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## A Probe into Alternative Futures of "Home" Respecting Covid-19 Outbreak Based on Causal Layered Analysis (CLA)

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### Abstract

The emergence of Covid-19 has extensively changed people's lifestyle. Returning to house/home was deemed to be one of the primary changes. The house from where we moved away in pursuit of modernity, and we used to spend most of the day and night in urban spaces and streets, and had been converted only into a dormitory, now has to meet many needs. Thus, the feeling of a need to change the environment, the body, and the concept of house arose in the heart of the society after the spread of Covid-19. The present work was to obtain possible scenarios for the future of house respecting the impact of Covid-19 disease and human health. To this, futurism was used and alternative metaphors - the basis for writing scenarios- were extracted by deepening of the four layers of Causal Layered Analysis (CLA) method. Four different scenarios were finally obtained from the combination of CLA and Scenario Writing. The scenarios, according to James Detour's method, discuss four different states for the future: the best state, the worst state, unchanged state, and out-of-the frame state. The scenarios were captured as the following order: the smart house and the house as the world's center, the flexible and self-sufficient house, the green house and house as the "home", and the fantasy and free house.

**Keywords:** Home, Alternative futures, Causal Layered Analysis, Covid-19, Scenario writing.

### 1. Introduction

At all times, human survival has depended on the correct response to a series of needs born and raised with man since his creation. The needs require correct response in any era in order improve quality of life. The need to have shelter is one the human being's wants that early man met it by taking refuge in caves. However, the way to meet the need for shelter has changed over time and due to the impact of other aspects on life and lifestyle, so that the cave of early humans has turned into a smart house today. The emergence of Covid-19 has extensively altered individuals' lifestyle. Returning to homes was deeded to be one of the biggest alterations. The house from where we moved away in pursuit of modernity, and we used to spend most of the day and night in urban spaces and streets, and had been converted only into a dormitory, now has to meet many needs including the need for education, work, social relations, physical and mental health, sports and recreation. Hence, these houses (only used as dormitories) cannot meet the new needs; they demand to be changed. Sometimes in life, it is not possible to go through the crisis, so you have to make changes and adapt to new conditions. The pandemic, which is a threat, may turn into an opportunity by adapting to the new conditions and making appropriate changes. Proper analysis of the existing conditions and delving into the different layers of the issue may help the realization of alternative futures for the house and development of the corresponding scenarios that help to prepare for the future and to build a suitable future based on new needs.

Throughout history, global crises have had a great impact on people's life and its various aspects. The global environmental crisis and epidemic diseases have changed the foundation of the world in some way. Epidemic diseases started with the plague, and currently overshadow the world with Covid-19 or the so-called coronavirus disease. The first pandemic, the plague, started in Egypt in 541 AD and spread to Europe, causing severe casualties and reducing the population of Europe, Africa and Asia by more than 50%. According to an article published in 2019, after the plague, leprosy in the 11th century, the Black Death in 1350, the Columbian disease in 1492, the Great Plague of London in 1665, the first cholera epidemic in 1817, the third plague epidemic in 1855, measles in 1875, Russian flu in 1889, Spanish flu in 1918, Asian flu in 1957, AIDS in 1981, and SARS in 2003 are known as pandemics that changed history (Onion, Sullivan, & Mullen, 2020). According to the report of the

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World Health Organization on December 31, 2019, this organization warned a group of pneumonia patients in the city of Wuhan, Hubei Province, China. A week later, on January 7, 2020, the Chinese authorities confirmed a new disease called Covid-19 caused by the coronavirus, as the agent of pneumonia (WHO-1, 2020).

Epidemic diseases affect various aspects of human life. Certainly, one of the transformations pertains to architecture and urban planning. For example, cholera is an acute diarrheal infection caused by consuming food or water contaminated with *Vibrio cholerae* bacteria, which demands economic development and global access to safe drinking water and adequate sanitation as a long-term solution (WHO-2, 2019). This caused the promotion and widespread use of potable water piping and as a result changes in urban planning. At present, almost all the countries of the world are affected by the new disease, Covid-19, and according to the reports by the World Health Organization, "staying at home" and "social distancing" are the most effective measures to prevent the disease (WHO-3, 2020), so that staying at home has turned into a big global challenge.

A house is a kind of commodity from an economic point of view, a symbol from an artistic point of view, an institution from the sociological point of view, a building from engineering and architecture point of view, a space from urban planning point of view, and a kind of culture from an anthropological point of view (Fazeli, 2008). Home as a space where a person spends most of his time, has always had a special place in the sight of architects and has been addressed from different perspectives. As emphasized by the World Health Organization, the house (known as shelter) and the place of residence affect human health. Studies and personal experiences have shown that the house can affect the health of the person and the family. The house should create a safe and healthy environment for the residents (Ghaffari, & Banaei, 2011). Scientific evidence shows strong relationships between housing and health. The public health community is developing, testing, and implementing effective interventions to improve health benefits through a better housing quality. Public health has a long (albeit intermittent) history of involvement in housing (Krieger, & Higgins, 2002). In the design of contemporary houses, it is necessary to consider socio-economic realities with a direct impact on sustainable life. Family transformation is the most important reality (Friedman, 2012). Towers and apartments have been a good solution for organizing and providing better services to members of a society. However, with the emergence of the new corona virus, apartments endanger people's health due to common places for the use of all residents, such as elevators, parking lots, stairs, etc. Hence, people naturally try to avoid these spaces and each other. Any change in the values and habits of a society (culture, customs, the manner and extent of technology use, the type of social relations, the way of shopping, the economy of the society, etc.) leads to the change of lifestyles and houses. Lifestyle values have made basic changes in the priorities of house construction (Wentling, 1994). The new widespread disease, Covid-19, has caused weeks and months of staying at home and being away from the work environment, classes, and all public places. However, the distance should not result in the prevention of life progress and the stagnation of all its aspects. Thus, topics like remote work, virtual education, recreation and sports at home, etc. start to work, all of which need space at home. This is while houses only played the role of shelters and dormitories before the disease. They hosted people for a few hours, and now they have to serve the residents all hours of the day and night.

Considering the discussions that were raised and regarding the current sensitive situation where a new disease has engulfed the whole world and caused people to stay at home, changes in house design and construction are inevitable. Therefore, we must predict the possible scenarios for a proper management. We need a new approach used all over the world to manage the future, that is, "future studies". The plural form "futures" is used to make systematic and intelligent speculations about not only one future but also several imagined futures through a wide range of methods. Future research is a science that is governed by rationality and reproducibility. Unlike astrology and occultism, it uses scientific and logical tools instead of magical and intuitive tools to study the future. Future research is a reflection of how tomorrow is born from today's changes (Mogimi, 2015).

Causal Layer Analysis (CLA) is a methodology based on the future, which was invented by Sohail Inayatullah. It has been developed as a way to create space for alternative futures. The alternative futures are not based on the extrapolation of data or the promotion of hypotheses in a systemic model (as is customary in scenario building), rather they are based on the deconstruction and reconstruction of critical hypotheses about the path that shapes the world (Inayatullah, & Milokevich, 2015). No one can see the future, but applying future research approaches and scenario writing definitely helps to get prepared for what lies ahead (Schwenker, & Wulf, 2013). Now, with the emergence of a new global crisis, i.e. Covid-19 disease, and its close relationship with staying at home, a renewed attitude should be given to the type of house construction. Futuristic research with the help of CLA method helps to predict different images of the future and then to realize the correctness or incorrectness of the changes taking place, and finally to attain the alternative scenarios for constructing future houses.

## 2. Background and literature

In the article entitled "What is a healthy house??", Ghaffari and Banei (2011) discussed the relationship between people's health and their place of residence. They argued that since the house is the main space in life and all sections of the society use it at different ages, the health of a house is defined as one of the elements of preventing disease and helping the health of the society. They stated that a healthy house not only doesn't cause disease in the residents, but also helps improve their health. They also emphasized the role of the physical aspect of the house in human health. The authors introduced the parameters of a healthy house and accordingly they defined a healthy house as a place that helps to fulfill the three main functions of residents' growth, potentials actualization, and social behavior practice.

In the article entitled "The influence of architecture on health, an idea for therapeutic architecture", Emamgholi (2014) explained the relationship between environmental architecture and individuals' mental health. He believes that the built environment itself can be a threat to human health, and this has become more pronounced in the modern era, following the emergence of problems resulting from machine life, especially in big cities. After examining the relationship between the environment and mental health, the author has explained the criteria for measuring the quality of the physical environment architecture. Using a questionnaire, he converted the qualitative criteria into quantitative and then obtained a model via the correlation analysis method. Comparing results of the analysis with the scores of the international standard questionnaire, he was able to prove the relationship between human health and environmental architecture, so it is concluded that improving the quality of the built environment can improve the general health of the users as well.

In the article entitled "Factors affecting the transformation of housing from the past to the future", Alalhesabi and Korrani (2013) introduced agriculture, industry and information as the causes of changes throughout history, including changes in the process of urban development, architecture and construction. Hence, we should prepare for the future changes by knowing the factors influencing development of housing in the past. The authors pointed out that the climate and weather are not considered to be influential factors on housing development because they have been constant throughout history and are not "variable". They mentioned the followings as the factors influencing the evolution of housing throughout history: culture, identity, economy, technology, social relations and politics. By explaining each factor in the past and future, Alalhesabi and Korrani discussed the issue of architects distancing from the residents as the result of a change in the view toward housing from a private perspective to an economic perspective. Finally, they said that in a world that is changing rapidly, we must act cautiously and learn from the past to make the future better. To this end, we need not only the science of architecture but also other sciences like futurism.

In the article entitled "Presenting house metaphor scenarios in the modern urban lifestyle based on CLA ", Sedaghati et al. (2019) used CLA and the combination of scenario writing (which has a qualitative approach) and defined the house as sacred privacy and beyond human privacy, while human housing today plays only the role of a shelter. The change of lifestyle values has led to changes in the house, and new buildings are only the answer to the human need for housing while lack the old functions. In the definition of the new style of urban life, they came to the conclusion that the classification of society in the 20th century is no longer correct by economic status and the social identity is ignored. Then, the concept of house in the modern world and the influencing factors has been investigated. With the help of interviews with a statistical community of elites and experts, the authors reached these findings: 1. Today, the concept of home is constantly changing; 2) Factors affecting the change and evolution of the concept are analyzed and investigated; 3) Home in the concept of new lifestyle is inspired by the world view of modernity, machine-centered, and more attention to the individuality. The authors use the term "home-like housing" to describe the current housing of humans; and 4) Smart house, the house as a digital cloud, the human house, and the mobile house are the metaphors for the future house. Each metaphor is addressed as a possible scenario for knowing the future.

Taj-Bakhsh (2020) in his article titled "Evaluation of the new lifestyle in the post-corona era" mentioned the corona virus and the covid-19 disease as an important factor for changing the existing systems and order, including the lifestyle. After reviewing the results, the author states that the corona virus has provided a good opportunity to rethink the lifestyle. He applied a qualitative method and phenomenological approach to investigate the lifestyle of young people in the post-corona era. After analyzing the data, he reached six main themes: health-oriented lifestyle, family-oriented lifestyle, media-oriented lifestyle, community-oriented lifestyle, culture-oriented lifestyle and leisure-oriented lifestyle. He aimed at demonstrating the power and importance of Covid-19 pandemic and its huge and extensive impact on all aspects of the lives of all people around the world.

Considering whatever mentioned so far, there is a lack of studies regarding the impact of diseases and health on the process of house building. Numerous papers have discussed the impact of various factors on human housing, but the impact of diseases and especially widespread diseases has been neglected, a problem affecting the whole world today and causing people to stay at home. As seen from the reviewed materials, the effect of house on health has already been discussed. However, the present work is an attempt to examine the effect of Covid-19 disease on the house. Or, as mentioned, there are studies about the house and its alternative futures, but they have adopted a general look at all the things that affect the house. The innovation of this research pertains to the attempt for linking disease, home and future. Moreover, by deepening in different layers of the issue, the research is to present metaphors for the future of houses respecting the impact of widespread diseases.

### **3. Methodology**

#### **3.1. Future research**

Future research refers to the knowledge of shaping the future in a conscious, deliberate and preemptive way, and it protects people from being surprised by the storm of sudden changes and developments. Future research includes a set of efforts that visualize potential futures and plan for them by analyzing sources, patterns and factors of change or stability. Future research shows how the reality of "tomorrow" is born from today's changing (or not changing) (Rahnama, & Maroofi, 2015).

Futuristic research is the knowledge that opens people's view of future events, opportunities, and possible challenges. Also, by reducing ambiguities and erosive doubts, it improves the ability of people and society to make smart choices. It allows everyone to know where they can go and where they should go. Planning human tendency and desire for the future may solve problems in the future. Regarding planning for the future, there are two general exploratory and normative paradigms, each looks at the concept of the future and how to reach it from a specific angle (Naimi, & Pourmohammadi, 2016).

Future research consists of a set of systematic efforts to visualize potential futures and plan for them by analyzing sources, patterns and factors of change or stability (Ahmadi, & Alipanah, 2015). Causal Layered Analysis (CLA) is a post-structuralist method for future research, which helps to go deeper into the constructive layers of the problem by criticizing the linear methods that examine levels of the issue (Heinonen, Minkkenen, Kaejalainen, & Inayatullah, 2016).

#### **3.2. Causal Layered Analysis**

Causal Layered Analysis (CLA) technique is qualitative in terms of method and exploratory in terms of approach (Fateh-Rad, Jalilvand, & Nasrollahi Vasati, 2014). In this method, the understanding of a phenomenon is done by going deeper into its constituent layers. These layers consist of four levels; each layer is more general than the previous one with more depth (Inayatullah, 2009).

CLA is proposed as a new method for future research. Its usefulness is not in predicting the future, but in developing transformative spaces to create alternative futures. CLA consists of four stages: litany, social causes, discourse/worldview and myth/metaphor. It is an evaluation criterion that ensures the implementation of the results will be in accordance with the four layers of "reality" (Inayatullah, & Milokevich, 2015).

The method has four layers. According to CLA, when we intend to research the future about a subject, we should consider a range of objective and subjective layers that shape the future. The layers are described as the following:

Litany layer is the first level of analysis that examines the apparent layer of the subject in question.

Causal systems layer: CLA method, passing through the first layer, quickly enters the second layer of causal systems and analyzes the roots of the problem. This step represents a proof of the supposition presented in the previous layer.

Discourse/worldview layer: At this level, it is vital to find deeper structures behind the issue and to redefine the issue. The foundations of litany level representation are also criticized and questioned.

Myth/metaphor layer: As the deepest and most creative level of the work, this layer looks for hidden metaphors in the context.

It should not be assumed that CLA can replace other methods like scenario writing. CLA only seeks to achieve a deeper understanding of our view of the world and thus open the way to recognize alternative futures. Therefore, it can be well combined with other methods. For example, the results can be used to start scenario writing (Khazaie, Jalilvand, & Nasrollahi Vasati, 2013).

Examining the problem in each of the four levels of CLA makes it possible to have different scenarios. Litany-level scenarios are short-term, social scenarios seem more policy-oriented and consider a longer time horizon, discourse/worldview-level scenarios try to uncover fundamental differences, and myths/metaphors scenarios

try to make a difference through poetry, stories, imagination and other "methods of the right hemisphere of the brain". Realization of the scenarios in the lower layers is more difficult and requires a longer time and their discovery demands more analytical ability. In addition, the person responsible for realizing the scenario at each level is different from other levels. At the litany level, the government or companies are usually held responsible. Second level scenarios require the cooperation of different groups. Worldview level requires voluntary participation. Finally, at the myth/metaphor level, the main burden is on the shoulders of leaders and artists. In general, litany type scenarios are more instrumental (Khazaie, Jalilvand, & Nasrollahi Vasati, 2013).

### 3.3. Scenario writing

Scenario-based planning is a strategic planning mechanism (Rahnama, & Maroofi, 2013). Nowadays, scenario writing plays a role as one of the new and practical methods in the strategic planning of advanced organizations. In general, the scenario is based on three components, each of which requires different skills: information gathering, information analysis, and future modeling (Hosseini, & Bagheri, 2012).

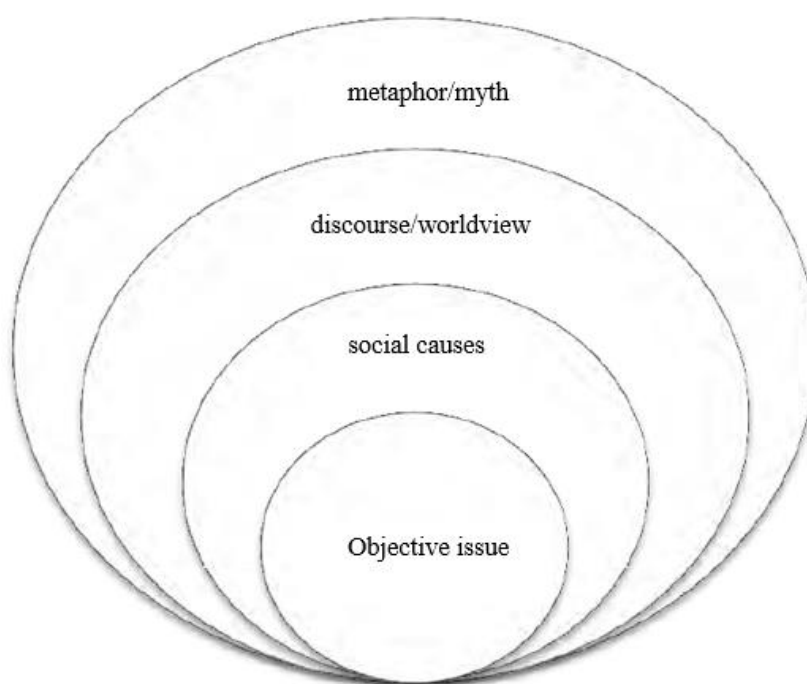


Fig. 1: Layers in the method of Causal Layered Analysis (Khazaie, Nosrati, & Taklavi, 2015)

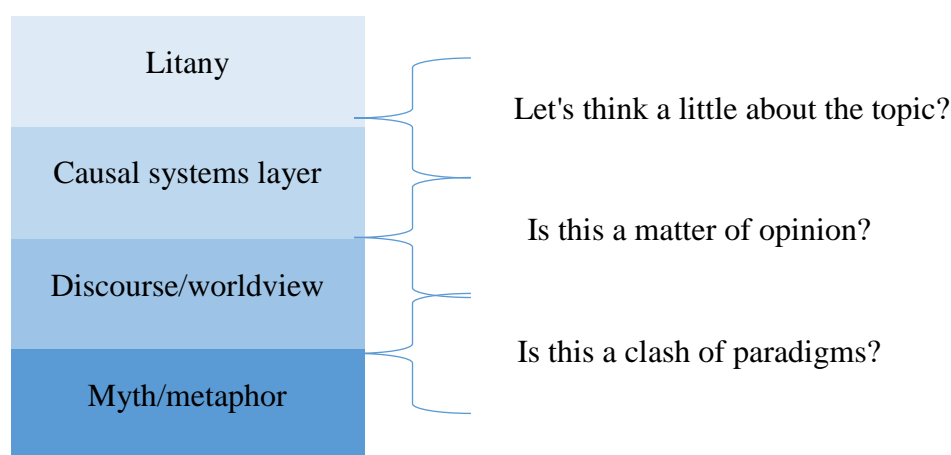


Fig. 2: Fuzzy boundaries in the column of Causal Layered Analysis (Inayatullah, & Milokevich, 2015)

Scenario writing is one of the basic future research techniques to analyze past and future trends. It focuses on creating or reconstructing future and past events and trends based on the collected evidence, data and information (Harati, & Moeinipour, 2012). The purpose of defining scenarios is not to choose only a preferred future and wish to make it come true by finding the most probable and adaptive future, but the main intention is to make strategic decisions that are wise enough for "all possible futures" and to stand (Zali, 2012).

Scenario writing is so consistent with the goals of future research that it is usually considered as the best tool for future studies. In CLA-based scenario writing method, each scenario represents a different way of knowing the future. Each scenario should act as a metaphor and a reminder shortcut to quickly provide an intuitive picture of the scenario and description of the main logic (Mahmoodzade, Shakerian, & Shahgoli, 2013).

There are many different methods for scenario writing. Since most of the methods are integrated, this research derives one from James Detour's method who believes there are four main patterns in writing scenarios:

1. Continuous growth: improvement of current conditions, more technology, etc. Here, technology is assumed to be the solution to all problems.
2. Collapse: This future is the result of the failure of continuous growth. Many contradictions that exist around us are the source of such a future.
3. Stable situation: This future indicates the stop of growth and the balance between economy and nature. In such a future, the society will be more balanced and fairer. This scenario goes back to both nature and the past. Human values play the primary role and technology is usually thought as a problem.
4. Transformation: These types of scenarios seek to change the basic assumptions of the previous three scenarios. Transformation occurs through a technological super change or a spiritual change (Khazaie, Jalilvand, & Nasrollahi Vasati, 2013).

In fact, James Detour designs a closed form and four scenarios as the model for compiling scenarios. The model helps to get an image of the best possible state, the worst possible state, the unchanged state, and the out-of-frame state.

- The best possible situation appears when the organization moves in the direction it wants.
  - The worst possible situation appears when everything goes wrong.
  - Unchanged state results from the linear continuation of the prevailing trends.
  - Out-of-frame state emerges when a surprising material or spiritual phenomenon appears and causes changes.
- Thinking about the four states assures that we did not unknowingly close our eyes to any part of possible futures (Bahari, 2012).

In this research, semi-structured interviews are used to obtain the primary data. The statistical population includes elites and specialists of urban affairs. Sample questions are designed and then the interviewer will guide the discussion around these questions flexibly. The participants will be selected based on the degree of expertise in architectural and urban affairs as well the knowledge on the progress of the old house until now. The sampling is done through a theoretical method, so that researchers will call people who have information on the topic of discussion or its aspects. CLA will be used with semi-structured interviews until the theoretical saturation and identification of the main themes of the levels of analysis will be achieved. In other words, the process of interviewing experts will be carried out until the answers become repetitive and there will be no new data. The sampling process will continue until conceptual saturation. The criterion of the sample size will be determined by theoretical adequacy and saturation of the subjects. The acceptability of the data will be checked with a variety of methods: Continuous review, simultaneous analysis of data and feedback to the research, allocation of sufficient time, selection of key informants and supervisory review. Validity and reliability of the data will be checked with the help of participants, colleagues and experts.

## **4. Results and discussion**

### **4.1. Layer 1: Litany**

The coronavirus pandemic was a push that on the one hand called mankind to re-read and rethink their lifestyle and on the other hand, created conditions for a new style of life to dominate human societies. Limiting communication and face-to-face interactions, closing down gatherings, improving personal and public hygiene (washing hands frequently, using masks and sanitary gloves, etc.), maintaining distance from others and observing other health protocols, reforming the society's consumption pattern, improving social capital and increasing the level of empathy and social harmony, paying more attention to the lower classes of society, changing the type of entertainment, closing religious centers and holy places, modern social life in the context of virtual space and improving media literacy, reducing air, land and sea travel, shopping and selling on the Internet, more convergence of family members, the growth of book-reading culture, watching more series and

movies, shifting from collective to individual sports, less fashion orientation, holding distance training courses, etc. have brought about many changes in people's lifestyle (Taj-Bakhsh, 2020).

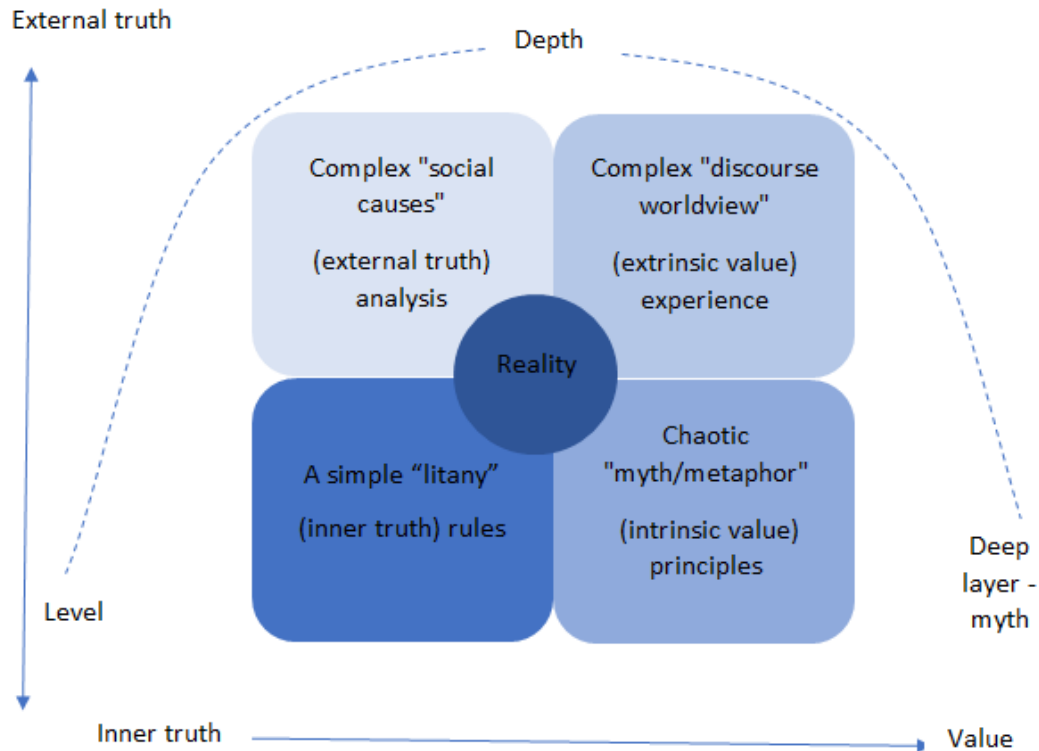


Fig. 3: Cross map with two Jungian vectors between SCCC (simple, complex, complex and chaotic) and Causal Layered Analysis (CLA) (Inayatullah, & Milošević, 2015)

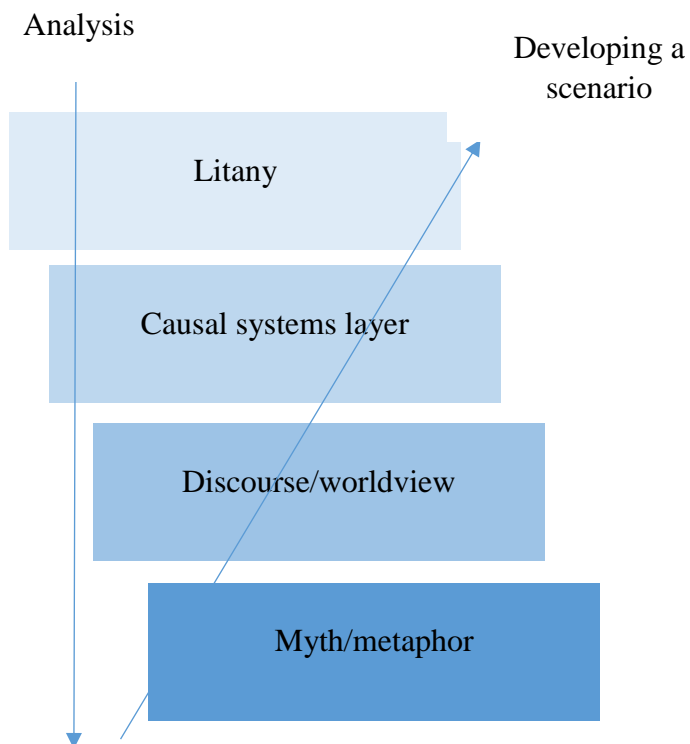


Fig. 4: The process of Causal Layered Analysis and development of scenarios (Inayatullah, & Milošević, 2015)

As the dimensions of the corona crisis became clear, the governments, with great reluctance, implemented policies like quarantine of urban centers that are the source of pollution and social distancing. They applied policies along with recommendations such as "staying at home voluntarily and applying laws if needed, banning public gatherings, closing schools and offices" (Anderson, Heesterbeek, Klinkenberg, Hollingsworth, & Deridre, 2020) and so on that slowed down and even stopped the wheels of social and economic life (Imani Jajarmi, 2020). So, due to the spread of the coronavirus all over the world and its consequences, people's lifestyles have completely changed: from the way they eat and exercise to the way children are educated and parents work, and even the way they dress and interact with others. As mentioned earlier, lifestyle has a direct impact on the human-built environment, the most important of which is the "house". With the spread of the coronavirus and the change in lifestyle, the concept of home has changed a lot. Today's house must be able to respond to all the new needs; i.e., it needs a physical and semantic change.

4.2. Layer 2: macro social causes

The second layer of the CLA pertains to social causes. However, Soheil Enayatolah mentions all the factors known as macro environment factors in management, including social, economic, cultural, legal, political and environmental factors (Belali Oskui, Heydari Turkmani, & Diba, 2019). The following table presents the factors and their role in the current challenge of the house and Corona, and their impact on creating a context for changing the concept and body of the house. The information in the table below is the result of using library resources and analyzing and classifying the semi-structured interviews with experts and elites.

Tab. 1: Major reasons of changing the concept of home related to epidemics

Influential factors	Underlying issues of changing the concept of home
Social-cultural	<ul style="list-style-type: none"><li>• Social separation and increasing individualism and social isolation, particularly controlled, goal-oriented, careful and unemotional attitude, contacts and communications.</li><li>• Reducing face-to-face communication ways and increasing the virtual communication of the foundation<ul style="list-style-type: none"><li>• Reducing social capital, especially social trust, and considering the possibility of risk in any area<ul style="list-style-type: none"><li>• Decreasing social health</li></ul></li></ul></li><li>• Establishing and increasing psychosocial consequences such as panic, fear, anxiety, stress, intellectual and obsessive-compulsive<ul style="list-style-type: none"><li>• Promoting personal and social-environmental hygiene</li></ul></li><li>• Paying more attention to residential spaces and mutual respect for the environment and sharing this ecosystem with other creatures of the planet<ul style="list-style-type: none"><li>• Promoting and improving the culture of intra-family entertainment<ul style="list-style-type: none"><li>• Reducing risky sex and increasing it to limited areas such as a spouse or special partner<ul style="list-style-type: none"><li>• Increasing cohesion in the family</li></ul></li></ul></li></ul></li><li>• Limiting activities such as talking with friends/colleagues, participating in family parties, participating in friendly parties and meetings, going to coffee houses and cafes, joining different groups and associations and...<ul style="list-style-type: none"><li>• Changing in the field of customs and traditions such as funerals</li></ul></li><li>• Promoting new social-residential styles in virtual space and the emergence of a new style such as (observation of) relationships, conversations, funeral ceremonies, economy, culture, meetings and scientific conventions in the shape of networks and virtual space.<ul style="list-style-type: none"><li>• Paying more attention to home and family and intergenerational communication<ul style="list-style-type: none"><li>• Manifesting communication and interactions by phone frames</li></ul></li></ul></li><li>• Increasing dialogue, interaction and tolerance in families and coming traditional Iranian family values back and increasing social capital</li><li>• Being closed many entertainment centers such as cinemas, cafes, clubs, swimming pools, etc. (i.e., all activities outside the home) and resulting in staying at home and causing physical inactivity and its negative side effects such as obesity, muscle weakness, circulatory system diseases, breathing and mental disorders</li><li>• Schools being off for a long time, the requirement to pay attention to virtual and electronic education remotely and at home</li><li>• Strengthening the two foundations of virtual space and home against shutting down mosques and religious rites and...</li></ul>



Economics	<ul style="list-style-type: none"> <li>• Occurrence of an economic recession in the world <ul style="list-style-type: none"> <li>• Increasing unemployment in the world</li> </ul> </li> <li>• Compelling strong shocks to the economics of the world <ul style="list-style-type: none"> <li>• Huge stroke to the foreign trade of different countries struggling with Coronavirus <ul style="list-style-type: none"> <li>• The possibility of closing the door of the world to the foreign trade</li> </ul> </li> </ul> </li> <li>• Decreasing demand such that there is no consumer to buy existing commodities and services in the global economy</li> <li>• Because of unemployment, some people are imprisoned in their house by compulsion or voluntarily <ul style="list-style-type: none"> <li>• Home businesses become an important issue that requires an appropriate environment</li> </ul> </li> </ul>
Legal-policy making	<ul style="list-style-type: none"> <li>• The requirement to adopt multilateral policies with a multidimensional view of the multifaceted phenomenon named Corona <ul style="list-style-type: none"> <li>• Adopting a "quarantine" policy to manage crisis <ul style="list-style-type: none"> <li>• Using "house" as a place for quarantine</li> </ul> </li> <li>• The policy of reducing real communication in all life aspects</li> </ul> </li> <li>• Establishing a social distancing policy and the law of staying at home and resulting in the emergence of many home-oriented styles</li> </ul>
Operational-functional	<ul style="list-style-type: none"> <li>• Becoming a pre-doctor <ul style="list-style-type: none"> <li>• Becoming hygienic, detoxification and disinfection, and consuming disinfectants so much <ul style="list-style-type: none"> <li>• Light isolation and quarantine, distancing</li> <li>• Prevention, disinfection and insecticide</li> </ul> </li> </ul> </li> <li>• Shutting the comprehensive sports system down, from public and recreational sports to professional and championship sports <ul style="list-style-type: none"> <li>• Exercise inactivity and long-time rest at home</li> </ul> </li> <li>• Using social networks and television programs to exercise at home without needing special equipment or indoor equipment <ul style="list-style-type: none"> <li>• Establishing sports challenges by famous athletes to encourage people to exercise at home <ul style="list-style-type: none"> <li>• Disturbance in eating habits and patterns because of being afraid of diseases</li> <li>• Reviving cooking and cooking traditional food at home means the reviving family plates</li> </ul> </li> </ul> </li> <li>• Eliminating unnecessary expenses such as going to restaurants, etc., and being contented and saving money in the society's consumption pattern</li> </ul>
physical	<ul style="list-style-type: none"> <li>• Injuries because of the physical space of houses (due to respect social distancing requirements)</li> <li>• Small living space and the interference of privacy between family members and their excessive interactions with each other.</li> <li>• Closed common areas where there is no possibility of air conditioning, resulting in the possibility of increasing the spread of the virus. <ul style="list-style-type: none"> <li>• Lack of suitable space for families with children in public use area</li> </ul> </li> <li>• Lack of enough space to store items and equipment needed during quarantine <ul style="list-style-type: none"> <li>• Lack of space for remote training and working</li> </ul> </li> <li>• High populations can result in unsanitary conditions and spread several epidemic diseases <ul style="list-style-type: none"> <li>• Need for light, air and nature (porch gardens) during quarantine</li> <li>• Need for more partitions and wider corridors and more stairs</li> </ul> </li> <li>• Need for using more suitable air conditioning and bigger windows and more plants</li> </ul>
Psychological-mental	<ul style="list-style-type: none"> <li>• Numerous mental, psychological and physical consequences at both individual and social levels because of quarantine <ul style="list-style-type: none"> <li>• Worrying about the quarantine becoming longer and indetermination in the future <ul style="list-style-type: none"> <li>• Being afraid of diseases and boredom</li> </ul> </li> <li>• Insufficient facilities, wrong, incorrect and insufficient information <ul style="list-style-type: none"> <li>• Financial and economic losses</li> </ul> </li> <li>• Feeling frustrated and depressed and staying at home boring</li> </ul> </li> <li>• Interfering of daily activities, prohibitions or restrictions laws of traveling and passage, reducing social relations and resulting in mental health risk. <ul style="list-style-type: none"> <li>• Increasing feelings of loneliness, decreasing social support, decreasing life expectancy</li> </ul> </li> <li>• Disorderliness of individual structures, which means a decrease in individual control power, and a decrease in the predictability of life flow because of home quarantine.</li> </ul>

4.3. Layer 3: Discourse/Worldview

In the third layer, according to the data obtained from the interviews, different intellectual bases and worldviews support the existing situation, most of which are borrowed from the capitalist system and thought; thus, they affect the lifestyle and consequently the architecture and houses of people. The discourses include the following:

- Capitalism: consumerism and commodification
- Mechanization and technology
- Individualism
- Cyberspace
- Seeking security
- Cultural confusion

All over the world, capital has dominated over the earth up to the last remnants of forests and small farmlands. Changes in climate and weather (e.g. pollution), changes in the vegetation of different regions, migration of animal species, and so on, are the results of promoting capitalist thinking and the accumulation of capital and production as a rule of self-interest. But with the spread of the corona disease and the forced quarantine of people in their homes and the interruption of the said chain, we can hope for the revival of nature and the environment.

Layer 4: Metaphor/myth

Finally, metaphors to describe the current state of the house during the pandemic, extracted from the interviewees, were discussed and analyzed in order to complete the understanding of the current situation using CLA. Metaphors include "matchbox", "confused", "shelter", "unfamiliar", "boundless", "limited and compressed" and "black and white". Now, by completing the information and deepening the current state of the research problem, we can continue the process of recognizing alternative metaphors and discourses.

Tab. 2: Four layers of the CLA for the current condition of the houses in connection with the spread of the disease Covid-19

Layer	Specified dimensions in each layer
Litany	Creating physical and mental problems at home due to the spread of corona disease Changing people's lifestyles in all dimensions The need to change the house and adapt to new needs
Macro social causes	Social-cultural causes include: communication and interactions, recreation and leisure time, education, worship and religiosity Economic causes include: work and job Legal-policy making causes Operational-functional causes include: mobility and exercise, nutrition and food preparation Physical causes Psychological-mental causes
Discourse/worldview	Capitalism Consumerism Commodification Mechanization Technology Individualism Cyberspace Seeking security Cultural confusion
Metaphor/myth	Matchbox Confused Shelter Unfamiliar Boundless Limited and compressed black and white

#### 4.5. Alternative House Metaphors

During the interview with experts and elites, after discussing and examining the status quo of the house respecting to the pandemic and reaching a detailed and complete understanding of the problems and the relevant factors, the below question was raised: "What future can be imagined for the house? What symbol, word, metaphor or myth can be used to describe the future of the house? (Regarding the status quo and the existing problems)". The interviewees were asked to explain their alternative narratives for the house in detail. The metaphors included the followings:

- Smart House
- Flexible house
- Free house
- Self-sufficient house
- Fantasy house
- House is the home
- Green house
- Home as the center of the world.

#### 4.6. Alternative Home Discourses

Once the metaphors were introduced, we discussed alternative discourses and worldviews which support alternative metaphors, so that we can't reach alternative metaphors without including these discourses. The alternative discourses include naturalism, technological determinism, existentialism, cultural revisionism and so on.

- Naturalism emphasizes the balance between human behavior and nature and reminds people that they do need nature; nature does not need human. In this way, interacting with nature as an important discourse plays a role in the formation of futures for the house.
- Technology has become an inseparable part of the life of all people. Man will no longer be able to deal with many of his new needs without technology.
- Existential discourse refers to authentic life, a life that respects the "existence" of man and considers his needs and interaction with the original manifestations of existence as an important priority for life. Such thinking leads people to benefit from the manifestations of existence (plants and animals, etc.) and to enjoy every single moment of life.
- Traditional culture and modern life needs are incompatible to some extent and in some cases. This does not mean that one should choose between the two and leave the other aside. Rather, it is necessary to achieve the right balance by reviewing and rethinking the society's culture. This will play a very important role in shaping future houses.

After examining the supporting metaphors and alternative discourses, four scenarios were formed for alternative futures of the house using James Detour's method and respecting the spread of epidemic diseases. The scenarios were based on the same alternative metaphors proposed in CLA method.

#### 4.7. Scenarios

**Continuous Growth Scenario:** "smart and digital house" and "house as the center of the world" are the metaphors selected for the continuous growth scenario. With the continuation of current conditions and the rapid development of technology, the house will become a smart place, a place overrun by quantity and there is no mention of the qualities and spirit of the home. In such a house, all tools, materials, and parts are designed as smart, benefiting from artificial intelligence. The lock of the entrance door will be opened by identifying the household members' faces with no need to touch the key, the door and lock. All faucets will be activated without touching, but by using electronic eyes. The temperature of the house is adjusted based on the body temperature of the people inside and the windows will be opened and closed by remote control. Also, the materials will have artificial intelligence; they will be disinfected and cleaned after being touched by family members. Such materials will also have the ability to change color when needed. In relation to the invisible space and other human needs, the house is equipped with high-speed internet, and all people can use it and communicate with the whole world and be informed of news and events through the advanced tools they have. In fact, electromagnetic waves cover the whole space and much furniture, equipment and materials work through the waves. Regarding the mental and psychological dimensions of humans, the house will have the ability to change according to the residents' feelings and conditions. For example, in case of depression, the house can change the mood of people by creating a different and happy environment.

According to this scenario, there is no need to touch anything in the case of epidemics. Most public appliances and devices will be active without touching and this will prevent the spread of the disease. Also, due to the intelligence of the space, people will be less tired and depressed from being quarantined in a house that has the ability to change. Moreover, with the help of the Internet and advanced tools, they will communicate with all relatives and friends and the feeling of isolation will decrease. There will be no need to disinfect surfaces anymore. Due to artificial intelligence, the house will be sensitive to people's body temperature, so it will have the ability to detect the members' illness, and proper ventilation and air disinfection device will be provided if one gets sick. But social physical interactions in such a house will go to zero and individualism will appear more than ever. The house will be the center of the world, though it will not have a center within itself. Neither the table, nor the fireplace, and nor the TV will be the center of the house, and maybe the TV will be removed from the house and all the news, movies, etc. will be summarized in everyone's mobile phone or a newer device.

In sum, technology designs and plans such a house, and in fact, it is the basis of house so that it can deal with the epidemic and provide suitable conditions for quarantine.

**Collapse scenario:** In this case, we will see an unmanaged situation and the continuation of the current trend. In fact, in this metaphor, the crises raised in the second layer remain unresolved, conflicting with each other, and not much change in the issue. "Flexible house" and "self-sufficient house" are the metaphors selected for the collapse scenario. A house that is very similar to our current houses, without much change; the only difference is seen in the furniture. In fact, the house will continue the current state and remain unchanged, because various factors prevent it from changing; the capitalist factor is the most important obstacle. Capitalism, because of the profit it seeks, prevents the change of houses and will become so powerful that other discourses will not be able to defeat it. It can be said that capitalism, with the help of detailed planning and people's lack of awareness, will prevent the change of houses and will impose its demands slowly and indirectly. As mentioned, the only difference will lay in the furniture. Residents will make changes in their homes only by changing furniture and using special and new devices, which is exactly in accordance with the demands of capitalist thinking. Flexibility will be created with furniture in a flexible home. For example, the bedroom will turn into an office by closing the bed and opening the table, while it will be a place to sleep at night by opening the bed and closing the table. Or the spaces of the house are changed according to the residents' needs, with the help of partitions or non-load-bearing movable walls. For example, sometimes a corner of the house is used for children to play, and sometimes the same space is used as a place for exercise. Therefore, many problems related to widespread diseases will still remain; only some of them will be solved (like the example of bedroom and office that is done by the residents not the external factors).

**Stable Situation Scenario:** In this scenario, the house is in a balanced and stable situation with various dimensions such as environmental, social, economic, cultural, legal, etc. The house integrates the spiritual dimensions of man and nurtures it. "Green house" and "house as the home" are the metaphors selected for this scenario. The green house is in full interaction with nature and its surroundings. As it was said, many people consider the covid-19 disease as the result of human actions and the nature's revenge. So, they move towards friendship, interaction and more attention to nature and environment, and make a balance between the living environment and the nature. Therefore, the houses will benefit from much vegetation inside and outside. They will use technology to reduce energy consumption and try to recycle (recycling of energy and resources, also materials). In other words, the recyclable materials will be used to build houses. Using plants at home will also have many effects on people's mental and emotional states. Moreover, the environment and the spiritual needs of humans are given more attention.

Talking about the house as a "home" means that the soul of the house and its spiritual dimensions should be considered; physical factors are not the only elements of the house. In "home", genuine human needs are very important and home is not considered only as a place to rest and work. Rather, it is a place to "stay" and "live authentically". Also, the spaces are designed according to the residents' needs, unique for each family. It's not like there is a single model for all sections of society followed by all houses; rather, each household creates home spaces according to its own needs. In this way, every person will be able to meet the needs during home quarantine. For example, a family with a child under the age of seven needs more space to play, but a family whose children are grown up and studying will need a quiet space. Interacting with authentic manifestations of existence (e.g. plants, the surrounding environment, and the health of the soul and body) is deemed as of the essential aspects of authentic life. In a greenhouse and a house that is a "home", a person has a continuous relationship with the original manifestations of existence, and in this way, many of his spiritual and psychological needs are responded; but some other problems caused by the coronavirus (e.g. contamination of surfaces) may still remain.

**Transformation Scenario:** "Fantasy house" and "free house" are the metaphors selected for this scenario. The house will be free from external constraints, so that it will have the ability to move. Mobility and movement will be considered not only for the whole house, but also for its parts. For example, the spaces have the ability to move separately, to change the location at any moment, and to create a new space. This will be convenient especially when someone in the family gets sick, as the person is quarantined in his own room and can meet his needs by moving that part, with no need to come out of quarantine and contact others. Such a feature will respond to many other new needs as well. For example, a person who needs a quiet place for work or training moves away from the noise to his own place and returns his place to the previous place after finishing the work. Regarding the general space, the movable house will have the ability to create free and open space. A central open space such as a central courtyard even might be created by changes in location. Or, relocations may create a yard in the corner and so on. As it was said, the free house can respond to many needs. A person whose physical and basic needs are easily met will be able to notice other dimensions of himself. This means that residents of the transformation scenario can grow their imagination. In this case, the house creates a place where the human mind takes flight, whether he wants it or not, and becomes active along with the house, making fantasy an inseparable part of the house. In fact, the scenario provides open, semi-open and closed spaces, all in a high-quality manner and according to the needs of the residents. A free and fantasy house includes both quality and quantity and can meet different human needs: the need for completely separate private and personal space, the need for collective space, the need for open and semi-open space, the need for green space and weather, and in general, physical and mental needs. The problems caused by epidemic diseases are much less in free houses and the residents will be in quarantine more calmly. Physical distance will happen with the mobility of the house components, if necessary. Work place, education space, playing space, etc. will also be provided by moving spaces and furniture. Fantasy of such a house will decrease mental and emotional problems, and it will be much easier to tolerate the quarantine.

## 5. Conclusion

The results from this research can be specified as follows:

- Using CLA and semi-structured interviews with experts and elites on the litany layer (i.e. **obvious problems of housing respecting the spread of Covid-19**), we realized that the concept of house has changed in the minds of the sample community.
- By analyzing the answers to the second question of the interview (**what are the social, cultural, economic, legal-political, physical, functional and psychological causes of house (housing) problems?**), we identified the underlying factors of changing the concept and the need to change the body of the house respecting Covid-19 pandemic (Tab. 1).
- As the third step, we analyzed the answers to "**What discourse and worldview supports the current and existing structure of the "house" (housing) in relation to the spread of the Covid-19?**" Capitalism, consumerism and commodification, mechanization and technology, individualism, virtual space, security and cultural turmoil were identified as the effective factors. We also discovered the discourses and worldviews supporting the current state of housing.
- The last question of CLA in the travel phase (**Is there a main metaphor to describe the current situation?**) addressed analyzing and classifying the responses in the form of 7 metaphors for the current situation of houses in the face of the corona virus (See "Results" section).

The result from completing the CLA route (in the round-trip process) was as follows: due to the spread of the covid-19 disease, people have faced many problems and challenges at home, their only shelter. This reveals the need to change the concept and body of the house (result of the first and second layer), but such a change requires to know more about the status quo for housing. Hence, by delving into the subject, we must first consider the discourses that support the current situation and then its descriptive metaphors (Layer 3 and Layer 4). Analysis of the layers reveals that the capitalist discourse is the most important factor supporting the current situation of the house, which affects many other factors besides the house.

Then, once we realized the necessity of change and the need to get familiar with alternatives, we looked for metaphors and alternative discourses in the return process of CLA method. The questions asked in the semi-structured interview were as follows:

- "**What is a new story or metaphor to reduce and transform the status quo?**" Analysis of the responses resulted in different results, which were classified into similar groups and finally 8 metaphors were extracted (frequency of the metaphors in the interviewees' responses is given in the results section). These metaphors were the basis for writing alternative scenarios; four different states were achieved for the future of the house.

• **"Create new and basic narratives (your story) about the concept of house until the horizon of 2050. (What is your description of the future of "house" and "housing" respecting the spread of epidemic diseases by 2050?)".** Analysis of the responses revealed worldviews and discourses supporting alternative metaphors (See "Results" section). Alternative discourses mean thoughts that guide and support the society on the way to reach the introduced alternative futures. We came to the conclusion that technology can play the main role in realizing the future scenarios of the house. In the first and fourth scenarios, technology and intelligence account for the main task. In other words, without more advanced technology, the realization of the scenarios is not possible. Therefore, technology and technological determinism are the major discourse to achieve alternative future scenarios of the house respecting the spread of Covid-19.

• As the result of semi-structured interviews and once the data validity was checked by the experts, four scenarios were finally attained, which represent four different states for the future: best case, worst case, unchanged, out of frame.

1. "Smart house" and "house as the center of the world" represent the best state: the society and the house move in the direction they want and meet the needs.

2. "Flexible and self-sufficient house" represents the worst case: no transformation takes place and macro social factors are still in conflict with each other. Only the residents think of making weak changes to solve problems using furniture.

3. "The house as the home" and "the greenhouse" represents an unchanged state, which will happen by continuing the linear path of the prevailing trends. In this case, the current trend continues slowly and by informing the society and moves towards having a simple "home" without much change.

4. "The fantasy and free house" represents the last state, which is out of the frame (Scenario 4). It is considered out of the frame due to the appearance of a wonderful and surprising material and physical phenomenon: the ability to move the parts of the house, so that position of each room changes by moving in length and width, and thus it is relocated. In this way, the houses will create different open, semi-open and closed spaces. Currently, this possibility seems to be a surprising phenomenon and according to the existing construction rules and restrictions, it will be far from reach. However, in the not-so-distant future, it will become very easy and the scenario will change to the best possible one due to the emergence of new technologies.

Using such a scenario-writing method and considering four different states, it is assured that no part of the possible futures is ignored intentionally or unintentionally, and all the states -from the best to the worst- and the relevant scenarios are written.

Finally, it should be mentioned that with the passage of time, changing the house (body and soul) is a necessity, and crises such as epidemic diseases fuel it more and make us realize its importance. Now, we should use such opportunities properly and get prepared for the alternative futures drawn by thinking and planning based on analysis and future research. By being aware and acquiring more information and knowledge, the bodies as well as individuals of the society should prepare for the change and transformation of their living place, i.e. their house and housing.

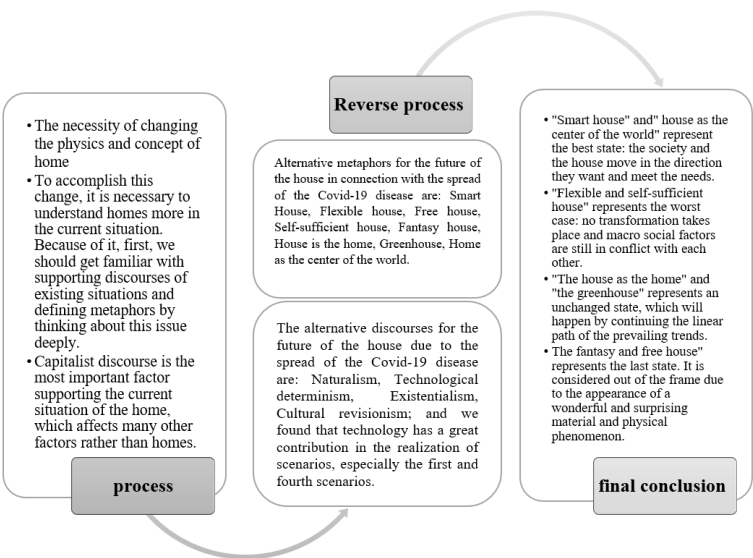


Fig. 5: The diagram of the conclusion from the reciprocating process of layered causal analysis and the conclusion of the research

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## سناریوهای آینده‌ی خانه در شرایط بیماری‌های فراگیر به روش جیمز دیتور

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### چکیده

خانه، اولین و مهم‌ترین زیستگاه آدمی است. مکانی که همواره در طول بحران‌های بسیاری همچون حوادث طبیعی سرپناه انسان‌ها بوده است. شیوع بیماری‌های همه‌گیر نیز نمونه‌ای از این بحران‌هاست. بحرانی که افراد را وادار می‌کند برای حفظ جان خود به امن‌ترین مکان، یعنی خانه‌های خود پناه برند. آخرین و جدیدترین بیماری همه‌گیر، بیماری کووید-۱۹ است که باعث قرنطینه خانگی برای حفظ سلامتی شده است. اکنون تقریباً تمامی کشورهای جهان درگیر بیماری جدید کووید-۱۹ هستند و طبق گزارشات منتشر شده از سازمان بهداشت جهانی، از مهم‌ترین اقدامات پیشگیری از ابتلا به این بیماری می‌توان به «در خانه ماندن» و «فاصله‌گذاری اجتماعی» اشاره کرد؛ به‌طوری‌که در خانه ماندن تبدیل به یک چالش بزرگ جهانی شده است.

### واژگان کلیدی

خانه، آینده‌های بدیل، تحلیل لایه‌ای علت‌ها، کووید-۱۹، سناریونویسی

خانه از دیدگاه اقتصادی نوعی کالا، از دیدگاه هنری نماد، از دیدگاه جامعه‌شناسی نهاد، از دیدگاه مهندسی و معماری بنا، از دیدگاه شهرسازی فضا و از دیدگاه انسان‌شناختی نوعی فرهنگ است (Fazeli, 2008). خانه به عنوان فضایی که انسان بیشترین وقت خود را در آن می‌گذراند همواره در نظر معماران جایگاه خاصی داشته و از دیدگاه‌های مختلفی به آن پرداخته شده است. یکی از عوامل تأثیرگذار بر سلامت انسان، خانه و محل زندگی او است که سازمان بهداشت جهانی توجه بسیاری به آن کرده است. خانه به عنوان سرپناه و محل سکونت شناخته می‌شود. مطالعات و تجربیات شخصی تک‌تک افراد نشان داده است که خانه می‌تواند بر سلامت شخص و خانواده تأثیر بگذارد. خانه باید محیطی امن و سالم برای ساکنانش ایجاد کند (Ghaffari & Banaei, 2011). شواهد علمی نشان‌دهنده روابط محکم بین مسکن و بهداشت است. جامعه بهداشت عمومی در حال توسعه، آزمایش و اجرای مداخلات مؤثری است که از طریق بهبود کیفیت مسکن، فواید سلامتی را به همراه دارد. بهداشت عمومی دارای سابقه طولانی (و البته متناوب) درگیر شدن در عرصه مسکن است (Krieger & Higgins, 2002).

با توجه به بحث‌هایی که مطرح شد و با توجه به شرایط حساس کنونی که بیماری جدیدی تمام دنیا را درگیر خود کرده و باعث خانه‌نشینی شدن انسان‌ها شده، تغییرات در طراحی و ساخت خانه امری ناگزیر است؛ بنابراین باید سناریوهای احتمالی که برای این امر وجود دارد را پیش‌بینی کنیم تا بتوانیم مدیریتی درست داشته باشیم. پس نیاز به رویکرد جدیدی داریم که امروزه در تمام دنیا از آن برای مدیریت آینده استفاده می‌کنند یعنی آینده‌پژوهی.

## ۱. روش‌شناسی

### ۱-۱. آینده‌پژوهی

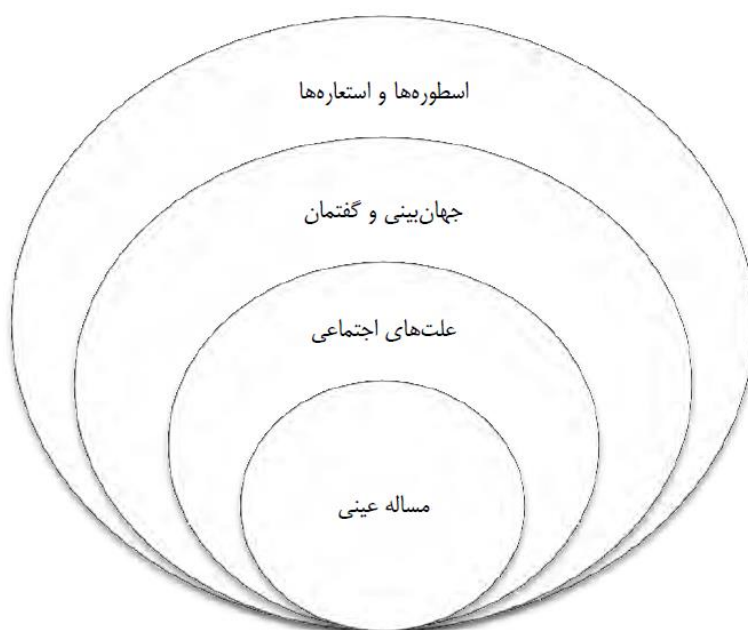
آینده‌پژوهی برابر عبارت لاتین "futures studies" است. واژه‌ی جمع "futures" به این دلیل استفاده شده است که با بهره‌گیری از طیف وسیعی از روش‌ها و به جای تصور تنها یک آینده، به گمانه‌زنی‌های نظام‌مند و خردورزانه، در مورد نه تنها یک آینده، بلکه چندین آینده متصور، مبادرت می‌شود. آینده‌پژوهی دانشی است که عقلانیت و تکرارپذیری بر آن حاکم است. این دانش برای مطالعه آینده برخلاف طالع‌بینی و غیب‌گویی از ابزارهای علمی و منطقی به جای ابزارهای جادویی و شهودی استفاده می‌کند. آینده‌پژوهی بازتاب‌دهنده‌ی چگونگی زایش فردا از دل تغییرات امروز است (Mogimi, 2015). یکی از روش‌های پسا ساختارگرایی آینده‌پژوهشی که با نقد روش‌های خطی، سطح موضوعات را بررسی می‌کند و به عمیق شدن در لایه‌های سازنده صورت مسئله کمک می‌نماید، روش تحلیل لایه‌ای علت‌ها هست (Heinonen et al., 2016).

### ۱-۲. تحلیل لایه‌ای علت‌ها

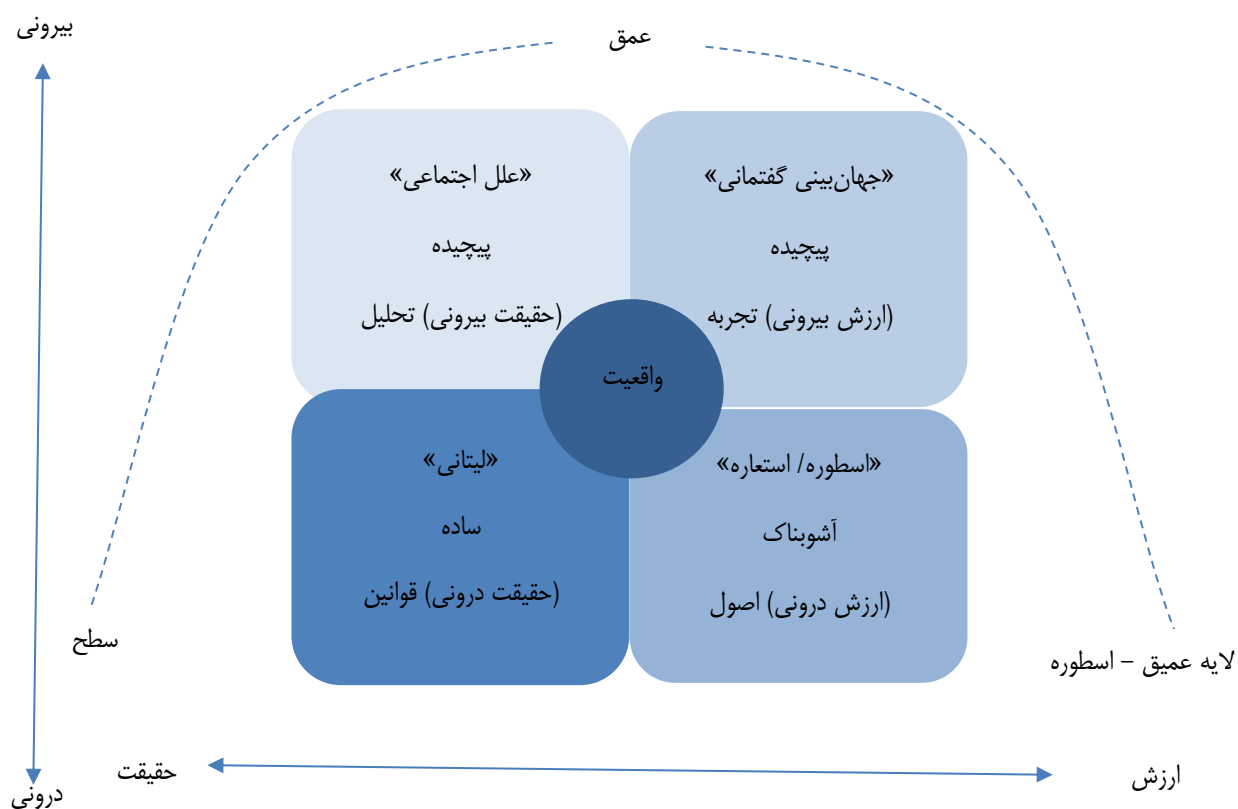
روش تحلیل لایه‌ای علت‌ها از لحاظ روش کیفی و از نظر رویکرد، اکتشافی است (Fateh-Rad, Jalilvand, & Nasrollahi Vasati, 2014). در این روش، درک یک پدیده با عمیق‌تر شدن در لایه‌های سازنده آن صورت می‌گیرد. این لایه‌ها از چهار سطح تشکیل شده است که هر یک نسبت به قبلی کلی‌تر بوده و عمق بیشتری دارد (Inayatullah, 2009).

این روش دارای چهار لایه است. مطابق روش تحلیل لایه‌ای علت‌ها، زمانی که در خصوص موضوعی قصد آینده‌پژوهی داریم، باید طیفی از لایه‌های عینی و ذهنی شکل‌دهنده به آینده را مورد توجه قرار داد. این لایه‌ها عبارت‌اند از: لایه لیتانی: لایه لیتانی نخستین سطح تحلیل در روش تحلیل لایه‌ای علت‌هاست که در این سطح، لایه ظاهری موضوع مورد نظر مطالعه و بررسی می‌شود. لایه نظام‌های علی: روش تحلیل لایه‌ای علت‌ها با عبور از لایه اول، به سرعت وارد لایه دوم یعنی لایه نظام‌های علی می‌شود و به واکاوی ریشه‌های مسئله مورد نظر در این لایه‌ها می‌پردازد. این مرحله نمایانگر شهادی بر ادعای ارائه شده در لایه

قبل است. لایه گفتمان/ جهان‌بینی: در این سطح یافتن ساختارهای عمیق‌تر پشت موضوع و نیز بازتعریف مسئله بسیار مهم و حیاتی است. در این سطح شالوده‌های نمایش سطح لیتانی مورد نقد و پرسش قرار می‌گیرند. لایه اسطوره/ استعاره: این لایه که عمیق‌ترین و خلاقانه‌ترین سطح کاراست، به دنبال استعاره‌های پنهان در متن است (Inayatullah, & Milokevici, 2015).



شکل ۱: لایه‌ها در روش تحلیل علی لایه‌ها (Khazaie, Nosrati, & Taklavi, 2015)



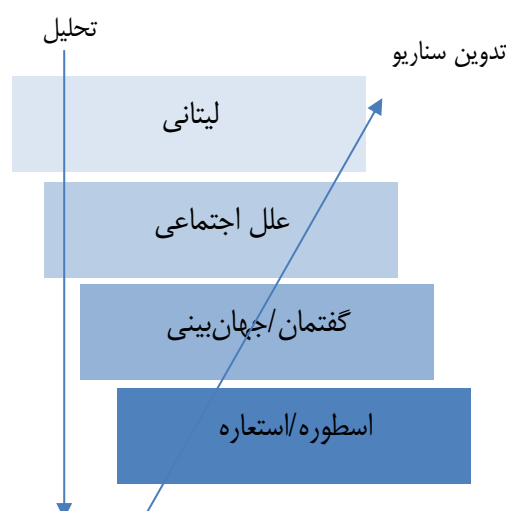
شکل ۲: نقشه متقاطع با دو بردار یونگی بین SCCC (ساده، بفرنج، پیچیده و آشوبناک) و تحلیل لایه‌ای علت‌ها (Inayatullah, & Milokevici, 2015)

### ۱-۳. سناریونویسی

یکی از شیوه‌های جدید برنامه‌ریزی، برنامه‌ریزی مبتنی بر سناریو است که از سازوکارهای برنامه‌ریزی استراتژیک است (Rahnama, 2013 & Maroofi). سناریونویسی چنان بر اهداف آینده‌پژوهی منطبق است که معمولاً به عنوان بهترین ابزار آینده‌پژوهی مطرح است. در روش سناریونگاری مبتنی بر CLA، هر سناریو در واقع معرف یک شیوه متفاوت دانستن آینده است. هر سناریو باید به عنوان یک استعاره عمل کند و در واقع میان‌بر یادآوری‌کننده برای ارائه سریع تصویری شهودی از سناریو به افراد باشد و در توصیف منطق اصلی موفق باشد (Mahmoodzade, Shakerian, & Shahgoli, 2013).

روش سناریونویسی جیمز دیتور معتقد است که چهار الگوی اصلی در نگارش سناریوها وجود دارد:

۱. **رشد مداوم:** بهبود شرایط فعلی، فناوری بیشتر، ... در این سناریوها فناوری راه‌حل تمام مسائل فرض می‌شود.
  ۲. **فروپاشی:** این آینده، نتیجه شکست رشد مداوم است. تناقضات فراوانی که در اطراف ما وجود دارد منشأ چنین آینده‌ای است.
  ۳. **وضعیت باثبات:** این آینده گویای توقف رشد و تعادل میان اقتصاد و طبیعت است. در چنین آینده‌ای جامعه متعادل‌تر و عادلانه‌تر است. این سناریو هم به طبیعت و هم به گذشته برمی‌گردد. ارزش‌های انسانی حرف نخست را در آن می‌زنند و به فناوری معمولاً به مثابه یک مشکل نگریسته می‌شود.
  ۴. **دگرگونی:** این نوع سناریوها به دنبال تغییر فرض‌های بنیادین سه نوع سناریوهای پیشین هستند. دگرگونی از طریق تغییر فوق‌العاده فناورانه یا تغییر معنوی رخ می‌دهد (Khazaie, Jalilvand, & Nasrollahi Vasati, 2013).
- در واقع، جیمز دیتور، الگوی تدوین سناریوها را به صورت بسته و در قالب چهار سناریو طراحی می‌کند. با پیروی از این الگو، می‌توان تصویری از بهترین حالت ممکن، بدترین حالت ممکن، حالت بدون تغییر و حالت خارج از چارچوب به دست آورد.
- بهترین حالت ممکن، زمانی است که سازمان به سمتی که مایل است حرکت می‌کند.
  - بدترین حالت ممکن، زمانی است که همه چیز بد پیش می‌رود.
  - حالت بدون تغییر، از ادامه خطی روندهای حاکم حاصل می‌شود.
  - حالت خارج از چارچوب نیز زمانی است که پدیده‌ای حیرت‌آور مادی یا معنوی ظاهر می‌شود که سبب تغییرات می‌شود. اندیشیدن به این چهار حالت ما را مطمئن می‌کند که به‌طور ناآگاهانه چشم بر بخشی از آینده‌های ممکن نبستیم (Bahari, 2012).



شکل ۳: فرایند تحلیل لایه‌ای علت‌ها و تدوین سناریو (Inayatullah, & Milokevici, 2015)

## ۲-۱. روند رفت تحلیل لایه‌ای علت‌ها

- به کمک روش تحلیل لایه‌ای علت‌ها و مصاحبه نیمه ساختاریافته با متخصصان و نخبگان زمینه پژوهش و تحلیل پاسخ آنان در رابطه با سؤال مربوط به لایه لسانی (لایه اول) یعنی سؤال: «مشکلات مشهود خانه (مسکن) در خصوص شیوع بیماری همه‌گیر کووید-۱۹ را ذکر کنید»، به این نتیجه رسیدیم که مفهوم خانه در ذهن اقشار جامعه نمونه دچار تغییر شده است.
  - سپس با تحلیل پاسخ‌ها به سؤال دوم مصاحبه یعنی سؤال: «علت‌های اجتماعی و فرهنگی، اقتصادی، قانونی - سیاسی، کالبدی-فیزیکی، کارکردی- عملکردی و روحی روانشناختی مشکلات خانه (مسکن) در ارتباط با بیماری همه‌گیر کووید-۱۹ چیست؟»، به عوامل زمینه‌ساز تغییر مفهوم و لزوم تغییر کالبد خانه با توجه به شیوع بیماری کووید-۱۹ دست یافتیم. نتیجه تحلیل پاسخ این سؤال در (جدول ۱) به‌طور خلاصه آمده است.
  - در گام سوم به تحلیل پاسخ سؤالات مربوط به سؤال: «چه گفتمان و جهان‌بینی‌ای از ساختار فعلی و موجود «خانه» (مسکن) در ارتباط با شیوع بیماری کووید-۱۹ حمایت می‌کند؟» پرداختیم و نتایج حاصل از آن شامل مواردی چون: سرمایه‌داری و کاپیتالیسم، مصرف‌گرایی و کالایی شدن، ماشینی شدن و تکنولوژی، فردگرایی، فضای مجازی، امنیت‌طلبی و آشفتگی فرهنگی بود و دریافتیم که گفتمان‌های حامی وضعیت کنونی خانه از جنس چه نوع تفکراتی هستند و برای ایجاد تغییر در خانه می‌بایست با چه نوع جهان‌بینی‌ای وارد بحث و جدال شد.
  - در سؤال آخر از روند رفت روش تحلیل لایه‌ای علت‌ها با پرسش: «آیا یک استعاره اصلی برای توصیف موقعیت کنونی وجود دارد؟» و تحلیل و طبقه‌بندی پاسخ‌ها در دسته‌های مشابه به ۷ استعاره برای وضعیت موجود خانه‌ها در مواجهه با ویروس کرونا دست یافتیم که در جدول به آن‌ها اشاره شده است.
- نتیجه‌ای که پس از اتمام مسیر رفت (در روند رفت و برگشتی) CLA بدان دست یافتیم بدین شرح بود. با توجه به شیوع بیماری کووید-۱۹، انسان‌ها در خانه یعنی تنها سرپناه‌شان، دچار مشکلات و چالش‌های زیادی شده‌اند و این موضوع لزوم تغییر در مفهوم و کالبد خانه را آشکار می‌کند. (نتیجه لایه اول و دوم) اما برای این تغییر نیاز به شناخت بیشتر خانه‌ها در وضعیت کنونی هست و به همین دلیل با تعمیق در موضوع ابتدا باید به گفتمان‌های حمایت‌گر وضع موجود و سپس استعاره‌های توصیف‌گر آن آشنا شد. (لایه سوم و چهارم) پس از بررسی این لایه‌ها نیز به این نتیجه دست یافتیم که گفتمان سرمایه‌داری مهم‌ترین عامل حامی از موقعیت حاضر خانه است که علاوه بر خانه، بر عوامل بسیار دیگری نیز تأثیر دارد.

## ۲-۲. روند برگشت تحلیل لایه‌ای علت‌ها

- هنگامی که به ضرورت تغییر و لزوم آشنایی با بدیل‌ها پی بردیم، در روند برگشتی روش CLA به دنبال استعاره‌ها و گفتمان‌های بدیل بودیم. سؤال‌های مطرح‌شده در مصاحبه نیمه ساختاریافته برای این مرحله بدین شرح است:
- «یک داستان جدید یا یک استعاره جدید که می‌تواند این شرایط را کاهش دهد و آن را متحول کند چیست؟»؛ با تحلیل پاسخ‌های مطرح‌شده برای این پرسش، به نتایج مختلفی دست یافته شد که با دسته‌بندی آن‌ها در گروه‌های مشابه، در نهایت ۸ استعاره استخراج گردید که به ترتیب تعدد آن‌ها در پاسخ مصاحبه‌شوندگان در بخش نتایج و یافته‌ها آورده شد:
- خانه هوشمند،
  - خانه انعطاف‌پذیر،

- خانه آزاد،
- خانه خودبسنده،
- خانه خیال،
- خانه، خانه است،
- خانه سبز،
- خانه به عنوان مرکز جهان.

این استعاره‌ها مبنای نگارش سناریوهای بدیل بودند و به کمک آن‌ها به چهار حالت متفاوت برای آینده خانه دست یافته شد.

- «روایت‌های زیربنایی و جدید (داستان خود را) راجع به مفهوم خانه تا افق ۲۰۵۰ بسازید. (توصیف شما از آینده «خانه» و «مسکن» متناسب با شیوع بیماری‌های همه‌گیر در افق ۲۰۵۰ چیست؟)»؛ در تحلیل پاسخ‌های این پرسش به جهان‌بینی‌ها و گفتمان‌های حمایت‌گر استعاره‌های بدیل دست یافتیم: طبیعت‌گرایی، جبرگرایی فناورانه، اگزیستانسیالیسم و بازنگری فرهنگی. گفتمان‌های بدیل یعنی تفکراتی که جامعه را در راه رسیدن به آینده‌های بدیل معرفی شده راهنمایی و حمایت خواهند کرد.

جدول ۱: لایه‌های چهارگانه تحلیل لایه‌ای علت‌ها برای وضع موجود خانه‌ها در ارتباط با شیوع بیماری کووید-۱۹

لایه	ابعاد مشخص شده در هر لایه
لایه لیتانی - مسئله مشهود	ایجاد مشکلات فیزیکی و روحی در خانه در پی شیوع بیماری کرونا تغییر سبک زندگی انسان‌ها در تمامی ابعاد لزوم تغییر خانه و تطبیق با نیازهای جدید
لایه علل کلان اجتماعی	علل اجتماعی - فرهنگی شامل: ارتباطات و تعاملات، تفریح و اوقات فراغت، آموزش، عبادت و دین‌داری علل اقتصادی شامل: کار و مشاغل علل قانونی - سیاست‌گذاری علل کارکردی - عملکردی شامل: تحرک و ورزش، تغذیه و تهیه غذا علل کالبدی - فیزیکی علل روحی - روانشناختی
لایه گفتمان / جهان‌بینی	سرمایه‌داری و کاپیتالیسم مصرف‌گرایی و کالایی شدن ماشینی‌شدن و تکنولوژی فردگرایی فضای مجازی امنیت‌طلبی آشفته‌گی فرهنگی
لایه اسطوره / استعاره	قوطی کبریت آشفته سرپناه ناآشنا بی‌مرز محدود و فشرده سیاه‌وسفید

با اتمام سؤالات مصاحبه نیمه ساختاریافته و تحلیل پاسخها و اعتبار داده‌ها با متخصصین حوزه، در نهایت به چهار سناریو که گویای چهار حالت مختلف برای آینده هستند دست یافته شد؛ بهترین حالت، بدترین حالت، بدون تغییر، خارج از چارچوب.

۱. در این پژوهش سناریو خانه هوشمند و خانه مرکز جهان گویای بهترین حالت است، حالتی که جامعه و خانه به سمتی که مایل است حرکت می‌کند و نیازهایش را رفع می‌کند.

۲. سناریو خانه انعطاف‌پذیر و خانه خودبسنده برای بدترین حالت در نظر گرفته شده‌اند، حالتی که هیچ تحولی صورت نگرفته و عوامل کلان اجتماعی همچنان در تعارض با یکدیگر قرار دارند. در این حالت تنها ساکنین خانه با یاری گرفتن از مبلمان‌های متفاوت به فکر ایجاد تغییرات ضعیف برای حل مشکلات هستند.

۳. حالت سوم و بدون تغییر، گویای سناریو خانه، خانه است و خانه سبز هست که با ادامه مسیر خطی روندهای حاکم، به آن‌ها دست خواهیم یافت. در این حالت، روند کنونی به آرامی به مسیر خود ادامه داده و با آگاه‌سازی جامعه، به سوی داشتن خانه‌ای ساده که با تغییراتی نه چندان شگرف به «خانه» تبدیل شده است، پیش می‌رود.

۴. آخرین حالت که خارج از چارچوب است، نشانگر سناریو چهارم یعنی خانه خیال و خانه آزاد است. این حالت به دلیل ظاهر شدن پدیده‌ای شگرف و حیرت‌انگیز مادی و فیزیکی، خارج از چارچوب تلقی می‌شود. این امر حیرت‌آور، قابلیت حرکت اجزاء خانه و قسمت‌های مختلف آن است، به گونه‌ای که هر اتاق می‌تواند با حرکت در طول و عرض، موقعیت خود را تغییر داده و در مکانی دیگر قرار گیرد و همین‌طور تمام قسمت‌های خانه با انجام این کار قادر به ایجاد فضاهای باز، نیمه‌باز و بسته مختلف خواهند بود. این امکان در حال حاضر پدیده‌ای حیرت‌انگیز به نظر رسیده و با توجه به قوانین ساخت‌وساز و محدودیت‌های موجود، دور از دسترس خواهد بود؛ اما چه‌بسا در آینده‌ای که نه چندان دور، با ادامه روند پیشرفت فناوری‌های جدید، انجام چنین امری بسیار سهل و آسان گردیده و این سناریو به بهترین سناریو ممکن تغییر حالت بدهد.

با این روش سناریونویسی و در نظر گرفتن چهار حالت مختلف، مطمئن می‌شویم که به عمد یا غیرعمد از قسمتی از آینده‌های ممکن، چشم‌پوشی نکرده‌ایم و همه حالات از بهترین تا بدترین حالت را نظر گرفته و سناریو مربوط به آن را نگاشته‌ایم. در نهایت باید عنوان کرد که با گذشت زمان تغییر خانه (کالبد و روح آن) امری ضروری است و بحران‌هایی همچون بیماری‌های همه‌گیر بیش از پیش به این امر دامن زده و ما را متوجه اهمیت آن می‌سازند. حال چه بهتر که از چنین فرصت‌هایی استفاده صحیح کرده و با تعقل و تفکر و برنامه‌ریزی بر اساس تحلیل و آینده‌پژوهی، خود را برای آینده‌های بدیل ترسیم‌شده آماده سازیم. این آمادگی نه تنها برای ارگان‌های مربوطه ضروری است، بلکه افراد جامعه نیز با آگاهی و کسب اطلاعات و دانش بیشتر، باید خود را برای تغییر و تحول مکان زندگی خود یعنی خانه و مسکن خود، آماده سازند.

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