A Conceptual Evaluation of the Relationship between Memory Space, Memory, and Space*

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Abstract

The Purpose of Study: *The concept of memory space is a popular topic of study on a national and international scale. When research on the concept of memory space (specific sites that envoke a memory) and the related concepts of memory and space are analyzed, these concepts are only included in the studies in the aspect that the researcher wants to address the subject. This approach leads to a narrowing of the concepts in terms of the subject of study, resulting in limited literature knowledge. In this study, we aimed to gather the concepts of memory space, memory, and space, which have wide definitions and scope under a broad perspective, and to classify and explain the issues that constitute the lack of information of these concepts in the literature.*

Literature review/background: *All national and international studies on the concepts of memory space, memory, and space were examined and a general perspective on the concepts was formed. While creating this perspective, starting from the basic sources of the concepts, the studies conducted until now have been discussed.*

Method: *In this evaluation, a national and international literature review method was used.*

Results: *The concept of memory space, which is handled in a comprehensive framework, cannot be fully defined. To determine the definition of the concept of memory space, which is accepted as a strong reflector of memory, how it is perceived, and how it is remembered, the concepts of memory and space that form the substructure of this concept are important.*

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Conclusion: *The concept of memory space carries within itself the characteristics of the concepts of memory and space. This study envisages that these components can be used in future studies of memory space in terms of perceiving this concept, recalling it from memory, and remembering it. The concept of memory space is open to all qualitative and quantitative research that can be conducted due to its current relevance.*

Keywords: *Memory Space, Memory, Space, Perception, Perceptual Dimensions of Space.*

Hafıza Mekânı, Hafıza ve Mekân İlişkisi Üzerine Kavramsal Bir Değerlendirme

Öz

Giriş ve Çalışmanın Amacı: *Günümüzde hafıza mekânı kavramı ulusal ve uluslararası ölçekte popüler bir çalışma konusudur. Hafıza mekânı ve bu kavramla bağlantılı olan hafıza ve mekân kavramları üzerine yapılan araştırmalar incelendiğinde, kavramların sadece araştırmacının konuyu ele almak istediği yönüyle çalışmalarda yer ettiği görülmüştür. Bu yaklaşım, kavramların çalışılan konu özelinde daraltılarak ele alınmasına ve böylece çalışmalarda sınırlı bir literatür bilgisinin aktarılmasına yol açmaktadır. Bu çalışmada çok geniş bir tanım ve kapsama sahip olan 'hafıza mekânı', 'hafıza' ve 'mekan' kavramlarının geniş bir perspektif altında toplanması ve literatürdeki kavram yoğunluğunu oluşturan konuların sınıflandırılarak açıklanması amaçlanmıştır.*

Kavramsal/Kuramsal Çerçeve: *Çalışmada hafıza mekânı, hafıza ve mekân kavramları ile ilgili yapılmış ulusal ve uluslararası tüm çalışmalar incelenerek kavramlara ait genel bir perspektif oluşturulmuştur. Bu perspektif oluşturulurken kavramlara ait temel kaynaklardan başlanarak günümüze kadar yapılmış çalışmalar ele alınmıştır.*

Yöntem: *Hafıza mekânı, hafıza ve mekân kavramları üzerine yapılan bu değerlendirme çalışmasında ulusal ve uluslararası ölçekte literatür taraması yönteminden yararlanılmıştır.*

Bulgular: *Çok kapsamlı bir çerçevede ele alınan hafıza mekânı kavramının tam bir tanımı yapılamamaktadır. Hafızanın güçlü birer yansıtıcısı olarak kabul edilen hafıza mekânı kavramının tanımı, nasıl algılandığı ve nasıl hatırlandığı konularının belirlenebilmesi için bu kavramın alt yapısını oluşturan hafıza ve mekân kavramları önem taşımaktadır.*

Sonuç: *Hafıza mekânı kavramı kendini oluşturan hafıza ve mekân kavramlarının özelliklerini bünyesinde taşımaktadır. Bu çalışma hafıza mekânı konulu yapılacak çalışmalarda bu kavramın algılanması, hafızadan geri çağrılarak hatırlanması konusunda da bu bileşenlerin kullanılabilmesini öngörmektedir. Hafıza mekânı kavramının güncelliğini koruması nedeniyle yapılabilecek nitel ve nicel tüm araştırmalara açık olduğu belirlenmiştir.*

Anahtar Kelimeler: *Hafıza Mekânı, Hafıza, Mekân, Algı, Mekânın Algısal Boyutları.*

1. Introduction

The relationship between memory and history dates to antiquity. Studies initiated with the desire to record memory with the help of space and spatial elements and to ensure its permanence, constitute the basis of the concept of memory space. French historian Pierre Nora, who dealt with this idea comprehensively, developed this concept in Spaces of Memory (Les lieux de mémoire) in 2006. In the course of his work on the nation and history, Nora realized that the memory of the nation was fading fast. For this reason, he began to identify memory spaces (physical sites or locations at invoke a memory) that develop in relation to people and time, and where the most distinctive memories emerge, especially within these spaces. When the literature is examined, particularly in the years after Nora's work, many researchers have conducted studies on memory spaces. However, similar to Nora, no researcher has clearly defined the concept of memory space, but have only evaluated the concept of memory space within the scope of their research topics.

The lack of an existing definition of the concept of memory space and the lack of information on how memory spaces are perceived and remembered constitutes the problem that this study serves to address. To solve this problem, the study aims to identify the triggering factors in the perception and recall of memory places and their sub-components to define memory places, which are strong reflectors of memory.

For this purpose, the concepts of space of memory or place of memory used synonymously within the title of the study were searched in national and international databases, including Web of Science, Scopus, Elsevier, Science Direct, Google Scholar, Researchgate, TR Index, Tübitak-Ulakbim, Dergipark, and YÖK Thesis Center. For English-language sources, this search was conducted with the terms "space of memory", "place of memory", and "site of memory". In this context, 120 theses, articles, conference proceedings, book chapters, and book reviews in Turkish and 50 in English were evaluated (figure 1).

Figure 1: Word clouds made up of keywords

Among all the studies, those that were suitable for the content and flow of this article were compiled and used as reference sources in the study. As a result of the literature review, the studies on memory space most frequently focus on the words "memory" and "space, place". For this reason, the concepts of memory space, memory, and space are discussed in a broad perspective on a national and international scale.

2. The Concept of Memory Space

Pierre Nora was the first person to explain and work on the concept of memory spaces on a scientific basis. Nora derived this idea from Cicero's statement that memories have a strong relationship with places and is based on the technique of memory (Cancik, 1990, p. 312). Nora dealt with this concept comprehensively in his 1984 publication: Les lieux de mémoire (Sites of Memory). In the following process, he developed this idea in other editions of his book and submitted to the wider literature (Assmann, 2015, p. 47).

The issue that led Nora to this research was the disappearance of memory. He realized that memory is rapidly disappearing, especially in the context of the nation and history. For this reason, he considered memory sites as values that do not constitute memory in themselves, but are in danger of disappearing. For this reason, he determined that a place of memory has reasons for existence, such as stopping time, preventing oblivion, determining the status of objects, immortalizing death, and making the intangible tangible. He explained specific problems of the nation, such as commemoration ceremonies, historical and social memory, ideologies of nations, politics, power, and republic by exemplifying them within his society. Nora observed that the most prominent memories are formed in these memory sites that develop in a human and time-oriented manner. He evaluated these areas within the scope of memory space and started to identify them (Nora, 2006, p. 9-38).

Nora defines a place of memory as: "If the expression site of memory needs to have a formal definition, it should be this: sites of memory is any significant entity, material or immaterial in nature, which through a human will or time becomes a symbolic element of the memorial heritage of any community" (Nora, 1996 as cited in Avcı, 2019, p.12). He also stated that memory sites are "not the things we remember, but the places where memory ferments, not the tradition itself, but its laboratory" (Nora, 2006, p. 12).

Assmann explains memory sites as: "Sites of memory are places where groups of people express a common knowledge of the past that forms the basis of the group's sense of unity and uniqueness in public actions". Moreover, the criterion for an item to be considered a place of memory and worthy of research is that these places "have a life story" (as cited in Cihangiroğlu, 2019, p. 55). In addition, another criterion for memory places is that they are now considered as memory places not only for the person who personally experienced the places, but also for the individual or community to whom these people convey their experiences (Cihangiroğlu, 2019, p. 60). However, not every event that is experienced or transmitted is considered a memory site, and the transformation of an event or memory into memory sites is influenced by factors such as the way these places function and the fact that they have a historical character depending on a certain time and culture (Szpociński, 2016, p. 250). Even when they are associated with physical or concrete space, memory sites can only be named as such if they are based on an image, a ritual, or a symbolic meaning (Nora, 2006, p. 32).

In the context of all these qualities, Nora (2006) defines memory sites as museums, archives, cemeteries, collections, holidays and holiday routes, anniversaries, agreements, minutes, monuments, sacred places, associations, school books, historical books, handbooks, autobiographies and diaries for memories, memories of statesmen, great events or events with great impact, wills, dictionaries, encyclopedias, birthdays, portable places, topographies, touristic places, funeral discourses, or flags. In addition to these, place names (Türkoğlu & Günay, 2018, p. 829), tangible cultural assets (religious buildings, museums, palaces and mansions, pavilions, monuments, arasta, bedesten and bazaars, water structures, city walls, squares and streets, parks, and traditional houses) (Günaçan, 2019, p. 68), and sometimes a sound and a smell (Cihangiroğlu, 2019, p. 38) are also considered as memory places.

Interest in memory sites is increasing day by day. The scope of memory spaces has expanded from spaces associated with sacred or religious events to spaces with different functions that have social value. This concept has become the subject of many disciplines, such as architecture, urbanism, landscape, painting, sculpture, and media and communication. When analyzed specifically in Türkiye, studies on memory spaces have increased since 2005 and continued to accelerate after 2010. The reason for this increase is the expansion of the scope of the concept of memory space (Cihangiroğlu, 2019, p. 55).

Organized in 2022, the exhibition and conference series of Spaces of Memory, Museums: Architecture and Exhibition, hosted local and foreign speakers who were asked how they define the space of memory:

- Emre Arolat: "Memory spaces can be defined as buildings that are in context with the city by considering them on a city scale".

- Han Tümertekin: "Everything that can take place in the future is a place of memory. Anything that connects the old and the new in a way that does not make us forget the old is a place of memory, and this is important for the continuity of memory".

- Kerem Erginoğlu: "There needs to be experiences. It must have a place in the memory of the citizens and the city. Actually, there is no exact definition. First of all, the new structure should be designed by understanding the old structure very well and it should be remembered here again with experiences".

- Yama Karim: "Without buildings, cultures, memories and memories will be forgotten. We need to remember the memory that disappears in a day, especially through architecture (war museums). That is why we want to create an experience here".

- Prof Francesco Brancaccio: "The place of memory is everything where memory emerges. Not only museums, but also everything that reminds us of memory, every structure, every object is a place of memory. For this reason, even the smallest fresco can be considered as an element that constitutes a memory space".

- Britta Nagel: "When reorganizing a historical building, the history of the building should also be told, its value in cultural heritage should also be conveyed, so that it can become a place of memory" (T.C. Kültür ve Turizm Bakanlığı, 2022).

In 2018, UNESCO showed interest in memory sites with its resolution titled: Interpreting Memory Sites. This resolution deals with tangible cultural heritage sites other than intangible and movable cultural heritage items. A field study was conducted for the interpretation of memory sites and other heritage sites with their monumental aspects. The study refers to Nora's Les lieux de mémoire (Sites of Memory) for its concept of memory sites and analyses this in more detail. Unlike Nora, the UNESCO working group has addressed memory sites on an international scale and in the context of tangible cultural heritage.

Looking at all these definitions and statements in the studies, the concept of memory space emphasizes the relationship between memory and space. The relationship between memory and space dates to prehistory. This technique, based on the Ancient Greek scribes' associating the information of these discourses with images and objects while recording speeches, constitutes the first examples of this relationship (Yalım, 2009, p.159). In this system,

which is based on fixing memories in memory and keeping them alive in the present just as in the past, both the recall of memory with visual sense and how it will be designed with an architectural fiction were determined (Sevinç, 2019, p. 50).

Özaloğlu (2017) expresses the importance of space for memory stating that "Space/place is the most fundamental component in conscious memory". Özmen and Çetin (2017) emphasize this view with the statement: "Memory is a phenomenon in which the process of remembering/forgetting is constantly shaped and changed, and space is the main element of this framework of relationships" (Altınay, 2020, p. 43). Kırcı (2015), cited in Connerton (2014), supports this view with the statement that "Space preserves the order of things that memory wants to remember". Assmann (2015) emphasizes the importance of spaces in fixing memory and recalling it for recollection, stating: "The figures of recollection want to be embodied in a certain space and updated at a certain time, that is, they are always based on a concrete space and time, although not in a geographical or historical sense. (...) Memory needs space, it tends to spatialize".

When the literature on memory space is examined, this concept is often explained by identifying it in conjunction with the concepts of memory and space. For this reason, the concepts of memory and space are discussed in detail by classifying each of them according to their concept definitions, subcomponents, and their similar and differing characteristics.

3. The Concept of Memory

The concept of memory comes from the Arabic root ḥfẓ and is used in the sense of storing or preserving (Nişanyan Sözlük, 2021). In the dictionary of the Turkish Language Association, memory is defined as "the power to consciously store in the mind what has been experienced, learned subjects, and their relationship with the past, repertoire, mind" (Türk Dil Kurumu, 2021). Apart from these definitions, memory is "the ability to keep in mind what has been learned, seen or experienced and to revitalize it in consciousness" (Altınay, 2020, p. 40), "the ability to recall experiences, experiences and experiences in transition. The power to recall to visualize them in the mind and to preserve the past in the present" (Cevizci, 1999, p. 111). Living communities are necessary to produce memory, therefore, memory is the interaction of remembering and forgetting and can change unnoticed while using it. memory is susceptible to prolonged uncertain situations and sudden revival; thus, it is in constant development (Nora, 2006, p. 19).

When the flow of the view of memory in the historical process is evaluated, it is seen that it has been handled in many different ways. In this study, all these expressions are explained according to the common views accepted. Thus, the definition and scope of the concept of memory, which is broad and scattered in the studies, has been classified and organized.

3.1. Classification of Memory

Memory has been the subject of many branches of science, including psychology, psychiatry, philosophy, sociology, neurology, biology, physiology, physiology, and genetics. Research on memory has been conducted mainly in the fields of neurology, psychology, philosophy, and sociology. The neurological basis of memory has been studied and in the field of psychology, the place of memory in long-term life stories has been evaluated. While the phenomenon of memory is the subject of philosophy, the formation of collective memories has been researched in the field of sociology (Öymen Özak, 2008, p. 9).

The first studies on the concept of memory were conducted by philosophers interested in the philosophy of mind such as Plato, Aristotle, Aquinas, and St. Aquustin. These philosophers tried to explain memory around the function of conscious recall. A second group of philosophers R. Descartes, W. Leibnitz, Main de Biran, and W. James worked on the types and functions of memory. The similarities between the work of these philosophers in the second group and today's memory classifications are striking. However, these classifications do not have a scientific and experimental basis (Cangöz, 2005, p. 52).

Descartes made the first attempt to categorize memory. Descartes, a natural philosopher, based his categorization on the memories that are desirable or undesirable to remember. He said that the memories that are desired to be remembered can be used for remembering. Leibnitz, on the other hand, analyzed memories under two headings: sensible and non-sensible memories. James also considered memory as primary memory and secondary memory. James stated that primary memory encompasses recent memories of experiences in the present moment. Therefore, it does not require much effort to recall the information stored in this class. Secondary memory, on the other hand, includes memories experienced long ago and recalling these memories requires more mental effort. Main de Biran categorized information according to the way it is stored. This classification argues that information is stored consciously or unconsciously. Therefore, Main de Biran categorized memory as mechanical, sensory, and representational. Mechanical memory includes "information about repeated movements". Sensory memory, on the other hand, is the class in which information about habits is stored, including "information about repeated sensations". In representational memory, he argued that conscious information about events is stored and processes such as comparing, matching, classifying, and abstracting this information takes place (Cangöz, 2005, p. 52) (figure 2).

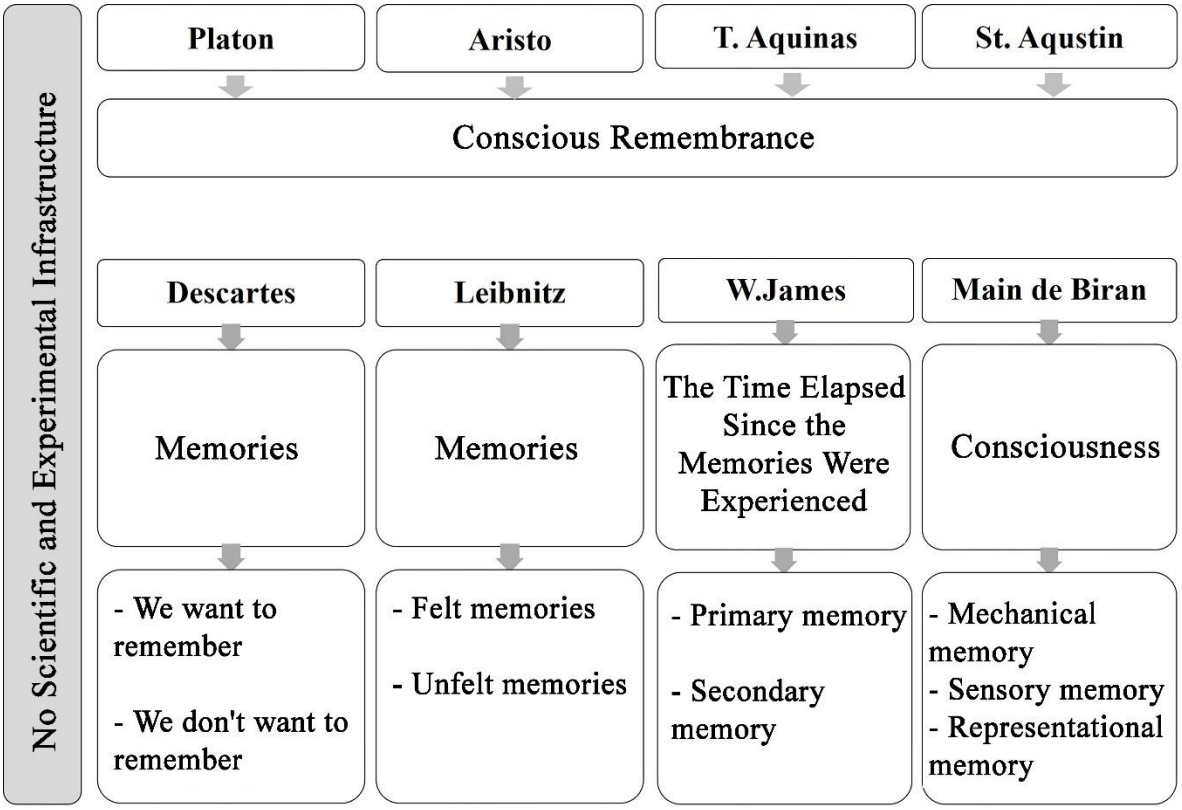

Figure 2: First studies on memory (no scientific and experimental infrastructure)

Hermann Ebbinghaus conducted the first study to examine memory with experiments in a scientific infrastructure. In this study, Ebbinghaus evaluated the parameters of remembering and forgetting (Özakpınar, 2016, p.19). Ebbinghaus used associations in his experiment and tried to determine the formation of the association of the item to be memorized in the mind, its recording in the memory, and the conditions of its retention in the memory. For this reason, he used meaningless syllables in his experiments, therefore, he planned that the item to be memorized would be free from individual influences, such as meaning, interest, relationship, emotional impact, and previous knowledge and learning (Boring, 1929, p. 380). Ebbinghaus focused on three factors that he thought could affect memory: the number of repetitions, the time between repetition and recall, and the amount of material. The number of repetitions means that the data to be memorized is perceived again. He considered the time between the end of repetition and the moment of recall as the basis for keeping the perceived data in memory. The amount of data to be memorized constitutes the amount of material. Using these

three factors in his experiments, he concluded that the power of recall would increase along with the number of repetitions, the shortening of the time between repetition and recall, and the decrease in the amount of material to be remembered (Özakpınar, 2016, p. 19).

The factors that Ebbinghaus tried to control and neutralize in his experiments, such as meaning, interest, relationship, emotional impact, and previous experience and learning, attracted the attention of Frederic C Bartlett. Bartlett thought that these factors could change the conditions of memorization and retention. In this respect, Bartlett's experiments did not focus on strict control and quantitative results. In his studies, Bartlett shows that in the process of memorization, the perceived item is not recorded verbatim, but the perceived item is processed and recorded depending on the individual's own needs, knowledge, emotions, interests, and attitudes. These studies have revealed important data on the functioning of the memory system and the factors affecting this functioning (Özakpınar, 2016, p. 24–27).

Kenneth JW Craik argues that in the thought process in individuals, real items received or perceived from outside are translated into numbers or symbols and recorded. He stated that decisions are made with these symbols and new symbols are reached and transformed into real events in the outside world. With this statement, he argued that the human–machine relationship can be analyzed with cybernetic expressions by adapting engineering principles to complex human behavior. With this view, Craik laid the groundwork for the representational system that forms the basis of today's cognitive psychology. For this reason, Craik can be considered one of the pioneers of information processing theory, which has left its mark on modern cognitive psychology, where research is concentrated on the concept of memory (Cangöz, 2005, p. 56).

Miller (1956) was interested in the limits of information processing capacity in memory. In this context, he revealed that information can be processed in different ways and in different numbers. With this study, memory research has since been analyzed in the field of cognitive psychology (Cangöz, 2005, p. 57) (figure 3).

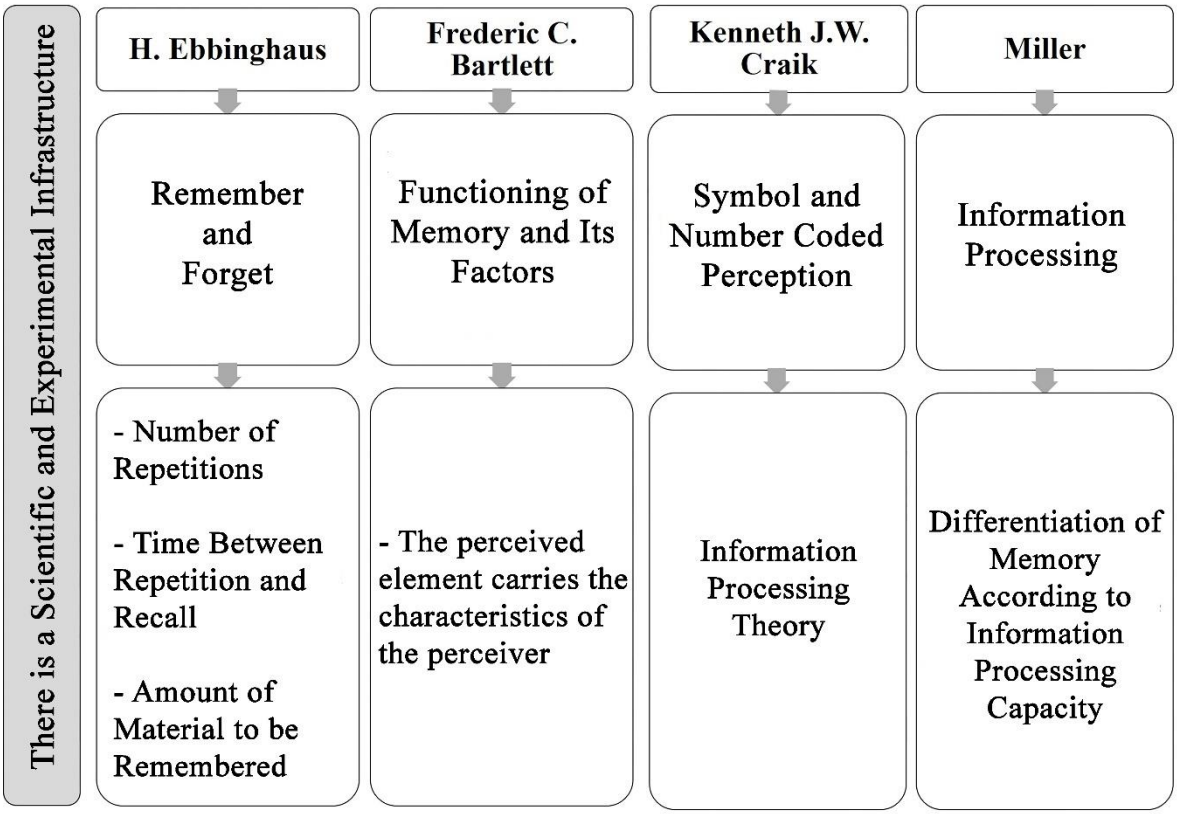

Figure 3: Studies on memory (scientific and experimental background)

From 1956 until the 2000s, cognitive psychology started to receive official recognition and in this process, the information processing approach has been the subject of study in this field. In principle, the information processing approach considers the computer and the human mind as equivalent. This approach is based on the similarity between the structures and functioning of computers and the human mind. It also predicts that computers can be used in the study of the human mind. According to this approach, how information is processed in the human mind is determined by experimental studies. These experiments showed that information is processed in two different models, namely serial information processing and parallel information processing. By combining serial and parallel information processing models, a hierarchical memory model is formed based on the content of the information stored in the memory. The implicit–explicit memory model was formed based on the level of consciousness of the information (Cangöz, 2005, p. 57) (figure 4).

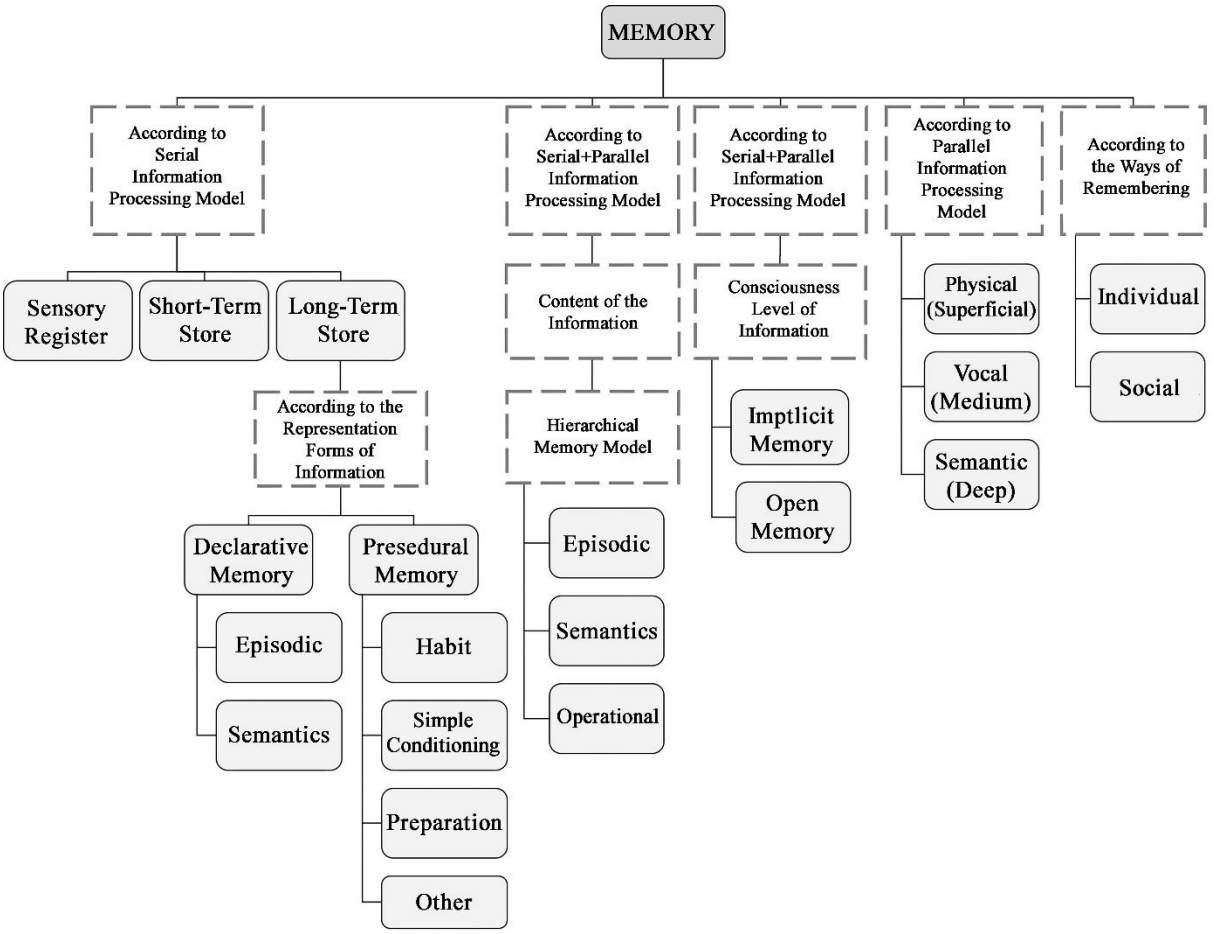

Figure 4: Classification of memory

The serial information processing model, which suggests that information is processed in a series of stages, divides memory into three structural components: sensory recording, short-term memory, and long-term memory. In the sensory recording process, the information received from the external environment, especially visual and auditory stimuli, is degraded or transferred to short-term memory after a period of several hundred milliseconds. After the sensory recording process, long-term memory is used to recall the information transferred to the short-term memory. The verbal equivalent of the information received visually is searched in long-term memory. If there is an equivalent in the long-term memory, it is transferred back to

the short-term memory and remembered. During this recall, the associations of the information sought can be recalled with the information. However, this interaction cannot be reduced from long-term memory to sensory recording and remains in short-term memory (Atkinson & Shiffrin, 1968, pp. 90,94). Since the information received from the environment stays in the sensory recording process for a short time and is quickly transferred to short-term memory, many researchers ignore the sensory recording process. These researchers base their studies on short-term and long-term memory only.

The first studies on the division of memory into short-term and long-term were conducted by Milner (1966) who analyzed people with damaged brains and tried to teach new information to these people. He observed that people could answer this newly learnt information when asked again after a short time but could not answer if more than 30 seconds passed. In the same study, it was observed that human brains were able to respond when asked about the information that was in their memories before they were damaged. Thus, he determined that this part of their memory was preserved the same. The study suggests that human memory works in two stages of short-term and long-term memory (Atkinson & Shiffrin, 1968, p. 97).

Short-term memory stores auditory, verbal, and linguistic elements for a short time. This type of memory is based on visual and auditory coding of verbal, auditory, and linguistic stimuli in the mind. This memory type is analyzed by short-term and single-trial experiments (Atkinson & Shiffrin, 1968, p. 101). The number of items that can be stored in short-term memory has been reported as approximately seven elements (Miller, 1956, p. 91). To memorize more than seven items, one item is lost from memory for each new item. In addition, if every piece of information in the short-term memory is not repeated, it is degraded and discarded after 30 seconds. However, with a lot of repetition, information can be transferred to long-term memory after 30 seconds. Long-term memory refers to the memory of comparable elements in the long-term storage of the mind, which is usually examined by long-term experiments such as list learning or multiple list learning experiments (Atkinson & Shiffrin, 1968, pp. 90,101).

Short-term memory is a biophysical process based on the existence of electrical conduction between nerve cells. If the nerve conduction between the cells continues, the information remains in the mind. This type of memory is also called working memory. The transfer of information to long-term memory is a biochemical process since it is mediated by protein synthesis. When nerve conduction stops temporarily for some reason, protein synthesis is also interrupted and the individual's memory of that moment or process is erased (Öymen Özak, 2008, p. 26).

Both short-term and long-term memory are characterized by encoding, storage, and search-find-retrieve processes. The first stage, encoding, is defined as recording information

that enters the memory in the mind. The visual or auditory value of the information to be memorized is not important for encoding, but the meaning or context of this value and its equivalent in the mind is important. New information entering the memory is encoded by associating it with previously learnt and existing information. The encoded information is stored in the long-term memory. This information is recalled and remembered when necessary. These processes in short-term and long-term memory are specialized according to the type of memory depending on encoding, storage capacity, and the number of objects recalled in retrieval (Öymen Özak, 2008, p. 27).

Long-term memory is divided into two components according to the way information is represented. This distinction is made as declarative and procedural memory and differentiates memory from each other on issues such as facts-events and habits-skills (Öymen Özak, 2008, p. 28). Declarative memory establishes a relationship of similarity with events. Procedural memory is adapted for gradual learning. For this reason, declarative memory is faster than procedural memory. Declarative memory is further divided into episodic and semantic (semantic and factual) (Squire, 1987, p. 155), while procedural memory is divided into four categories: habitual, priming, simple conditioning, and other.

Episodic memory, which is a subclass of declarative memory, focuses on past events in an individual's life. This memory consists of the person's experiences, knowledge accumulation, and autobiographical features with repetitions and can be evaluated within a certain time and place. Semantic memory, on the other hand, refers to information, such as facts, concepts, and the relationship between them. It includes information learnt after many repetitions of information gathered from episodic memory. This information is general and cannot refer to time and place (Tulving, 1972, p. 389; Öymen Özak, 2008, pp. 29,30). Procedural memory, on the other hand, is a type of memory that includes information about habits, actions, and events (driving, reading, etc.) that are frequent in daily life (Cihangiroğlu, 2019, p. 41).

Tulving (1983) examined memory classes divided into declarative memory and procedural memory under the hierarchical memory model. The hierarchical memory model combines serial and parallel information processing models. This model is based on the content of the stored information and is defined under three different headings: episodic, semantic, and procedural memory. While the definition of episodic and semantic memory is the same as the other classifications, procedural memory is defined as the memory that contains information about the individual's perceptual and motor skills (Cangöz, 2005, p. 58).

Another memory model is the implicit–explicit memory model. This model combines parallel and serial information processing models and is based on the level of consciousness of the information. The implicit–explicit memory model describes how information is retrieved from

the mind whereby implicit memory constitutes the process of unconscious or automatic recall of information from the mind. The process of conscious or voluntary recall is analyzed under the title of explicit memory (Cangöz, 2005, p. 58).

Another model of information processing is the parallel information processing model. In this model, it is argued that information is processed in parallel and simultaneously in the mind. In other words, different processes take place in the mind at the same time. Unlike the serial information processing model, in the parallel information processing model, the differences in the depths of the process based on the process of information, not the structural functioning of information, are evaluated. According to these differences, it is argued that information is encoded at physical (surface), auditory (medium), and semantic (deep) levels (Cangöz, 2005, p. 57). For an item to become embedded in the mind, the amount of perceptual processing must increase. After the stimuli are recognized in the memory, they can be subjected to further processing with enrichment or elaboration. Thus, the retention of detailed information in memory increases (Craik & Lockhart, 1972, p. 675).

Another perspective on the categorisation of memory is the distinction made according to the forms of recall. According to the ways of remembering, memory is divided into individual and social memory. When the literature is reviewed, most studies on memory focus on individual and social memory. Individual memory consists of one's own past knowledge, experiences, and memories (Ricoeur, 2011, p. 113). In another definition, it is where the storage area is the mind of the individual (Assmann, 2015, p. 24). The concept of autobiographical memory is often used synonymously with individual memory. It is defined as the memories in an individual's life, the part of their personal history consisting of conceptual, generalized, and schematic information (as cited in Günaçan 2019, p.9).

Halbwachs (2018) argued that memory, which includes the experiences and perceptions of the individual, cannot be evaluated independently of society: "The social framework is essential for the formation and preservation of individual memory. The individual who grows up in absolute solitude has no memory".

The concept of social memory, which can also be called collective memory, is a concept that cannot be expressed with clear definitions. Two names frequently appear in the literature on the concept of social memory: Henri Bergson with his studies examining the relationship between memory and space and Maurice Halbwachs who concentrated his studies in the field of sociology. According to Bergson, "Memory is when some of our experiences become part of our consciousness". Halbwachs, on the other hand, argued that social memory is not a mysterious idea assigned to a group; it is based on social infrastructure and on the memories of individuals involved in groups and institutions in society (as cited in Cihangiroğlu, 2019, p.51). In other words, social memory is the memory of the group formed by

the coming together of more than one person or the memory that different groups transfer from generation to generation from any event or communication that they experience with each other (Uğur Çınar, 2017, p. 139). According to Halbwachs, groups such as social classes, institutions, organizations, families, armies, and so on each have memories that their members have established in their memories over a long time. Here, it is the individuals who remember according to the characteristics of the group they are in and by recreating the past (Halbwachs, 2018, p. 65). The task of transferring memories within the social memory based on space and time is provided by elements such as space, objects, and tools and equipment around individuals (Demirarslan, 2018, p. 911).

4. The Concept of Space

Place etymologically comes from the Arabic root "kwn" and is used in the sense of existence, place of existence, and location (Nişanyan Sözlük, 2021). In the dictionary of the Turkish Language Association, it is defined as "place, place of being, home, yurt", and in the dictionary of philosophy, it is defined as "the vast vastness in which all existing things are contained, which includes all limited greatness; emptiness, state of nothingness; unlimited environment, infinitely large container or reservoir; volume with three dimensions, i.e. width, length and depth; ground covering" (Cevizci, 1999; Türk Dil Kurumu, 2021).

One of the most fundamental and precious elements of the universe is space. Matter, with its spatiality, one of its most fundamental qualities, exists in space and continues its existence there. In Merleau-Ponty's words, "existence is spatial" (Tümer, 1984, p. 90). Every space exists before individual or social subjects that are members of a group or class and try to claim the space. As such, space shapes the existence, action, expression, competence, and success of these subjects (Lefebvre, 2014, p. 85).

The concept of space is based on a long philosophical preparation process. According to Aristotle, space and time are effective in the naming and grouping of our feelings. However, Aristotle suggests that the state of space and time cannot be determined. Space and time are considered high assumptions obtained from experimental methods or data of organs in the grouping of sensations. Descartes put an end to this tradition of thought and played an important role in liberating the concept of space. After Descartes, philosophers such as Spinoza, Leibniz, and Newtonians adopted the concept of absolute space with the idea that space is the object that dominates the subject (senses and body). Later, Kant changed Aristotle's view and reconsidered it to be that the subject's consciousness is fundamentally internal and ideal, ungraspable in itself (Lefebvre, 2014, p. 33) (figure 5).

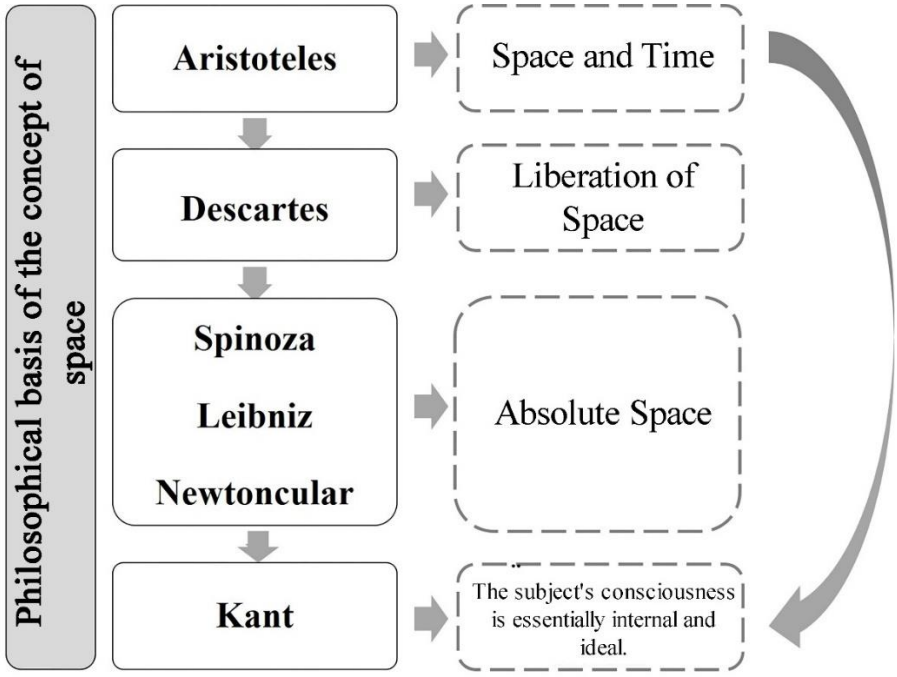

Figure 5: Philosophical basis of the concept of space

Lefebvre (2014) analyzed space in three ways: perceived, designed, and experienced space. Perceived space is where spatial practices emerge because of a debatable interaction. It is the space that is claimed and finalized by society and when analyzed, the spatial practices of society can be determined. Designed space is also called space representation. Designed spaces contain information that is always relative and in change or transformation. Although these spaces are revisable, they are objects. Designed spaces show their important and specific effects on the production of space by placing practical, effective knowledge, and ideologies into spatial textures. Designed spaces are not only the construction of a palace or a monument, but are also designed textures or projects in a spatial context, however, it necessitates spaces in which symbolism and imaginary elements are not lost. Living spaces are also known as spaces of representation. These spaces are lived rather than designed and are not obliged to consistency and commitment. These spaces consisting of imagination and symbolism constitute the history of society or each individual belonging to society. Lived space is lived, it speaks, and it contains direct time by gathering around a sensory center. Therefore, lived space is directional, situational, relational, fluid, and dynamic (Lefebvre, 2014, pp. 66–71) (figure 6).

Roth (2006) defined space as "a powerful shaper of behaviour". With this statement, he drew attention to the strength of the relationship between space and people. Roth also categorized space into four classes: physical, perceptual, conceptual, and behavioural spaces. Roth defined the space surrounded by architectural building elements and forming a volume as physical space. He briefly defined perceptual space as "space that can be perceived and seen", and described this space as a mental map in our brain. He then analyzed this space in detail, suggesting that the basis of perceptual space is a person's focus on making sense of all the components in the environment, that is, instinctive perception. In terms of perception, he argued that what is perceived is related to previously known knowledge. Roth defined conceptual space as spaces that are mentally stored in memory. The spaces designed by the architect and directing the actions and behaviors of the users are considered as behavioral spaces (Roth, 2006, pp. 75,76–91) (figure 6).

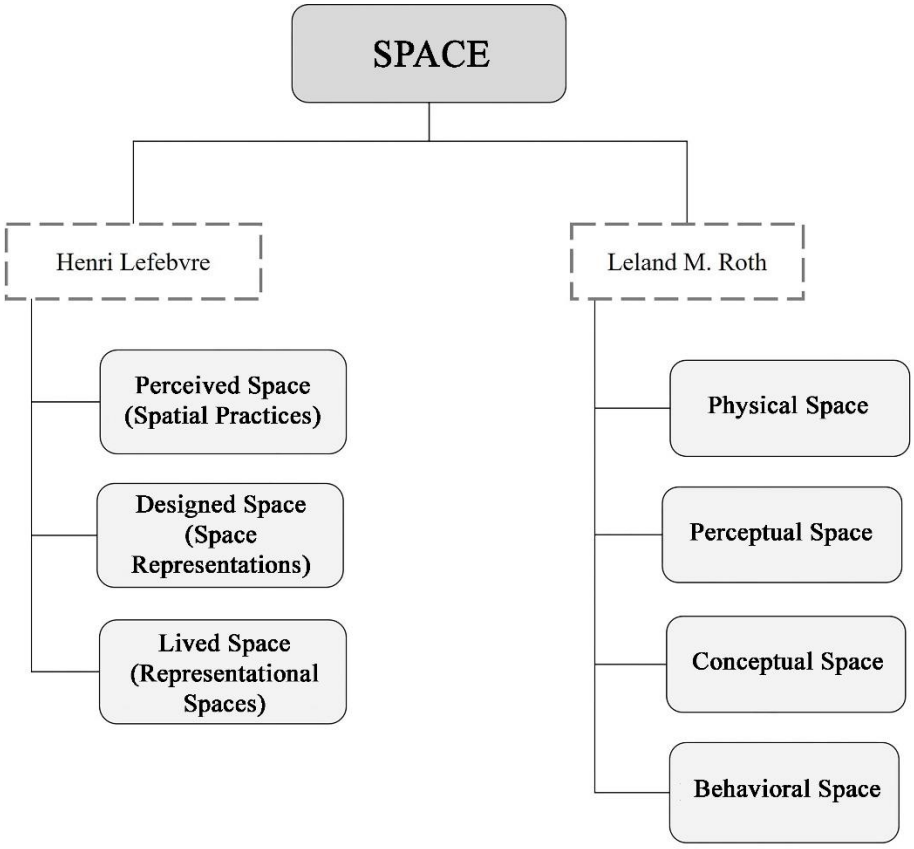

Figure 6: Classifications of space

In literature studies on the concept of space, it is often seen that individuals are important regarding the effect of space on the mind and the place for the memory to be formed. For this reason, the concepts of perception and perception of space were investigated, considering that it is important to know the effects of individuals on the perception of space.

4.1. Concepts of Perception and Perception of Space

Humans must obtain information from the environment they live in to benefit from it, to take shape according to it, and to adapt it to themselves. The interpretation of this information is defined as perception (Norberg-Schulz, 1971, p. 27). By another definition, "perception refers to the process that comes to human beings through the senses, gives harmony and unity to the material and therefore has physical, physiological, neurological, sensory and cognitive components" (Cevizci, 1999, p. 37).

The process of perceiving space occurs in three stages: the sensation stage of the space, the second perception of the space (mental process), and the coding of the space into permanent memory. The sensation stage, which is the first step in the perception of space, is the sensation of physical stimuli, such as color, image, texture, form, sound, light, reflection, and smell experienced by the individual together with the physical elements of the space, events, and contexts within the space. For the individual to experience a sensation, the physical state of the space and the sensory organs of the individual should work simultaneously and in a spiral manner. The perception phase of space starts with the cognitive and mental aspects of the perceptual process. At this stage, different qualities created by the elements of the space interact with the sensory structure of the individual. Individuals perceive the space with the decisions they reach by contextualizing many different stimuli in the space with sensation and filtering them through individual evaluation criteria. The perceived space is stored in the long-term memory and the space is permanently encoded in the memory by reusing it in new situations with processes such as association, matching, and comparison. The storage of a spatial element in the memory is as permanent as the number of contexts that the individual establishes while perceiving the space in the sensory and perceptual process (Öymen Özak, 2008, pp. 75–77).

4.2. Factors Affecting the Perception of Space

The factors affecting the perception of space are grouped as either physical, individual, as social structures, or experiential time dimensions because of the evaluation of existing literature studies. The physical dimension emphasizes the physical characteristics of the perceived space. The individual dimension highlights the individual characteristics of the perceiver. The social structure dimension of the space refers to the social structure resulting

from the individual's socio-cultural differences. The amount of time spent in the space and the explanation of the experience during this period constitute the experiential time dimension (figure 7).

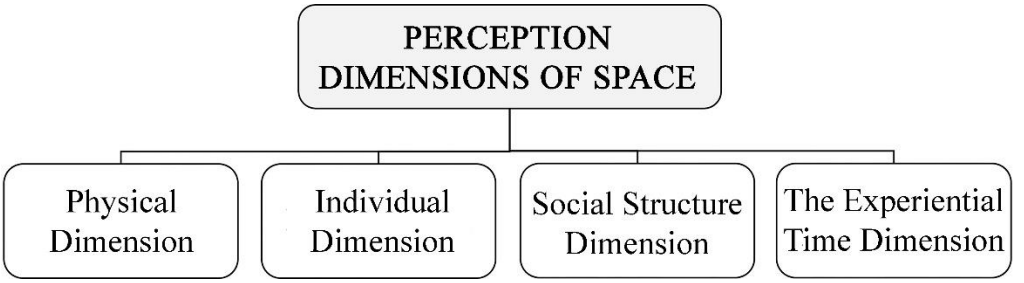

Figure 7: Perception dimensions of space

4.2.1. Physical dimension

The first element that initiates the perceptual process during the perception of space is the physical feature, such as image, texture, form, color, sound, light, reflection, smell, temperature, humidity, and so on, that are present in the space. These features constitute the physical dimension in the perception of space. These physical features of space are perceived by individuals with senses including vision, hearing, smell, touch, taste, and balance. Although the particular focus is on vision in the perception of space, other senses also affect sensations and perception in different ways. Many features such as the acoustics of the space, the smell that occurs as a result of actions in the space or the smell of the materials in the space, surfaces with different textures, and the lighting of the space can all affect the perception of the particular space (Yılmaz, 2017, p. 10).

The joint operation of all senses that can respond to stimuli in the perception of space increases the permanence of the space in memory, thus creating qualified spaces. Mitchell (1990) stated that in the perception of space, four qualities that can be defined for each of the senses, namely quality, intensity, size and duration, and the senses required to sense the physical stimuli in the space, will have an effect on perception (Kahvecioğlu, 1998, p. 56).

The first condition for perceiving a space with all its physical stimuli is the existence of an individual who can perceive that space. For this reason, the existence of the individual and their individual characteristics gain importance in perceiving the space.

4.2.2. Individual dimension

The most important task in the perceptual process of space is undertaken by the individual. Each person forms different perceptual concepts in response to a phenomenon (Cihangiroğlu, 2019, p. 12). Rapoport (1977) focused on variables affecting perception in his studies on environment and behavior. Many characteristics such as the individual's gender, age, personality traits, profession, place of residence, duration of residence, physical environment, sociocultural structure, lifestyle, social relations, educational status, needs, tendencies, past experiences, and value judgments affect the perception of space created in the individual's mind (Mutlu, 2020, p. 11).

The physical stimuli of the space taken into the perceptual process by individuals are loaded with different meanings due to the various evaluations made by each person, causing different spatial perception interpretations to develop and be encoded in memory (Öymen Özak, 2008, p. 76). The definitions used to remember the space recalled from memory are also expressed together with the individual characteristics used by the person remembering during their perception of the space.

4.2.3. Social structure dimension

The social structure dimension that is effective in the perception of space describes the characteristics of the society in which the individual is located, such as architecture, socio-politics, socio-economic status, cultural values, and traditions and customs. The individual carries these characteristics in their being, willingly or unwillingly, therefore different perceptions of space are formed for everyone. In addition, important events that take place in the space and affect the individual or society are also recorded in the memory of each individual with different perceptual characteristics (Öymen Özak, 2008, p. 84).

4.2.4. Experiential time dimension

Along with the unique qualities of the space and the physiological and social characteristics of the individual, experiencing the space causes it to be coded with more data during the perception process, thus increasing its permanence in memory. In addition, the time spent in the space while experiencing it also changes the relationship established with the space. While the individual can perceive and remember only the general characteristics of the space when it is experienced for a short time, increasing the time spent there creates more context for the space, increasing its permanence in memory and making it easier to remember (Sayar Avcıoğlu&Akın, 2017, p. 431). The experience in the space is related to the concepts of

time and movement. The individual's position or movement during the long-term or short-term experience of the space differentiates the spatial perception (Özen, 2006, p. 81).

5. Results

The first study on the concept of memory space was conducted by Nora. In his study, Nora described memory spaces as lost values and emphasized that they should be protected urgently. When the national and international literature on the concept of memory space was examined from Nora's study to the present day, the first studies on the subject began in 2004. In the period from 2004 to 2018, very few studies were published on the subject. In 2019, the interest in the subject increased suddenly and continues to rise. In addition, according to the same review, the studies were mostly conducted in the form of research articles and theses. When the content of the studies was examined, the concept of memory space was not defined clearly and explicitly, which caused researchers to create their own definitions and scopes in the studies they conducted on the subject. The concept of memory space has been addressed in a holistic manner without making any distinctions based on their characteristics, such as tangible and intangible cultural heritage spaces, registered and unregistered spaces and structures, open and closed, and wide and narrow spaces.

When the keywords used in the studies were examined, the concept of memory space was often explained with the words memory and space. This situation has led to a compilation study that addresses the concept of memory space, which is at the forefront with its status, in a broad and detailed manner of the concepts of memory and space.

In the literature on the concept of memory, it is classified according to information processing models and remembering styles. The approach that information is processed in memory just as it is processed in a computer has created the information processing model. Therefore, memory is classified under the serial information processing model (ie, parallel processing model and serial and parallel information processing model) where these two models are combined by differentiating according to the content of the information and the level of consciousness of the information. Another classification about memory is the class of remembering styles that change depending on the quality of the person remembering.

As a result of literature studies on the space and perception of space, it has been determined that there are perceptual dimensions of space, such as physical and urban features, individual features, experiences gained depending on experiential time, mental images from experiences, and social features including the architectural, socio-political, and socio-economic structure of the period lived in and cultural environment forming traditions and customs. Determining this is also important when considering the explanation of the perception dimensions of space, which are lacking in academic literature, and establishing their scope. In

addition, coding, storage, and recalling are realized in the perception of space regardless of the perceptual dimension.

This study draws attention to the problem of the lack of a nationally and internationally accepted definition of the concept of memory space. It is emphasized that to define this gap in the literature, the concepts of memory and space should be examined in detail, internalized, and used in studies. This study is important for all researchers who want to work with the concepts of memory space, memory and space, as it is the shortest path to access literature information on related subjects.

We also report that no study has been conducted on memory space and the triggering elements that form it. At the same time, the perception dimensions of the space, such as physical and urban features (color, image, texture, shape, sound, light, reflection, smell, silhouette, human, commercial, and tourism factors), individual features (place of residence, gender, age, profession, duration of residence, physical environment, socio-cultural structure, lifestyle, and social relations), experiential time features (experiences), and social features (periodic, and cultural values) that are determined as triggering elements in the perception and remembering of the memory space can also be used as triggering elements in the perception and remembering of the memory space, and that they are open to qualitative and quantitative studies. This is an important idea that can pave the way for new developments in future academic and scientific studies.

The subject of memory space and its triggering elements is open to studies in the fields of architecture and urban planning with its physical and urban dimensions; in the fields of sociology and psychology with its individual, social characteristics and experiential time dimensions; and in interdisciplinary fields by addressing one or more of these dimensions.

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