

Architecture and Participation: Review of Emerging Themes and Outlooks*

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ABSTRACT

A participatory approach is one of the architectural design techniques that emphasizes users' collaboration in the formation process of the building and environment. Since there are many main research works in this field, researchers need a holistic understanding of the studies to be conducted. This study has reviewed the papers on participatory architecture topics since 2010 to achieve a better perception of participatory architecture concepts and create a structure based on the concepts existing in it. This study asks questions to find scopes leading to papers and their objectives, discover variables and notions available in the articles, and their temporal evolution process. In this research, the relevant papers were classified into two general fields of critical concepts (including definitions and components, social values, and historical fields) and empirical-educational studies (comprising participation tools, training, social health, users' needs, and heritage preservation). Content review of papers indicated the most important topics and variables investigated in them: expressing a problem and tools for overcoming it, examining target populations, assessing diverse scales, and discovering central concepts. The most frequent problems that led to participation included a lack of proper urban and rural infrastructures and the presence of social-political issues. Researchers have used a mixture of anthropological (identifying and evaluating existing status as well as overt and covert needs of people groups) and pragmatic (participatory design and construction of prototypes and final samples) tools to overcome the mentioned problems. The most studied groups included people in crisis (low-income, affected by flood and earthquake, illegal immigrants, etc.) and socially sensitive populations (elders, children, pregnant women, etc.) who were most frequent at the scale of cities, towns, and urban slums. Also, a review of the network of keywords and concepts used in the studies confirms the presence of three underlying concepts: decentralization, marginalized communities, and the semantic potentials of the environment. These concepts can be placed in a subset of relevant words and a network of relationships to demonstrate the main conceptual constructs of participation. Also, the concepts were placed on a time-based diagram to find the contribution of each concept in shaping topic literature within different periods. Therefore, results confirmed the highest growth of some sub-concepts in past years: users' identity finding, daily life, and cultural heritage. According to the studies conducted about variables and concepts, it has been recommended for the future orientation of this scope towards problems (e.g., narrowing the gap between intergeneration ideals and the presence of discriminative spaces), target groups (like racial and cultural minorities and war victims), scale (such as the design of small daily objects and open spaces out of the city), and tools (e.g., large 3D printers and artificial intelligence (AI)).

Keywords: Participatory Architecture, Review Study, Variables, Network of Concepts, Future Orientations.

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1. INTRODUCTION

The design has various methods and models. Design researchers have investigated its different generations, models, and patterns. Participatory design¹ The technique is one of the mentioned methods known as second-generation methods (De Vries 1999) with a communal research or community design approach (Salama 1995). The general subject of relevant studies is related to perceptual and cognitive differences between architect and user and understanding various aspects of participation. In the opinion of researchers, this method has changed the design for users to the concept of design “with users,” integrating the role of designer and user, making cultural layers of society constantly hiding and finding. Such a process can play a vital role in progressing democratic goals (Sanders and Stappers 2008; Van Zyl and Sabiescu 2020; Myjak-Pycia 2021). Hershberger (1969) explained for the first time why architects cannot show their intentions to their users (Brown and Gifford 2001). His study indicated that the highest difference between architects and non-architects occurs in the pleasantness case. Pleasantness represents many factors, which are studied by Hershberger (1969); this study highly influenced further studies. In the next years, researchers revealed why architects could not share their criteria with project users. However, the domain of studies related to participation became wider and covered other new fields. Identification of the last scopes of researchers’ focuses, variables available in studies, and their concepts can provide a clearer image of the status of studies in this field, existing gaps, and future outlooks.

Hence, asks four questions by reviewing papers published over the past 10 years: 1) What are the main scopes forming participatory architecture papers, and what are their goals? 2) What are the variables (problems, tools, scales, population groups, and concepts) in the papers about participatory architecture? 3) What kind of underlying concepts can be identified based on the literature? 4) How is the temporal evolution of concepts, and what are the emerging concepts about participatory architecture? To answer these questions, papers related to participatory architecture were reviewed by considering certain criteria (such as being conducted in a recent 10-year period that shows the newest approaches, paying attention to being indexed in authenticated websites, published in the English language, and so forth). This study has been done to achieve a better understanding of participatory architecture concepts based on the papers published over the past decade, their zoning, identification of variables’ status, network of concepts, temporal evolution process, and emerging trends.

2. METHOD

This study is a hybrid integrated and scoping review and tends to create a scope of concepts in the papers

related to participation and architecture. The scoping papers are considered in three areas: concepts, contexts, and population (PCC). Concepts are the main notions that construct the topic literature, which is formed in a certain situation, such as cultural or geographical (context) status with a concentration on various groups in terms of age, gender, race, etc. (Parker et al. 2021). Integrated papers tend to create a new framework concerning the discussed field by mixing empirical and non-empirical studies (Kutcher and LeBaron 2022). To examine the research background and collect data matched with the main purpose, the papers available in international databases were searched based on an extensive search series, including words related to participation² Through Scopus and Web of Science databases. After searching through references and collecting data, repetitive cases (30 cases) were finally deleted from 270 cases. In the next step of the paper’s review, 44 cases were selected based on certain criteria³ examining their titles, abstracts, and 10-year period. These papers were scoped to answer the first question of the study. In the next step, non-empirical papers were temporarily eliminated. The rest of the papers related to practical experiences in the field of participation were reviewed in terms of variables (scale, population, method, and tools) to extract the main concentration cases in each variable. These were examined in terms of time to find those scales, populations, and methods that are more emphasized in recent years (answer to the second question). The main concepts were extracted from the empirical and non-empirical papers with an in-depth study, and a network of relationships was created as a lexical framework (answer to the third question). To answer the fourth question (temporal evolution and emerging trends), the concepts were illustrated in a timetable. Because this paper tends to determine the status of concepts over time, the papers focused on a timetable, which was used to determine the most frequent and newest notions.

3. SCOPES OF PARTICIPATORY ARCHITECTURE PAPERS

Studies of participatory architecture confirm two general fields. Table 1 reports the scope of each paper. 1) Focus on critical concepts: this group of papers tries to express abstract concepts and intellectual foundations of participation. They attempt to examine participation topics from different aspects with historical, critical, social, and other perspectives. These papers consider what participation is, clarify it, and investigate historical contexts and social-political values. The most important goals of this category of studies include the following themes:

Power modification, situation-based measures, mutual learning (Luck 2018), necessity for adopting horizontal and bottom-up approaches (Arboleda 2020), shaping citizenship feeling and care (Beeksma

and De Cesari 2019; Behrens 2017), reducing social insecurity (Baratta et al. 2022), creating environmental justice and poverty eradication (Hofmann 2018; Nguyen and Dang 2020), keeping economic and natural-economic stabilities (Papa and Petërç 2021; Asadpoor, Goh, and Thorpe, 2021; Udall and Holder, 2013), increasing collective creativities in the city environment (Seve et al. 2021), recovering the forgetting indigenous identities (Marques, Grabasch, and McIntosh 2021; Rodgers, Marques, and McIntosh 2020), presenting a political and critical approach (Kaminer 2014), criticizing the concept of hero architect (Nuijsink 2021), emphasis on creating a different form of aesthetics (Melcher 2016), impact of informal participatory dwellings on strengthening critical thinking (Boano and Kelling 2013), and considering the title of “post-participation” with the idea of form that follows people (Jørgensen 2022).

2) Empirical-educational studies with a concentration on solving problems in real fields: These papers try to detect real problems among people, solve them, and report the results of their practical measures. These papers consider some components such as problem expression, its solving method, target groups, and scale. These studies pay specific attention to social health areas, preferences and needs of users, cultural-historical heritage, and education. The most important goals of this category comprise the following ones: Attention to users’ preferences and differences between them in visual readings and residents’ participatory image of housing (Asadpoor, Goh, and Thorpe 2021), identifying preferred aesthetical differences between ordinary people and architects (Zvoncakova et al. 2019; Ghomeishi and Jusan 2013),

elderly participation (Tavy et al. 2022), attention to patients with Alzheimer and pregnant women (McLaughlan, Annear, and Pert 2018; Blundell 2022), solving problems of informal immigrant at the risk of flood (Ravina, Shih, and Medvegy 2018), considering the problems of earthquake victims (Hoddinott, Swaffield, and Stewart 2019; Bakr, El Sayad, and Thomas 2018), creating sense of belonging among residents of informal residences (Baratta et al. 2022), improving gender equality and reducing speculation (De Jorge-Huertas 2020), use of city platforms as participation media (Behrens 2017), emphasis on communal imagination (Murphy 2005), understanding hidden cultural potentials based on the residents’ participation (Beeksma and De Cesari 2019; Belova and Schofield 2022; Chavarria Arnau et al. 2017), sustainable development of rural residences and their cultural heritages (Ekici, Özçakır, and Bilgin Altinöz 2022), co-design of open spaces for urban agriculture to increase income of low-income classes (Dubbeling, Bracalenti, and Lagorio 2009), renovation of marginal residences, abounded urban spaces, and slums (Baratta et al. 2022), holding participatory workshops (Staniewska and Konopacki 2021; Dubbeling, Bracalenti, and Lagorio 2009), empathy for problems among marginal groups and increasing students’ concerns about social issues (Salazar Ferro et al. 2020; Rodrigues and Loures 2017), repairing the disconnected relationship between professional and city (Belova and Schofield 2022), and creating a deep perception of cultural differences (Hasanin 2013).

Figure 1 shows the contribution and role of each focus scope and its sub-scopes in the formation of papers.

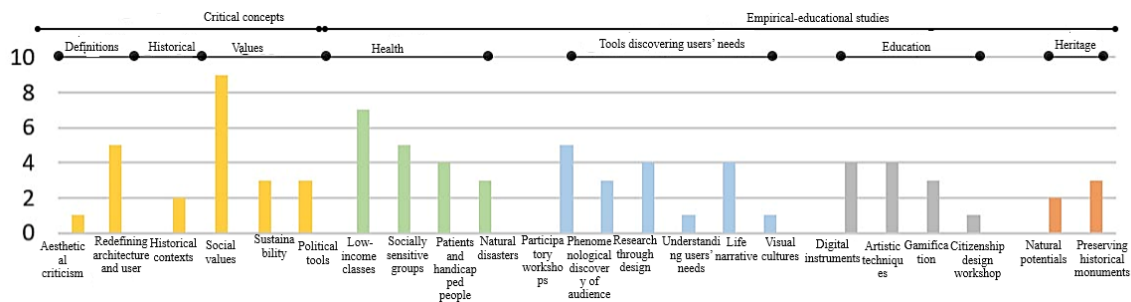


Fig. 1. Scopes and Sub-Scopes of Participatory Architecture Papers

It should be considered that papers are generally a mixture of mentioned scopes. This subject is more seen in empirical-educational studies. After reaching the stage of results, these studies would criticize

the previous hypotheses or open a new concept to enhance the domain of available concepts in this way. Table 1 indicates which studied references are related to which scopes or sub-scopes.

Table 1. Studies Reference and Research Scopes

| References based on Publication Year | Critical Thinking | | | | Empirical-Educational Study | | | |
|---|-------------------|----------------------------|--------------------|---------------------|-----------------------------|---------------|--------------|---------------------|
| | Social Values | Definitions and Components | Historical Context | Participation Tools | Education | Social Health | Users' Needs | Preserving Heritage |
| 1 (Jørgensen 2022) | | * | | * | | | * | * |
| 2 (Boys and Partington 2022) | * | * | | * | | | | |
| 3 (Denicke-Polcher 2022) | | | | | * | * | | |
| 4 (Belova and Schofield 2022) | | | | | * | | | |
| 5 (Tavy et al. 2022) | | | | | | * | * | |
| 6 (Boys and Partington 2022) | | | | | | | * | |
| 7 (Ekici, Özçakır, and Bilgin Altinöz 2022) | | | | | | | | * |
| 8 (Asadpoor, Goh, and Thorpe 2021) | * | * | | | | | * | |
| 9 (Seve et al. 2021) | | | | * | * | | | |
| 10 (Papa and Petërçi 2021) | | | | * | | | | |
| 11 (Woolner and Cardellino 2021) | * | | | | | | | |
| 12 (Marques, Grabasch, and McIntosh 2021) | * | | | | | | * | * |
| 13 (Nuijsink 2021) | * | | * | | | | | |
| 14 (Rodgers, Marques, and McIntosh 2020) | * | * | | | * | | | |
| 15 (Nguyen and Dang 2020) | * | * | | * | | * | | |
| 16 (De Jorge-Huertas 2020) | * | * | * | | | | * | |
| 17 (Arboleda 2020) | | | | | | | | |
| 18 (Hermansdorfer et al. 2020) | | | | * | | | | |
| 19 (Ibrahim Samy Sayed Saleh, Ismail, and Faggal 2020b) | | | | | | | * | |
| 20 (Heras et al. 2019) | | | | | | | | * |
| 21 (Beeksma and De Cesari 2019) | | | | | | | | * |
| 22 (Hoddinott, Swaffield, and Stewart 2019) | * | | | | | * | * | |
| 24 (Sanchez 2019) | | | | * | | | | |
| 25 (Bakr, El Sayad, and Thomas 2018) | | | | * | | | * | |
| 26 (Luck 2018) | | | * | | | | * | |
| 27 (Kreutz, Derr, and Chawla 2018) | * | | | | | | * | |
| 28 (Ravina, Shih, and Medvegy 2018) | | | | | | * | * | |
| 29 (Hofmann 2018) | * | * | | | | | | |
| 30 (Chavarría Arnau et al. 2017) | | | | * | | | | |
| 31 (Behrens 2017) | | | | * | | | | |
| 32 (Hong et al. 2016) | * | | | * | | | | |
| 33 (Bilge, Hehl-Lange, and Lange 2016) | | | | * | | | | |

| References based on Publication Year | Critical Thinking | | | | Empirical-Educational Study | | | |
|--|-------------------|----------------------------|--------------------|---------------------|-----------------------------|---------------|--------------|---------------------|
| | Social Values | Definitions and Components | Historical Context | Participation Tools | Education | Social Health | Users' Needs | Preserving Heritage |
| 34 (Melcher 2016) | | | | | | | | |
| 35 (Natakun 2015) | * | * | | | | * | | |
| 36 (Edwards, Li, and Wang 2015) | | | | * | | | | |
| 37 (Pogačar 2014) | * | | | * | | | | |
| 38 (Hasanin 2013) | * | | | | * | | | |
| 39 (Serginson et al. 2013) | | | | * | | | * | |
| 40 (Udall and Holder 2013) | * | * | | | | | | |
| 41 (Freeman 2013) | | | * | * | | | | |
| 42 (Sani, Ulucay, and Ulucay 2011) | | | | | | | * | |
| 43 (Swift 2010) | | | | * | | | | |
| 44 (Dubbeling, Bracalenti, and Lagorio 2009) | | | | | | | * | |

According to a review of empirical-educational studies on participatory architecture (second category), participation has been done under some conditions. These conditions have three main elements. The first element is a problem that participation tends to solve. This problem is subject to a target group or a certain

spatial scale (second and third elements). Studies have used some tools to overcome problems. The results indicate the importance of some concepts in this context. Therefore, some common variables can be taken into account.

These variables are depicted in Figure 2.

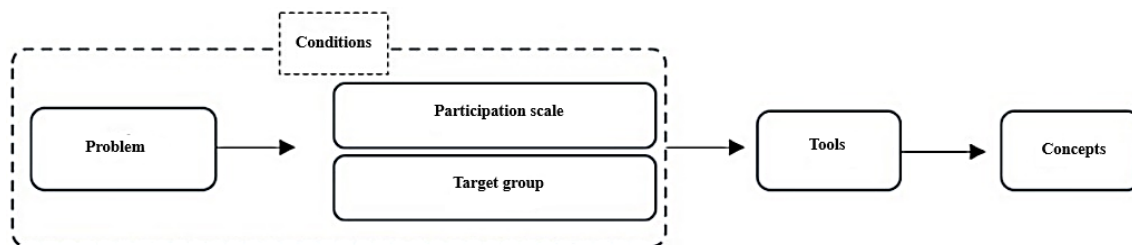


Fig. 2. Variables Available in Empirical-Educational Studies

In this study, problems, participation scales, target groups, tools, and concepts are briefly classified and analyzed.

4. PARTICIPATION CONDITIONS

In this section, participation conditions are examined in terms of problem type, scale, and participation groups. This investigation is related to empirical-educational studies focused on solving a real problem.

4.1. Problems

Studies have tried to alleviate problems existing in individuals' lives by using participatory methods. These problems are classified into five groups:

urban infrastructures, identity crises, political-social challenges, improper housing, and lack of relationship between stakeholders and designers. The most frequent subject in this field is related to identity crises, improper housing, and political-social problems:

- 1) Lack of suitable urban-rural infrastructures
Lack of access to healthy water (Baratta et al. 2022) and the presence of unused and dangerous spaces (Dubbeling, Bracalenti, and Lagorio 2009).

- 2) Identity crises

Destruction of places and loss of communal identity of residents (Belova and Schofield 2022), lack of sense of belonging among citizens (Chavarria Arnau et al. 2017), non-preservation of historical

heritage (Heras et al. 2019; Ekici, Özçakır, and Bilgin Altinöz 2022), deterioration of traditional culture (Marques, Grabasch, and McIntosh 2021), absence of marginalized communities in urban processes and sense of solidarity between citizens (Papa and Petërçi 2021), and lack of museum belonging to all races (Beeksma and De Cesari 2019).

3) Improper housing

Lack of safe house in terms of structure (Ravina, Shih, and Medvegy 2018; Arboleda 2020; Baratta et al. 2022), high costs of house purchase and lack of governmental houses (Kee 2014; De Jorge-Huertas 2020), homelessness of illegal refugees (Denicke-Polcher 2022), and high energy use in houses (Asadpoor, Goh, and Thorpe 2021).

4) Social and political problems

Fear of loneliness and lack of support during old age (Tavy et al. 2022), low-income families (Dubbeling, Bracalenti, and Lagorio 2009; Marques, Grabasch, and McIntosh 2021), filling the gap between governmental projects and ideals of residents (Kee 2014; Hoddinott, Swaffield, and Stewart 2019), and reducing population and refugees' entry to the area (Denicke-Polcher 2022).

5) Lack of accurate relationship between users and designers

Lack of easy-access tools in participatory embodiment (Bilge, Hehl-Lange, and Lange 2016), and the need for new tools for communication (Edwards, Li, and Wang 2015; Swift 2010).

4.2. Scale

Diverse scales and contexts have been considered in the participatory design scope, which includes a wide range from urban areas to house components. In this case, the scales of the city (6 cases), urban neighborhoods and towns (4 cases), marginalized urban slums (2 cases), villages (4 cases), house and social housing (8 cases), public buildings (4 cases), and house's components (1 case) have been repeated. The most frequent scale is city (including urban neighborhoods and towns, marginalized urban slums) followed by the house and social housing:

- 1) City (Behrens 2017; Bilge, Hehl-Lange, and Lange 2016; Chavarría Arnau et al. 2017; Hoddinott, Swaffield, and Stewart 2019; Jørgensen 2022; Marques, Grabasch, and McIntosh 2021)
- 2) Urban neighborhood and town (Dubbeling, Bracalenti, and Lagori 2009; Belova and Schofiel 2022; Heras et al. 2019; De Jorge-Huerta 2020)
- 2) Marginalized urban slum (Baratta et al. 2022; Papa and Petërçi 2021)
- 4) Village (Ekici, Özçakır, and Bilgin Altinöz 2022; Marques, Grabasch, and McIntosh 2021; Rodgers, Marques, and McIntosh 2020; Arboleda 2020)
- 5) Urban building (museum, school, etc.) (Beeksma

and De Cesari 2019; Hofmann 2018; I. S. S. Saleh, Ismail, and Faggal 2020a; Woolner and Cardellino 2021)

6) Houses and social housing (Baratta et al. 2022; De Jorge-Huertas 2020; Denicke-Polcher 2022; Asadpoor, Goh, and Thorpe 2021; Ravina, Shih, and Medvegy 2018; Sani, Ulucay, and Ulucay 2011; Kee, 2014; Tavy et al. 2022)

7) House's details (Denicke-Polcher 2022)

4.3. Target Groups

Researchers have studied diverse populations, which can be classified into six groups city and village people, socially sensitive groups, victim individuals affected by crises, students, and house residents:

1) City and village people

Citizens (Behrens 2017; Seve et al. 2021; Jørgensen 2022; Bilge, Hehl-Lange, and Lange 2016), people in historical neighborhoods (Bilge, Hehl-Lange, and Lange 2016; Heras et al. 2019), museum visitors (Beeksma and De Cesari 2019), villagers and native people (Arboleda 2020; Ekici, Özçakır, and Bilgin Altinöz 2022; Marques, Grabasch, and McIntosh 2021).

2) Victim individuals affected by crises

Individuals living in slums and marginal areas of cities and informal residences (Baratta et al. 2022), immigrants and refugees (Denicke-Polcher 2022), low-income people (Dubbeling, Bracalenti, and Lagorio 2009), individuals affected by earthquake and flood (Hoddinott, Swaffield, and Stewart 2019; Ravina, Shih, and Medvegy 2018).

3) Socially sensitive groups

Elderly (Tavy et al. 2022), children (Papa and Petërçi 2021), and pregnant women (Blundell 2022).

4) Students (Hofmann 2018; Ibrahim. Samy. Sayed. Saleh, Ismail, and Faggal 2020b; Ghaziani 2021).

5) House's residents (De Jorge-Huertas 2020; Asadpoor, Goh, and Thorpe 2021; Sani, Ulucay, and Ulucay 2011).

6) Cyberspace users (Swift 2010).

Figure 3 depicts a summary of problems, target groups, and scales existing in the participatory architecture papers. This image shows how problems, target groups, and scales are related to each other. In terms of problems, the lack of suitable urban and rural infrastructures has made relationships with more target groups. This problem pertains to socially sensitive groups, victim individuals (low-income people, people affected by flood, immigrants, etc.), housing residents, and students. In the case of target populations, most attention has been paid to socially sensitive groups who were studied at the city, village, and house scales.

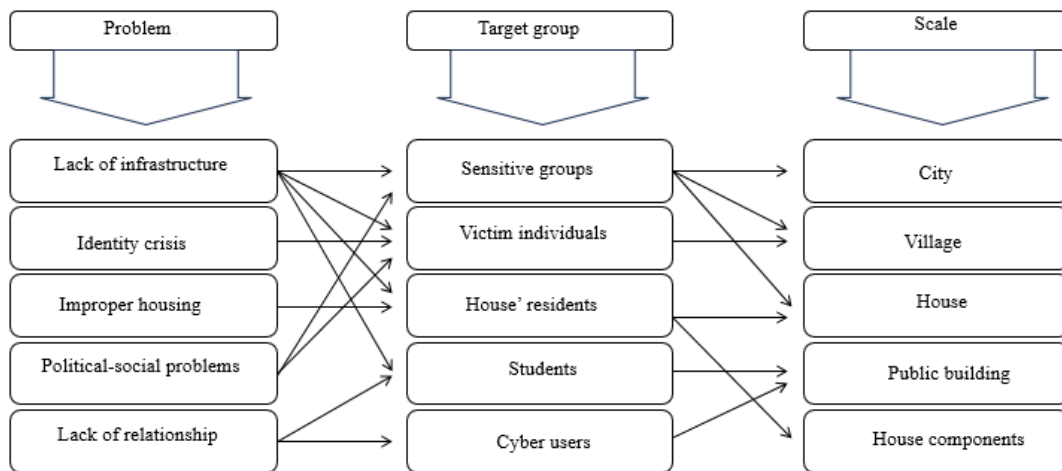


Fig. 3. The Relationship between Variables

Another analysis in this field is related to the dispersion of criteria within the temporal interval (Fig. 4). This analysis indicates how problems, target groups, and scales have been present in participation literature over the past years. There is a relatively equal distribution of problems in papers from 2010

to 2017, but identity crises assigned most share to themselves since 2017. In this interval, scales of city (including city, towns, and slums) and village have received greater attention among demographic groups of city, village, and victim individuals affected by crises.

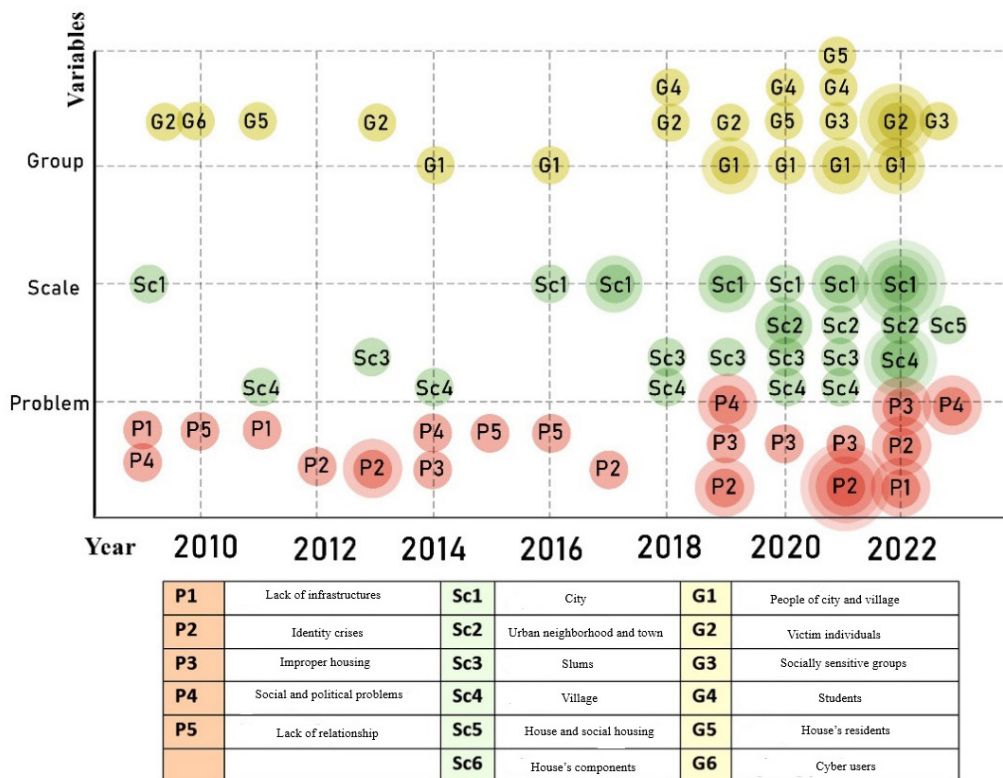


Fig. 4. Dispersion of Criteria within the Temporal Interval

5. TOOLS

The studies have used different measures to overcome the mentioned problems. These tools have been employed in the frame of group workshops or virtual communications with participants. These tools are divided into two general categories anthropological (identifying and evaluating existing status as well as overt and covert needs of people groups) and pragmatic (participatory design and construction of prototypes and final samples) measures. All empirical studies conducted on participatory architecture have done a mixture of research and pragmatic measures:

1) Anthropological measures

Studying environmental behavior including visual anthropology and movement maps (Woolner and Cardellino 2021), recording people's mobility and stillness patterns (Jørgensen 2022), observing physical effects of users' daily lives (Hasanin 2013), verbal anthropology, semi-structured and in-depth interviews, memories, and narrative study (Belova and Schofield 2022; Heras et al. 2019; Marques, Grabasch, and McIntosh 2021), online questionnaires (Chavarría Arnau et al. 2017), and users' illustrations (Marques, Grabasch, and McIntosh 2021; Dubbeling, Bracalenti, and Lagorio 2009).

2) Pragmatic measures

Use of recycled materials (Papa and Petërçi 2021), collage (Ibrahim. Samy. Sayed. Saleh, Ismail, and Faggal 2020b; Woolner and Cardellino 2021), 2D and 3D replicas (Arboleda 2020; Ibrahim. Samy. Sayed. Saleh, Ismail, and Faggal 2020b), digital techniques such as creating a participatory game in Minecraft server or BIM combined with game engines (Staniewska and Konopacki 2021; Edwards, Li, and Wang 2015), and training by construction together with participants (Rodgers, Marques, and McIntosh 2020; Arboleda 2020).

6. CONCEPTS

The concepts used in the papers imply that participation means the presence of the user and designer in a new role. The new roles would lead to the formation of deep questions. For instance, Melcher (2016) has introduced participation aesthetic topics under the titles of many but unified voices in a project. With a critical view, he points to beauty perception contradictions between architects and users, which leads to synergy and the formation

of newer and higher levels of beauty. Therefore, participation has a critical discourse in conflict with the common stereotypes of beauty and performance. This process has embraced the physical and mental dimensions of stakeholders and is a complex process that includes permanent coding and encoding. Coding processes are linked to the concept of humans and their surrounding physical and social environment. Hence, participation is a substantial need in the social life of humans, which comprises various scales. The presence of a sophisticated process coding that occurs at diverse scales with people's presence would make participation a twofold concept. A concept that can be either a democratic ideal or just a tool for democracy shows (Boano and Kelling 2013); therefore, participation provides a political and social context in many cases. Social contexts of participation make it a language for expressing forgetting visual cultures. Visual cultures show themselves in diverse participatory architectures. From the viewpoint of critics, there has been so far a wide gap between the visual culture of communities and architecture (Julier 2006). A researcher points to Dubai and Beijing towers that not only cannot make the modern culture richer but also ruin the visual cultures and semantic layers of their countries (Stierli and Widrich 2015). A review of the concepts indicates that some researchers try to enter participation into educational procedures. A teacher explains that nobody inherently knows the principles of participation. As a mediator, the teacher makes a relationship between students and the target society but does not introduce an imposed sentence to the observation and learning processes (Ortiz et al. 2021). Thus, students and also the target society will achieve a phenomenological understanding of each other, which shall be as much as possible far from judgment. In the opinion of researchers, participatory architecture education is a step beyond the emphasis on the behavioral sciences in the design and shape of social realities.

Some of the most important concepts of text and their keywords were identified and extracted by studying empirical and non-empirical studies. A map was illustrated for the most significant concepts of participatory architecture scope based on the mentioned words. The keywords were classified into three larger groups and an interconnected network of their relationships appeared. This network is seen in Figure 5.

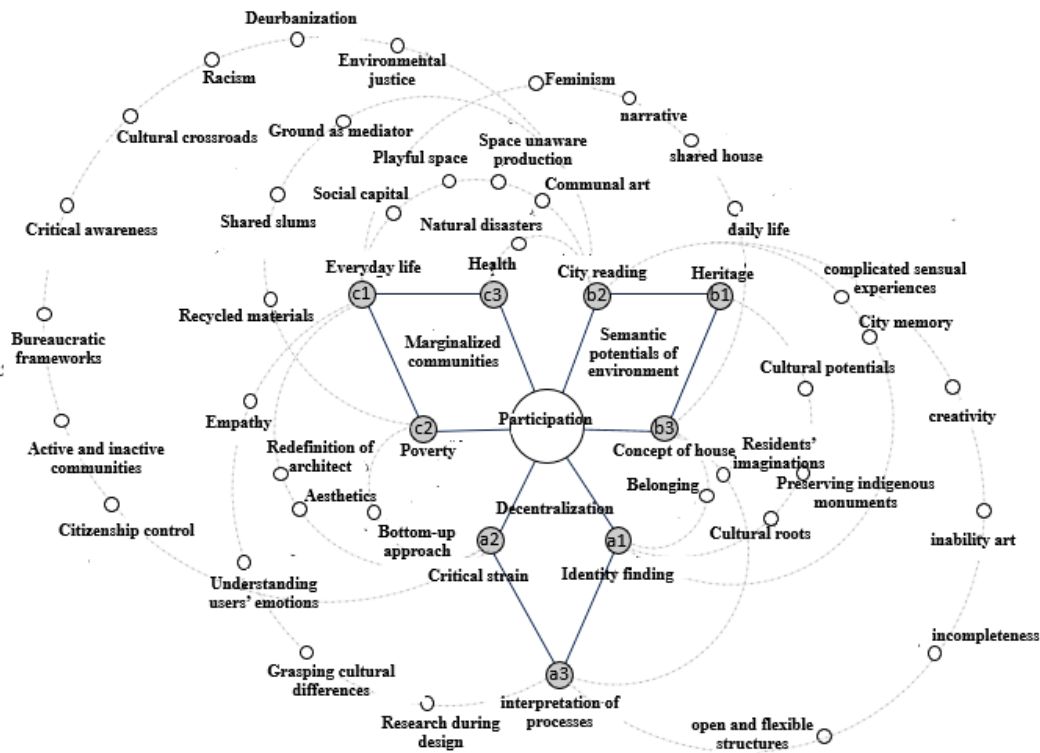


Fig. 5. Map of Key Concepts of Participatory Architecture

6.1. First Concept: Decentralization

The term “decentralization” emphasizes on distribution of centralized power in governmental institutes to engage citizens in decision-making and execution processes (Natakun 2015). Decentralization is a central concept in participation literature that comprises three important sub-concepts. Critical strains are among these sub-concepts (a2). This keyword encompasses a wide range of criticism literature words, such as critical awareness (Denicke-Polcher 2022), social action (Heras et al. 2019), and unaware production of meaningful space (Jørgensen 2022). These concepts would create a new identity for participants and designers. Identity-finding of participation is another important side of decentralization (a1). Also, understanding the importance of process interpretation and participation outcomes is another substantial way to decentralize rigid readings (El-Kholei 2020) (a3). Interpretation can give architects the role of an active mediator who can move among new dialogues and situations. The interpretation would result in flourished comments of the target society, different perceptions of the sense of place and belonging (Sani, Ulucay, and Ulucay 2011), aesthetical challenges (Asadpoor, Goh, and Thorpe 2021), and its distinctive role in decentralization (Melcher 2016), and also formation of cultural crossroads (Nuijsink 2021).

6.2. Second Concept: Emantic Potentials of Environment

Participatory processes become important in their contexts. If the ruling structures are accurately decentralized and converted to flexible and open structures, there will be many narratives in the environment that can contribute to the recovery of missed communal memories (Belova and Schofield 2022). There is a considerable emphasis on the importance of narrative (Rodgers, Marques, and McIntosh 2020; Heras et al. 2019), the discovery of hidden cultural potentials of the site, the design of communal flexible spaces over time (Arboleda 2020), and daily life of user (Marques, Grabasch, and McIntosh 2021) in participation literature. The concept of environmental semantic potentials is considered in the field of cultural and historical context (b1), reading the environment of city and village (b2), and the concept of houses (b3).

6.3. Third Concept: Marginalized Human

After the centrality of rigid structures is removed, narratives are discovered within the environment context focused on human presence. In participation literature, human is the marginalized human. The marginalized human can be an ordinary citizen who does not play any role in decisions made about their environments, or may be harmed by natural disasters

such as flood and earthquake or disease prevalence, affected by gender or racial violence, and live in slum areas (Ravina, Shih, and Medvegy 2018; Hofmann 2018). Therefore, the marginalized human must enter the scene of problem-solving through participatory processes using tools such as behavioral maps (Asadpoor, Goh, and Thorpe 2021), verbal anthropology (Rodgers, Marques, and McIntosh 2020), and or education (Woolner and Cardellino 2021; Dubbeling, Bracalenti, and Lagorio 2009). Hence, the perception of poverty from the viewpoint of the poor is critical in participatory processes, for instance (Arboleda 2020). Everyday life, (c1), poverty (c2), and health (c3) are three sides of the marginalized human concept. Accordingly, one can define participation as a process with political, noncentral, and critical aspects after

connecting these vertices. It is a process that tends to shape human identity by linking to their cultural and contextual roots. In this process, activists try to improve human health especially in marginalized communities, by adopting social mediation methods and interpreting the spatial and semantic potentials of the communal environment.

6.4. Temporal Evolution of Concepts

Another analysis in this field is related to the dispersion of concepts within temporal intervals (Fig. 6). This analysis depicts the role of each concept in shaping the topic literature over the past years. The results showed a dramatic increase in papers over the recent five years (from 2018 to 2022).

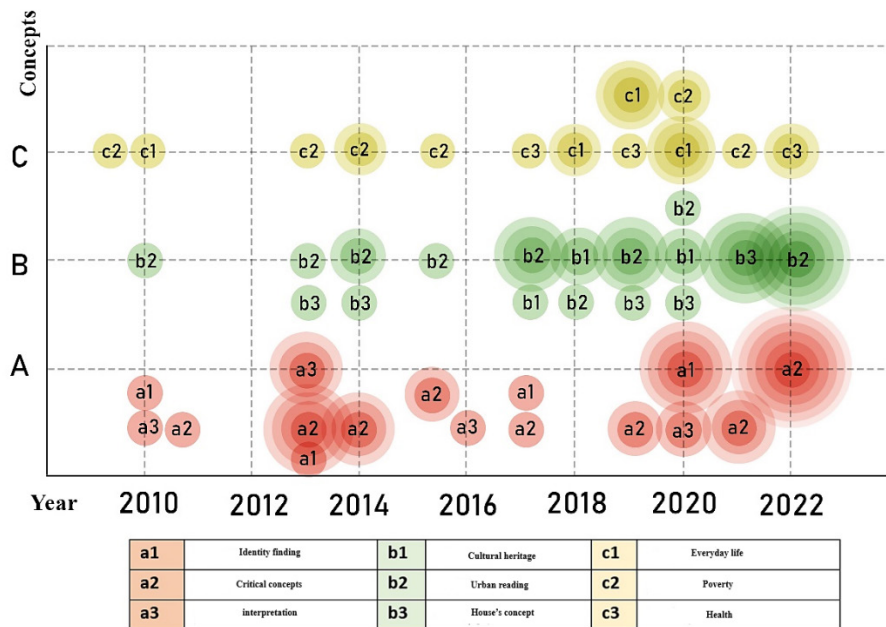


Fig. 6. Dispersion of Concepts through Time

Another analysis in this field is related to the dispersion of scopes and concepts within temporal intervals (Fig. 6). This analysis indicates the contribution of each concept and its sub-concepts to the formation of participatory topics. This examination confirmed two separable periods. The first period concerns 2010-2016, which can be named the period of the slow growth of concepts. In the second period (from 2016 to 2022), triple concepts have had a certain growth. This period can be called the accelerated growth period of some concepts, such as urban readings, cultural heritage, identity finding, critical concepts, and everyday life issues, with the peak point occurring in 2020.

In the case of decentralization, the critical concepts have been frequent during all years, which is expected regarding its extensive keywords. Shaping the

identity of users, however, has been a concept that has become more important in past years. The concept of interpretation received greater attention in 2012 and 2013 but had no accelerated growth compared to other sub-concepts. In the case of semantic potentials of the environment, the concept of heritage is not observed in the first period. Therefore, participatory heritage is taken into account as a new concept. The concept of the house also had a minor role in this period, but it became significant and one of the substantial concepts in the field of participation in the second period when the concept of historical and cultural heritages also appeared. Nevertheless, urban and rural readings related to the presence of citizens or villagers in public open spaces and the creation of public perception and cooperation among participants have had the highest importance throughout the whole period. This topic

and house's concept have created the most significant environment's semantic potential notion during past years. Regarding the marginalized human theme, the concept of general health and hygiene of society has grown since the second period. This concept has received more attention in recent years, especially due to the COVID-19 pandemic. The concept of poverty has been always one of the main keywords of this theme over all years of the first and second periods. One growing concept is attention to the daily lives of citizens, which is in line with contemporary phenomenological and anthropological approaches. This concept has become the most frequent notion in this theme during the second period.

7. CONCLUSION

This study is a mixture of two types of review studies (scoping and integrated) done to achieve a better understating of participatory architecture. This study reviewed studies conducted from 2010 until now. The research findings contribute to answering the four asked questions.

The first question was about finding the main scopes for the formation of participator architecture papers and their objectives. To answer this question, two general scopes of papers were identified and concentration points of each sub-scope were revealed: critical concepts (what are it and clarification, historical contexts, and social-political values) and concentration on solving real problems through empirical and educational approaches (including social health, tools for discovering users' needs, cultural-historical heritage, and education).

The second question searched those papers in this context that considered problems, tools, scale, demographic groups, and concepts. In terms of problems, five underlying problems had the most shares in papers: lack of proper urban-rural infrastructures, identity crises, inappropriate housing, social and political problems, and lack of correct relationship between stakeholders and designers. Among these problems, identity crises have been more emphasized in recent years. In terms of target groups, researchers studied six general groups: people of the city and village, victim individuals affected by crises, socially sensitive groups, students, house residents, and cyberspace users, with the highest contribution belonging to the study of city and village people, and socially sensitive groups. Regarding the scale, this study indicated that researchers have investigated the city scales (including urban neighborhoods, towns, and slums), village, house and social housing, public buildings, and house components. Among these scales, city and village scales have received greater attention and frequency. Also, the relationship between these variables showed that among considered problems, the lack of proper urban and rural infrastructures has made relationships with more target groups. These

individuals include socially sensitive individuals (low-income people, flood-affected people, immigrants, etc.), housing residents, and students. Among these categories, socially sensitive groups have been studied at more scales (city, village, and house). A study of problem-solving tools showed that researchers have tried to solve existing problems by using anthropological measures (identifying and evaluating existing situations and overt and covert needs of people groups) and pragmatic measures (participatory design and construction of prototypes and final samples).

The third question is related to the identification and temporal analysis of underlying concepts that can be extracted from the topic literature. Since the discovery of scope is one of the significant goals of scoping studies, a mixture of keywords and concepts available in empirical and nonempirical papers were collected and analyzed. A conceptual map of the main concepts of participatory architecture existing in the papers was created based on the relationship between these keywords and their classification. These concepts emphasize three central concepts available in papers. Three main concepts are semantic potentials of the environment (including cultural heritage, city and village readings, and house notion), marginalized communities (including identity finding of users, critical strains, and interpretation of procedures), and decentralization (including society health, poverty, and daily life) that are placed in an interconnected network of keywords.

The fourth question aimed at discovering emerging concepts of this realm through temporal evolution analysis of subjects. Temporal assessment of concepts showed two periods of 2010-2016 (slow growth period) and 2017-2022 (rapid growth period), and sub-concepts of user identity, daily life, and cultural heritage are dramatically growing in the second period.

Researchers can introduce new scopes and concepts to the participation notion by using the results of this study. The following are recommendations given based on the variables mentioned in the present paper:

- In terms of problems: 1) the gap between intergeneration ideals of users, 2) the presence of urban areas free of the sense of belonging, 3) spaces without attention of mentally and physically retarded groups, 4) the existence of urban infrastructures that decrease women's security, and 5) presence of spaces with racial or gender discrimination.
- In terms of target groups: 1) gender, racial, and cultural minorities, 2) victim women and female-headed families, 3) physically and mentally disabled, 4) war victims, and 5) some jobs such as physicians, artists, and athletes.
- In terms of scale, 1) design of daily small objects, 2) open spaces outside of the city such as artificial jungles, and 3) urban open spaces such as parks.
- In terms of tools: 1) employing humanistic experts,

2) technological ideas such as using large 3D printers and AI technology, and 3) creating users' personas with different cultures.

This study reviewed English papers available in Web of Science and Scopus databases since 2010 and did

not consider the congress papers, books, and other academic documents, further studies can be done to complete the periods and consider other databases and documents.

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CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

MORAL APPROVAL

The authors commit to observe all the ethical principles of the publication of the scientific work based on the ethical principles of COPE. In case of any violation of the ethical principles, even after the publication of the article, they give the journal the right to delete the article and follow up on the matter.

PARTICIPATION PERCENTAGE

The authors state that they have directly participated in the stages of conducting research and writing the article.

ENDNOTE

1. Co-design or community design
2. (TITLE): PARTICIPAT* OR CO-ARCHITECTURE OR COLLABORAT* OR "client-center" OR "client center" OR "user-center*" OR "user center" OR "user-cent*" OR "user-orient*" OR "user orient*" OR "human center*" OR "human-center*" OR "peoplecenter*" OR "people-center*" OR "well-design*" OR "peoplecenter*" (TOPIC):ARCHITECT*
3. Inclusion criteria of study: having a clear and academic research method, being registered as a paper, having findings matched with the objectives of the present study, being published in authentic international journals of ISI (Institute for Scientific Information), and being published in the English language. Therefore, papers written in other languages, repetitive titles, and cases with unclear (or not-recorded) research methods were exclusion criteria.

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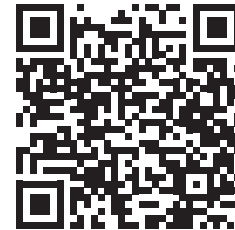
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