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"أثر السيموطيقا على إدراك الفكر التصميمي للحيزات الداخلية الكسرية (الفراكتلية)"

**"The Effect Of Semiotics On The Design Thought's  
Perception Of Fractional Internal Spaces"**

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Subject Of Thesis

**"The Effect Of Semiotics On The Design Thought's  
Perception Of Fractional Internal Spaces"**

For The Degree Of

Master In Interior Architecture

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## **Summary:**

### **Chapter 1 Summary**

This chapter explores the relationship between architectural design and semiotics as a tool for analyzing symbols in architecture and interior design.

Architectural design, whether interior or exterior, is considered a means of communication between the designer and the user. The chapter emphasizes the importance of semiotics in facilitating this communication by analyzing the signs and symbols that affect the user's experience .

The chapter focuses on three main areas of semiotics: semiology (the organization of symbolic systems), semiotics (the study of the meanings of signs), and pragmatics (the use of signs in specific contexts). It also examines the development of semiotics from Greek philosophy, highlighting the contributions of thinkers such as Ferdinand de Saussure and Charles Sanders Peirce .

In the context of interior design, the chapter discusses the role of symbols in shaping architectural spaces, classifying these symbols into three main types: iconic (such as furniture), indexical (such as doors and stairs), and symbolic (such as colors and materials that express cultural values). It also addresses how these symbols interact and evolve from iconic to symbolic .

The chapter stresses that understanding symbols in design enhances communication between the designer and the user, contributing to the creation of environments that meet emotional and aesthetic needs. It also highlights the role of symbols in expressing cultural and social values, explaining how to improve communication in interior design using symbols to convey meanings and information between the designer and the user.

## Chapter 2 Summary

This chapter discusses the impact of the development of mathematics, particularly fractal geometry, on architectural and interior design. It begins by clarifying the relationship between semiotics and interior design, where semiotics serves as a tool for understanding the use of signs and images in architectural communication. It focuses on fractal interior design, which relies on repeating complex geometric patterns to create rich and expressive spaces .

The chapter presents the transition from traditional Euclidean geometry to fractal geometry in architecture, where recent technological and mathematical advancements have contributed to the creation of unconventional designs. It discusses how architectural designs rely on repetitive patterns and geometric rules, such as the golden ratio, which designers have used from ancient civilizations to the modern era to achieve balance and beauty .

The chapter also addresses the concept of fractals in mathematics and their appearance in nature, where fractal shapes exhibit self-similarity across various scales. It also explains the relationship between ecological systems, nature, and fractal geometry, pointing out characteristics such as repetition and symmetry .

In conclusion, the chapter emphasizes that integrating semiotics with fractal geometry opens up new opportunities in interior design, allowing the use of mathematics to shape complex architectural environments that interact with the user's perception and meet their emotional and aesthetic needs.



### **Chapter 3 Summary**

This chapter discusses the role of "fractal geometry" in enhancing interior design and adding a new dimension to architectural designs. A fractal is a geometric pattern that repeats infinitely in nature, observable in elements such as tree leaves and mountain chains. Designers draw inspiration from these natural patterns to create spaces that harmonize with the environment and inspire users .

The chapter begins by explaining the "self-similarity" property of fractals, which allows the pattern to recreate itself at multiple levels. This property is valuable for designers, as it helps create visually rich designs while maintaining harmony. The chapter also discusses the types of fractals, ranging from natural fractals in the surrounding environment to geometric fractals designed using mathematics and modern technologies .

The chapter further explores the use of fractals in modern interior design, explaining how they can add dynamism and vitality to spaces. Fractals contribute to improving natural light distribution and ventilation, enhancing environmental sustainability, while also creating a visual experience that changes according to movement and different angles .

The chapter concludes by clarifying that integrating fractal geometry with semiotics enhances spatial perception, helping designers guide users to a deeper understanding of the space. This integration boosts aesthetics and reflects the cultural identity of the place, making the interior design vibrant and responsive to the users' needs.

## Chapter 4 Summary

This chapter discusses the use of semiotics and fractal geometry in understanding and analyzing interior design. It explains that semiotics is a powerful tool for interpreting the symbols and visual signs in design, helping designers create environments that are connected to the user's psychological and emotional experience, making spaces more interactive and dynamic .

The chapter explains how to integrate fractals with semiotics to add visual harmony and balance to interior design. By repeating fractal geometric shapes, the design is transformed into an interconnected network of visual relationships, giving spaces cohesion and a better connection with their surroundings. This integration not only enhances the beauty of the design but also provides a dynamic and balanced visual experience .

The chapter also presents a case study of the Grand Egyptian Museum design, as an example of using semiotics and fractals in contemporary architecture. The museum's design incorporates repetitive triangular patterns inspired by the pyramids, with light and shadow interaction through windows that enhance the visual experience. It also discusses the importance of materials, such as natural stone, in reinforcing the connection between the building and its natural and historical environment, which enhances the sense of sustainability and integration between the past and present .

In conclusion, the chapter highlights that combining semiotics and fractal geometry provides designers with powerful tools to create innovative and sustainable interior designs that deeply impact the user's experience, making spaces more vibrant and interconnected with the environment and the surrounding culture.