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Original Research Article

Semiotics as a Framework for Reading and Writing Landscape*

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Abstract

Problem statement: Modern semiotics has opened new avenues for research in various fields of science, and it has expanded the process of analysis in different branches by providing models. It seems that semiotics can provide a framework for landscape architects.

Research objective: This research seeks to discover the relationship between semiotics and landscape architecture to develop a framework for the analysis and design of landscape architecture based on semiotics.

Research method: This article employs the comparative method to analogize a landscape to a text and semiotics to a text analysis tool. Using a descriptive-analytical method, it examines and analyzes the basic concepts, opinions, and divisions of experts in the field of semiotics and proposes combined models for analysis and design.

Conclusion: Preparing a mixed three-dimensional model, which studies the physical, semantic and audience-based dimensions of the landscape in relation to each other for landscape studies, based on the Peirce and Hjelmslev models, is one of the findings of the study. It has also applied Wang's extended model of Hjelmslev in studies of physical and Meaning dimensions. It is a three-step pattern for finding the meaning of a landscape or giving it meaning.

Keywords: *Semiotics, Landscape Architecture, Framework, Meaning, Physical Body.*

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Introduction

This research aims to find the relationship between semiotics and landscape architecture. Semiotics is a broad, comprehensive, and multidisciplinary approach that encompasses all cultural, biological, and social phenomena, in addition to the issues of meaning and cognition. Thus, semiotics is widely applied not only in linguistics but also in the fields of philosophy, psychology, anthropology, art, and cultural studies (Zaimaran, 2004, 39). Semiotics is a type of text analysis that looks for structural total in texts as well as hidden and implicit meanings. (Chandler, 2015, 29). Semiotics seeks to look beyond appearances and what lies behind them to reveal the underlying cultural and social structures that produce those (Mingers & Willcocks, 2017, 17). Semiotics is a kind of knowledge and the world phenomena understanding which obtains through reading signs and symbols (Zaimaran, 2004, 7).

Finding the relationship between semiotics and landscape architecture presents the possibility of hierarchical, multi-ventricular, and multilateral analysis for the landscape designer and analyst and will allow them a relatively comprehensive perspective. Therefore, addressing this issue can provide a powerful tool for landscape designers and architects just as it has presented to other disciplines in humanities, literature, and philosophy. The main question of this research is how semiotics can provide landscape architects with a framework for analysis and design. Thus, this article aims to make more conscious use of semiotics as a tool in various stages of landscape analysis and design.

Extensive studies have not been done in the world

about the relationship and application of semiotics in landscape architecture, and especially in Iran, there are no published studies. However, Lomas considers art as one of the channels of semiotics that can produce and transmit meaning in different ways and mentions architecture as one of the art channels (Lomas, 2016; Lomas, 2019, 8). Prominent theorists (Barthes, Eco, and Grimas) have theories on the relationship between architecture and semiotics (Bronwen & Ringham, 2006, 213, 219, 222). There are also some books on the subject, such as *Peirce for Architects* (Coyne, 2019). In Iran, articles have been written on semiotics, architecture, and urban planning. These studies can divide into two general categories. The first group compares the views of Saussure and Peirce. Then they analyze the structuralist and poststructuralist semiotic indicators. (Ghaffari & Falamaki, 2016; Majedi & Saeedeh Zarabadi, 2010). The second category includes articles that try to match indicators of semiotics with examples such as bazaar, mosque, neighborhood, and city form. Among these, the topic of layered semiotics, proposed and used by Farzan Sojoodi, introduces significant features (Talaei, Habib & Mokhtabad, 2018; Dabbagh & Mokhtabad, 2014; Daneshpour, Rezazadeh, Sojoodi & Mohammadi, 2013, Ghaffari, 2017; Turkamen, Ansari & Kiani, 2019).

In this regard, three global articles can be mentioned in landscape and semiotics (Table 1). It is possible to develop a model or theory of landscape that reflects the linguistic and mental structure of the landscape by using the concepts and elements of semiotics, said Jorgensen, a landscape architect who

Table 1. Summary of world studies on semiotics and landscape architecture. Source: Authors.

Year of publication	Authors	Topic
2018	Raaphorst, Duchhart, van der Knaap, Roeleveld, & Van Den Brink	Reading landscape design representations as an interplay of validity, readability, and interactivity: a framework for visual content analysis through semiotics
2016	Raaphorst, Roeleveld, Duchhart, Van Der Knaap, & Van Den Brink	The relation of semiotic-based landscape design: with a critical visual research approach in landscape architecture.
1998	Karsten Jorgensen	Semiotics in Landscape design

is a professor at the University of Finland. He does not introduce a model and suffices to cite examples of the landscape which are compatible with Peirce’s three divisions (Jorgensen, 1998, 39). In 2016 and 2018, Raaphorst et al., in papers reflecting on the concepts of semiotics, developed an analytical framework based on Peirce’s theory of semiotics to analyze visual content of images presented to introduce landscape design. For this purpose, they used the results of presentations of a landscape competition (Raaphorst, Duchhart, van der Knaap, Roeleveld & Van Den Brink, 2016; Raaphorst, Roeleveld, Duchhart, Van Der Knaap & Van Den Brink, 2018). The distinguishing feature of this research is providing a model for analysis, design, and meaning interpretation of landscape from the relationship between landscape architecture and semiotics.

Theoretical foundations

First, it is necessary to review the literature and its basic concepts to find the place of semiotics in landscape architecture.

• **Semiotics**

Semiotics derives from the Semainein (the ancient Greek verb). It means “signify” (Ghaemi Nia, 2014, 38; Chandler, 2015, 26). Anything that is considered as a signifier, referent, or pointer to something other than itself, can be a sign (Chandler, 2015, 41). One of the most common definitions of semiotics is Umberto Eco’s, who believes that semiotics deals with anything that can be considered a sign (Eco, 1979, 7).

The founders of modern semiotics are Charles Sanders Peirce and Ferdinand de Saussure (Ghaemi Nia, 2014, 44). Saussure laid the

foundations of semiotics with discussions of signification, signifier, signified, and sign. Saussure’s pattern is two-part and considers the sign to be composed of signifier and signified. Contemporary reviewers acknowledge the form of the sign, as a signifier, and the concept of the sign as signified. Peirce offered a triadic (three-part) model which includes representation (the form the sign takes), interpretation (the sense made of the sign), and the object (to which the sign refers). The interaction between the representamen¹ the object², and the interpretant³ is called semiosis by Peirce (Sojoodi, 2011, 21; Chandler, 2015, 61). Peirce’s influential tripartite classification in signs feature is the icon, index, and symbol (Table 2). Peirce asserts that the three modes of signs are not necessarily definite categories and are in a kind of continuous relationship with each other. A sign can be an icon, symbol, index, or combination (Sojoodi, 2011, 32). Whether a sign is a symbol, icon, or index is essentially dependent on how the sign is used. The sign may work in one context as an iconic character and in another context as a symbolic mode (Chandler, 2002, 43). Peirce has stated that the most perfect of signs are those in which the iconic, indicative, and symbolic characters are blended as equally as possible (Zaimaran, 2004, 196). Morris is the first semiotician to divide it into three sections: syntactic, semantics, and pragmatics. These three sections show three different realms of semiotics. Syntactics discusses the relationships between signs. Semantics reviews the relations between each sign and its designatum⁴. Pragmatics studies the relations between signs and their users (Cobley, 2001, 259-260). Some linguists believe that semantics examines meaning outside of context,

Table 2. Three aspects of indexical, iconic, and symbolic from Pierce’s point of view. Source: Authors.

Symbolic Mode	Indexical Mode	Iconic Mode
A mode in which the signifier does not resemble the signified but which is fundamentally arbitrary or purely conventional, like the traffic light.	A mode in which the signifier is not arbitrary but is directly connected in some way to the signified, this link could be observed or inferred (a portrait).	A mode in which the signifier is perceived as resembling or imitating the signified (footprints, smoke).

but pragmatics examines meaning within context (Ghaemi Nia, 2014, 57). In this way, interpretation can be considered related to the scope of pragmatics, syntactic to the field of representation, and meaning can as related to the subject in general (Fig. 1).

Hjelmslev develops Saussure’s model and provides a framework for analysis. By referring to the levels of expression and content, which are equivalent to the signifier and signified in Saussure’s model, respectively, he considers both levels to have substance and form and strengthens Saussure’s pattern. In this way, it is possible to analyze different dimensions in various texts and assign meaningful potential aspects. There are four categories in the Hjelmslev framework: the substance of expression, the form of expression, the substance of content, and the form of content. This model provides a valuable framework for systematic analysis of texts that will expand the structure of the sign (Chandler, 2015, 89-90); (Fig. 2). The opposition of form and substance acquires a new epistemological value that makes it possible to separate the substance and form of the signifier and the signified. The signified meaning is determined based on the concept of thought embedded in it (Guiraud, 2001, 48-49).

• **Denotation and connotation**

In semiotics, explicit and implicit meanings are concepts related to the relationship between signifier and signified. There is the tendency to provide a definite and obvious meaning for the sign in denotation. The term connotation refers to the socio-cultural and personal meanings (associations) of the sign. Connotation meanings are concepts that deal with the relationship between signifier and signified. The nature of the sign is polysemous and, the meaning of the sign is created by both significations.

• **Hierarchy of signification**

Barthes emphasized the ability of signs to create second, third, and fourth levels of signification (Zaimaran, 2004, 16). Pierce coined the term semiosis to describe the sequential process of meaning-making. The distinction between hierarchies is not

precise, but some theorists have divided them into three stages for analytical purposes. The first order of signification is denotation. At this level, there is a sign consisting of a signifier and a signified. Connotation is the second order of signification. It uses the denotative sign (signifier and signified) as its signifier and attaches to it an additional signified. Here, the connotation is a sign which derives from the signifier of a denotative sign (so denotation leads to a chain of connotations).

In other words, for the first stage, signification is relatively self-sufficient. In the second stage, signification is the reflection of values attached to a sign. Furthermore, in the third stage of signification, signs reflect the main concepts of cultural values that support a particular universal perspective

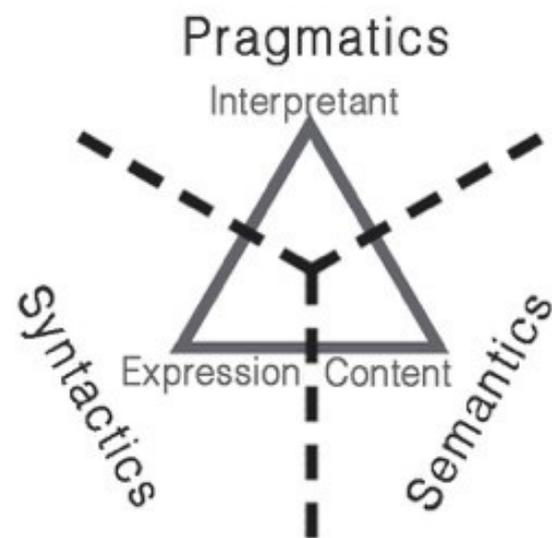


Fig. 1. Peirce’s Triple Adaptation and Morris’ Triple Division. Source: Authors.

Signifier	Expression Plane	Form of Expression
		Substance of Expression
Signified	Content Plane	Form of Content
		Substance of Content
Saussure		Hjelmslev

Fig. 2. Expansion of Saussure’s two-part pattern by Hjelmslev. Source: Authors.

(ideological). The signifier or signified depends on the level at which the analysis process takes place. A signified on one stage can be a signifier on another level. Tropes (for example, metaphors) give birth to implicit meanings (Chandler, 2015, 211-217; Sojoodi, 2011, 71-80); (Fig. 3).

• **Codes**

The concept of the code is fundamental in semiotics. Since the meaning of a sign depends on the code within which it is situated, codes provide a framework in which signs make sense and create a relationship between signifier and signified (Chandler, 2015, 221). The codes are value systems. They have a social and historical aspect. They are acquired and diverse (Sojoodi, 2011, 144-147). The various kinds of codes may overlap. The semiotic analysis of any text or practice involves considering several codes and the relationships between them. Chandler, Barthes, and Guiraud classified different codes (Chandler, 2015, 222- 223). Eco groups codes into two main categories: structural codes and processual codes. Processual codes can be viewed as codes that relate the elements of a structural code to the elements of one or several other structural codes. Johansen and Larsen believe that semiotics is active at two levels of codes at the same time. At the first level, there are the structural codes that relate a series of elements, to a specific but not necessarily closed arrangement. At the second level, there are the processual codes that connect at least two of the pre-established structures to each other (Zaimaran, 2004, 157).

• **Landscape architecture**

Landscape architecture has various definitions and dimensions. Mahan and Mansouri introduce landscape as a objective-subjective, living and dynamic phenomenon that includes quality and meaning in addition to the body. They emphasize that the relationship between humans and the environment is of particular importance (Mahan & Mansouri, 2017, 26). The objective-subjective dimension (physical-mental) is one of the most significant dimensions of the landscape. Of course, there are purely physical or purely perceptual and subjective approaches to the landscape. However,

since the purpose of this study is a holistic view of the landscape, one-dimensional approaches are avoided. Objectivity can extend from mere visual to all physical aspects perceived by the senses. Punter and Canter introduce dimensions of meaning, activity, and form as dimensions for knowing the place and creating a sense of identity. Activity deals with the function of space and behavior and events related to human presence in the place (Canter, 1977, 158; Punter, 1991). Thus, in a holistic view, the physical dimension, the semantic, and activity-based dimensions (or audience in landscape) are the three main aspects of landscape studies. Each of these dimensions is the subject of numerous studies independently or in conjunction with other dimensions.

Research method

This research has used the descriptive-analytical method and the lens comparisons method. In the lens comparison method, A is regarded as a lens to view and analyze B. This method utilizes a lens for observation and measurement that consists of several main steps. The frame of reference is the first step. Specific sources such as a known and generalizable theory construct the best frames of reference (Piravivanak, 2016, 6; Walk, 1998). In this research, the theories of semioticians and landscape architects have created an initial frame of reference. The subsequent steps are grounds for comparison, thesis, organizational scheme, and linking of A and B. The grounds for comparison mention the rationality and reasons behind the research choice. First, linguists introduced modern semiotics in the literature.

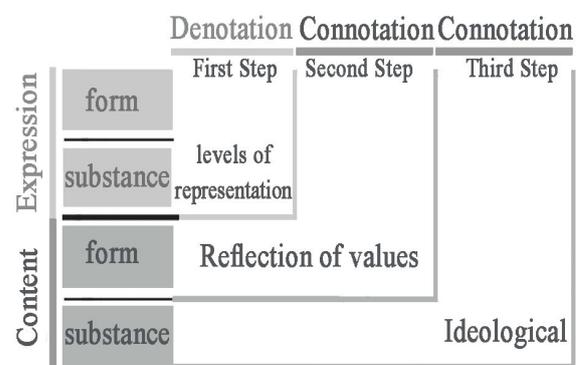


Fig. 3. The place of all kinds of significations and concepts behind it in the model of Hjelmslev. Source: Authors.

Gradually, with the expansion of the definition of text and its departure from linguistics to other humanities, many categories were defined as text, and numerous linguistic tools were used in recognizing and analyzing several social, cultural, and other texts. Many landscape architecture researchers have also pointed to the Landscape text and language in general and in part (Spirm, 2008; Lindström, Kull & Palang, 2013, 114; Jorgensen, 1998). Duncans consider the term text to describe the landscape as the context in which the process of meaning occurs with an open end and says that landscape text is full of signs and metaphors that affect the landscape meaning. The “landscape is a text in which signifiers become signifieds in an endless chain of metaphors” (Duncan & Duncan, 2006, 26-28). Although the similarities between literary texts and other texts are not necessarily the same, this analogy has yielded many analytical and cognitive results. Thus, landscape as a text can benefit from text analysis tools such as semiotics. This thesis is used in the lens comparisons method of this research. The lens comparisons method defines the structural order as follows: A is a tool for B. Thus, by logical reasoning and the use of analogy, semiotics becomes a tool for landscape cognition and analysis (Raaphorst et al., 2016; Raaphorst et al., 2018; Lindström, Kull, & Palang, 2013). The linking between two subjects (the final part of the lens comparisons method) is described in the discussion section.

Discussion

Semiotic theories describe how the meaning of signs is constructed and interpreted through the semiotic process (Jappy, 2013). Semiotic tools can be used as a method for analyzing landscape text. Landscape and its manifestations are composed of several semiotic systems (Raaphorst et al., 2018, 168). For a better understanding of the subject, the parallels between the theories of semiotics and landscape architecture are discussed. As mentioned, semioticians proposed different sign patterns which expand the sign structure. In a holistic and comprehensive view of semiotic theories, and

for ease of operation and avoidance of repetitive activities, it is possible to integrate different theories of semiotics with logical reasoning. This integration has been done in some cases by some linguists depending on the subject under study. The most significant difference between two-dimensional and three-dimensional patterns is interpretation in the Peirce model and pragmatics in Morris pattern. Peirce and Morris’s patterns involve a meaning that is formed in the audience’s mind. In contrast, it is not in Saussure and Saussure-oriented patterns such as Hjelmslev and Barthes. Therefore, in studies that deal with the role of the audience or user of space or his perception and feeling, it is necessary to use three-dimensional semiotic models. However, the discussion of expression and content in Hjelmslev’s theory has a more detailed description and deals with deeper layers. Moreover, if studies investigate the role of the audience in association with the physical dimension and the landscape meaning, a combined model of Peirce and Hjelmslev’s theory is proposed (Fig. 4). In comparing and combining the theories of Saussure and Hjelmslev, meaning or content is considered equal to signified and, expression or form is equivalent to signifier (Sojoodi, 2011). Thus the hierarchical content of Hjelmslev and Barthes is equivalent to the object in Pierce’s theory (semantics in Morris’s model) and, the level of expression in Hjelmslev’s model is equal to the representation in Pierce’s model (syntax in Morris’s model).

The operationalization and the development of Hjelmslev’s model by Wang, an up-to-date source, can be valuable. In his recent book, Wang defines the form of expression layer as how the essential elements of the text are related to each other and calls it the internal structure. He discusses the substance of the expression layer to include the text elements that contain a system of codes. The content form embodies the macro-arrangement of the semantic content of the text. It includes the overall content structure of the text and the semantic hierarchy of the content. He introduces the structures of concepts as the content form; and contents or referents of

concepts as the content substances (Wang, 2020, 336-337); (Fig. 5).

By referring to the landscape as a text, the landscape elements are equivalent to the text elements, i.e. they build the layer of the substance of expression. The main landscape elements are plants, water, soil or earth, and manufactured places that include paths, seats, and even architectural bodies. The position of the landscape elements shapes the form of expression layer. How the elements of the landscape context are related to each other determines the manifested layer of the expression. In other words, the internal structure of the landscape defines the layer of expression form that is called syntax in Morris's model. Spirn describes the structure of a landscape as the relationship of components to the whole, which makes it possible to understand the whole and shows how a shape (or any feature and landscape element) has evolved or been constructed. The structure also defines the shape proportions and complexity (Spirn, 2008, 147-148). The structure is effective in creating coherence and complexity (Bell & Apostol, 2007, 7). The physical arrangement can be studied by concepts such as geometry, proportions, hierarchy, scales (Raaphorst et al., 2018), locating the elements, and the syntagmatic elements. The hierarchy gives order to the landscape by putting some of the properties as dependent on other ones (Spirn, 2008, 259).

According to Barthes, at this stage, the sign is related to the values of the context. Wang believes that the third level relates to the semantic

structure of concepts in the context of the text. Numerous contextual concepts affect the semantic structure of the text. Cultural, social, ecological, religious, economic, and other values can play an infrastructural role in the text concepts.

These contexts form several layers which, independently or in combination with other values, affect the formation of the physical structure. The correlation between landscape elements and other background Components forms the meaning of landscape elements. Without such relationships, landscape elements have only intrinsic meaning (ibid. 246). Sometimes these concepts are derived from another dominant source, such as an ideology accepted in that cultural texture or multiple sources. Thus, the landscape is formed or takes shape in the contextual concepts and values. Following the hierarchical analysis, designers or analysts can analyze each of the fundamental concepts. Concepts manifestations in the landscape can be studied at the level of expression. Different cultural, social, and religious fields may have overlaps and emphasize the specific presentation of an element in the landscape. Research that intends to examine the meanings of the landscape in more depth can continue to reflect and analyze until the reference stage of concepts or ideology (s) hidden in the context. Lawes argues that semiotic analysis is not complete until signs and symbols are meaningfully connected to society, culture, and ideology (Lawes, 2019, 1).

The three main stages and the three layers of landscape meaning (the first meaning is direct and the

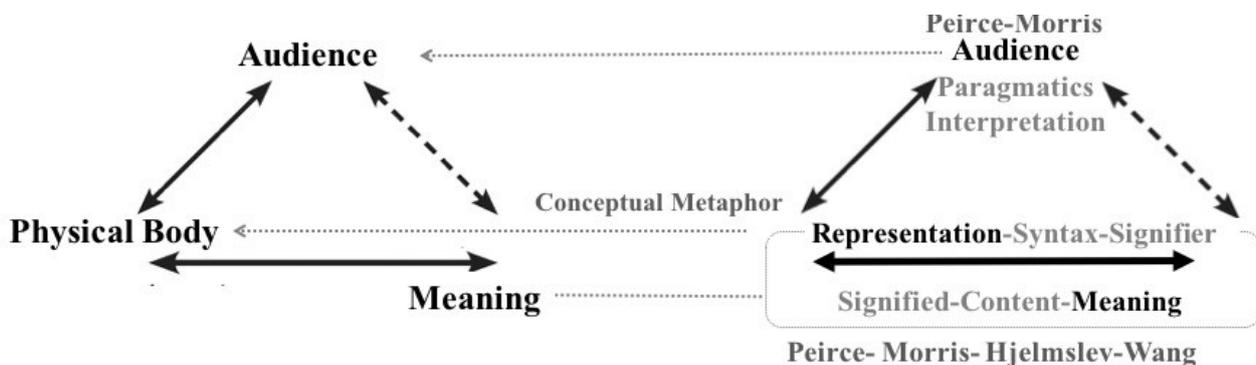


Fig. 4. Comparison of the combined pattern of Pierce, Morris, Hjelmslev, and Wang semiotics and the landscape architecture dimensions. Source: Authors.

subsequent meanings are implicit) can be considered equivalent to Peirce’s tripartite classification. The icon, index, and symbol are respectively based on similarity, causality, and metaphor. In other words, conceptual metaphor is a tool in semiotics that allows the connection and correspondence of two different domains that can be used in the third stage and sometimes in the second stage (Fig. 6).

Thus, an analytical framework for classifying different dimensions of the landscape is acquired. This framework provides analytical categories for describing expression and content. These categories determine the scope of landscape content and expression. Each of the four categories briefly described in Figure 7 has its symbolic function and forms a semiotic system consisting of semiotic components. In this figure, the four comparative cases of expression form, expression substance, content form, and content substance are described in the landscape. In this image, water is selected from the category of expression substance and cultural values from the form of content as examples. Each of the other items can be considered alone or in conjunction with other values. In landscape analysis, cognition begins from the physical structure and gradually deals with the content layers and the relationship between body, meaning, and content while design begins with concepts and value layers and the designer slowly looks for ways to express those meanings in the physical structure. Thus the direction of the process in design and analysis is inverse to each other (Fig. 7).

Semiotics in landscape-related research, especially in research that deals with the

meaning of environment and landscape, can be valuable and effective as a method and tool (Gharehbaglou & Ardabilchi, 2020, 56).

Conclusion

Semiotic patterns provide a lens for recognizing, analyzing, and designing the landscape. The three main dimensions of landscape in terms of semiotic models are the form of the landscape, the landscape meaning, and what is relevant to the user and audience of the landscape. The correspondence of these three with the semiotic categories has been adopted in a combined model taken from the triple model of Peirce and Morris in the dimension of interpretation and audience of space, and the model of Hjelmslev and Wang in the semantic and physical dimension.

As a result, semiotics provides a method and tool for experts to comprehend landscapes. And especially in the field of meaning, it investigates the mechanism of meaning creation and various dimensions affecting it with a systematic hierarchy. According to Hjelmslev’s model, first, the study of the landscape elements and its internal structure governing them forms the layer of expression. Then the different textual values that affect the design can be studied in more depth. These value layers (culture, society, religion, economy, ecology, and others such as policy) may overlap in some cases. These dimensions are the semantic structure of the concepts affecting the landscape design. Depending on the research subject, we can refer to the reference or references of these dominant values. For example, in a cultural context, religion may play an

Signifier	Expression Plane	Form of Expression	Internal structure (Physical structure)
		Substance of Expression	Text Elements
Signified	Content Plane	Form of Content	Structures of Concepts
		Substance of Content	Ideology
Saussure		Hjelmslev	Wang

Fig. 5. Expansion of the Hjelmslev-Saussure pattern by Wang. Source: Authors.

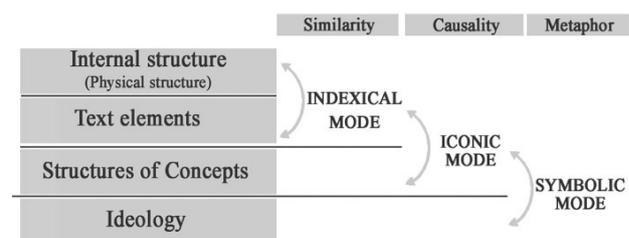


Fig. 6. Peirce’s Triple Hierarchy in the Hjelmslev Model. Source: Authors.

infrastructural role as an ideology. Alternatively, a school of thought for other dimensions may play an infrastructural role. Thus, semiotic patterns provide an opportunity for systematic examination of the landscape. Meaning can be classified into three basic levels: First, the meaning of space elements and the order and structure that govern them, second meaning derived from the textual values of the design context and third, meaning results from the ideology. The codes, if they exist, can be from the second onwards stage. Conceptual metaphor, trope, and ironic can link physical elements with cultural, social, historical, natural, and religious values. Thus, understanding the process of semantics in landscape design or analysis and finding a written framework and hierarchy for it is provided with the help of semiotics. Therefore, semiotics becomes a method of reading and writing the landscape.

Endnote

1. Standard dictionaries note that a representation is something which stands for or in place of something else – which is of course what semioticians call a sign. Semiotics foregrounds and problematizes the process of representation. Representation always involves the construction of reality. All texts, however realistic they may seem to be, are constructed representations rather than simply transparent reflections, recordings, transcriptions or reproductions of a pre-existing reality (Chandler, 2015, 340).
2. Term used in Peirce’s triadic model of the sign to describe the referent of the sign – what the sign ‘stands for’ (ibid. 336).
3. An interpretant by using certain features of the way the sign signifies its object generates and shapes our understanding.
4. Latin term sometimes used for a referent (Morris, Jakobson).

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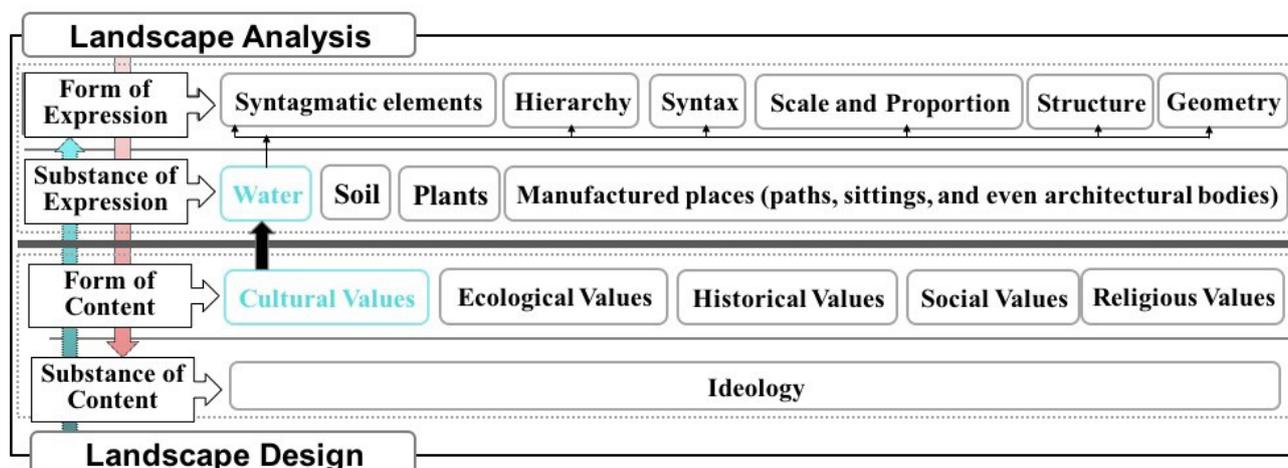


Fig. 7. Development of semiotic patterns in reading and writing landscape text (water and cultural values as an example of studying the components of a diagram). Source: Authors.

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