

Overlapping of the semiotics in the fields of linguistics and architecture: A relational analysis approach

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Abstract

Semiotics is a way of finding meanings by examining the relationships between signified, signifier, and text. Semiotics can be used intentionally in architecture to convey meanings through form, which is perceived differently by the user's experience. Since influencing the user's experience is the way to enhance the mutual connection between architecture and users, semiotics is significant in architecture. Given this importance, no comparison has been studied between the linkage of these two fields. Therefore, this research is required. The purpose is to discover the differentiation of the existing relationships between these two fields based on this question: "What relationship can be affirmed from the texts that have been written in the field of linguistics and architecture with the similar keyword (semiotics/semiology)?" To achieve this, the relational analysis method is needed which is a subcategory of qualitative content analysis. In this regard, 53 articles from 2005 to 2020 within the "Science Direct" source website are used as the population interest of this research. Afterward, 16 samples are selected by the snowball sampling method for depicting cognitive mappings. Thus, after finding the concepts by snowball sampling, the relationships between them are defined as codes. Results showed that six types of relationships exist among the concepts. These codes are used as a reagent indicator of the relationship types and are depicted in the suggested cognitive mapping.

Keywords

Architecture, Qualitative content analysis, Relational analysis, Semiotics, Semiotics in architecture.

1. Introduction

Semiotics studies the process of meaning-making through signs and has a wide range of definitions. In this regard, one of the widest influential definitions in this field is mentioned by Umberto Eco (1979), whose description of semiotics is included in everything that can be perceived as a sign. At first, it only encompassed language and the debates related to linguistics, but it was developed through many fields. Indeed, Semiotics was established by Ferdinand de Saussure and Charles Sanders Peirce, whose viewpoints are considered in the most influential and related debates. Ferdinand de Saussure (2019), the founder of modern linguistics, believed in placing linguistic signs in a more general-based theory, so he suggested semiology instead of semiotics. In fact, semiotics is a split in semiology. The principles that semiotics detects are those that can be used in linguistics, and therefore linguistics is specified to a particular place in the field of mankind's knowledge (ibid). Charles Sanders Peirce (2012) employed the word semiotics instead of the semiology of Saussure and thought that it was necessary to consider the interpretant as well as the sign and signifier (Peirce & Buchler, 2012). Thus, he proposed a three-dimensional system. It was from this view that biosemiotics and eco-semiotics were derived.

Saussure's theory neglected the debates about meaning and reality (Hodge, 2017), while Peirce's theory expands semiotics boundaries to various fields of meaning-making such as social, cultural, and cognitive debates (ibid). In the end, semiotics developed through many sciences like architecture, urbanism, sociology, psychology, criticism, media, and so forth, as well as becoming an approach to research methodology (Wang, 2020; Pietropaolo, 2020; Hodge, 2017). For example, the approach of semiology in the field of architecture contains an architectural mechanism, and the social-cultural background of the area with its three-dimensional perspective such as syntactic, semantic, and pragmatism (Rapoport, 1990). The architecture consists of two main categories

architects and users, which are known as knowledge and instruments that can be improved over time (Prieto, 1975) with responsive functions. For all these parts, a detailed analysis of the semiotics'-based theories enables the readers to utilize semiotics as a knowledge instrument in architecture and come to an understanding of morphological aspects of architectural structures generally. This would involve examining how meaning is conveyed through architectural elements in both formic such as shape, materials, rhythm, and cognition, perception, design reasoning in content. Because architecture can intentionally convey meanings through semiotics, resulting in varied user perceptions and a significant impact on user experiences. By merging insights from semiotics in linguistics with architecture theories, can explain the origins, bases, and conduction of signs and the way of their meanings within a cultural-social context in architectural speech. In this way, architecture as a medium can create a reality, and according to Barthes (1993), reality has different modalities. So, if reality comes into existence through an architectural medium such as a built environment it conveys different meanings. As Chandler (2017), declared every medium can produce a variety of genres or styles representing parts of reality that have multiple meanings for individuals, so it is dynamic and context-dependent. It means the reality created by architecture (built environment) would be a representation of the value system of reality that is diverse, specific in style, and responsive to the social culture of society according to its time. Likewise, semiotics is a methodology itself (Wang, 2020; Pietropaolo, 2020; Hodge, 2017) that can be used in architectural procedures. Understanding the association between semiotics and architecture requires further research on signs in architectural speech and practice. However, there has been a lack of comparison between these two fields. Consequently, it is critical to conduct further research to reach a more comprehensive understanding of the relationship between semiotics and architecture can be achieved.

This research is being undertaken

to clarify the process of the influential developments of the semiotically multi-dimensional systems of Saussure and Peirce in the field of architecture through its history. To achieve this purpose, it is necessary to understand and analyze the kinds of relationships that exist across semiotics in the fields of linguistics and architecture, such as connections, coherences, subcategories, originations, and correlations. So relational analysis is needed. Furthermore, Onwuegbuzie and Leech (2007), declared that “the term “encoding” is used to make mention of the “constant comparison analysis” method, which was expressed by “the fathers of grounded theory, Anselm Strauss and Barney Glaser in 1967” (p. 565). Obviously, in this approach “meaning” can be achieved by the relationships between concepts (Carley, 1997). To represent the overall meaning of the texts, the cognitive mapping approach is used for creating a model. Consequently, the basis of this research is a qualitative content analysis method of research that according to Carley (1993), focuses on the repetitions of words or concepts within or across the texts. To study these relationships, various articles were chosen from 2005 to 2020 within the source of the Science Direct website as the population interest of this research seeks to answer the question: “What relationship can be affirmed from the texts that have been written in the field of linguistics and architecture with the similar keyword (semiotics/semiology)?” The broadly relatable importance of studying “the relationships between texts that have the similar keyword (semiotics/semiology) in the field of linguistics and architecture is the evidence of different originations of cognition and concepts that can be concluded as the frame of the suggested cognitive mapping.

2. Theoretical framework: selective related articles in the field of architecture and linguistics

The theoretical framework of this paper is based on a qualitative content analysis of texts which was obtained from the Science Direct source website within the years 2005-2020 to arrive at the concepts through the texts

for drawing mental models. To do this, 53 Articles were found using a search for the keywords “Semiology/Semiotics” from 2005 to 2020 on the Science Direct source website. Subcategories of “semiotics debates as theoretical foundations” or “semiotics as the research method” were studied in selected articles. After making sure that articles were relevant to the topic issue of this research, a table of the contents of selected articles was prepared as shown below in Table 1. This table has two main groups which are architecture and linguistics, respectively indexed with the letters “A” and “B” and comprises the population of interest in this research.

3. Method (The population of interest and sampling)

According to the purpose of this paper, the chosen research method is based on relational analysis which is a subcategory of the qualitative content analysis method of research. This method “shares many of the unique attributes associated with all qualitative research methods” (Roller, 2019, p.1). One of the approaches of this method is “relational analysis” which focuses on relationships between concepts. According to Palmquist et al. (2020), a “concept” is an ideational kernel, a single idea, and a “relationship” links two concepts that are named “statement”. In cognitive networks, concepts are devoid of meaning except as they relate to other concepts (ibid). Thus, at first, the core concepts from the texts were specified as shown in Figure 1, and then the relationship between them was determined according to the next selected article and its contents from the viewpoint of the authors. In other words, the relationships between cores define the whole meaning that was obtained from the 53 articles.

As Kracauer (1952) admitted: “Only in approaching these perfect individuals with all one’s being will the analyst be able to find and determine their meaning or one of their meanings, thereby assisting them in their realization” (Kracauer, 1952, p. 642-3). In the end for representing how the cores are connected and in which means, mental models are used. Carley (1990)

described mental models as an indication of connected concepts. This means mental models can visualize the perceptual realization of the conscious or subconscious by the use of representations (ibid). The population of interest for this research covers 29 articles in the architecture field and 24 articles in the linguistics field, which was shown previously in Table 1 and the method used for sampling was the snowball sampling method. Goodman (1961) describes this method as a way of achieving a randomized sample of individuals from a certain population. In this way, the first paper was selected with the consideration of general comprehensive information to achieve core concepts, and then with the snowball sampling method, the papers related to these cores were chosen.

Hence, after selecting the first paper for content analysis core concepts or “main codes” were identified. To complete data for the main codes, it was needed to discover the interactions, discussions, and categories of more pieces of information. So, later information which was defined as “subcodes” was gained with use of the snowball sampling from studying other papers’ content analysis. By this means every code specified the further step of data that connects information or subsequent subcode which was directed by the snowball sampling method.

Then In this stage, articles A.1, A.2, A.3, A.4, A.7, A.11, A.12, A.14, A.15, A.17, A.20 from the architecture group and B.2, B.3, B.4, B.7, B.21 from the linguistics group were chosen as sample groups for studying.

To present gathered data in a tangible way that can be readable and make a whole knowledge and related together, cognitive mapping was used. As cognitive mappings shape relations and concepts, First, the connections among codes were discovered and then classified to make a whole meaning from all concepts. Second, the relation types were perceived and represented. As Table 2 shows six types were specified.

In both fields, all these types were found except number 4, which was only detected in the field of architecture. The core concepts were obtained

Table 1. The texts of the population interest of this research.

		Semiology				
		Authors	Year	Methodology	Case study	Location
Architecture	A.1	Brandt	2005	Critical	A painting by Matisse	Denmark
	A.2	Pellegrino	2006	Analytic	-	Switzerland
	A.3	Luck & McDonnell	2006	Empirical study	Pre-briefing conversations	UK
	A.4	Pellegrino	2006	Analytic	-	Switzerland
	A.5	Casakin	2006	Empirical study	Students of design	Israel
	A.6	Taib & Rasdi	2009	Survey, Semiotic	The perception of users towards sacredness or sanctity space in mosque	Malaysia
	A.7	Pierroux & Skjulstad	2011	Text analysis	Tate Modern Museum in London, and the National Museum of 21st Century Arts in Rome	Norway
	A.8	Wang & Heath	2011	Review	-	UK
	A.9	Kuznetsova	2011	Semiotic	Greimas semiotic theory for analyzing architectural works	Lithuania
	A.10	Mashayekhi et al	2012	Survey, comparative	The behavior of the different residents of Ekbatan residential complex	Iran
	A.11	Shafik Ramzy	2013	Semiotic	Funerary Complex of Sultan Qaitbay in Cairo, Egypt	Egypt
	A.12	Gulliver et al	2013	Organizational semiotics	The worth of particular systems in the care environment	UK
	A.13	Masatlioglu	2014	Interpretation of criticisms	-	Istanbul
	A.14	Baharudin & Ismail	2014	Interpretative, comparative	Prominent communal mosque found in Muslim and non-Muslim countries	Malaysia
	A.15	Mohidin & Ismail	2014	Interpretive paradigm and semiotics	Perdana Putra and Parliament Malaysia	Malaysia
	A.16	Mahdavi Nejad et al	2014	Descriptive	-	Iran
	A.17	Parsaee et al	2015	Comparative, descriptive	The residential architecture of Bushehr, Iran	Iran
	A.18	Yan	2015	Descriptive,	Design semiotics	China
	A.19	Brasher	2016	Review	-	UK
	A.20	Lazutina et al	2016	Analytic	Architecture symbols	Russia
	A.21	Anti et al	2017	Survey	Gorontalo vernacular architecture	Indonesia
	A.22	Marotta et al	2017	Comparative experiment	De Fusco, Luisa Scalvini, Luigi Brusasco, Tosoni, Borghini	Italy
	A.23	Shojaee & Saremi	2018	Semiotic	Architectural codes theory of Umberto Eco	Iran
	A.24	El-Torky	2018	Hermeneutics	Mohammad Ali's Mosque	Egypt
	A.25	Goubran	2019	Semiotic	Deductive and abductive reasoning of sustainable design	Canada
	A.26	Ferrara & Russo	2019	Hermeneutics	Italian Material Design	Italy
	A.27	Lyu	2019	Survey	-	China
	A.28	Pane et al	2020	Descriptive	Tjong A Fie's House	Indonesia
	A.29	Simanjuntak et al	2020	Semiotic	Contemporary Architecture of Batak Toba	Indonesia
Linguistics	B.1	Manning	2006	Historical, descriptive	Wealth & value	Canada
	B.2	Danesi	2006	Analytical	-	Canada
	B.3	Nuessel a	2006	Semiotic	-	USA
	B.4	Nuessel b	2006	Historical, cognitive	Figurative language	USA
	B.5	Anderson	2006	Semiotic	-	USA
	B.6	Perron	2006	Semiotic	Propp's model	Canada
	B.7	Bernard	2006	Analytical	The fundamental units of sign systems and process	Austria
	B.8	Wodak & De Cillia	2006	Historical, critical discourse	The Waldheim affair	UK
	B.9	Kravchenko	2007	Bio-cognitive	The code models of language used in traditional linguistics	Russia
	B.10	Mutis & Issa	2008	Semiotic	Use of symbols as signs	USA
	B.11	Cooren	2008	Analytical	-	Canada
	B.12	Moya Guizarro & Pinar Sanz	2008	Textual analysis	Kress and van Leeuwen's social semiotic analysis and Hallidayan linguistics in a picture book	Spain
	B.13	Bax	2009	Historical, diachronic, analogical	The context of medieval rhetorical practice	Netherlands
	B.14	Foote & Azaryahu	2009	Analytical	-	Israel
	B.15	Hunter	2009	Historical	The post-Kantian metaphysics of Husserl and Heidegger	Australia
	B.16	Pinnow	2011	Semiotics	English Language Learner of a Second Language classroom in the United States	USA
	B.17	Adler	2011	Semiotics	Argumentative silences that illustrated by Diaz Canales and Guarnido (2005).	Israel
	B.18	Perrin	2011	Review	Marks and marking behavior	USA
	B.19	Batu	2012	screen model	-	Turkey
	B.20	Tang	2013	Semiotics	4 series of middle school students' acts of meaning-making in nanoscience lessons	Singapore
	B.21	Yakin & Totu	2014	Comparative, content analysis	Theory of Peirce and Saussure	Malaysia
	B.22	Mazzola et al	2016	Review	-	Switzerland
	B.23	Pablé	2018	Comparative	Benedetto Croce's expression and Roy Harris' sign	Hong Kong
	B.24	Akimoto	2019	Analogical	Genette's narratological terms	Japan

through samples B.2, B.3, and B.21 which showed that language as a multifaceted human faculty can be read as several views of semiotics. In this manner, six different definitions of language describe the multi-faceted nature of language that can be studied through

Table 2. The relationship codes of cognitive mapping that used in figures 2 to 8.

	Relation Type	Definition
1		Branch-Subset
2		Equiponderant
3		Orientation-Eventuation
4		Gap
5		Group
6		Category

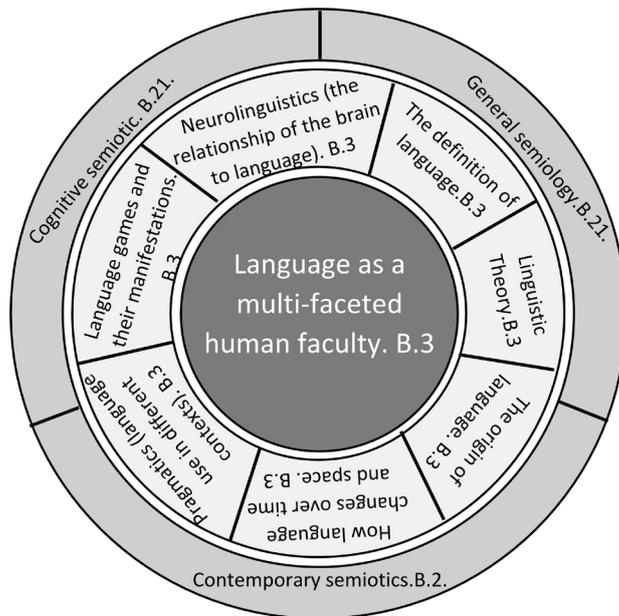


Figure 1. Language as a multi-faceted human faculty can be read through several views of semiotics.

various approaches of semiotics, but as core concepts, general semiotics, cognitive semiotics, and contemporary semiotics were obtained as shown in Figure 1.

4. General semiology

In Peirce’s thought, anything that stands for something else can be included in semiotic studies (Peirce & Buchler, 2012) whilst Chandler (2017) expressed that semiotically, “signs can be enrolled in different states such as words, images, sounds, gestures, and objects” (p. 11). In addition to these declarations, Saussure (2019) stated that since signs exist within social life, thus, they can be studied in social or general psychology.

The most famous view of his theory is the two-dimensional system which is summarized to sign and the signifier. This relationship holds in the sign systems and the arbitrary system (Saussure, 2019). In dichotomy or duality, in

the theory of Saussure, signs consist of two focal components, known as signifier and signified (ibid). The signifier is considered as the sound pattern, whilst signified or the concept is the interpretation of the signifier (ibid). Likewise, the signifier can be considered physical, form, langue, and synchronic and syntagmatic features (Yakin & Totu, 2014). Meanwhile, the signified is considered abstract, content, parole, with diachronic, paradigmatic, and associative characteristics (ibid). To this, there are two distinct pages in human minds of the special form, the notion, and sound, so that spokesmen optionally plan slight portions to link them together (Bernard, 2006).

The notion of the text is the most essential data on which a considerable amount of research on sign systems is based (Colilli, 2006). Bakhtin considers the notion of text as the main origin of all sciences of humans because there is no subject of investigation in the inexistence of text (Todorov quotes from Bakhtin, 1984). Shepherd (2012) Inferences a real-live interactive form of language from Bakhtin’s texts, which is according to Bernard (2006) opposite to the Saussure theory from the sign and ideology closeness point of view. This idea is the base of the socio-semiotics and cultural-semiotics, which create different principles for dialogue, means of communication, reality, senders, and percipients (ibid). The cultural semiotics is adopted as the point for the interactionist pioneers including Robert Lafont and Ferruccio Rossi-Landi. Rossi-Landi introduces (1992) the signs in accordance with themselves naturally and apart from any communication or commentary process that relates to the social-historical connections. Alongside his works on distinguishing the signs and non-signs, he tried to accomplish some fundamental mechanisms of production and reproduction of the signs (ibid). Rossi-Landi (2019) describes the diversity of language can lead to differentiation issues that relate to a variety of social or other human fields.

As mentioned before, the dichotomy theory of Saussure is the base for multimodal theories afterward such as linguistic structuralism, socio-se-

miotic structuralism, and post-structuralism which are the main and fundamental core for other branches of later theories and studies themselves. For instance, various schools of semiotics like Prague School, Paris School, Moscow-Tartu School, and Stuttgart School in the field of Linguistic structuralism can be referred to (Bernard, 2006), which have had many lucrative endeavors to enhance the distinguishing of the characterizing of semiotics and its progress. Through the development of Saussure's explanation of semiology by Louis Hjelmslev (1969), he achieved the totality of all sign systems in his Danish School of Glossematics. That is to say, he employed "expression-form (EF)" and "content-form (CF)" to replace the signified/signifier dyad (Hjelmslev, 1969).

In the 1960s, revolutionary innovations called poststructuralism were formed in the theoretical framework of the structuralist paradigm (Howarth, 2013). The poststructuralism theory developed invariant categories. In this regard, it can be mentioned the critical existentialism of Heidegger (2013) from transcendental phenomenology, the deconstruction of texts of Derrida (Derrida et al, 2016), the deconstruction of social contexts of Foucault (2005), the psychoanalysis of Lacan (2019), the radical human subjectivity of Žižek (2014), and so forth.

Derrida (2016) defined the word "différance" as differentiation and a delay in meanings between signifiers and signifieds. For revealing the message of a text, all signifiers' meanings relate together and decode in relation to each other (ibid). The meaning can be interpreted differently by interpretants or over time. The process of reading a text is called deconstructing (ibid). Deconstructing later became prominent in architecture in the 80s (Tallak, 1996). To deconstruct a built environment, it should be considered as a text that needs to be interpreted by referring to all the representamens, objects, and interpretants in a system of signs (Derrida, 2016). The first layer of text interprets to reach the second layer of the text, and it continues to the underlays, thus different endless meanings can be achieved simultaneously or over time

(ibid).

In the 1970s, Algirdas Julien Greimas (1984) a developer of the Paris School studied Saussure theories and used the Hjelmslev legacy and also utilized the School of Glossematics tenets. In this sense, the semiotics intention is to counterfeit the tools, especially for the characterization of the verbal as nonverbal communications to inspect the articulation of the semantics in micro-universes (Greimas, 1984). According to him, the metalanguages hierarchy a descriptive level exists in this part (ibid). This is where the analyzed language through communication clarifies the semiotic theory (ibid). The analyzed instruments intricate at this procedural level, consist of concepts, procedures, and models (ibid). Eventually, the last level is epistemological, wherein the validation of analytical homogeneity coherence tools happens (ibid). The second level in the hierarchy consists of communication and the core part of the semiotics (ibid). Max Bense (1975), defined Peirce's triadic relationship of the signs with cardinal numbers in a formula. In which, the singular medium is used with the duality relationship of the object, and the triadic interpretant relation (Walther, 2016). Bense (1981), detached this triadic relationship of the signs from the Peircean triangle. The medium in the Bensean triangle is the interpretation part, which acts as a background, is perceptible, and instantly connects to the two other parts (Bense, 1981). Kristeva & Beardsworth (2020), separated the symbolic and semiotics. They borrowed the "speaking being" notion of semiotics from psychoanalysis (ibid). Thus, in her multi-influenced theory, semiotics develops in broader lines by means of sem-analysis, intertextuality, and dialogism (ibid). They developed the treatment art of the mentality in psychoanalysis which created a new vision through the verbalized faculty of thought (ibid). In general, it can be said that her exquisite theory rearranges the cultural trajectories in societies (ibid).

Baudrillard (2016), in his theory of sign, defined simulacra. He explained in post-modern societies there is a common socio-political simulation that possesses every reality with their

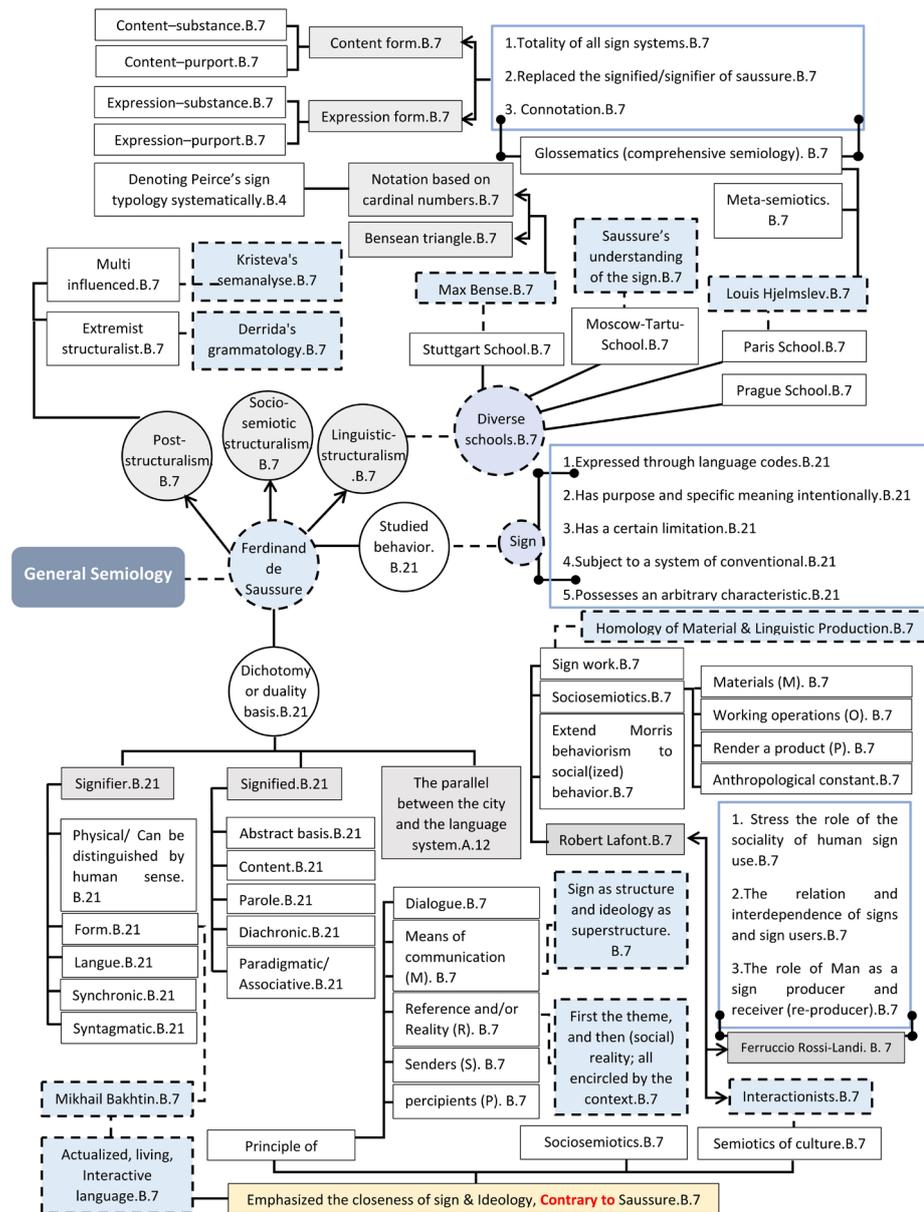


Figure 2. General semiology and its development.

desires, and so the “hyperreality” will come into existence instead of the true experience of humans (ibid). In this system, the value of signs is based on consumption values or value exchanges (Baudrillard, 2020). Accordingly, the politics behind the economy produce signs in product designs ideologically, and when they are decoded into notions these notions reproduce and simulate themselves repetitively (ibid). This shows how the semiotics or the system of signs is powerful in daily life.

Figure 2 shows the mental model of a dichotomy basis, its development,

and the relationship between the Saussure theory of sign and structuralism. The term “semiology” is used due to the relation of this part with Saussure.

5. Cognitive semiotics

In Peirce’s thought, generally logic is another name for semiotics (Peirce, 1931-58). Triadic sign models include a heterogeneous set of semiotic theories that distinguish three relationships of the signs, sign means, sense, and reference (ibid). Sometimes, dyadic and triadic models are not distinctive from each other (Nöth, 2014). The

development of studies of structuralist semioticians in fields of combined sign systems and nonverbal signs clarified the limitations of sign theory. Thus, some motivational works from theorists of this field came to arise with the use of typology terms of Peirce's theory of signs, for instance, icon and index (Bernard, 2006). This theory divides the group of signs based on the relationships that exist among objects such as contiguity and arbitrariness (*ibid*). In this regard, the contiguities relations categorize the sign's types into Icons and indexes. This is while diagrams, images, and metaphors are ramified from the category of icons (*ibid*). Symbolic signs are the most common ones, while iconic signs are conventionality significant, and indexical signs can draw attention blindly to themselves (Peirce, 1931–58). Peirce's theory of semiotics is an act of thought that explains language, culture, and contemplation as historical elements (Hoopes, 2014). Eco (1979), appended the element of culture, which is laid underneath human communications to the triadic theory. In other words, the semiotics interpretations depend on the communications that are concatenated with culture (*ibid*). In addition to this, Leeds-Hurwitz (2012) declared the particular relationship between semiotics and nonverbal language that is generated by the culture. Lorusso (2015) defined, cultural systems are made by cultural units and continue with redundancy and steady differentiations that lead to homogeneity and distinction relationships. Jacob (2021) mentions, that every society possesses its own culture that arises from the national contextuality of a community, which is based on a particular system of signs to make and convey meanings through communications. Codes and structures are referred to by different systems to make the meanings (*ibid*).

Morris (1938) introduced a triadic model of signs, consisting of designatum, sign vehicle, and interpretant, applicable to both humans and animals, considering the existence of behavior and biology, known as animal signs or proto-semiosis. Proto-semiosis further

classified into three categories: syntactic, semantic, and pragmatic, borrowing from the philosophy of rationalism (*ibid*). This theory provides a comprehensive framework for understanding the processes of communication and meaning-making in both human and animal contexts.

Sebeok, who raised the issue of global semiotics due to the social world of humans (Sebeok, 2001), believed that semiotics is a science that not only studies communication in culture but also studies communicative behavior from a biosemiotics perspective (Sebeok & Danesi, 2012). He suggested the biosemiotics interpretation of the concept of language as a syntactic modeling device (*ibid*). Biosemiotics is the fundamental level that links biology to the humanities in a different manner from sociobiology, and evolutionary psychology (Brier, 2006). This different manner according to Kull (2001), is "communicational structures". As biosemiotics is adopted by Peirce's triadic theory, its causality consists of model fit, differences, and codes as the data part in the dyadic proto-semiotic materials (Nöth, 2001). This is the necessity for the last part of the causality, signification, and interpretation of semiotics (*ibid*). Uexküll (1982), considered three components in his biosemiotics theory. According to him, every live organism is assumed as a subject, that is a meaning utilizer (*ibid*). According to him, the meaning vehicle is considered an object, while between these two the *umwelt* is laid down (*ibid*). In this sense, the internal parts of an organism in semiotic procedures call "endo-semiotic", the organism and its *umwelt* call "exo-semiotic", and the signification part is called *umwelt* (Sebeok & Danesai, 2012). These parts interfere with each other by means of social communication, the cultural signification is created (Brier, 2006). Different theories are derived from biosemiotics such as the theory of systems, the biology of theory, and the theory of self-organized systems (Brier, 1998). Figure 3 shows the trichotomy system of Peirce in cognitive semiotics, and its development through the studies of Sebeok and Uexküll.

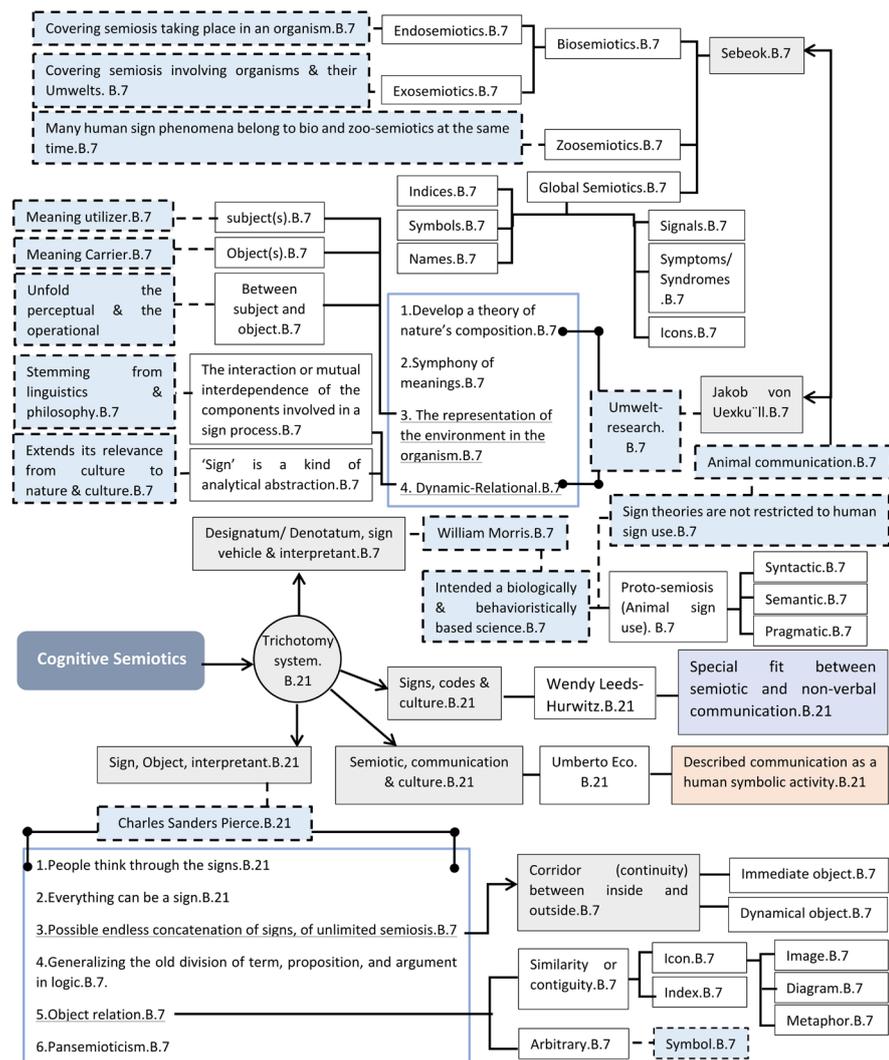


Figure 3. The trichotomy system of Peirce in cognitive semiotics.

6. Contemporary semiotics

According to various studies, contemporary semiotics identifies different types of signs such as visual, aural, and so forth. visual signs will be studied in this paper due to their important relevance to architecture. Meanwhile, traditional scholars made dichotomous between figurative language and verbal language (Nuessel, 2006a), in which classifications are metaphor, simile, personification, onomatopoeia, oxymoron, hyperbole, allusion, and idiom. As in architecture “metaphor” is more useable in the design process of forms and in environmental experiences after creating the form, this research studies it briefly.

For the first time, Pollio et al (1977) declared the metaphor’s role in conceptual abstraction forms and mentioned that a metaphor is not as much exclusively to a discourse, while discourse is the main structure for it. After this declaration in the 1970s and the 1980s, two fundamental categories arose (Sebeok & Danesai, 2012). The first one is the theory of conceptual metaphors which Lakoff is its pioneer in his book titled “Metaphors we lived by” (Lakoff & Johnson, 2017), and the second is cognitive linguistics which is related to Langacker’s book under the name of “Cognitive Grammar” (Langacker, 2008). But today’s meaning of the term “metaphor” is equivalent to figurative language, which points out the exist-

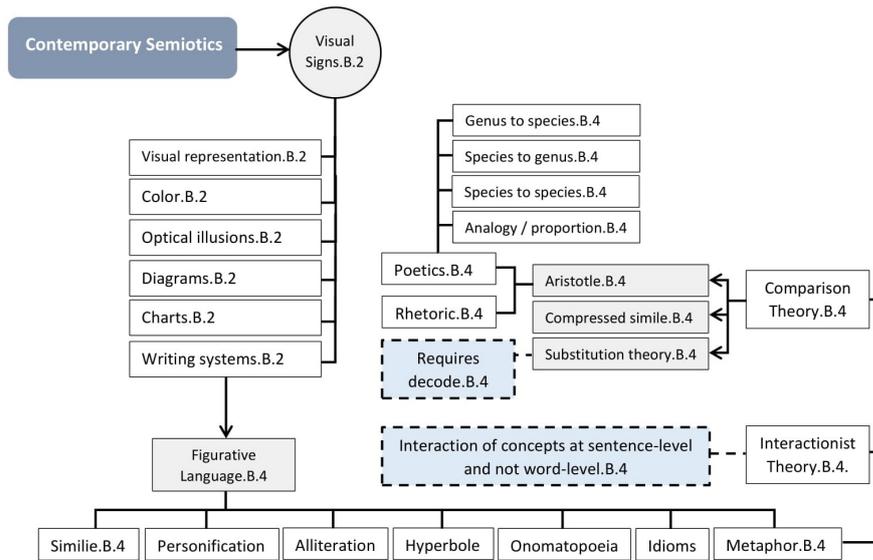


Figure 4. Visual signs in contemporary semiotics.

tence of physical abstractions. Sebeok and Danesai (2012), mention as these intentional abstractions are encoded within the simulation process of awareness inferences of humans, they need to be decoded.

The division of metaphor theories into substitution and comparison is made clear in Nuessel's (2006a&b) writings. According to him, in substitution theory, an improper figurative term exists in place of a literal term (ibid). In the comparison theory, the interplays of concepts do not exist at the word level but sentence level (ibid). This means the association of concepts creates a metaphor together with a new meaning (ibid). This view relates to Aristotle whereby means "A is B" or "A implies B" in a metaphoric sense and "A is like B" in a simile sense" (Aristotle & Kennedy, 2007). Aristotle describes the metaphor as the application of an alien name by transference in 3 forms or by analogy, that is, proportion (Aristotle, 2019). Figure 4 shows the place of visual signs in contemporary semiotics.

7. Semiotics in architecture, the ambiguity, and contradiction in form and figure

Using the word semiotics in architecture can be traced back to the definition of architecture, which is related to architects and includes, amongst other things, the clients,

and users of buildings. Vitruvius (2019), one of the ancient architects, declared that architecture is a science that is understood by practice and theory, which respectively means, that architecture contains the design performances, in accordance with the significant subject of architecture, which is, the creation of proper form with the appliance of the proportions. The proposed items related to the measurements given to the different parts of the planned building (ibid). Thus, according to Vitruvius (2019), theory in architecture can be considered a semiotic theory, and generally, the significant things in sciences are the signified and the signifier. The optional description of components of the graphic sign creates a linkage between metalanguage and connotation (ibid). Thus, there will be a connotative intonation in expressions and context in the expression plan of architecture (Pellegrino, 2006a). In opposition and ambiguity of the level of the forms, architecture pushes back the conventions, the duplication of utilization norms, and the emulation of common styles (ibid). Designing through measurements and proportions creates a monumental expression, in which the mechanism of communication appears within the form and content (ibid). This is proof for architecture which is arising a form from the intention of its architect. So

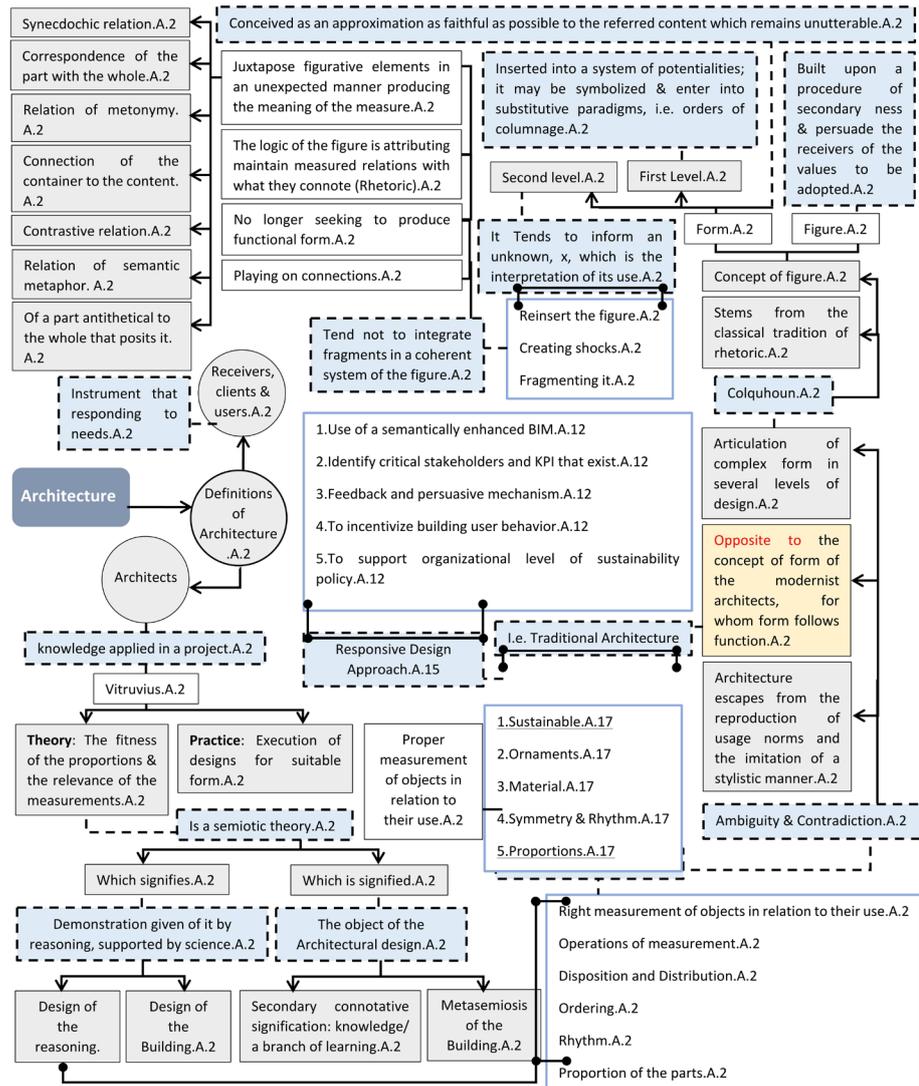


Figure 5. Semiotics in the architecture, of ambiguity and contradiction in form and figure.

in this shape of communication, the form is a container of the architect’s intentions and expresses itself through measurable proportions forms (ibid). However, this articulation is in opposition to the doctrine of Sullivan where “form follows function” (Sullivan, 1896, p.408). Modern architects describe the complex form devised in multiple levels of design (Thornberg & Carulla, 2011). Alan Colquhoun in 1985, mentions the concept of the figure upon the second level of meaning, which according to Fontanier and Genette (2009), originated from the tradition of classical rhetoric.

In Colquhoun’s theory, the figure is the second external layer of meaning,

while the form is signified by the content of the concept in the internal layer of meaning (Colquhoun, 1985). The first level of the form is based on the potentialities, and it can be symbolized through the substitutive paradigms (ibid). This is while the second level of the form is inclined to inform its use interpretation, and it happens through re-entering the figure to create shocks and then disintegrate it (Pellegrino, 2006a). Nevertheless, disintegrating is not happening in the syndetic system of the figure (ibid). The connotation and denotation rules in syntax make an indicated principle with the use of composition, continuity, and discontinuity of combined elements (Pellegrino, 2006b). This indicated principle

7.2. Architectural speech in analogy with linguistics

A semiotic system of architecture can be compared with a system of language. In the pursuit of analogy, the syntactic, morphological, pragmatic, and sign structure is developed and the debates continue over dialects, idiolects, and even architectural speech sociolects (Lazutina et al., 2016). In accordance with the triadic model of Peirce, the materialistic or physical objects are interpreted to the concepts or notions of the signs, that are created in the organism's mind (Peirce & Buchler, 2012). In this regard, the interpretations of perception that occur in the mind, create the cognitive part of the interpretant content or subject awareness. Brier (2006), mentions this subject awareness as a "consciousness" of human beings and as an "experience" in animals. So that the awareness process in biosemiotics initiates the signification within the living systems or living organisms and by means of the perceptual process eventually leads to the cognition or awareness of the subject (Brier, 2006; Thibault, 2006; Sebeok & Danesi, 2012; Feng, 2020). In this sense, this debate in variant scholar's fields of works such as neurology, cognitive sciences, psychology of environment, architecture, and so forth has come to the conclusion that the subject awareness comes from the sensory systems and psychoanalysis part of the interpretants. As this paper seeks to find the overlapping of the semiotics field with architecture, it is necessary to study the perceptual process of the places. In this regard, the most important related debates of environmental psychology are experiencing the places, the quality of the atmosphere of the places, and the sense of the places. It is significant to notice that all these debates happen after the perceptual process is raised and led to schemas or mental maps and eventually behavior or actions. Sebeok and Danesai (2012), explain that schemas are created by the reduction of the interchanged information of sensory systems into the "mental models", so that awareness of the subject, or cognition, happens after the perceptual process. Thus,

the participation of the organism in the environment or other behavioral actions occurs in conclusion to the sensory information due to interactions of the self with own or self with other-selves (Thibault, 2006). These actions and reactions happen during the perceptual process between self or "endo-semiotic" and object in the out or "exo-semiotic" (Sebeok & Danesai, 2012), which came along in Peirce's theory as "firstness" and "secondness" (Peirce & Buchler, 2012), as mentioned above.

Obviously, information on sensory systems is gained from the five human senses, such as vision, auditory, olfactory, and tactile sensation. Since in environmental sciences and architecture, the most influential sense is the vision, it was discussed before under the visual signs' debates in contemporary semiotics. As the importance of the influence of architectural work on user behavior developed, the behavioral model of architectural semiotics was proposed. Figure 7 shows architectural speech in analogy with linguistic semiotics.

8. Discussion and conclusion

In this paper, after defining the concepts by snowball sampling, six types of relationships that existed between them have been identified and used for creating the cognitive mappings. According to generated cognitive mappings, as shown in Figures 2 to 8, contemporary semiotics is a correlation of general semiology and cognitive semiotics. That is, on the one hand, contemporary semiotics classifies visual signs and writing systems that include verbal and nonverbal signs, in which connotation matters. In this sense, comprehensive semiology was derived from replacing the Saussure theory and led to the definition of connotation.

In this duality theory of signs, structuralists from diverse schools of meta-semiosis studied the content form and expression form in both substance and purport.

On the other hand, is the multiplicity and plurality of meaning of post-structuralism, which is an adaption of the index, icon, and motivated sign from the cognitive semiotics of Peirce.

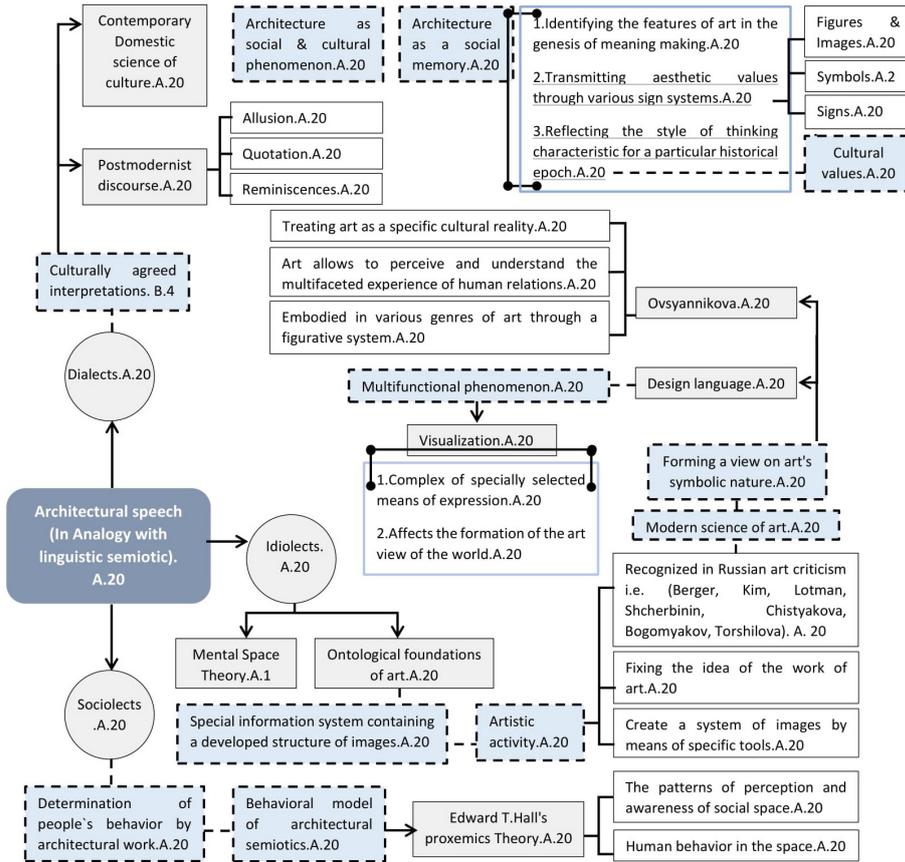


Figure 7. Architectural speech in analogy with linguistic semiotics.

Later the cognitive semiotics based on the trichotomy system developed by the idea of Morris appended behavior to categorize semiotics called proto-semiosis into three main groups syntactic, semantic, and pragmatic. Along with this Umwelt's research proved the dynamic relational and symphony of meanings features of the sign which turned a sign into an analytical abstraction that relates to nature and cultural relevance.

Meanwhile, global semiotics comprises a more extensive world including animals and biology. The combination of these two, as contemporary semiotics, leads to the utilization of signs as shown in Figure 8, Part A.

Semiology is a means of studying meaning-making which was initiated in linguistics and then developed through the different sciences such as architecture. Since architecture is a way of giving expression to content, it is therefore related to semiotics and can

be used consciously to convey meanings through the architectural form. Thus, the importance of form and content within a text has been highlighted which is attributed to the triadic theory of Peirce. In this sense, the signifier is considered as a form, structure, and model while the signified is considered as content, notions, and codes. The relation between these two is upon the vehicle of meaning or media, which here is exemplified as architecture.

To use a semiotic system in architecture or any other media practically the notion or idea becomes significant. Baudrillard introduced the simulacra in post-modern societies that dominated the socio-political aspects of reality to form a desired ideology instead of the actual reality. This means signs are in service of specific socio-political ideas that convey particular meanings while reproducing themselves.

This system is conducted within the text. Text can take various debates

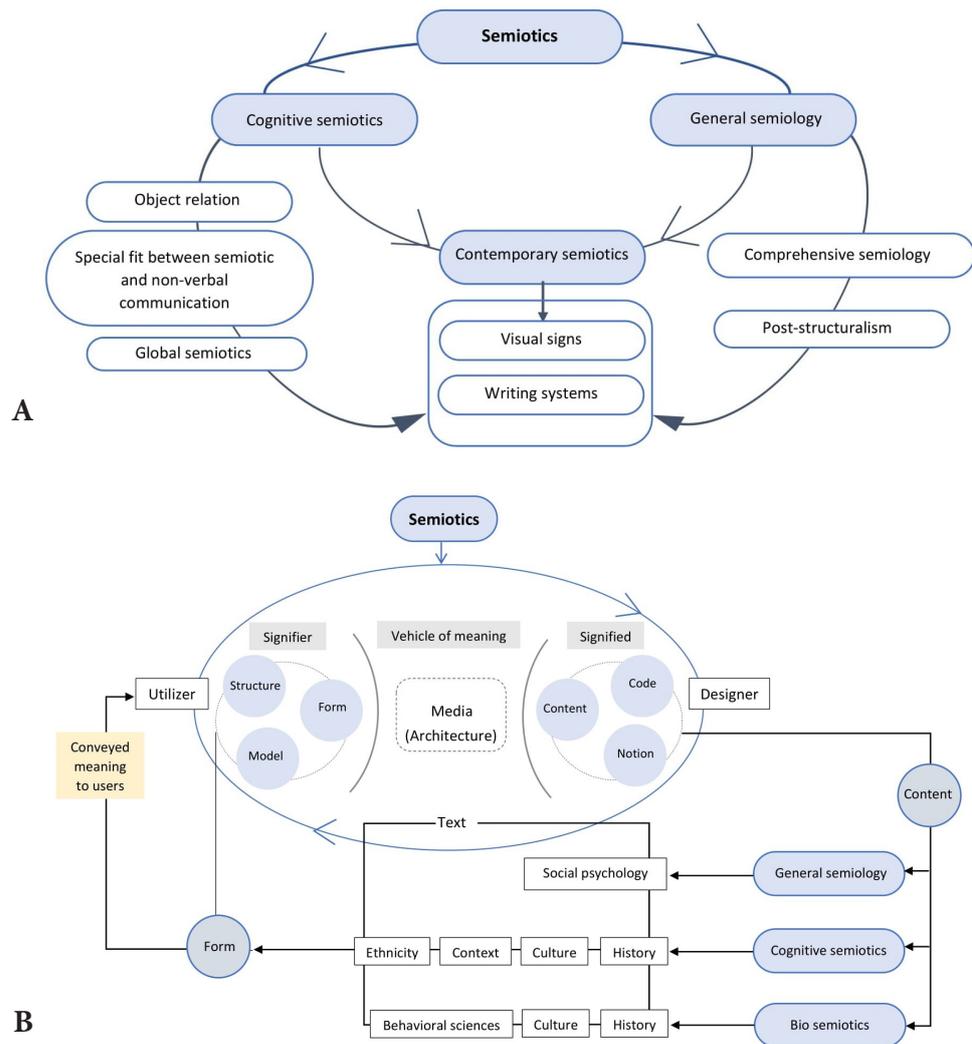


Figure 8. The relationship between semiotics theories. (B) The relationship between semiotics theory and architecture.

among different categories of semiotics theories. For instance, according to cognitive semiotics, content creates form through culture, history, ethnicity, and context, while in biosemiotics, the combination of behavioral sciences with history and culture can make the form. Consequently, the architectural style of these two categories likewise will be different. As for the cognitive semiotics according to historical considerations in the design process can lead to vernacular architecture, indigenous architecture, neoclassic architecture, or postmodern architecture. This is while the appliance of the biosemiotics theory to the design procedure considers environmental psychology and behavioral sciences that can create parametric architecture, complemen-

tary architecture, biomorphic architecture, zoomorphic architecture, and responsive architecture. In both categories, the different types of signs mentioned before as symbols, indexes, and icons are used. In this regard, in the phase of design, architectural diagrams of the architects can be named which are icons themselves, or the form, that is also assumed as a metaphor for the architect's idea is also an icon, as shown in Figure 8, part B. After creating a form, in the phase of utilizing, and according to the endo-semiotics the users of an architectural place can experience the place through their sensory systems, which leads to individual meaning for them.

This is according to Derrida's theory of deconstruction which assumes a built

environment as a text that has to be interpreted. A text is written by an author's notion that over time, different users come to various meanings conforming to their cultural, behavioral, and social experiences. Thus, a built environment can't have a single meaning and it depends on various aspects of comprehension situations of the utilizer.

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