

# Explaining and Formulating Effective Components in Architectural Design of the Therapeutic Environments\*

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## ABSTRACT

Many experts in environmental sciences argue that architecture and spatial capabilities, and medicine play a significant role in the treatment of patients. However, the studies show that healing has not been achieved despite the architecture and spatial capabilities related to medicine. Many consider this issue in the relationship between the indicators of the architectural place and the patients' needs. It is while the issue is related to the lack of plurality of space-time in the therapeutic environment. Thus, the question is what combination of the components establishes a systematic, theoretical, and practical framework that a kind of plurality of space-time in architecture is achieved and the contrast of patient-centered space-time is resolved by the staff-centered one to improve the quality of healing? Hence, the current paper aims to develop influential systematic components in designing the architectural form of therapeutic environments that can be influential in solving spatial conflicts, social interaction, and healing in hospitals. To this end, the research method was focused on the link between the components. The research was applied in terms of purpose, which was conducted by explaining the theoretical content of theoretical and interdisciplinary findings and empirical analysis of hospitals in terms of methodology. Application of the theoretical and experimental results shows that in three aspects of place consisting of time, space, and humane relations, its social relations, and cultural pattern are the concrete content of the space, which was organized through the functional factors. Also, the combination of the managerial, social, perceptual, and physical components in the therapeutic environment leads to the production of the pluralist space-time and improvement of the healing quality in the treatments process.

**Keywords:** Therapeutic Environment, Space-Time, Effective Components, Communication Strategies, Patient.

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## 1. INTRODUCTION

Providing health services has been intertwined with environmental and architectural studies over the past two centuries. In the late 1800s, Nightingale was among the first people who studied the effective environmental elements in accelerating the healing and reducing the mental stress of the patients in the hospital. In this regard, he suggested higher hospital rooms with larger windows and proper natural light. Since the middle of the 1970s, researchers analyzed the relationship between the hospitals, design conditions, and environment planning more (Bagly, 1974; Balahan, 1979; Ulrich, 1980; Reizenstein, 1982; Spencer, 1986; Bensing, 1991; Stewart, 1995; Shariatzadeh, 1998; Hyndron and Pollyk, 2000; Dilani, 2000; Little et al., 2001; Jensen, 2001; Berg, 2005; Willems, 2005; Delnord, 2006; Oberlin, 2008; Alaei, 2008; Ghazali and Abbas, 2010; Timothy, 2016; Terri Petter, 2017; Cifter, 2017; & Chrysikou, 2018). The first architectural steps to help medicine were Elementalist steps and evaluated based on the partial components of the architecture, and this research merely included a part of the physical components of healing. Based on the transdisciplinary approach and using all the related sciences, the current research shows that the best architectural service to medicine is establishing the balance of architectural space-time of the plural social groups in the hospitals, which is resulted by the combination of the effective components in the design of the therapeutic environment. It is socially and professionally necessary and the most important architectural contribution to healing humans. Therefore, the question is which social, managerial, and physical components establish a systematic, theoretical, and practical framework that leads to the pluralist space-time in the architecture to solve the conflict of the patient-centered time-space contrast by staff-orientation and are effective in the facilitation of the social interactions of the individuals in the hospitals and improve the quality of healing? Thus, the current research aims to formulate the influential components in the architectural design of therapeutic environments. The present study is focused on the connection and structure. This research is applied in terms of purpose, which was conducted by explaining and interpreting the theoretical content of the theoretic findings in an interdisciplinary field, including spatial-urban sociology, urban psychology, and strategic management, spatial planning, architecture, and medicine based on the architecture and hospital management, and general health. To this end, the structure of the paper consists of the following sections: A) Theoretical framework of space-time and social relations from scholars' opinions, which begins by primary definitions of the social relations of the patient and health staff, space-time in the therapeutic environment, and treatment place, and continues by analytical discussion; B) Theoretical strategic approaches related to the patient-health

staff relationship and its purpose is to determine the optimal strategy as the ideal type (Weber's theory); C) Explaining a conceptual framework and presenting a conceptual framework of space-time, and human, and we will determine the principal components and aspects of the selected type; and D) Empirical study of hospitals. Conducting this research and selecting the research samples regarding the research on hospitals were performed by coordinating the officials of the health research institute of the Tehrani University of Medical Sciences, especially Dr. Pourreza, who is an expert in health and sociology. Finally, the research population was selected for the brief study from Tehran province, including Imam Khomeini Hospital, Amir Alam, Farabi, Rouzbeh, Atieh, and the hospitals of Gilan Province, including Pars, Razi, Poursina, and Gil Hospital in Rash. Also, four hospitals were selected as main hospitals under study, including Imam Khomeini Hospital and Atieh Hospital in Tehran, and Razi Hospital and Rash Hospital in Rasht. Its space-place comparative model in the hospital environment will be presented in the final step, considering the experimental studies.

## 2. THEORETICAL FRAMEWORK OF SPACE-TIME CONTENT AND SOCIAL RELATIONS

Various categories and subjects form the theoretical and scientific framework of the current research subject. The social relations between patient and health staff, space-time in the architecture and therapeutic environment, the relationship between space, time, and humane relations are among the concepts reflecting the scientific literature of the subject.

### 2.1. Existence of Time and Space in the Architecture

According to the centuries of history of philosophy and human knowledge on space and time, we learned from Aristotle that space and time are two primitive categories, and its subject is epistemology. However, Mulla Sadra (founder of the theoretical foundation of Isfahan School), in Asfar, the eighth step of the four journeys, in the 10th AH, stated that movement, time, and space are the one. They have intrinsic unity and essential movement and are the quiddity aspects of the material being. Therefore, it is not only epistemology but also is ontology. Mulla Sadra writes: Time is a natural quantity that is renewed by its essence from the point of view of its essential priority and posteriority. On the other hand, the mathematical body is susceptible to accepting the triple dimensions (length, width, and height). One of these quantities is gradual and of a temporal nature and can be divided in terms of temporal priority and posteriority in one's imagination while the other takes place all at once in a spatial form and can be divided in terms of spatial priority and posteriority. Simultaneous with the Isfahan school in Iran,

renaissance in Europe changed our perception of existence. The geometry of our epistemological-conceptual structure of the two-dimensional understanding of the world was changed to three-dimensional understanding, especially in the ancient and medieval ages. Such mindfulness would not have been possible without the abandonment of the Ptolemaic cosmology and the acceptance of the Copernican-Galilean cosmology. In the following, Spinoza developed this idea. By linking philosophy to history and time, Hegel validated the dialectical logic of movement in the realm of concept in thought, and Marx researched the application of this logic in real life, emphasizing the inseparability of socio-historical events from their inherent motion in time, reading the ages of looking for the regulations of the moving totality and reality in time showed that the categories of space, time and place can be understood by the dynamics of production methods, ownership, economic relations and social relations and through the socio-cultural model. Thus, we learned that reality is the evolving totality in time and place and dialectic is the logic for understanding it. Then, we realized that the time-space, as Minorsky states, is an unbreakable four-dimensional continuity, which is not separated from its essential objects and is related to epistemology, ontology, and logic. Indeed, we believed that Lobachevsky's non-Euclidean geometry, Critique of Newtonian world theory, Enlightenment philosophy, development of physical and experimental knowledge and social, political, and economic revolutions, especially the industrial revolution greatly affected the geometry of the human epistemological structure without which neither Hegel nor another one could take such a step. The twentieth century was modern, the world's introduction to Einstein's relativity equation in 1905-1904, the progress in the social and empirical sciences and the influence of the artists of visual arts, performance, and music, and the great literature of that time have constantly changed the humans' perception of the world, existence, space, and time. However, was it enough? Did accepting time as the fourth dimension and its priority over space and place solve everything? The answer was no. Within the perception of the evolving four-dimensional reality, the twentieth century experienced the generation of various movements that challenged modern perception and showed that the world is not obligated to be subject to the modern imagination. The first movement was the development of the non-Euclidian geometries of the world, especially fractal, Julia Set, Mandelbrot Bud, and Lorenz Curve in prediction. The second was Heisenberg's uncertainty principle, the emergence of the complex system theory complexity of which was not in dimensions, scale, and the number of the elements but in its inherent complexity and chaotic behavior of that system. The third movement was Lotfizadeh's great discovery in Fuzzy logic, and the fourth was the development of the quantum physics

theory, forming the pluralistic imagination of time and space. Stephen Hawking, in his unprecedented book, *History of Time*, states: Time does not need to follow the concept of chronological pattern. Time can adapt to non-directional states, which is known as quantum theory (Hawking, 1988). Although in the early twentieth century, in terms of speed, Einstein paid attention to the curvature of time, space, and its shortness and length at two temporal speeds in different spaces. The sixth decade of the twentieth century showed that the affairs and realities faced by the architect and urban planner follow the quantum theory of time and have a complex system of fractal and logical fuzzy geometries. However, something was not solved regarding time and space and remained unresolved until the early 1960s, which was the precedence of time or space over another that was a great challenge. Solving this challenge was raised not through experimental sciences but sociology. David Harvey explains two groups of theories regarding space and time that are as follows: social theories and aesthetics theories. Social theories consider time superior the space by referring to Hegel and Marx, dialectic, and in their formulation as they prefer history on geography. They consider pre-existing spatial order as a context in which the historical-temporal processes take place. Aesthetics theories profoundly spatialize time and look for regulations representing the immortal and unchangeable concretes within the flow of currents and change. Any system, such as architecture, is a type of specialization, which spontaneously freezes the flow of experiences through which changes what it tries to express (Harvey, 1990). Therefore, there is a tension between the beautiful physical space and historical-social space in the architectural form; a tension between the built-space, as an aesthetical object, and built-space as a social product; it is the tension between the dynamic space of the real-life and static space of the two-dimensional drawings of the architectural and landscape works, and the tension between the architecture space (not as a fixed and static building) and landscape (constantly developing and growing). All of these tensions are representations of the tension between space and time. David Harvey, in his book titled *Social Justice and the City*, adds geography to Marx's historical materialism, i.e., establishing the attachment of space to time, existence. This teaching and knowledge of the cosmology of the 1960s to the present day has made architecture more complex; the object of architecture is constantly changing in simultaneous and parallel times in a spatial plurality based on the groups with different cultural patterns. Therefore, the architectural form is not possible regardless of the evolution process of space and time in the context of the social and economic trends of the producing and reproducing groups. Considering the space as a social product, we can include the fourth dimension, i.e., pluralist time and pluralist space, in our spatial perception; because it is possible to apply the

space-time concept in the social relations, and such a stimulus to the social-space relations provides the ground for the lived experience in the space and makes it eternal through collective memory. Accordingly, perceiving time and space, its diachrony and synchrony parallelism form in a set of intertwined processes of psychosomatics based on the collective-historical memory and through the social-cultural mediations. There is never a single complete conceptual schema and experiencing the space-time for the humans are formed and distanced based on the social groups and their cultural mediations. The architect is responsible to understand this complexity and solve the conflicts. Therefore, the designer architect must know that there is no motionless reality in time and space, and the form of the architectural work depends on the mental schema at the production level mental construct of which is a cultural-social process that is distinct in the various social groups and requires different time-space. The architect knows that architectural form requires flexibility, diversity, adaptation, and variability in line with today's multidimensional cosmology so that "being in time, a degree of freedom, and fluidity" becomes possible in the design.

## 2.2. Social Relations between Patient and Healthcare Staff

Social relations between the patient and healthcare staff in the hospital environment can affect health in three ways: behavioral mechanisms, physiological and mental mechanisms, ideal social relationships. It is a relationship in which the healthcare staff feels sincerity, honesty, positive and unconditional attention to the effectiveness of the patient's treatment. This relationship can be a principal and constructive key of the patient-centered therapeutic environment (Weston, 1995). Accordingly, we found out that there is an effective possibility for the emergence of the different interpretations, from being in line with the space and time, its diachrony, synchrony, and parallelism to everything, as well as architecture, that must be applied. Today's architects cannot create a work merely based on aesthetical or functional principles. He must use a set of intertwined processes of psychosomatics based on the historical-collective memories to give meaning to work. Today's architecture knows that the buildings are influential in the formation of the historical memory and its temporal continuation. Also, time has a particular effect on the formation of the historical-collective memory. He knows that the experience and mental schema are formed by time, as Vygotsky (1978) and Wertsche's theory (2002) state, through the social-cultural mediations.

## 2.3. Space-Time in the Therapeutic Environment

Today's architecture is a totality of the moving reality

in the multiple spaces of the content of space of the hospitals-relations, and events, which is manifested in the contrasts and multiple spatial changes based on the perception of diachrony, synchronicity, and parallel times of the patient, nurse staff and physicians. Here, perception of space-time in the hospital architecture is based on the introduction with the epistemological geometry of the social groups, which is based on cosmology. Space is not a content or a ground for events, actions, life processes but is relationships and interactions, various and pluralist actions and processes, forming the ever-changing (being) space. The formation of the space does not require its freezing and motionlessness in time, but "relationships", "movement, and permanent "change" lead to the formation of the space. The absolute and abstract space can only be imagined independent of time. Time cannot be divided or separated, and the possibility of existing a pause in time in a section of time is an abstract image, which can be imagined independent of time. The static sections in time cannot lead to being even though they are infinitely pluralistic (Massey, 2005). For instance, space is discovered during the time from the lobby of the hospital to the emergency room; for example, flowers in the path or talking with the companions or other hospitalized people, etc., define numerous spaces for the individual. According to what was stated, time is a concept by the passing of which one can perceive the depth of the architecture.

## 2.4. Treatment Place

The place is a formed space that manifests its function and meaning within the enclosed physical boundaries (Castells, 1999). Place extends in the space and cannot be considered a fixed and static concept. The totality of the world and what is related to the place are constantly changing even though it might seem static (Massey, 2005). The place is created when the human has a relationship with other layers of themselves. These layers in the treatment space can be manifested and represented by the common activities of other peers regarding being in nature or the corner of the built environment, and thus, the human becomes familiar with other layers of their being existing in the external world, resulting in the increased knowledge of the environment and themselves. However, first of all, what socially activates these places is the physical factors to provide entering and then pausing of the individuals within the space. In this regard, the factors, such as accesses, visual attractions, natural factors, etc., can be mentioned. Nevertheless, the prediction and creation of the social events are more effective than the physical aspects in the presence and social interaction, providing improvement of the sense of belonging to the place while creating the participation opportunities in the social activities (Lennard & Lennard, 1984).

## 2.5. Inferential and Combined Analysis of Scholars' Opinions on the Relation of Space, Time, and Human Relations

The relationship between space, time, and humane relations is the subject of broad studies. It can be considered in two ways; one in the post-colonial studies and another one in the urban modernity studies (Giedion, 1971). Many prominent figures have tried to analyze and clarify the critical and somehow tragic aspects through which we are experiencing the space, time, and daily life nowadays, such as Eric Hobsbawm, Fernand Braudel (and generally their school), Peter L. Berger (and Cultural History School, in general), Michel Foucault, Pierre Bourdieu, Jean Baudrillard, Jacques Derrida, Talal Asad Eric Wolf, Judith Butler, Edward Said, David Harvey, Marc Auge, etc. Meanwhile, Edward T. Hall and his extraordinary book, *Hidden Dimension*, are indisputable. Following the theories of Foucault, Bourdieu, and Lefebvre, a group called post-modernism thoughts analyzed the spatial situations of the advanced modernity based on the critical theory approach, and they warned about their potential and actual risks. Meanwhile, Marc Auge's theories in the non-places theory emphasized the disidentification capabilities of the new places and the spaces created without any identity and for merely capitalist profiteering purposes. Considering the differences and similarities of the architecture and urban planning in the susceptibility of the physician-centered space to the economic system of the society, which has been raised during the interviews and both of them are perceptual spaces, theorists, such as Saskia Sassen, in urban planning explains that how the domination of the economic profiteering on the urban human leads the cities towards a kind of chaos and anonymity. In "Right to The city" theory, David Harvey knows citizenship as a right rather than a duty that can be defined well through space. The concept of space extends from the body, as an individual, personal, and private space to the city, country, and state. In particular, the relationship between space and human relations and the spatial use of human beings for domination everywhere is a matter of one thing: can the personal or group interests of the minority justify the domination on the absolute majority of society, nature, and the environment under any pretext? In contrast, we must first consider the privilege of the public interest on personal interest, and then redefine the policy of "right to the city". It is a right that eventually is the right to lifestyle, daily life, and body. For Marx, space and time are both the tool and production force under the capitalist government. The dual features of the space are a product and also a production tool. Its abstract form is important as a commodity, which increasingly will have a fetish feature. The ownership and control of space is an important factor in the organization and continuation of capitalism. Alienation is not anything but the separation of the person from the

nature of their job (Ebrahimi, 2009). The relationship between humans, space, and time has been deepened again by Foucault and his ideas on the power applied in analyzing the space of hospitals, asylums, and universities. For him, the space is a metaphor for the position or the content of the power, which prevents freedom, except for some cases. Foucault states that a space in which we live and go beyond ourselves is where time erosion occurs. Foucault believed that the anxieties and stresses of the current life are associated with the space in which we are. As he describes well: the space was considered dead, immobile, motionless, and non-dialectic. In contrast, time is considered enriched, productive, vital, and dialectic (Foucault, 1980). Medical surveillance is what attracts Foucault in the medical world, i.e., dominating humans by medical surveillance. By stepping into all areas of human life, the medical world considers itself authorized to monitor those areas and tries to practice its power and influence in them. Doctors exercise power everywhere and write prescriptions on anything, which has anything to do with humans or their bodies (Foucault, 2012). For Bourdieu, ordinary actions and representations are determined by a dialectic link between the body and the organized structure of space and time (Bourdieu & Wacquant, 1999). Hannah Arendt believes that those who have the art of establishing relationships must be free to develop the space. Space should not be the monopoly of discourse or even a discourse of public will because there is a risk that groups will introduce their members as the spokesperson of the public will and seize power and subjugate society (Beiner, Arendt, Cavell, Lomore, O'Neill, Kateb, & Bilski, 2001). According to Habermas, a dialogue that leads to the public will and opinion must be achieved in the ideal state of dialogue, and there should be no power relationship between the two parties of the dialogue (Habermas, 1984). According to the fact that social relations, spatial and temporal actions are the focus of this research, it is possible to consider strategies of the social relations in the therapeutic environment in a more dynamic framework and the capitalist system categories; because it is evident that space and time cannot be perceived independent from the social action system.

## 3. STRATEGIC THEORETICAL APPROACHES ON THE HEALTHCARE STAFF-PATIENT RELATIONSHIP

Considering the conducted studies and using the planning theory and developing it in the architecture, various models were proposed to theorize the relationship between the physician, patient, and nurse.

### 3.1. Introducing Strategic Approaches

Four strategies were classified as presented in Table 1.

**Table 1. Proposed Architectural Strategies**

Four Strategies of Architecture		
Post-modern Era (Post-industry)	The Beginning of the Industry (Overcoming Liberalism and Modernism)	Centralization-decentralization
Democratic (Decentralization) Democracy	Centralization (Centrality)	Rational/ Erational
Space-time Strategy of Pluralism - Patients' Comfort	Space-time Domination Strategy, Physician and Healthcare Staff - center-oriented, Physician-oriented, Reason-oriented	Absolute Modern Space-time (Rational) -Instrumental Rationality - Bureaucracy
Space-time Domination Strategy, Domination of Patient on the Physician and Healthcare Staff -Bottom-up Democracy -From Patient to the Physician and Officials	Sectional time-space strategy -Partial, discontinuous, subject to the centralism - Controlling the physician periodically	Relative Space-time Erational -Weakness in Bureaucracy and Domination - Weakness in Intellectual Comprehensiveness at All Levels - Relativism, Corrective Action

**3.2. Discussion and Argument of the Above Four Strategies**

The above four strategies were analyzed and discussed based on the research literature.

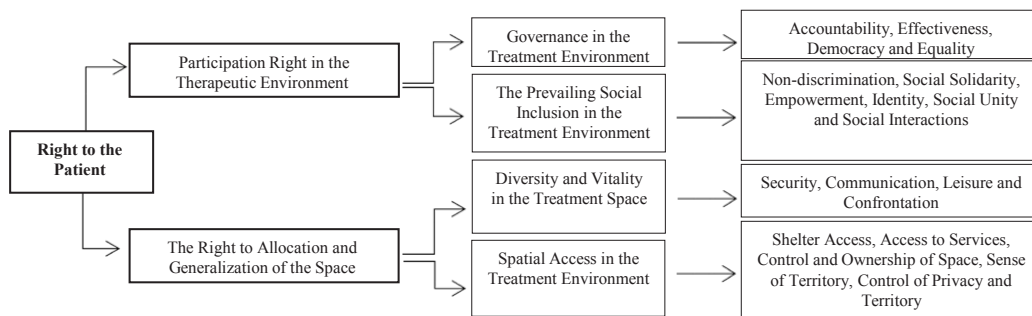
**3.2.1. Space-Time Domination Strategy of the Physician and Healthcare Staff**

According to the brief studies, a broad range of architects believes in a type of absolute modern space-time strategy in the patient-medical staff relationship. The strategy of the physician and staff dominating the patient has an objectified perspective on the patient, and dominating space is the main and inclusive source of the social power of the physician and the health staff in daily life. David Harvey considers the reason for the dominating space and time the critical element in any action for earning profit (Harvey, 2016). In this strategy, there is a clear distinction between professional, knowledgeable, and skillful individuals and ordinary people. The patient and his needs form the basis of the medical profession. The patient is passive and receiver in this strategy. It is assumed that the patients cannot perceive the required information for decision-making on the health cares related to their bodies (Asemani, 2012), and the physician plays the fundamental role and makes the final decision. Graham and Oakley (1981) state the encounters of the healthcare staff with the patient clearly as follows: I am the doctor, I know better (Graham & Oakley, 1981). Foucault also

discussed the unique concentration on the organized oppressing spaces (hospitals and other social control institutes) in detail. Harvey knows the capital relations as the reason for the dominating social relations of the healthcare staff in the therapeutic environment in which the patient will not have the right to choose and control the environment. Due to these circumstances, the space and power are integrated. It is how the space will become a packed and tradable commodity (Harvey, 2016).

**3.2.2. Space-Time Strategy of Pluralism**

According to Harvey, the right to the city is purposive not monopolized, and includes those who help the regeneration of daily life (Harvey, 2012). Therefore, the pluralist strategy seeks a solution in the social relations between the patient and healthcare staff in which the patient's right is highlighted. Social relations in the hospitals reflect the existing relationship in society. For Lefebvre, the more participation, occupation, and allocation of the space in the public spaces, the simpler the right to the patient will be realized (Lefebvre, 1991). Indeed, the right to the patient is considered a right to all the residents and includes the right to space occupation, and participation right (This group's motto is the hospital is for everyone, including the physicians, not only for the economic interest. The right to the patient includes two rights to the participation, allocation, and generalization of the space.



**Fig. 1. Conceptual Model; the Connection between the Categories of the Right to the Patient Notion**

In this model, the physician makes the patient's situation comprehensible for the patient, gives him hope, and offers the best way by facilitating the space-time production for the patient. The patient's autonomy is preserved in terms of moral self-improvement.

### 3.2.3. Neoliberal Monopolized Space-Time Strategy

This strategy is the result of the modern space-time continuation in a more complicated, flexible yet curlier form in the post-modern era, and is taken from the center of neoliberalism and is more practical for domination. In this strategy, money is the main mechanism of participation without any personal commitment. The space is introduced as a universal, objective, and homogenous matter in most monopolized social actions. However, space is traded as a commodity. According to Simmel, money is the basis of the exclusive strategy of space. There are direct and entirely specific written contracts that exclusively provide the physician's control. The power imbalance between the two parties of the contract is a constant threat; because the physician has more knowledge and experience. The patient-physician relationship in the exclusive space-time strategy emphasizes the commitments and requirements of the parties. Two parties are considered traders who want to benefit from each other. Here, providing medical services is not the patient's demand. The client's role is not an absolute passivity; he buys the physician's knowledge and advice and then, determines his next shop using

this commodity (Asemani, 2012). It occurs through the patient's encounter with the secretaries of very crowded offices in which the patient's aggravation is disregarded in long appointments. The only criterion to visit the physician is to make an appointment. Here, dominating space is considered useful, flexible yet cruel, natural yet humane through complicated ways.

### 3.2.4. Space-Time Domination Strategy of the Patient over the Physician and Staff

The last two decades show the fundamental changes in the patient-physician relationship. The centrality of many medical decisions has been the patient's demands and his values. In this strategy, the physician considers the patient as a human more important than him and pays attention to his perceptions, beliefs, and concerns in addition to his clinical diagnosis. In this strategy, the physician provides all the related information based on which involves the patient in treatment according to the best adaptation with his values. Then, the physician corrects the selected intervention and performs it. Indeed, the physicians consider themselves the servants of the science and the patient in this model. There is an entirely clear difference between the realities and values in this model. The patients' values are well recognized, and what the patient does not have are the clinical facts that will also be informed about them. These are the facts stating which is the physician's responsibility and obligations. In this strategy, the physician provides the specialized techniques and means through which the patient can control his body.

Table 2. Evaluation of the Strategic Theoretical Approaches to the Patient-Healthcare Staff Relationship

Row	Communication Strategies	Studied Components	Legitimacy	Participation	Recognizing Patient's Values/ Patient's Satisfaction	Physician's Role	Type of Relationship	Patient's Autonomy	The Most Distinctive Strength	The Most Distinctive Weaknesses
1	Space-time domination strategy of the physician and healthcare staff	Physician's power, the official science of the medical system, the dominant values in the medical society	NA	It is not recognized, lack of relationship with the patient's values, beliefs, emotions	Full caregiver of the patient in medical affairs	Physician-centered	The patient has no power to make decisions.	Ensuring the patient of receiving the best possible treatment	Not giving priority to the patient's rights or wishes in case of conflict with the defined norm	
2	Pluralism space-time strategy	Patient-physician interaction by emphasizing the dominant values in the medical society	Yes	It is recognized	Consultant	Patient-centered in line with physician's surveillance	The patient's autonomy is strong. In the end, the patient understands the final path and makes the decision.	Paying attention to the influential values on the patient's health, recognizing the physician	Patient's mistake in decision making	

Row	Communication Strategies	Studied Components	Legitimacy	Participation	Recognizing Patient's Values/ Patient's Satisfaction	Physician's Role	Type of Relationship	Patient's Autonomy	The Most Distinctive Strength	The Most Distinctive Weaknesses
3	Sectional space-time strategy		Disregarding the medical values	Participation in line with business, not treatment	It is recognized or will be recognized gradually.	Partial, discontinuous, periodical	Commodity-centered	The patient's autonomy seems good but it is weak in practice.	Benefiting the parties of the contract in case of any control or surveillance; the price is appropriate to the quality.	The relationship does not have a humane orientation. Passive patient-physician relationship.
4	Space-time domination strategy of the patient over the health staff and physician		The individual power of the patient according to the specialized information of the medical council	NA	It is recognized.	Provides specialized information.	Patient-centered.	It is strong. The patient has power over the medical decisions.	Considering patient's values. Not recognizing the physician.	Patient's mistake in decisions making, passive physician, paying extreme attention to patient's autonomy.

#### 4. EXPLAINING THE CONCEPTUAL FRAMEWORK; PRESENTING THE CONCEPTUAL MODEL OF SPACE-TIME, PLACE, AND TODAY'S HUMANE RELATIONSHIPS

The place has been modeled in a three-faceted form in the current study. Given Rapaport's opinions on the environment formed by the space, time, meaning, and communications, and other scholars' opinions in the social sciences and architecture on the temporal-spatial and social nature of the place, space, time and human form three axes of the proposed model of the place. In addition to the axes, their link is also significant in the proposed model.

##### 4.1. Determining the Strategy of the Social Relations

According to the facts and conducted studies, most of the health centers of Iran are administrated based on the space-time domination strategy of the physician and health care staff, centralization, reason-oriented (instrumental rationality), physician-oriented, disregarding the human sprites and establishment of the human relationship, the lack of the discourse spaces and advocacy planning beyond the executive measures, with an elemental and commodity-oriented perspective on the patient. On the other hand, architecture affects the patients' relations and interactions with the built

environment and natural environment as a spatial system, and the patients' interactions and collective relations affect the interaction between the architecture and environment. Thus, given the above mentioned, it seems there is a conflict between centralism and the establishment of the democratic feature in the hospital environment. If we know the architectural design as knowledge and art of solving the conflicts, thus, its solution can be found in the design of the components of the place in which the conflict between the place and centralism time-space (physician and healthcare staff) can be resolved by the space-time democratic factors of the right to the patient. Solving this conflict is the antagonist and necessarily pluralist, and can be achieved through a plurality of space-time and the interaction between all the individuals and meeting the expectations, not any other strategy.

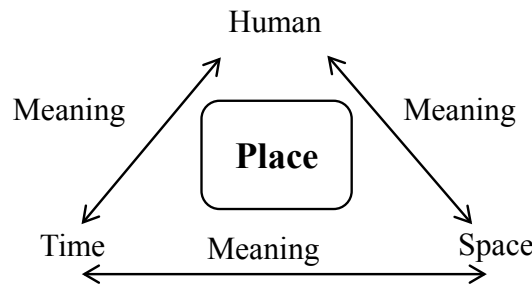
##### 4.2. Agree with David Seamon

The place is an environment, in which the experiences, actions, and humane meanings are formed spatially and temporal (Seamon & Gill, 2016). Also, according to Rapaport on the formation of the environment from space-time, meaning, and communication, the architectural principles of the hospital place, a model with three components of space, time, and human activity and their interactions and dynamics are developed based on cultural patterns. In the attempt to dominate time, the human forms events, meanings, memories, etc., and in the attempt to dominate the



infinity of space, he defines and encloses physical forms, shaping the space. Also, space and time are defined in a continuous relationship. Thus, based on the relationship between three vertices and their

connections in the context of culture and memory, the place is formed, and its meaning is understood. Figure 2 shows a conceptual model.



**Fig. 2. Conceptual Model of the Triple Relationship to Solve the Conflict between Centralism and Democracy in Designing the Place**

Among the components of the meaning, there is a shared space between three principles, continuity,

distinction, and relationship, presented in the model of the place.

**Table 3. Explaining the Generic Conceptual Framework of Space-Time, Contemporary Human**

Relationships and Position	Aspects	Indicators of Continuous Meanings
Relationships and Position	Space	The difference in the physical elements and structure, the difference in the natural elements of the place The flexibility of the space Functional and activity distinction*
	Time	The sequence of the activities
	Human	Predicted interactive relations, unpredicted interactive relations, and collective behaviors
	Human-place	Daily activities and presence in the therapeutic place Diversity, attraction, and functional vitality in the therapeutic place The content richness of the activities in the therapeutic place Accepting the presence in the place
	Human-time	Memorability of the place with memory* Frequency of the event or activity
	Space-time	Preservation of the physique and function of the context* Respecting previous structures Physical occurrence of the events* Temporal durability or being historical*

\*(Adopted from (Ali Alalhesabi, Charbgoon, & Rezazadeh, 2017))

## 5. RESEARCH METHOD

The current study was linkography-structural research based on the considered aspects in the case study, and not only analyzes but also emphasizes the analysis of the synthesis of the components and concepts. Therefore, the research method was systematic and structural focusing on the functional aspects. The present research was applied in terms of purpose and was based on the adaptation of the theoretical content of the theoretical findings to the interdisciplinary area of the experimental analysis of the hospitals. The information was collected using library and documentary studies and taking notes from the valid

papers and books in the first step. Then, the qualitative combined method (studying particular opinions) and quantitative mapping (a questionnaire based on the results of the qualitative step) were used to collect the required data, considering the qualitative and quantitative types of data. The research analysis was systematic-structural and functional. It is noteworthy that the selected hospitals were first briefly identified to calibrate the generic framework (Table 3) for the domestic hospitals (the selected hospitals were chosen among the various hospitals of Iran using field observations, documents information of the research center of Shahid Beheshti University of Medical Sciences and the professors' opinions in this institute).

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The result of this generic adaptation in the particular conditions was the principles that were presented in the following. Therefore, the case studies were first introduced and identified in the following, and then, the comparative principles were compiled. These principles are the main key to the relationship between the generic model particular adaptive models.

## 6. IDENTIFYING SAMPLES AND EMPIRICAL FINDINGS

Investigating the status quo of the hospitals under study shows that:

**Razi Hospital:** Non-observance of standard distance in the arrangement of patients' beds, limited facilities, and equipment, patients waiting in the triage ward for a visit, determination of the hospital's physical parts, overcrowding of patients, lack of environment for social interaction, the proximity of the decentralized nurses station to patients' rooms, scattered buildings on the main site.

**Imam Khomeini Hospital:** Long-distance to reach the main part of the hospital, no direct connection between the clinic and radiology, laboratory and emergency wards, lack of separate waiting area for each ward, lack of adequate light and proper view of the hospital site, lack of inviting interior space, overcrowding of patients.

**Atieh Hospital:** locating the hospital in a site with mechanical and physical noise, the lack of space for physical mobility (walking space for the staff and patients), lack of designing the green space, inappropriate visual view, Lack of legibility of paths and spaces in the floors, lack of proper ventilation in the spaces, especially the three lower levels, lack of production of space-time for the patient, such as: looking, sitting in (sun or shadow, etc.), lack of behavioral diversity, inability to control and monitor the environment.

**Pars Hospital:** Volumetric design of the building with suspended slopes suitable for the climate, the use of the universal atrium as a different concept, air circulation, use of the sun, natural comfort, patient social support, lack of service to all classes of society economically, the pleasure of the experience, proper orientation of spaces.

According to the final analysis of the status quo of the hospitals under study, although the organization purpose of the hospitals of Iran is the treatment of the patients in the shortest possible time using the best facilities, "treatment" in the hospital associates the concept of the production of "treatment industry". Industrial line production is a method of modern production organized to gain the maximum profit and minimum cost, and the hospitals of Iran are no exception. If so, a hospital, like any industrial repairment line, generates alienation. The alienation of the medical staff leads to the alienation from the treatment as a product and objectification of the patient. Thus, the patient is assumed as the absolute

subject to the healer and the medical staff.

## 7. COMPARATIVE PRINCIPLES OF THE IDEAL TYPE OF THE COMPONENTS IN THE PLACE PRODUCTION IN PARTICULAR CONDITIONS

According to the comparison of the general theoretical studies and empirical findings, the following principles are determined:

### 7.1. Values

Observing family values, security and mental safety of the patient, individual and inclusive care of the patient, increasing patient's social support, privacy and private environment of the patient, patient's experience to control their affairs, providing private rooms for the accompany with sleeping place for the family, respecting values, beliefs, religion, and culture of the families, observing patients' roles and their families in the treatment group, the patient is not an isolated object but is a member of a family, society, and culture. Having access to the efficient system of addressing the patient's complaint, educating families to take care of their patient, not lying to the patient, breaking the silence and giving information, and establishing a two-way relationship with the patient.

### 7.2. Patient's Rights

Patients have the right to have honest and free communication in a warm and supportive environment. Accepting patients as informed, responsible, and free people to choose their lifestyle and health. The patient has the right to know about their sickness; the patient's right to freely choose and decide must be respected. Receiving desirable health services is the patient's right.

### 7.3. Prudent Responsibility of Physicians

Establishing a good relationship with the patient through recognizing social, mental, and physical problems, considering their behavior and words and avoiding disappointing and inappropriate behaviors, not feeling weak when dealing with patients with refractory disease and creating hope in the patient, using non-verbal communications (emotional, eye contact, affectional, etc.), recognizing the patient's preparation for establishing a relationship with the physician, paying attention to the patient's tendency to deny, giving the family members the participation power in caring their patient, collaborating with the patient's family in a way that benefits the patient, supporting the patient and his or her family by meeting their social and emotional needs.

### 7.4. Architectural Responsibility

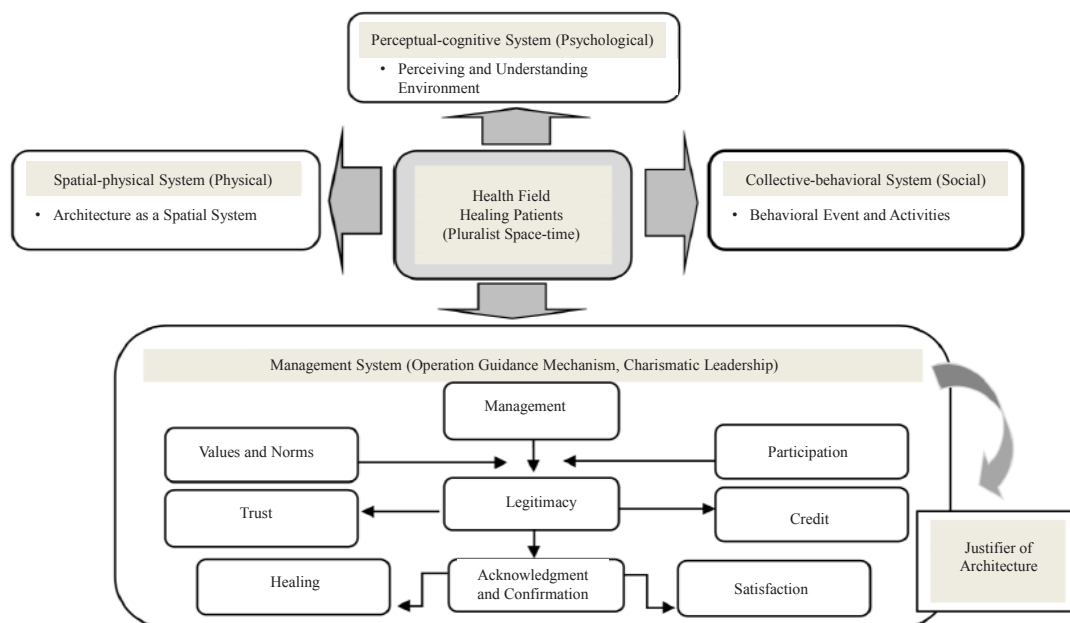
Creating a positive and functional environment, providing an environment for gathering and social

interaction, a design with the capability to be changed and developed in the future, the maximum standardization, reducing the inspiration and complexity of the space and confusion and losing the path in the therapeutic environment, providing adequate and proper light, using color in the glass surfaces in the interior façade, using a corridor space between different wards and creating pleasant interior space, such as: park, using durable and satisfactory materials and products to control the noise, proper arrangement of the furniture and creating pleasant spaces, providing proper food for the patients, providing proper conditions for patient's sleep and rest, reducing the patients' stress, providing a space for physical mobility (walkability for the patients and staff), preparing a space away from the physical and mechanical noise, the proximity of the decentralized

nurses station to the patients' room, designing separate corridors for the patients and people, providing library services, access to the internet for the patients and their families, providing a safe and secure environment for exchanging information.

## 8. THE ADAPTIVE CONCEPTUAL FRAMEWORK FOR APPLIED STUDIES IN HOSPITALS

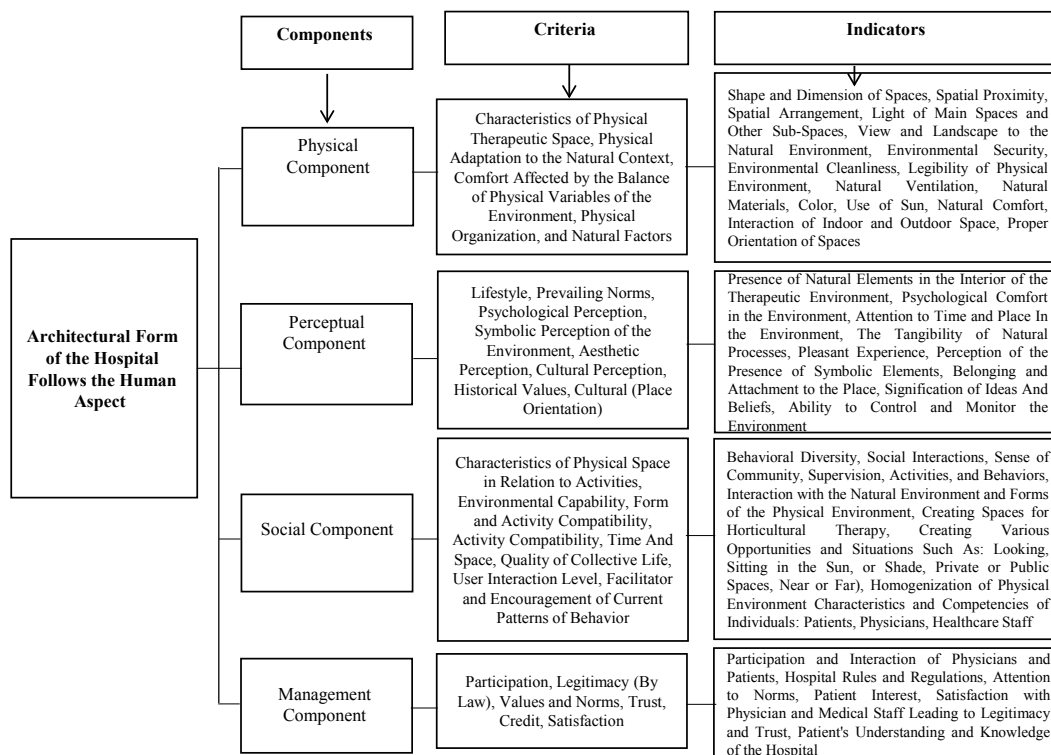
The adaptive framework focuses on the four main systems that interact with each other (Fig. 3) and affects the functional systems. This framework is the development of the theories in the particular conditions of Iran and a measurement tool of the concepts, components, and variables affecting the design of the therapeutic environments.



**Fig. 3. An Adaptive Mechanism for Conceptual Development and Measurement of the Concepts in the Therapeutic Environment**

According to this analytical mechanism, the function of the health field is affected by the four systems: physical-spatial, collective-behavioral, perceptual-cognitive, and managerial. Therefore, the four systems and the function system of the health organization and its components play a significant role in creating the space-time of the groups introduced in Figure 4. According to Figure 4, the architectural form of the therapeutic spaces follows the human aspect. According to this framework, human interaction with the therapeutic built environment is affected by intertwined factors. The components of the place, systems of activity,

events, and social norms of life affect each other, and their interaction forms the human-therapeutic built environment interaction. Thus, the architectural principles of the physical form will create a place to the spatial plurality and considering the components of the system in which the plurality of space is perceived.



**Fig. 4. The Practical Principles Used in Designing Therapeutic Spaces (Influential Components in Designing Therapeutic Environment)**

## 9. COMPILING EXECUTIVE METHOD OF APPLYING THE ADAPTIVE MODEL IN THE ARCHITECTURAL DESIGN

Considering the research purpose, which was met in the table above, it is expected to profoundly compile the implementation method of the adaptive model in the empirical research in other cases too to show the practicality of the adaptive model application in the circumstances of Iran's health system.

The executive steps in the research are presented in detail as follows:

- The detailed collection of required data, in special circumstances.
- Given the qualitative and quantitative data, the mixed qualitative and quantitative methods are also used in practice.
- The selected statistical population must include architects, sociologists, physicians, and patients. The validity of the sampling method is in line with the direct expert observations and the evidence of the health system institutes.
- The sampling method was a purposive non-random sampling method. Then, the first questionnaire was used among the physicians to screen the variables, and its results were distributed among the patients and healthcare staff in the second questionnaire. The findings were analyzed descriptively.
- The data can be analyzed using pairwise comparisons, Structural Equation Modeling, Fuzzy Delphi method, a mixture of Factor analysis, and Analytic Network

Process. Hence, the relative importance of each criterion and the considered sub-criteria will be determined. Therefore, the required experimental basis is provided for developing the policies of the architectural design of the hospital by applying the model purposively in the selected hospital and determining the relative priority of each criterion and considered sub-criteria.

## 10. CONCLUSION

The current research was presented to determine the components effective in the system of the plurality of space in the hospital environment to answer the following question: which components create a systematic, theoretical and practical framework that achieves a kind of plurality of space-time in architecture to resolve the patient-centered space-time conflict with the staff-centered space-time and improve the quality of healing?

- The study showed that four components, managerial, collective-behavioral, perceptual-cognitive, and physical-spatial, in a systematic, theoretical, and organic form based on the pluralist approach to the rights of the groups of patients, staff, and physicians play a significant role in creating the space-time system and spatial form of the environment of the hospital.
- Explaining these components is associated with an analysis of the social and power relations. However, the pluralist strategy socially requires the fundamental changes of the society's relations from utilitarian and money-orientation in the hospital environment

to the humane environment. The current conditions of the hospital environment are far from the desired conditions. However, based on the research findings, selecting pluralism strategy as the superior strategy to create a suitable balance between the physicians and patient, as the users of the therapeutic environment, is the only strategy. Accordingly, the initial concern of the current research was the right to the patient. Therefore, the most significant and fundamental part is the right to the patient is to achieve a plurality of space-time in the architecture and governance in the space, social inclusion, diversity, and vitality in the space considering the physicians, patients, and nurses in the therapeutic environment.

- Also, the study showed that in triple aspects of the place, including time, space, and humane relations, the social relations and their cultural pattern are the concrete contain the space, which is organized and becomes meaningful through functional factors. The result of the analysis in the more detailed level showed that the relationship between the human and space, as the components of space, is more emphasized, and nowadays, there is no choice but to follow this motto: "Form Follow Human Aspect". The human-space relations include the various combined components in which four components, physical, perceptual,

social, and managerial, have the maximum semantic implications.

- The results of analyses also confirmed this expectation that the relationships between the components of the place phenomenon interactively play a role in the continuation and human relations.

- Finally, there is a significant relationship between the spatial organization of the environment and the activity systems, affecting the perception. The activity systems can be weakened or strengthened by the arrangement of the physical space and physical organization of the environment. The form of spaces has a direct relationship with the adjustment of activity systems in the space and users' perception in the activity spaces. The current values and norms based on lifestyle and communication strategies also affect the perceptual, behavioral, and activity systems in the space. On the other hand, the efficiency of the spatial systems is influenced by the consideration of the values and norms of life. Indeed, the role of architecture and building as the solution to the space-time conflict of the different groups with each other is not an ultimate purpose, but the healing and health of the human are the final purposes.

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