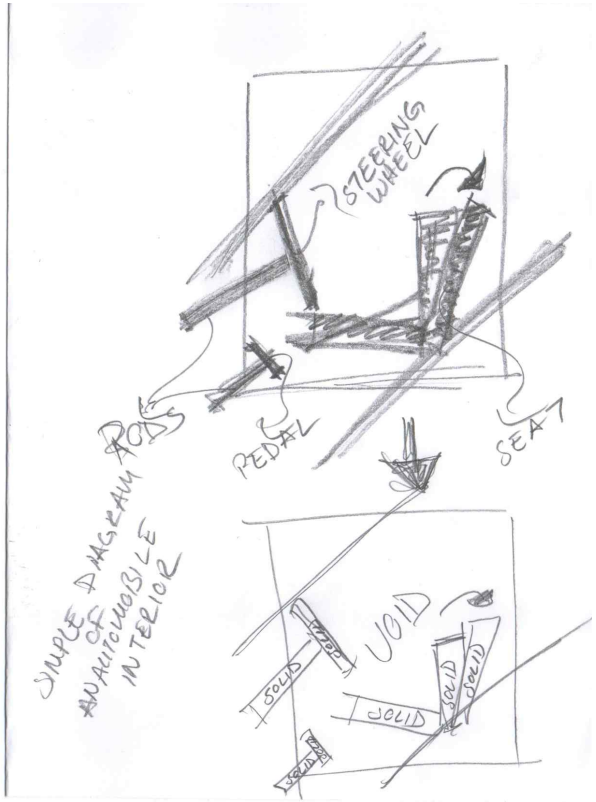


in design diagrams enables designers to organize the form and function of the product holistically, thus enhancing the potential conversions of the design. Moreover, by incorporating human movements of the whole body and individual body parts into the product's design diagrams, designers can acquire a comprehensive understanding of how users will interact with the final design. This knowledge can inspire creativity in the design process as the designer gains a more comprehensive grasp of the product's form, function, and interaction through simple diagramming.

Conclusion

This study uses cross-disciplinary hermeneutical inquiry to explore the significance and potential usage of design diagrams in industrial design. As a complex and iterative process, design relies heavily on visual representations to navigate the problem and solution spaces. While sketches are invaluable for designers, diagrams offer a distinct advantage, especially for those struggling with advanced sketching skills. Through their structured approach, diagrams simplify complex problems and facilitate a deeper understanding of the target domain, enhancing the overall design process by offering a holistic perspective on form, function, and interaction. They convey design information, establish relationships between design elements, and foster creative solutions when used alongside sketches. Despite their potential, diagrams are relatively underutilised in industrial design compared to architecture.

While the literature on design diagrams primarily originates from the architectural discipline, their insights may shed light on the potential benefits of incorporating diagrams in industrial design. The distinctions between architectural and industrial design in terms of the relationship with humans, the dynamic nature of products, and the incorporation of time as a parameter emphasise the



need for tailored approaches to design diagram usage in each discipline.

In conclusion, this research contributes valuable insights into the multifaceted role of design diagrams. It emphasises recognising their value as powerful tools for cognitive processing and problem-solving in industrial design by drawing insights from their application in architecture and considering the unique characteristics of industrial products, shedding light on their adaptability and potential to enhance problem-solving and creativity. A more profound understanding of design diagrams can lead to more efficient and user-friendly product designs, immensely benefiting industrial design.

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A Case Study on Interoperability of Agent-Based Crowd Simulation with Building Information Modeling

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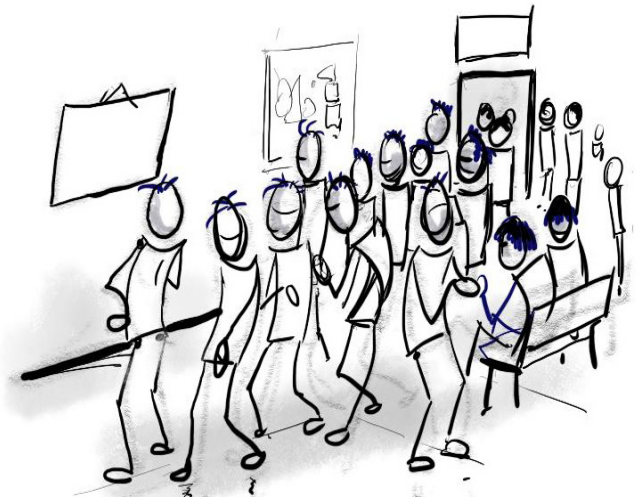
Keywords: Interoperability; IFC; BIM; Pedestrian Simulation



Abstract

This research paper investigates the interoperability of agent-based crowd modeling with Building Information Modeling (BIM) systems. BIM technologies promise effective collaboration through improved interoperability among building design and analysis software. Agent-based simulations of pedestrian behavior are important for analyzing scenarios like emergency evacuations and optimization circulation systems. To illustrate these concepts, a case study is conducted involving crowd bottlenecks observed at the student entrance and foyer of the Main Building at Izmir Democracy University.

The data transfer workflows from BIM authoring system to crowd simulation software using both 2D DWG files and 3D Industry Foundation Classes (IFC) have been explored. IFC files were found to offer a more effective solution preserving the details in building information. The results of the simulations were able to identify the bottlenecks experienced in the building and based on the results solution strategies are proposed.

The findings of this research reveal the feasibility of combining agent-based crowd modeling and BIM to inform and propose optimizations in real-world scenarios. By using IFC standards to seamlessly transfer BIM data into crowd simulation software, the study demonstrates how these technologies can collaborate to enhance decision-making processes and facilitate effective crowd management strategies.

Introduction

The movement of large groups of people in different spaces such as metro stations, stadiums, banks, shopping malls, has certain common characteristics (Braun, Musse, Oliveira, & Bodmann, 2003). As people move from one place to another, they start from a starting point, exhibit a continuous movement that shows a linear character with different speeds and pauses and reach the desired point (Villamil, Musse, & Oliveira, 2003). This straight-forward abstraction of human movement based on lines and points opens the door to simulation and analysis of the spaces used by large groups of people. Subsequently, modeling and simulation of crowd movement behavior has become an important research topic (Musse & Thalmann, 2001). Research is not limited to the simulation of the movements of crowds in physical spaces but is also used to determine pedestrian movements that take place in virtual spaces, such as animations and games.

Simulation of pedestrians in crowds is mostly based on agent-based models where each individual pedestrian is represented as an agent (Braun et al., 2003). The parameters that define their movements include a starting point, an end point, and a certain velocity between these two points. The obstacles and focal points that cause slowing or hesitation in the movement are defined on the linear movement path of the agent (Werner & Helbing, 2003). Dynamic behavior modeling is required to deal with emerging problems in the planned route. Examples of these problems include crossing of multiple agent paths due to inadequate width of passages, and agents that are on crossing routes (Helbing, Farkas, & Vicsek, 2000). The advances in artificial intelligence applications have resulted in effective modeling of pedestrian behavior in agent-based simulation.

Crowd simulation applications with different end-user interfaces all use similar agent-based models underneath. They provide opportunities to employ realistic simulations for predicting human movement in different disciplines such as architecture, transportation, urban planning and industrial engineering. However, challenges remain in terms of human behavior analysis, spatial modeling, and interoperability with design systems used by these different disciplines.

This study aims to investigate the level of Building Information Modeling (BIM) interoperability provided by the agent-based crowd modeling approach within an architectural design context. A case study is conducted for circulation optimization of the architectural layout at the student entrance and foyer in the Main Building of Izmir Democracy University. Pedestrians are simulated for emergency escape scenarios and micro-scale interventions for eliminating the bottlenecks that are experienced are proposed in the light of simulation results. The analysis was made by transferring the data of the building modeled in BIM environment to the simulation software using Industry Foundation Classes (IFC) standard. In the context of this case study, issues related to the utilization of IFC standards for transferring data between modeling software are identified. An analysis is also conducted with a focus on achieving lossless data transfer, specifically emphasizing the preservation of detailed building information, extending beyond basic geometric data.

The study is significant in terms of illustrating the potential of utilizing crowd simulation within BIM workflows providing improved design-support within the domain of architecture. It also paves the way for the integration of analytical approaches into architectural design from a broader perspective.

Figure 1. Exterior and İnterior View of the Classroom Block

Case Study Selection

Main building of Izmir Democracy University consists of two interconnected blocks. The Rectorate block of the building, located near the main road, houses administrative functions. The second block is allocated to classrooms, laboratories, and faculty offices. Entrance and exit to the building is provided for pedestrians through two doors: One from the Rectorate and the other from the classroom block. The user profile consists of university staff and students, and outside access is not allowed except in extraordinary circumstances. University staff use the entrance doors in two blocks, and students only use the door in the classroom block.

Crowds are periodically observed at the entrance of the classroom block, which experiences the highest volume of traffic (Figure 1). This crowding occurs for two primary reasons: routine and non-routine activities taking place within the building. Routine activities are regular classes and breaks, whereas non-routine activities involve events such as congresses, symposiums, exhibitions, and

social gatherings. At the beginning and end of these activities, the ground floor, including the foyer area of the classroom block, is the place where the most concentrated pedestrian movement occurs. Current study aims to formulate interventions to the architectural layout in order to eliminate the bottlenecks at this entrance.

Figure 2. Ground Floor Plan of Classroom Block

Methodology

In the first stage of the study, the selected entrance space was modeled in Graphisoft's Archicad software - the BIM environment (Graphisoft, 2023). In the second stage the two options available for data transfer between BIM and the pedestrian movement analysis software were investigated. The first option is exporting of a 2D plan as a DWG file, and the second option was transferring of the 3D model as an IFC file. IFC is an international standard developed by the buildingSMART consortium formerly known as the International Alliance for Interoperability (IAI), to support data sharing between software used in the construction industry (buildingSMART, 2023). IFC aims to store geometric and non-geometric BIM data in a single database, independent of software, and to use this data at all stages of the building life cycle. In the third stage pedestrian movements were modeled using InControl's Pedestrian Dynamics software (InControl, 2023), and problems in circulation were investigated through simulation scenarios.

Setup of the Environment

The case building which is the ground floor of the classroom block of Izmir Democracy University Main Building was modeled using Archicad, to be transferred to Pedestrian Dynamics software (Figure 2).

Pedestrian Dynamics software allows both 3D (.ifc file format) and 2D (.dwg file format) data imports. Both options were tested. The building model created in the BIM environment was exported first as a .dwg and then as an .ifc file.

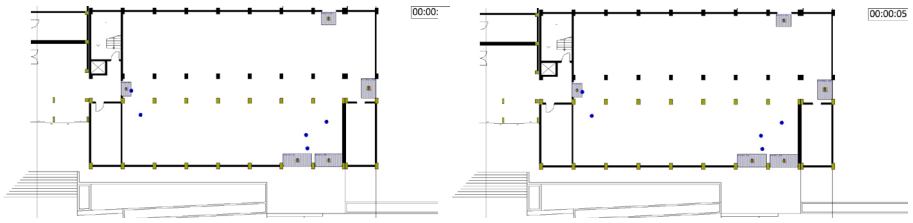
The version of the model exported as 2D .dwg file format was imported into the Pedestrian Dynamics software. Several issues were encountered because only two-dimensional geometric data can be transferred using the DWG file format. The 3D building boundary elements like doors and windows were not recognized properly by the simulation software due to their 2D representation as geometric elements. Moreover, axes, hatch lines and tagging text were perceived as building elements by the Pedestrian Dynamics software.

Using the IFC file data transfer was more effective despite the fact that it requires handling of 3D data. IFC files can contain all geometric and non-geometric data of the building model. When the .ifc file of the building model is imported into the Pedestrian Dynamics software, a dialog allows selecting the floor level of interest, open and closed areas, and determining how non-geometric data will be utilized. It is also possible to automatically identify elements that affect pedestrian movement, such as columns, doors, stairs and ramps.

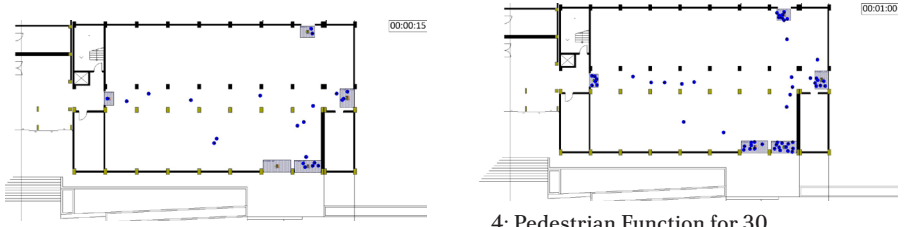
Pedestrian Dynamics Software allows defining activities for pedestrians such as entry and exit, waiting, shopping, changing floors on stairs and ramps. Artificial intelligence based functions determine number of pedestrians, time, speed and routes. Pedestrian counts are related to time and speed functions. The desired frequency and movement speed of the pedestrian or pedestrian groups can be defined. Pedestrian movements can be anticipated using least effort or shortest distance strategies. In addition, speed determination can be defined separately for elements that require movement between floors, such as the use of stairs and ramps.

Pedestrian Functions

Bottlenecks due to routine and non-routine pedestrian movements described in previous sections are observed in the classroom block. Five distinct functions were defined producing five groups of pedestrians for use in simulation scenarios. The first group is defined with a pedestrian frequency that lasts from the beginning of the shift to the end of the shift, representing the daily pedestrian movement that produces 1 pedestrian per second. The second group consists of small groups of friends consisting of 5 students every 5 seconds. The third group consists of a pedestrian function based on regular class hours consisting of 15 students in 15 seconds, which do not have to be connected to each other. The fourth group is defined for pedestrian crowds that accumulate in a space with 30 people in 1 minute, taking into account the capacity of public transportation vehicles. Finally, in the fifth group, a function definition of 100 people was made to describe pedestrian movements that are not routine, such as symposiums or

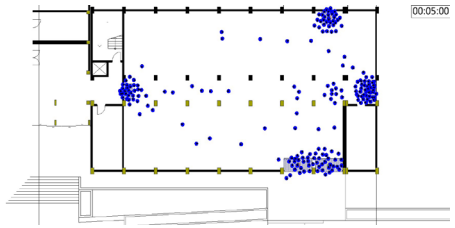


2: 5-Person Friends Group



3: Pedestrian Function for 15

4: Pedestrian Function for 30



5: Pedestrian Function for 100 Persons for Non-Routine Activities

Figure 3. Pedestrian Functions

congresses, but do not recognize the circulation axes in the space, or consist of dense crowds to represent the density during emergency exits. Figure 3 shows these five functions producing groups of pedestrians.

Scenario Descriptions and Simulation Results

The parameters of five pedestrian functions were specified within the Pedestrian Dynamics software. The simulations based on these five pedestrian functions, was performed utilizing the model imported from Archicad as an .ifc file. Four distinct scenarios were prepared with regard to space density throughout the day. The first scenario consists of faculty members and students who can come from nearby areas, and pedestrian activities unrelated to class hours, using only the first pedestrian function. The result of this simulation shows a low pedestrian density per square meter (Figure 4). In this scenario it is possible to pass through the Rectorate block and the intermediate doors, and there is no bottleneck.

In the second scenario, routine pedestrian movements involving the first, second and third pedestrian functions were simulated. In this scenario, two doors that provide internal access to the Rectorate block and one door in the student reception area were closed and the analysis was focused on classroom functions. The simulation results show that there is a bottleneck starting from the corner on the route leading to the student reception area and the stairs that provide access to the upper floors of the block. The simulated accumulation is seen in Figure 5.

In the third scenario, the first four pedestrian functions were included in the simulation and only the two doors that enable internal passage between two blocks were closed, while both doors in the student admission area were activated. The goal is to determine the maximum pedestrian density the area is exposed to (Figure 6).

In the fourth scenario is created to investigate disaster situations where crowds move at the same time at the beginning, end and break times such as symposiums and congresses. As seen in Figure 7, the simulation results show that the pedestrian movement is interrupted and the bottleneck causes a congestion. Purple areas show the density where movement is minimal and the number of pedestrians per square meter is maximum, and blue areas show the outer perimeter where pedestrians try to determine alternate routes.

Findings and Discussion

When existing pedestrian densities are compared with the four simulation results obtained from the Pedestrian Dynamics software, it can be said that analysis results are a good match.

In order to diversify the pedestrian functions used for the simulations, existing activities in this space should be further examined. Each new pedestrian function to be created is important for the accuracy of the simulation results.

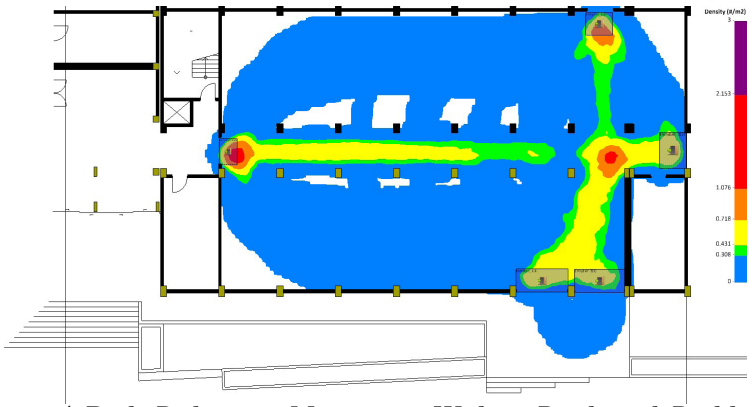


Figure 4. Daily Pedestrian Movements Without Bottleneck Problems

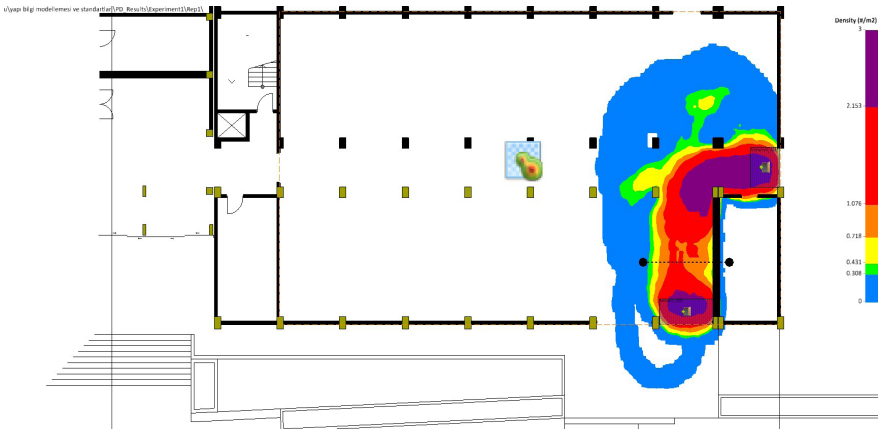


Figure 5. Bottleneck Scenario Showing Pedestrian Density Areas

In pedestrian functions, pedestrian movements were specified at equal speeds, 1.35 m/s on horizontal surfaces and 0.8 m/s when climbing stairs and ramps. Including pedestrian functions to simulate those that move at higher and lower speeds such as students who are late to class will also improve the quality of simulation results.

Pedestrians' route planning can be based on least effort or shortest distance strategies. In the current study, only least effort strategy was used. Including pedestrian functions using shortest path strategy can also improve the accuracy of results.

Spatial route planning can also be done, which forms the basis for the routes to be chosen by pedestrians. However, due to misinterpretation of the IFC data of different building elements by the simulation program, incorrect results are produced in route planning. Cleaning the IFC file and representations that cause these errors in building element selection parameters before the analysis be-

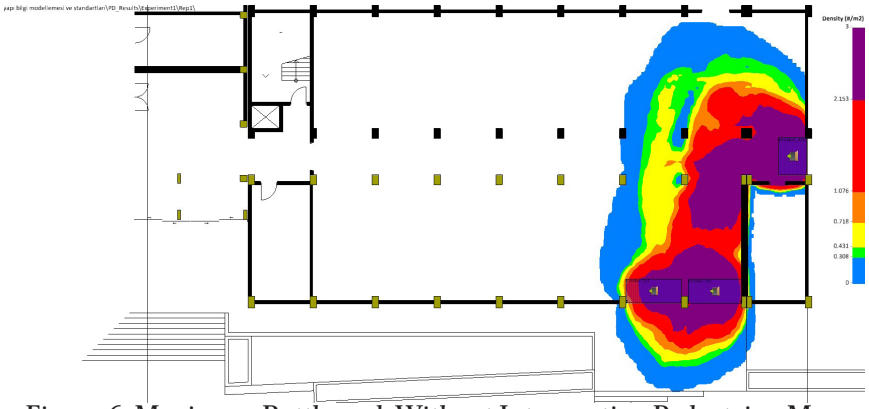


Figure 6. Maximum Bottleneck Without Interrupting Pedestrian Movement

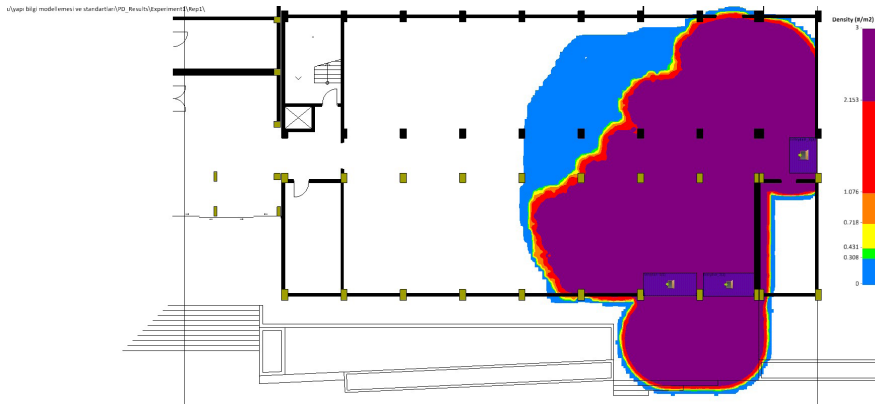


Figure 7. Maximum Bottleneck Scenario

gins determines whether the results are usable or not. There are parameter settings such as an element's border, transition slowdown, half border, and space.

Suggestions

Based on simulation results, strategies have emerged for eliminating the bottlenecks identified in the area. Firstly, improvements need to be made in the student entrance area, which is considered the primary cause of the bottleneck. The proposed improvements are:

1- Expanding the open space in front of the classroom block entrance towards the Rectorate block.

2- Adding a third door next to the existing two.

3- Increasing the number of metal detectors inside the space.

4- Increasing the number of turnstiles.

Secondly, in order to widen the area at the corner of the security office where the bottleneck occurs, the existing security office should be reduced in size in the direction of the door leading to the classrooms, since the extra space is unutilized in the security office.

Thirdly, the space remaining in the foyer area will be adequate when the entrance is expanded since the user density can be shifted to the other side of the corridor. Finally, the two doors that provide internal access to the Rectorate block have not been observed to have any role in the formation of bottlenecks, and they are sufficient in their current shape.

Conclusion

This case study has explored the potential of modeling and simulating agent-based crowd movements, within the context of architectural layout optimization in large, complex spaces. The focus of this research is on using agent-based crowd modeling with 3D models from Building Information Modeling (BIM) systems. Through the case study of the Main Building at Izmir Democracy Uni-

versity, which often experiences crowd bottlenecks at student entrances and foyers, this paper has provided findings into the power of such an approach.

The simulation results highlight the feasibility of using agent-based crowd modeling and BIM together to inform and propose optimizations in real-world scenarios. By employing IFC standards to seamlessly transfer BIM data into crowd simulation software, the research shows how these technologies can be integrated to improve decision-making processes and support effective crowd management strategies.

However, many issues still remain with regard to both interoperability and crowd simulation. IFC based data transfer necessitates in-depth knowledge of various settings in export and import stages. Crowd simulations require careful consideration of various pedestrian groups utilizing the space in order to provide accurate results. Further research and development is required to meet these challenges. More research should be conducted to explore integrating agent-based crowd modeling with BIM systems. Bridging the gap between these two domains will benefit architects, engineers, urban planners, and policymakers, providing them with improved design support.

Acknowledgement

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Understanding the Space Based Interaction Between Architecture and Art Through the Film Goodbye Lenin

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Keywords: Space, Art, Everyday Life, Socio-Cultural Studies in Architecture

Abstract

This study aims to understand the space based interaction between architecture and art through the medium of cinema. With this aim, it reviews and critiques the spaces of everyday life in the film Good Bye Lenin (Becker, 2003) through the framework of socio-cultural studies. For exploring how cinema mediates the spatial interaction between architecture and art, this study examines the changing situations and spaces of everyday life through socio-cultural concepts of nostalgia, globalization, and consumption culture. The methodological framework is structured by critical theory and its method of critique.

Introduction

Have you ever imagined how it would feel to wake up one day and find out that everything you knew about your daily life has changed? In this situation it would be easy to get lost in a sense of nostalgia where we idealize the past and forget to focus on the present. This study accepts nostalgia as a valuable tool for handling the changing situations and spaces of everyday life due to the effects of globalization and consumption culture. To explore how cinema mediates the spatial interaction between architecture and art, this study examines the changing situations and spaces of everyday life through socio-cultural concepts of nostalgia, globalization, and consumption culture by focusing on the film Goodbye Lenin (Becker, 2003). In this regard, this paper firstly reviews the film, then focuses on the spaces and effects of the changes on the everyday life in the East Germany during reunification.

Ostelgie Versus Westalgie 1

The film addresses dramatic changes in the East Germany under the socialist government of Deutsche Demokratische Republik (DDR) during the reunification of Germany following the fall of the Berlin Wall in 1989. The protagonists are a family from East Germany, who are the mother Christiane and her children Alex and Ariane. When Alex and Ariane were little, Christiane's husband abandoned his family and left the country for a better life. After the defection of her husband, Christiane had a mental breakdown and received a treatment for six months. After the treatment, she become an enthusiastic follower and a worker of Socialist Unity Party of DDR. However, not everyone was proud of the DDR like Christiane. Many people in DDR were protesting the government and demanding the reunification of Germany. Like Christiane's family DDR was facing social crises in 1989.

At one of the demonstrations, Christiane saw Alex arrested by soldiers. Although Christiane had dedicated her life for supporting this system, she witnessed that this system was fighting with her family. Shocked by this reality, she suffered a heart attack and fell into a coma. After eight mounts she woke and needed to be kept away from stress. However, this was not easy since communism was collapsed, and Germany was reunified while Christiane was in hospital. Besides, the family took their share from the German reunification. Ariane rejected the everything connected to the past, dropped out her school, began to work in Burger King and had a partner who is a German from the West. Alex also lost his job since his company was closed and started to work as a marketing staff for a satellite broadcast service. Besides, the daily aspects of life were changed since their mother had been in coma. During her coma, their family were familiar with globalization as well as their country. Where they live, what they wear, eat, drink and watch were not socialist anymore. Everything that Christiane believed was disappeared both for the family and the country. Although Christiane did not move geographically after her coma, she became an immigrant of a new country, which was socially and politically changed within the eight months. Hence, Alex decided to keep away his mother from the truth. He manipulated the reality that East Germany had been facing and tried to keep alive DDR for Christiane. He recreated the DDR in Christiane's bedroom and tried to maintain her previous life before reunification. He found local foods, arranged a birthday party with old comrades and broadcasted fake news about the socio-political conditions of the country for maintaining the daily life of Christiane. In the end, Christiane died before learning the truth.

This ending represents the death of the ideological era that Christiane represents. In fact, the fictional DDR of Christiane is the country that Alex wishes for himself. The speech of Sigmund Jähn, who is Alex's youth idol and the first German cosmonaut, verbalizes this wish of Alex: "Socialism does not mean living behind the Wall, it means reaching to others and living with others. Not just to dream about a better world, but to make the world a better place".

Rapid Modernization and Globalization

Through the shared experience of modernity, which unites all humankind in a whirlwind of perils and possibilities, people experience the destruction of traditions, the transformation of the world and themselves, as well as the demolition of everything they have, know, and are (Berman, 1988:15). In the film, similar demolishment process accompanying the very rapid modernization can be seen. The characters seem to experience the three phases of modernity that Berman (1988:17-19) states. In the first phase, which was between 16th and 18th centuries, people cannot fully grasp the modernity but have hopes about it. Similarly, East Germans cannot fully grasp the reunification at first, but have hopes about freedom, income growth and decrease in the unemployment rate. The sequence that begins with Christiane's husband leaving East Germany and ends at Alex's arrest can be associated with the first phase of modernity. In this phase East Germans are more hopeful for a better life. Although they cannot fully grasp the consequences, they appreciate the collapse of socialist system and want the removal of borders as the key for their freedom.

In the second phase of modernity, which is started during 1790s with the effects of French Revolution and reached to the 19th century, people grasp what has hit them and they experience personal, social and political upheavals (Berman, 1988:19). According to Berman, this phase promises highly developed dynamic processes and involves vast industrial zones, grown cities with dreadful human consequences, mass communication tools expanding on a wider scale, ever ex-

Figure 1. Trink Coca-Cola!

panding world market and mass social movements fighting these modernizations. These dynamic processes create two contradictory worlds simultaneously, one is modern and the other is not. In the film, we can see similar promises with the second phase of modernity following the fall of the Berlin Wall. Deutsche Mark is flowing over the Wall and global agents of the capitalist society such as Burger King, Coca-Cola and Ikea are welcomed. On the other hand, East German Mark turns into a worthless piece of paper, the local products are begun to disappear, and many of the East Germans begin to lose their job. Berman states that the third phase of modernity is started at 20th century (Berman, 1988:25). In this phase, modernity and its effects spread all over the world. According to Berman, the modernists of the third phase share two contradictory manners for the modernity experience and do not accept it with pros and cons. The first manner accepts modernity as synonymous with freedom and support the destruction of all the traditional structures in the society (Berman, 1988:25). The second manner refuse the modernity and only focus on its harmful consequences (Berman, 1988:28). Berman (1988:27) is critical to both manners by stating that each manner shares commonalities for accepting the human as an object of modernity that shaped by it, rather than accepting human as a subject of modernity. Alex's sister seems to follow the first manner and accept reunification as a pure freedom likewise the German youth. She leaves her clothes and furniture easily, drops out her school and accepts anything related to DDR as nonsense. However, the old generation who are mostly unemployed soon after the reunification presents an opposed manner. The dialog between Alex and Mr. Ganske reveals this: "That is how far they have driven us already...that we have to go fishing in the garbage".

When we recall the list of Berman for the sources of the maelstrom of the modern life we can say that globalization is one of the consequences of the modernization process2. However, Pieterse (1995:45-68) accepts globalization as coetaneous with modernity and a process of Westernization. According to Jameson (1998:55), globalization is "a communicational concept which alternately masks and transmits cultural or economic meanings" and means the export and import of culture. Besides the transformation of capital, "a way of life" is exported through globalization (Jameson,1998:64). Similarly, Sassen (1996:137) states that globalization is not only constituted in terms of capital but also in terms of people and cultures. According to Pieterse (1995:62), globalization is resulted both homogenization and hybridization. In the film, globalization appears both as homogenization and hybridization. Cultural hegemony of the capitalist society results as a homogenization in the everyday life in terms of the global agents. By means of globalization as homogenization, local markets are assimilated, and local products are disappeared. On the other hand, through globalization as hybridization of East Germans with West Germans the global mélange is created. Hybridization means to combine the separated parts into new forms. Pieterse (1995:60) defines hybridization as "making global culture as the global mélange". During the first years of the reunification, the hybridization process of East Germany is occurred. After reunification, East Germans are neither East German nor West German and they become the object of the global mélange.

Consumer Oriented Society

It is not easy for Alex to keep alive DDR during the rapid modernization and globalization following the fall of the Berlin Wall. As a result, East Germans encounter capitalist consumption. Consumption is a crucial component for capitalism to be sustained. As Harvey restates (1989:99-112), Marx stressed the relationship between capitalism and consumption by focusing on the modernization process that brings a meta-fetishist world. As a result of meta-fetishism, goods have been standardized and detached from human condition both in the producer and the consumer level. Besides, modernization process brings the idea that everyone must be unique in the public life. According to Simmel (1998:174-187), people who lived in the great metropolis react as in the form of blasé attitude and the blasé attitude caused individualism through the pursuit of uniqueness. Similarly, Featherstone (2007:13-27) states that consumption not only involves material goods but also involves transformation of lifestyles, living spaces, identities, and bodies which are central to consumer culture. He accepts consumption not only as an economic process based on a use-value but also as a social and a cultural process. In a similar vein, Baudrillard (2004:49-98) states

Figure 2. The advertisement on the background welcomes the disposal of the Local car Trabant

that products have sign-values as well as the needs and functions. By means of sign-values of products, communication system of the capitalist consumer society is constructed. In the consumer society, products and goods play a symbolic role to determine social status and tastes and as a result social classes occur (Baudrillard, 2004:49-98). This process brings consumption culture and provides opportunities to display identities.

In the film, the East Germans embraced the consumption culture and become a consumer-oriented society. The East Germans who are searching for their individualities in DDR, are appealed by the new colorful product paradise of capitalism. As a result, many local food factories are stopped, and markets do not sell local foods since they are not preferred. The new money and global products are flowing behind the Wall. The transformation of the East Germans to a consumer-oriented society is stressed by several scenes. For instance, the entrance of truckloads of Coca-Cola to the East Germany following the fall of the Berlin Wall and unfurling of the 'Trink Coca-Cola!' banner from the building that faced to Christiane's bedroom (Figure 1).

This unfurling act represents the new and colorful everyday life versus the old and the monochromatic one. Moreover, many of the local products are eliminated by the global agents of the capitalist society. For instance, Coca-cola, Jacobs and Mercedes took the place of Vita cola, Mocca Fix Gold and Trabant respectively soon after the reunification (Figure 2).

The unfamiliarity of consumer culture to the East Germany is given with the scene of Christiane's birthday party. Christiane accepts regular foods such as coffee and peas as a great gift. Before the reunification, consumer culture of the West generally accepted as a decay in the East Germany. However, soon after the reunification the socialism is replaced with consumerism. While socialism becomes obsolete, East Germans becomes more consumer oriented. As a result, some local products cannot survive in the competitive market of this new consumer-oriented society. For instance, Alex cannot find any Spreewalder pickles, Globus green peas or Tempo beans to conceive his mother that she is still living in DDR. The disappearance of the local foods represents the loss of the East German Culture (Figure 3). However, the markets present new tastes for locals and Alex. "Overnight, the pure stores were transformed into a colorful product paradise, and I became The King as a consumer" says Alex.

Figure 3. Markets transform into colorful paradises for the consumers.

Nostalgia

The cultures that undergo rapid transformations like colonization are prone to see themselves from "the eye of the other" and estranged their own culture (Seremetakis, 1994:8). Although East Germans do not experience colonization, they experience transformation as if they colonized by the capitalist system but in a self-imposed manner. Throughout the film, we see the old furniture and household goods are amassed in the streets. Although they are thrown away quickly, they are not removed easily from the streets. Theses abandoned things represents the ghost of the DDR in the collective memories of East Germans (Figure 4). According to Halbwachs (1992:46-51), through continuous reconstruction of our memories, our identity is perpetuated. Hence, generally the East

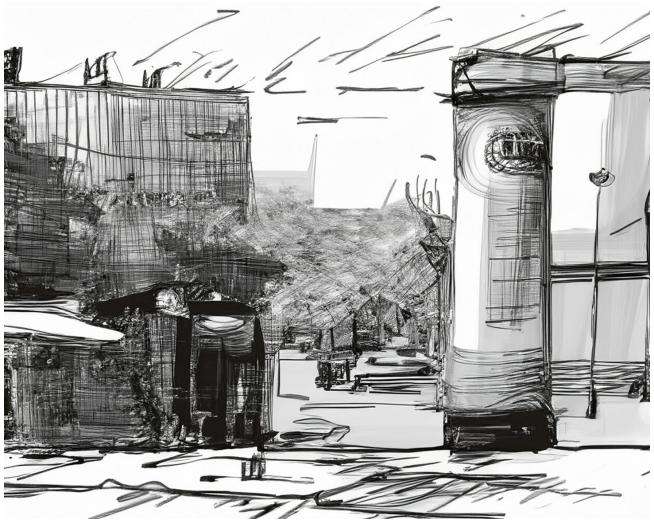

Figure 4. The ghosts of DDR is on the streets beside the Ikea advertisement.

Figure 5. Lenin turns into a nostalgic icon for the East Germans.

Germans throw away the old furniture and recreate their identities remote from their memories. What is loss are not only the furniture, foods, and tastes of East Germany but also the memories which turns to nostalgia.

Boym (2001:xiv) defines nostalgia as a resistance to time and the result of the borders between local and global that modernity brings. After the collapse of socialism, the memories of the old generation share a nostalgia in which they idealize the past of DDR. The question of Dr. Klapparth recall the idealization of the past in the socialist days: "We were all valuable people, isn't that right Alex?" Besides nostalgia which lives in the memories of the old generation, socialism turns into nostalgia for East Germany. The scene in which the bust of Lenin carried by a helicopter represents the history turns into nostalgia (Figure 5).

Conclusion

This paper reviewed changing situations and spaces of everyday life in the film Good Bye Lenin (Becker, 2003) through the socio-cultural concepts of nostalgia, globalization and consumption culture. In the film, we witness both the hybridization and homogenization process of East Germany through globalization. The film also presents the transformation of the Westalgia before the fall of the Berlin Wall into the Ostelgia following the reunification.

Likewise, Ariane's West German boyfriend who finds east exotic and interested in belly dance, today's consumers interested with the Ostelgia in the Germany. Today, Ostelgia becomes an exotic feature of consumption and East Germany is marketed with its products that share appealing attributes for consumers. Thus, DDR's history transforms into a nostalgic simulation. For instance, today consumers have many stores which sells Ostelgia products. Moreover, if they want to experience the everyday life of East Germany, they can enjoy the simulation of the DDR culture in the DDR museum of Berlin for an entrance fee3. The museum promises the tastes of DDR's local foods, the smell of the original Trabant car, the atmosphere of the socialist home and exotic nudism beaches. Besides, there are many Ostels4 in Berlin that promise the most original DDR-design hostel for consumers. If consumers want to experience the exotic atmosphere of East Germany, they can stay in the rooms furnished with original furniture of DDR. Therefore, the collective memory of DDR is consumed like an appealing product.

Acknowledgement

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Notes

1 Ostalgie refers nostalgia for the everyday aspects of life in DDR before reunification. Westalgie is looking present in a future oriented way by welcoming the values of West Germany while refusing DDR's (Powman, 2004).

2 Berman's list (1988:16) includes great discoveries, industrialization that transforms scientific knowledge into technology, demographical upheavals, rapid urban growth, mass communication systems, mass social movements, class struggle, nation states and capitalism. He defines modernization as the social and economic processes that generate the maelstrom of the modern life and keep it in becoming continuously.

3 http://www.ddr-museum.de/en/museum/
4 DDR-concept hotels named Ostel. Please visit http://www.ostel.eu/en/index.html.

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Diagrams as Potential Design Tool in Competition Projects

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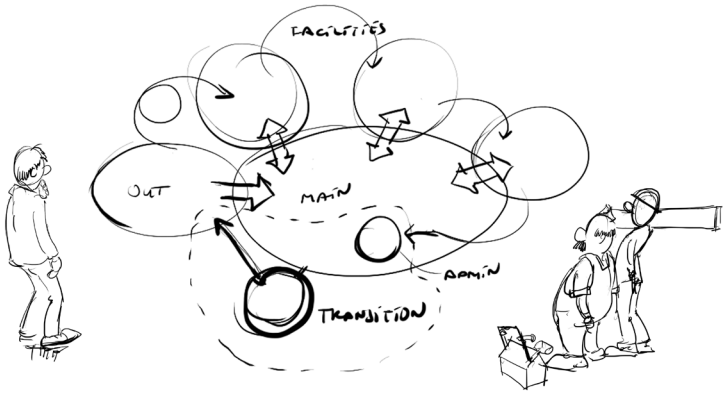
Keywords: diagram, abstraction, competition, vidler



Introduction

The diagrams in architectural projects are important visualization tools to communicate the architect's vision for the building in a clear and abstract way. In addition, they reserve a special role in architectural competitions because competition juries do not only expect the finishing the program or functional requirements and they may have little time to read too many projects quickly. Well-crafted diagrams could represent the main idea of the project and get the attention of the jury. The initial aim of this study is to explore the potential role of diagrams as a design tool in architecture. This study will define what a diagram is and how it generates the open-ended possibilities for design idea. It will then draw on the work of Gilles Deleuze and Peter Eisenman to discuss the potency of diagrams in more depth.

The discussion about the role of the diagram starts with the comparing them with potentials revealed in technical drawing. Technical architectural drawings are typically used to give the details of a building's functions, program or construction. Diagrams, on the other hand, can represent a wider range of information, including architect's conception for the project in an abstract and graphic way. By proposing different diagrams, architects can reveal new and unexpected possibilities. For example, the diagram of the Project might show how the architect is inspired from some contextural and natural references on the site or how the building form is developed to promote a public life. In "Diagrams of Diagrams: Architectural Abstraction and Modern Representation," (2000) Architectural theorician Vidler states that that diagrams are not simply tools for communication, but that they can also reveal new possibilities about the project. According to Vidler, diagrams can be used to break down and reorganize the elements of a project in new ways, leading to unexpected insights and discoveries.

They can also be used to explore different design possibilities without having to commit to any one solution.

Since referring to the diagram as "non-representative" and "generative" device, this study assumes that diagram generates possible readings; it maps the possible worlds. That is to say, the abstraction outlines the mode of relations rather than developing a static entity via signified meanings. Different functions and meanings may emerge through the same elements having different relations. The elements do not bear a signification but they manage for the expose of the meaning. That classification explicates what French post-structuralist Gilles Deleuze refers to the diagram a "generative and non-representative" device:

The diagram is thus the operative set of lines and areas, of asignifying and non-representative brushstrokes and daubs of color. And the operation of the diagram, its function, as Bacon says, is to "suggest." Or, more rigorously, it is the introduction of "possibilities of fact. Brushstrokes and daubs of color must break away from figuration all the more since they are destined to give us figure. This is why they themselves are not sufficient; they must be utilized": they outline possibilities of fact, but do not yet constitute a fact.

Deleuze's perspective on diagrams is introduced through the lens of Bacon's paintings, emphasizing the role of diagrams in revealing figurative data and, by extension, exposing the concept of a buildings. The oscillation of diagrams between the concrete building and the abstract idea is highlighted, showcasing their function as mediators for organizing essential architectural elements. Echoing the study of Stan Allen's view that diagrams act as abstract machines, not resembling the final product but actively contributing to its generation, this study focus on potentials of diagrams unveiling new and expected possibilities.

What is Diagram?

Diagrams can be seen mediators in two points that; the inquiry on diagrams can clarify theorization of the design process and make comprehensible how the design evaluate from the conceptual diagrams to the building. The other contribution is related with the product that diagrams can reconcile the concept idea with its transformation to the spatial configuration. Namely, it works as mediator between actual and virtual. In this respect, the conceptual diagram can later mediate the visual and spatial organization based on the conceptualization of the design. And also, it differs from the sketches that they are "a kind of 'neither/nor' of delineation, a neutral zone, where certain relations are mapped precisely but without effect, with no qualitative information: there is, one might say, nothing superfluous in the diagram" Thus, based on the definitions, diagrams represent the conceptual abstractions of physical entities. Stan Allen states that, "the primary utility of the diagram is as an abstract means of thinking about organization. The variables in an organizational diagram include both formal and programmatic configurations: space and event, force and resistance, density, distribution, and direction."

Also, the definition of the Peter Eisenman in Diagram Diaries embedded the diagram in another context that diagram is a mediator between "interiority" (inner world of architecture) and "anteriority" (the accumulated knowledge coming from the history of architecture). As the essential elements of architecture, as he underlines, interiority and anteriority will be structured via the diagrams. According to him, diagram reveals the "singularity of the specific forms and objects" by breaking their relations with the "previous modes of legitimizations." Through the agency of diagram; the architect can generate new relationships in the formal or contextual elements and "supersede the formal canons." This effort can be observed in the works of Eisenman such as the Houses series (House II, Vermont 1969; House IV, Connecticut 1971). Especially in the house IV, diagrams are the tools to (re)arrange the essential elements of the building. Rather then displaying the knowledge for the finished product, they represent the design process and the evolution of the concept idea. Thus, its performative role supersedes the realization of the building. It will be helpful to extend the Gilles Deleuze's definition for diagram as an operational tool. Deleuze examines the Francis Bacon's act of painting:

What is this act of painting? Bacon defines it as follows: making marks at random (brushstrokes-lines); cleaning, sweeping, or wiping places or areas (daubs-color); throwing paint at varied angles and speeds. Now this act (or acts) presupposes that there are already figurative data on the canvas (and also within the painters head) that are more or less virtual or more or less actual.

This question "What is act of painting" ends with the Bacon's answer "diagram." Actually, the canvas has already contained the figurative data that the diagram organizes it. Concretion of the idea with diagram can be compared to the "battle" transforming figurative data to the painting. Based on the analogy between painting and architecture, diagram in architecture proceeds in two respects that: the diagram is the mediator to realize the end product and also it can be seen as the guide to reveal the initial aim and approach of the architect.

In that respect, diagram becomes an important tool in the architectural competitions that it gains ascendancy over other drawing such as plans and elevations because it enables to pursue the evolution of the design process as well as the approach of the architect. This is highly different from the overrating to the visualization effort during the evaluation process by the juries and also by the competitors. It should be comprehended that the architectural competitions can

be appreciated as the opportunity in terms of realizing the projects. Thus drawings, especially the conceptual drawings, work as the guide revealing the design process and idea. They cannot be accepted as the extra drawings or work differing from the proposal drawings. Yasemin Sayar from the jury report of Antalya Golden Orange Museum of Cinema architectural project competition exemplifies the visualization effort not for the building but for the representations:

The visual expression in many of the presentations has surpassed the data that is intended to be presented. Many of the projects have not satisfied the expectations of the jury to contribute to the city life, but have the tendency to put forward itself as an object.

Assessment of conceptual diagrams as the visual outcomes, rather than the exposition of figurative data of the project, ends with visualization of the mental space but not the suggestions for the lived space, whereas the diagram can be seen as the key to comprehend the initial aim of the project and also to develop virtual into the actual. At that point, the diagrams developed for the competitions are examined and the correlations between the diagrams and the idea will be questioned. Before this, it will be important to point out that the current architectural projects were analyzed in terms of use of diagrams. Rather than elaborating the quality of the project (for example winner or not) or tracing the continuity between diagrams and built work, this part focuses on the use of diagrams and what diagram reveals for the project in competitions. Also in order to restraint the discussion and provide a common base, the competition projects focusing on conceptual design for urban centers will be discussed. In this respect, the first two projects are the redevelopment suggestions for the site of La Villette in Paris. The first one is the winner project by Bernard Tschumi, and the other by Rem Koolhaas but to a certain extent both projects point out some basic definition for the site and develop the resembling design strategies suggesting the irrelevant and anticontextual layers. The third example is the result from national competition project, Cin Çukuru City Center in Bandırma. As mentioned above, although there is insufficiency in use of diagrams in competition projects in Turkey, project of Kerem Yazgan suggests generative ground for more open-ended and suggestive approach to city center via the digital diagrams.

1.A Critical Distance to the Abstraction

In the article “Diagrams of Diagrams: Architectural Abstraction and Modern Representation” Anthony criticizes the "abstraction of abstractions" that is often found in modern architectural representation. He argues that this can result with a loss of meaning and legibility of the project.

Depicting a set of specific architectural codes and conventions, the modern architectural drawings were abstracted and thence caused to the underestimation of the human’s requirements from the architectural language. Vidler argues that this abstraction can make it difficult for people to understand the concept of the project and to appreciate the building's architectural qualities. Similarly, as French philosopher Henri Lefebvre argues that modern architects often use abstraction as a way of “sophisticated visualization” that are visually appealing. He writes:

The abstraction of space in modern architectural drawings has led to a loss of human touch in architecture."Anthony Vidler use the term “abstraction of abstractions” for the diagrams The accepted norms and abstrat conventions, according to Vidler, focs not on the real problems of space; rather they lead to the development of more abstract space

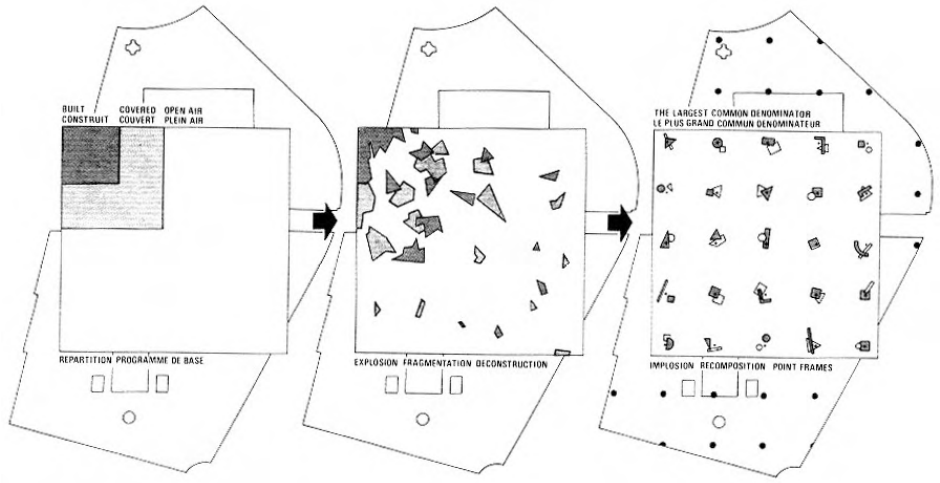


Figure 1: Diagrams display programmatic deconstruction, 1983
SOURCE: Andreas Papadakis, Deconstruction, Omnibus Volume, ed. by Andreas Papadakis, Catherine Cooke and Andrew Benjamin, (London: Academy Editions, 1989), p.180

According to Vidler, architectural project is developed in three separate stages, “abstraction in terms of life, and abstraction in terms of space and also concretion in terms of architecture.” and the transformation of the abstract idea into the architectural process sometimes ends with the following the contours of the diagram, not the idea behind it. Whereas, diagram does not serve to represent what the building should be. Instead, it governs the idea.

In the context of your study, Lefebvre and Vidler's critiques of the abstraction of space in modern architectural drawings are important because they highlight the potential dangers of using diagrams in architectural design. Architects need to be careful not to create diagrams that are so abstract that they become incompre-

hensible or that they lose their human touch.

Competition projects

3.A Park De La Villette (Paris, 1983) by Bernard Tschumi

In 1983 Bernard Tschumi entered the competition for the design of Park de La Villette in Paris and he won. Between 1983 and 1990, the Park de la Villette was built. Park de le Villette is sited on the former location of the Paris slaughterhouses and has a total area of 1.000.000 m2 The Park includes the restaurants, science and technology museum, music pavilions, recreation facilities and gardens, as well as outdoor elements providing galleries and bridges.

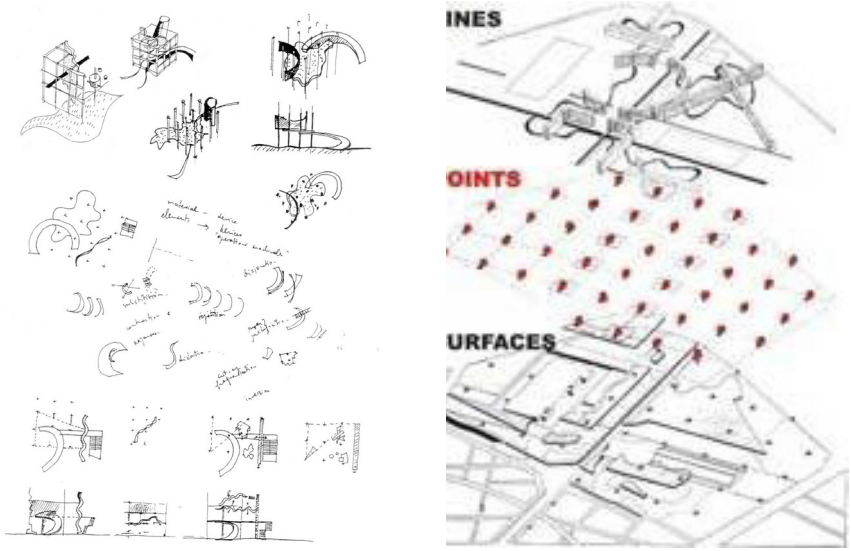


Figure 2 and 3: Modification of the modules according to confrontation of layers via the grid.
SOURCE: Jeong Ji-Seong, Bernard Tschumi, ed. by Jeong Ji-Seong. (Seoul: CA-Press Co., 2006)

The project primarily derived from the superimposition of three non-related layers or autonomous systems: the points of the follies, the lines of the paths, and the planes of the sport areas. The superposition of three structures ends with something "undecidable, opposite of a totality" . Intentionally, the dispersion of elements, and meaning, on three autonomous layers in the diagrams display the attempt the conflict over synthesis:

The independence of the three superposed structures thus avoided all attempts to homogenize the Park into a totality. It eliminated the presumption of a re-established causality between program, architecture and signification. Moreover, the Park rejected context, encouraging intertextuality and the dispersion of meaning.

The points at the intersection of the grid lines refer to Follies. Additionally, lines and surfaces indicate respectively "circulation, and promenade" and "activities requiring large expanses for horizontal space for play, games, body exercises, mass entertainment, and markets." These two layers are organized by means of grid layer. Here, the grid layer works as diagram of the Park to organize the other two layers without narrating anything outside (from context or programme) but points to itself. Tschumi emphasize the role of the point-grid system:

We had to fulfill a number of functions: the grid was anti-functional. We had to be realists: the grid was abstract. We had to respect the local context: the grid was anti-contextual. We had to be sensitive to site boundaries: the grid was infinite. We had to take into account political and economic indetermination: the grid was determinate. We had to acknowledge garden precedents: the grid had no origin; it opened onto an endless recession into prior images and earlier signs.

As the self-referential and infinite mediator between the layers (lines and surfaces), grid espouses the liberation of "memory and context" coming from the ground and also it keeps visible the general idea during the development of the design process. In other words, it opens up the possibility of adding new elements within the concept decided.

Starting with the idea that largest discontinuous building rejecting the idea of totality, Tschumi refers to grid to superimpose the dispersed folies and also the system of lines and surfaces. As a consequence, grid as diagram of the layers both develops the design process and keeps the interaction between the spatial, structural elements.

3.c Cin Çukuru City Center (Bandırma, 1999) by Kerem Yazgan and Mehmet Kütükçüoğlu

The project has been designed to redevelop the city center of Bandırma which was emptied because of the removal of a stadium. And then, the void for a park and the social spaces surrounding the park and the skyscrapers which defines the void in vertical direction is suggested. The boundary is systemized with design of periphery buildings, triple strip. The grid system in three dimensions generates the grounds of each floor for diverging activities such as cinema, hotel, residence, theatre, cafes. As Kerem Yazgan deliberates, the aim of the project is to keep the void in the city centre within the accumulated city. There are reasons of this: the void reveals the social and formal relations which have decreased by the globalization and communication technologies, because the globalization process creates its own centers which liberate the individual from the flows in the urban space. Thus this project challenges to dispersion of city centers with

the keeping the organization of void by means of grid system. By interrogating the digital diagrams, the generation of the park can be seen. It is highly instigative that grid system works for the design of a void and the relations accumulated within. The other thing which is open to discussion is that structuring of a city center and the complicated visual or spatial relations between diverging activities are made comprehensible and generative via the diagrams. The diagrams work as a guide to maintain the relationships and functions between the units It is important for a city centre that it will open up to the formations and modifications after the design process. In other words, diagrams do not refer to an ended solution, rather it opens up the ground for typological processes. Van Berkel and Bos deliberate the diagram as "external element" which is between object and subject with the "aim of escaping of pre-existing typologies."

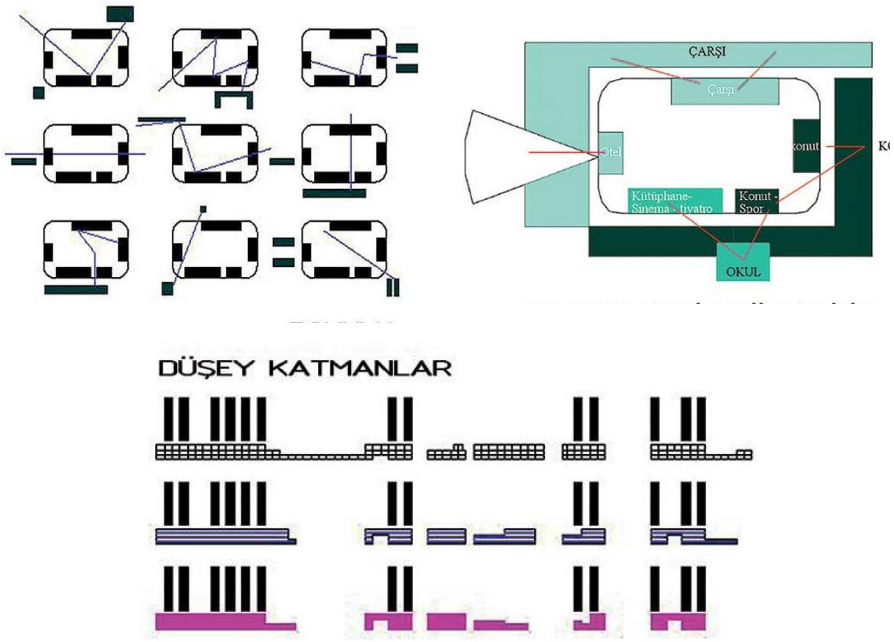


Figure 4, 5, and 6: respectively network, programmatic continuity, vertical strata
SOURCE: www.arkiv.arkitera.com

In this respect, this project introduces new insights and themes via the shift in the meaning of urban centre without repeating the existing typologies.

Conclusion

This study assumes the generative role of diagrams as a design tool suggesting the multiple possibilities for ordering the essential elements in architecture. In that respect, diagrams in the competition projects becomes important to reveal the logic of the project and "possibilities of fact." Considering the difficulties to represent the conceptual scheme of the project in the competitions, diagram gives the possibility of opening the possible worlds according to aim. In this respect, there can be a risk of misconception because of the substitution to abstracted elements in competitions because only the drawings enlighten the employer about the project.

Rather than the exploitation of the diagrams as the image-based object, the role of the diagrams in competitions should be defined in order to transform the virtual data into the actual in reference to Deleuze's explanations. Otherwise, the deceptive images obstruct to get through to information both about the design process and the conceptual framework. Hence, the architectural competitions searched for reaching the conceptual diagrams providing new "grounds" for the project. Regrettably, the national competition projects even the conceptual ones do not often use conceptual diagrams. Rather the 3D renders are brought into play to reveal the idea about space, structure or form. It is highly interesting that drawing 3D images are not assumed as the necessity to enter the competition. Although the absence of diagrams in recent projects obstructs to reach the generative role of them in competitions, the three examples overtly exemplifies the role of the diagram which is aimed to discuss.

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