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A Taxonomy of Bottom-Up, Community Planning and Participatory Tools in the Urban Planning Context

Bruno Seve [1] | Ernesto Redondo [2] | Roberto Sega [3]

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Abstract

The last fifty years of urban transformation has generated impressive "know-how" in urban studies in Europe. However, making our cities increasingly attractive through ambitious urban plans of transformation and renovation has also led to issues such as gentrification, degradation of heritage, social tensions, mass tourism and even exclusion. Inherited from the 1970s, processes of participation, which are directly related with reclaiming the city, are now re-emerging in urban and architectural processes in democratic cities. Sustainable, resilient, urban regeneration means working with inhabitants when cities are transformed, giving them the opportunity to collaborate in the city's creation. Complex, ready-to-use participatory methodology is required for urban planners and landscape architects to work in an interdisciplinary way with other specialists. This research proposes the creation of methodology for participatory action using new and traditional tools (information and communications technology, mapping, big data cartographies, tactical planning, and opinion polls among other techniques), through their classification into a taxonomy. This paper shows the taxonomy generated through an analysis of several historical and recent case studies in which the real stakeholders in urban planning—its users—co-designed the project. By combining the tools, we should be able to build a methodology or a guide for co-creation workshops.

Keywords: Participation; bottom-up; community planning; urban project

Citation

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Una taxonomía de herramientas participativas en el contexto de la planificación urbana

Resumen

Los últimos cincuenta años de transformación urbana han generado un impresionante "saber hacer" en los estudios urbanos en Europa. Sin embargo, hacer que nuestras ciudades sean cada vez más atractivas a través de ambiciosos planes urbanos de transformación y renovación, también ha generado problemas como la gentrificación, la degradación del patrimonio, tensiones sociales, turismo de masas e incluso exclusión en diversas formas. Heredados de la década de 1970, los procesos de participación, directamente relacionados con la recuperación de la ciudad, están resurgiendo ahora en los procesos urbanos y arquitectónicos de las ciudades democráticas. Una regeneración urbana sostenible y resiliente significa trabajar con las comunidades cuando las ciudades se transforman, dándoles la oportunidad de colaborar en la creación de la ciudad. Por lo tanto, se requiere una metodología participativa compleja y lista para usar para que urbanistas, arquitectos, arquitectas y paisajistas trabajen de manera interdisciplinaria con especialistas. Esta investigación propone la creación de una metodología para la acción participativa con herramientas nuevas y tradicionales (tecnologías de la información y las comunicaciones, mapeo, cartografías de *Big Data*, urbanismo táctico, encuestas de opinión entre otras), a través de su clasificación en una taxonomía. Este artículo muestra la taxonomía generada a través del análisis de varios estudios de caso históricos y recientes en los que las verdaderas actrices y los verdaderos actores del urbanismo, sus usuarias y usuarios, co-diseñaron el proyecto. Combinando las herramientas, deberíamos poder construir una metodología o una guía para los talleres de co-creación.

Palabras clave: Participación; de abajo hacia arriba; planificación comunitaria; proyecto urbano

[1] Ph.D. Architect, Assistant professor, ETSAB-UPC (ORCiD: 0000-0002-0600-1923, Scopus Author ID: 57215578892, WoS ResearcherID: AAE-5213-2021), [2] Ph.D. Architect, Associate professor, ETSAB-UPC (ORCiD: 0000-0002-6633-4471, Scopus Author ID: 42462098100, WoS ResearcherID: A-3836-2013), [3] Ph.D. Architect. Contact e-mail: bruno.seve@upc.edu

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1. Participation in the urban planning context: A range of face

Public engagement is quite a recent concept. It was recognized by the Brundtland commission (Brundtland G, 1987), whose definition of "sustainable development" implied equity encouraged by citizen participation. This concern for actively involving numerous groups is at the heart of discussions on sustainability objectives in Agenda 21 (1992), with notions such as women's empowerment "*through full participation in decision-making", "grass-roots mechanisms to allow for the sharing of experience and knowledge between communities and giving communities a large measure of participation in the sustainable management and protection of the local natural resources*" (UNCED, 1992, p. 5). In Europe, the Aarhus Convention establishes public rights (of individuals and their associations) with regard to the environment, such as the right to participate in environmental decision-making (Stec *et al.,* 2000).

Although interest in the subject is growing[1], participation, bottom-up processes and community planning are quite recent practices. A vision of a city will only be complete if the perspectives of groups with different interests are incorporated. Recent history has shown how new types of communities and entire neighbourhoods can arise in an urban environment that is struggling against the global city[2], and how the means used by planners to effectively engage participants in decision-making processes have been improved. For example, Giancarlo De Carlo challenged with TEAM X the modernist doctrines of CIAM (1969). Jane Jacobs tried to protect central neighbourhoods in New York (1961) and was committed to observing the experience of inhabitants and using common sense, in contrast to many functionalist visions that seek to simplify and order neighbourhoods. Henri Lefebvre promoted the right to the city, a political proposal whose focus is the city and the possibility of people taking ownership of it again (1968). Lewis Mumford understood the city as a living organism (1961). "The Ladder of Participation" (Arnstein, 1968) is one of the most significant papers to date on real participation. It describes eight levels of participation from manipulation to citizen control, which represents true participation. Christopher Alexander (1979) believed that users of architectural spaces know more than architects about the type of building they need. Jesús Ibáñez (1990) was a pioneer who conducted over a thousand surveys and empirical studies on different topics. In Spain, he developed the "discussion group" practice, which is one of the distinctive research tools in qualitative sociological trends. The matrices of Max-Neef *et al.* (1993) include the economic dimension but from a perspective that is neither exclusive nor exclusive. These matrices allow development on a human scale. Humans and their more subjective dimension are put at the centre of the analysis on development, and it is assumed that development should always refer to people and not to objects. Sanoff's (2000) work focused on building a community participation method. The above are just a few examples. In Barcelona, emerging participatory methods associated with the reclaimed city have been tested recently, such as the work of Col·lectiu Punt 6, Zaida Muxi, Raons Públiques or La Col.

The participatory phenomenon, defined as "the action of taking part in something", is as old as architecture (and the city) itself, as evidenced by historical community and local organizations. Since its origins, urban life has been a mirror and engine of important processes of social, political and cultural change. The concept of capitalism emerged in the city with the development of trade, division of labour and accumulation of wealth. Historians and sociologists like Karl Marx or Friedrich Engels argued that societies were traditionally based on equal, communal social relations (Scott & Marshall, 2007). Although we cannot really speak of urban planning context in these first settlements, we can imagine how the communal activities of tribes or family clans represent an archetype of participation. To turn around the notion of participation, we can also use the concept of top-down and bottom-up processes, inherited from computer science. In the top-down model, a system summary is formulated, without specifying the details.

[1] In Spain, the integrated and participative approach in the urban regeneration context has recently evolved with the methodology URBAN" and URBAN II. (De Gregorio Hurtado, 2019)
[2] The term "global city" is attributed to the sociologist Sassen (1991).

E-ISSN 1886-4805

Recent works on “urban commons” help to understand the latest concept: urban communities should have the right to access and use urban spaces (such as public spaces, urban land and infrastructure) to support a range of goods and services that are important for the sustainability of these populations and particularly their most vulnerable members. This movement is based on founding principles that include sharing, collaboration, civic engagement, inclusion, equity and social justice (Foster & Iaione, 2016). Similarly, the works of Stavros Stavrides (2016) call for a conception of the urban space as a common good—beyond the notions of public and private space—and a space governed by everyone. He considered that urban space should remain open to all, and he explicitly expressed and exemplified new forms of social relationships and life in common. To support his thesis, Stavros Stavrides drew on numerous examples of social housing, self-built urban settlements, street trade and art, occupied space, liberated space and graffiti. He considered these "common spaces" as alternatives that are against and move beyond capitalism and are produced through ‘collective inventiveness’ (p. 6).

In this context, participation in urban contexts is not only a technology promoted by those officially entitled to practice urbanism or planning, but something that groups or individuals do. Self-building, occupy, protest, dissidence, alternative and disobedience are all forms of participation that should always be considered as such. Participation and urban transformation are recursive processes, as explained by Morin (1994). A recursive process is one in which the products and the effects are both causes and producers. Recursive organization breaks with the simple idea of cause-effect and product-producer, because everything that is produced is reintegrated into what has produced it in a cyclical process.

This suggests that participatory urban planning can include the various forms of citizen mobilization that occur in a city. The truth is that participation in any given process or context is not only an (embodied-intentioned) technology brought about by experts, but an inevitable feature of any process of development or transformation. Urban projects are complex, that is, they have a complex dialectic that makes us open to more than two options. They are like multilemmas or tetralemmas that allow us to find new options when faced with a dilemma (Villasante, 2006).

We assume that if we study this wide range of experiences, they can be grouped into similar patterns. To propose new activities and dynamics for the common good, we need knowledge and understanding of the basic tools and characteristics that lie behind past and recent case studies. This means considering all experiences regardless of their origin and classifying them according to common patterns. This concept led us to consider and create a method of analysis to classify bottom-up and participatory processes, like a taxonomy with a chart.

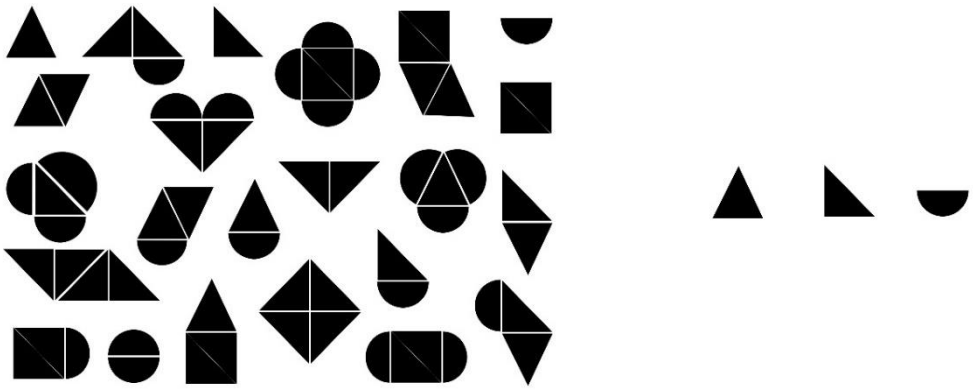
2. Taxonomy

To propose participatory, community planning methodology, first we must analyse the range of participatory and bottom-up experiences in urban transformation. Taxonomy is a term that is normally used in biology. In its essence, it comes from the Greek “**τάξις**” (*taxis*) which means “ordering” and “**νόμος**” (*nomos*) which means “norm” or “rule”, according to the most general definition of the science of classification (Lidell & Scott, 1843). In biology, taxonomy seeks to identify, name and classify species and reflects the relationship between them or between groups of organisms. Traditionally, as in Aristotle’s works (384-322 BC), species groups are classified by observable or morphological characteristics, although this method changed with the notions of molecular biology (Lennox, 2011).

E-ISSN 1886-4805

In our research, we have opted to group by categories with various attributes, as in traditional classification. This classification considers that any being in biology or, in our case, any experience can be registered and ordered based on similarities and differences in structure and appearance. Figure 1 illustrates abstractly how the taxonomy was created: a set of forms (on the left) can be classified according to a common denominator (on the right). Our research considers participatory actions and bottom-up tools, and classifies them according to four categories (tool, duration, place and objectives), with basic attributes that are shared or not by the experiences. The other part of our research, experiments involving students and the local community, reinforces the theoretical model. At the time of writing, we have experimented with various co-creations and urban DIY workshops, such as the Taller Espacios Abiertos (TEA/OSW) held in Mexico and Barcelona (Seve, 2012; Seve & Redondo 2020). Another workshop, which we call "Urban Notes", is currently being tested in the School of Architecture of Barcelona (ETSAB).

Figure 1. Taxonomy explained

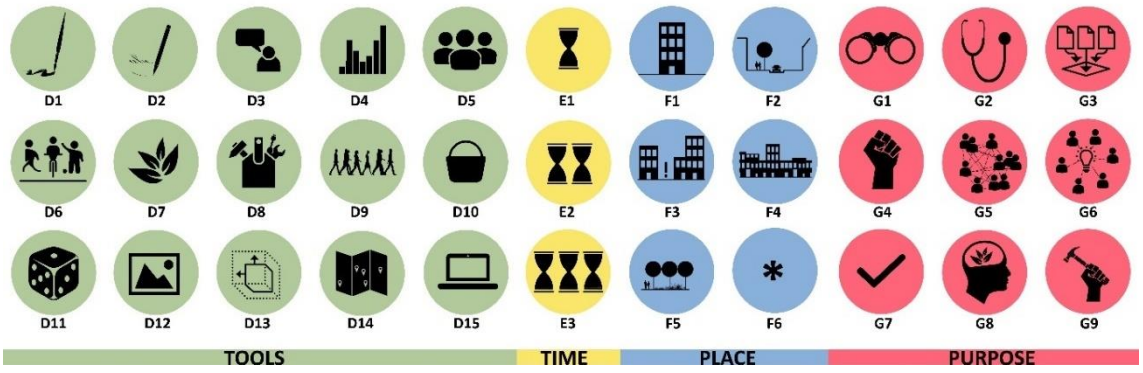


Source: Authors.
Note: a set of entities (on the left) can be classified according to a common denominator (on the right)

2.1 *Table of taxonomy*

The classification (or taxonomy) is drawn up using a grid consisting of four columns (D, E, F and G) (Figure 2). To facilitate the interpretation of the table and its possible adaptation as a guide or collaborative platform, a legend has been created with icons to ensure universal, multilingual interpretation. The four categories describe the basic tools used in the participatory experience (D), the time needed (E), the type of urban space (F) and the purpose (G). The categories are described below.

Figure 2. Zoom on the taxonomy categories D, E, F and G



Source: Authors.

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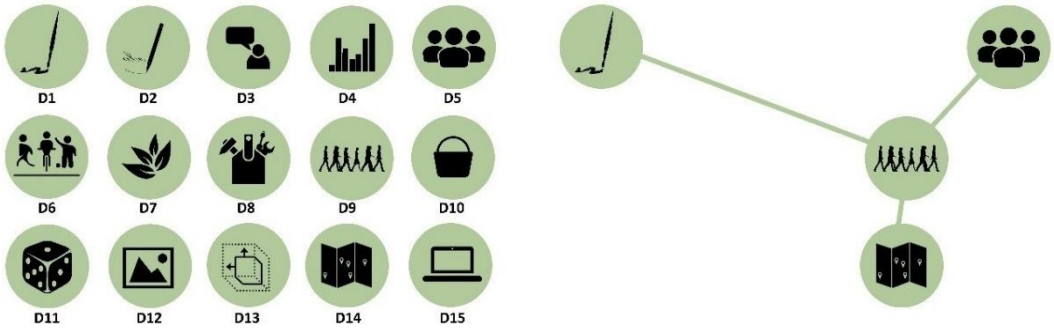
D. Tools and Actions. (D) corresponds to the first category. This is the most important column in the creation of the taxonomy because it illustrates the tools and actions used in the processes of participation, community planning, bottom-up processes and natural grassroots processes. The chart of tools has evolved during the study. A participatory experience or method is comprised of combinations and variants of the detected tools; hence it is highly permutable (Figure 3).

Figure 3. Bottom-up and participatory tools (left). Tools involved in a hypothetical experience (right)



Source: Authors.

- D.1. Drawing, by definition, can refer to the art that teaches us to draw and the image that is executed. The action of drawing, as a form of inhabitants' expression, and the images that are created can be a source of data. In the case of "Urban Notes", walks around the area that incorporate drawing sessions are organized with architectural students and inhabitants (Figure 4). The purpose of these sessions is to observe, collect data, analyse, diagnose and even provide some early sketches and ideas for a schematic design. Another experience, "los mapas corporales" (Body maps), developed by Col·lectiu Punt 6, proposes the use of drawing to analyse emotions and other sensations in relation to the spaces and environments in which participants live or through which they travel (Col·lectiu Punt 6, 2017).

Figure 4. Urban notes

Source: Authors.

- D.2. Writing and notes can be considered a classic tool for collecting information and even preparing reports of results. A combination of this tool and assemblies or discussion groups can be used to discuss a specific topic, and to explore and share reflections based on peoples' ideas.

- D.3. Talk: interviews are carried out to extract information and data on the perception of the users who inhabit a place. The interview can be formal or informal and undertaken in several ways: individually, in a discussion group or through questionnaires.

E-ISSN 1886-4805

- D.4. Surveys and polls. The purpose of surveys is to ensure public participation or information by collecting data through a previously designed questionnaire. Surveys provide quantifiable data.

- D.5. Meetings and assemblies bring together all stakeholders in an urban project. In consultation meetings such as public debates and in citizen participation processes, users are generally only informed of a project. At the other end of the scale, in assemblies and discussion groups, there is real debate and decisions are made by vote with hopefully no hierarchical figure. The purpose of these discussions is generally to collect information on a specific topic and share reflections and ideas. It is important to organise groups of four to six people strategically to be a success.

- D.6. Occupation or alternative use of an urban space. Often associated with the right to the city, this is basically the occupation of a public space, an empty plot or an abandoned building, reclaiming it for a change of use or for its preservation. This occupation can sometimes take the form of an event, tactical urbanism or a short-term settlement. It can be static or in movement, as in the famous Massa Critica event described in Point 2.2. In Barcelona, an initiative promoted by the City Council called "Obrim carrer" literally means opening the streets for civic uses. The Via Laietana and Gran de Gràcia, two symbolic streets currently used by motor vehicles, are closed to traffic every first weekend of the month for use by pedestrians only. The municipality intends to incorporate an additional section into this mobility pacification strategy.

- D.7. Urban gardening - green guerrilla. This is generally combined with tool D.6. In general, a community of neighbours occupy empty space on an urban plot and transform it into an urban orchard. The term *"green guerrillas"* has been used since the 1970s in New York for these actions (Lamborn & Weinberg, 1999). Past experiences include the Liz Christy garden in New York and Barcelona's temporary garden (See Point 2.2). New city plans and policies, such as the "Pla Buits" (see Point 2.2) of Barcelona, already include urban gardening synergies to reinforce biodiversity through the participation of neighbourhood communities.

- D.8. DIY: urban do-it-yourself and all types of self-build. This category includes all actions on the physical space that are carried out on the urban space, including urban bricolage (DIY), tactical urbanism, urban art and self-built processes (such as the famous Segal's Method). It is normally associated with tool D.6. Tactical urbanism or experimentation at a 1:1 scale is understood as short-term actions that seek to generate a long-term change in the way of inhabiting the city. Depending on the cases, this type of intervention can be fully participatory because it usually does not involve too much technical knowledge and can take the form of a game. A good illustration of an urban bricolage workshop is the "Taller Espacios Abiertos" (TEA) or "Open Spaces Workshop" (OSW) in Mexico (Figure 5), in which an abandoned railway station has been transformed into a cultural centre with the help of students and the local community (Seve, 2012). The YA+K and Recetas Urbanas are other examples of architecture entities that are working with Urban DIY (Do it Yourself) workshops to have a positive impact on the urban space, reinforcing existing urban communities.

- D.9. Exploration route. An exploration route is a walk or cycle tour in groups to record, through drawing, photographs or notes, the elements and situations that the users consider important for urban transformation. The information that is gathered can describe the daily environment, the perception of the site and its characteristics.

- D.10. Traditional and local use of the public space as marketplaces by communities (goods, services). This category refers to all formal and informal activities that can take place in the urban space spontaneously and create a special atmosphere and social links. We generally refer to traditional markets in public spaces, which are a clear sign of the involvement of inhabitants. From

E-ISSN 1886-4805

an anthropological perspective, markets are not only places where products are exchanged, but also community generators. An interesting case study (in progress) on the famous Tianguis in Mexico, shows how users self-organize, occupy the urban (or rural) space, exchange goods and services, provide information of all kinds and establish a series of personal ties that are inherent in the creation of community (Seve *et. al.,* 2022). Street food market stalls are another clear example of the inhabitants' involvement, built on a bottom-up use of the sidewalks. The vibrant life in Ho Chi Minh has been mapped by Annette Miae Kim's team (2015).

Figure 5. TEA /OSW: One wagon transformed (left). Children from the neighbourhood use furniture built by students with the help of the local community (right)

Source: Authors.

- D.11. Participatory games. Participatory games are very varied. They are usually non-competitive, so players simply seek to enjoy the activity, involving adults and children in the process, to collect data or preserve the identity of a neighbourhood. Raons Públiques, the urban social innovation cooperative, has designed for example "las gincanas de barrio" (neighbourhood gymkhanas) or "los cromos de barrio" (neighbourhood trading cards) and other tools that involve the use of images and the wishes of neighbours (Figure 6).

Figure 6. Participatory games created by Raons Públiques

Source: Authors.

- D.12. Image. An image is a visual representation that shows what an imaginary project will look like. Its usefulness is evident in processes of agreeing and communicating projects, in the context of perspectives and plans that inform inhabitants what a design will be like. However, there are

E-ISSN 1886-4805

other variants in which images can be used in an even more participatory way. For example, existing references of urban spaces can be used to determine what kind of environment users want (Figure 6 - left). An image of an urban project can be adapted if virtual reality is applied to the urban transformation.

- D.13. Models. Models are another example of a device that is widely used for urban projects to communicate with the neighbourhood and users. It can be used merely to communicate or it can be fully participatory, with evolving models.

- D.14. Mapping. Mapping is an operation that associates an element with another element to create maps. By extension, mapping, combined with drawing or collaborative platforms, is a useful participatory tool for urban diagnosis and data collection through the creation of emotional and perceptual maps. For instance, in participative urban sketching, we map the drawings collected in observation routes to generate an initial conversation with participants.

- D.15. Digital technologies are information and communication services that are based on the participation of users, their cooperation for production, mutualization of data and the sharing of knowledge. These tools can facilitate some processes by accelerating integration capacity without the need for face-to-face interaction. Sites allow production, storage and easy access to information, including cartographic interfaces, which contribute to informing inhabitants.

E. Time. Time is another important factor when a designer or stakeholder analyses, creates or engages in a participatory practice. Three units (E1. Hour, E2. Day and E3. Month) are used to describe each experience, as approximate information. The approximative time is generally that needed with the stakeholders and does not include the time required to plan or carry out data mining. In other words, the time that stakeholders are involved in the participatory practice or process is counted.

- E1. Hour. The action occurs in less than a day and can be counted in hours. It includes short activities such as a survey or poll, possibly with the use of digital technology, as well as exploratory routes, etc.

- E2. Day. The activity occurs over at least one day and can take several days. This is the case of practices organized in workshops sessions.

- E3. The practice occurs over at least a month and can last several months. Longer experiences in this category can have a positive impact on the community as they reinforce community ties. This is the case of community gardens or urban DIY workshops.

F. Place. This is the physical place or space involved in the action. It means the place that is the object of the participatory practice. These sites can refer sometimes to spaces of latent opportunity, as obsolete, misused or mismanaged abandoned space that is likely to be transformed into a space for social and ecological bonds, and spaces that are already appropriated or used by a community. Our study shows that places can be classified according to their type and scale. Although experiences have involved or taken place in a range of places, they can be classified into a few types. Six urban spaces were defined:

- (F1) Building. Generally, a building that has been abandoned or is in bad condition: an old factory, dwellings. These places, before their possible transformation, were usually closed to the public for years and are still on hold. On some occasions these places are re-appropriated through insurgent practices, such as squatting, or reclaimed through the pressure of neighbourhood associations and other collective groups.

E-ISSN 1886-4805

- (F2) Public Space. A public space that is reclaimed could be a street with a lot of traffic or a square occupied by parking lots. The issue of public space and its waste for motor vehicles is generally a leitmotif in many practices that involve a public space. Changes that are demanded normally seek sustainable mobility (bicycles and pedestrian uses), green areas and civic uses for the neighbourhood, such as playgrounds for children. For example, in the Park(ing) Day event, participants demand green spaces by occupying public parking lots in the street.

- (F3) Brown field and empty plots. A brown field or empty plot could be used as a community garden in dense cities. This category includes urban voids and industrial wastelands. These leftover places can be private lots that at some point receive the attention of the surrounding neighbourhood, which gradually or suddenly seeks to appropriate or reclaim the space for civic, community and leisure uses.

- (F4) Large scale urban fragment. This is a place on a larger scale that encompasses a fragment of a city, generally associated with a district. It can include buildings and public spaces. It could be an entire neighbourhood or a city, a metropolitan region or even territorial areas. Collective maps, for example, work at various scales in a participatory way.

- (F5) A green public park that users want to preserve. A natural or semi-natural space that can be inside a city or in another environment, which in some way has a symbolic and use value for users. Its evaluation, protection or transformation due to possible degradation is considered. In some cases, these spaces are subject to urban pressures, such as the construction of public infrastructure or private buildings.

- (F6) Another generic space. Sometimes the object of the participatory practice includes some or all of the spaces proposed in this category.

G. Purpose. This category analyses the desire or the reasons for carrying out the practices. Although it is difficult to define exactly all the reasons why users participate in some practices, it is possible to formulate some principles of purpose. Each participatory experience can have one or more purposes. Nine basic purposes have been defined:

- G1. Exploration. Also called awareness. This is about knowing the environment at stake, sometimes through multiple dimensions: architecture, people, inhabitants, heritage, vegetation, security, comfort, etc. Explorations are usually a good starting point for discussions and conversations.

- G2. Diagnostic. The current situation of a place can be observed to determine some of its deficiencies at architectural, landscape, sociological and mobility level. This allows us to discover community needs and identify weak points in the built and natural environment on which we are working.

- G3. Data collection. Data collection is the process of collecting and measuring information in an established system. It allows you to answer relevant questions and evaluate results. Data can be quantitative and/or qualitative and are normally used at the beginning of an urban project.

- G4. Reclaim. In the action of reclaiming, the community considers that it is recovering something for an alternative use. This is often a condition sine qua non of participation, as the local community aspires to change its environment. It is often related with urban struggles, in which it is clear to see those who experience the city as a collective creation, those who are involved in the design, and those who want to control the dynamics.

E-ISSN 1886-4805

- G5. Community making. Eventually, if the participatory practice lasts a long time, community networks can be created between users. Some users may seek to strengthen themselves as a community, as is the case in some urban community gardens (Petrescu, 2005).

- G6. Co-creation. We define co-creation or collective creation as making an urban project with users. It generally involves a collaborative process in which various stakeholders take part.

- G7. Testing. This is purposeful action that allows a place to be tested for an alternative civic use to the previous use. These are usually temporary actions to teach a possible change and to experience it as a user. Testing is often associated with temporary architecture that activates a place (placemaking), as in urban DIY (do it yourself).

- G8. Environmental education. As a purpose, environmental education is a process that allows users to explore environmental issues in many ways. Gardening workshops in community gardens, or events that reclaim the street for sustainable mobility are examples of practices that have environmental education as one of their purposes.

- G9. Self-built and direct use, when technically viable. These purposes go beyond merely testing the place. They involve re-appropriation that seeks to directly use the space through transformation or construction.

2.2 Bottom-up, grassroots and participatory case studies

The taxonomy was used in a study of approximately 40 experiences. It helped us to understand participatory, bottom-up processes in a simpler, exhaustive way. The grid (Figure 2) with its icons clearly shows the combination of participatory tools and their purposes. The classification is made easier and can be useful to create methodical sheets. However, the taxonomy table does not provide an exhaustive explanation of a given experience. It is like a roadmap, in which a user can then search for more information or contact the author of an experience. The taxonomic table can be used as a template to analyse a case study and generate and clarify a new participatory practice. The creation of a collaborative platform based on this taxonomy would mean that architects, students and other groups could enrich this database. This would require adaptation of the present study. This study is considered valid and ready to use for anyone interested in studying or creating a participatory experience for urban transformation.

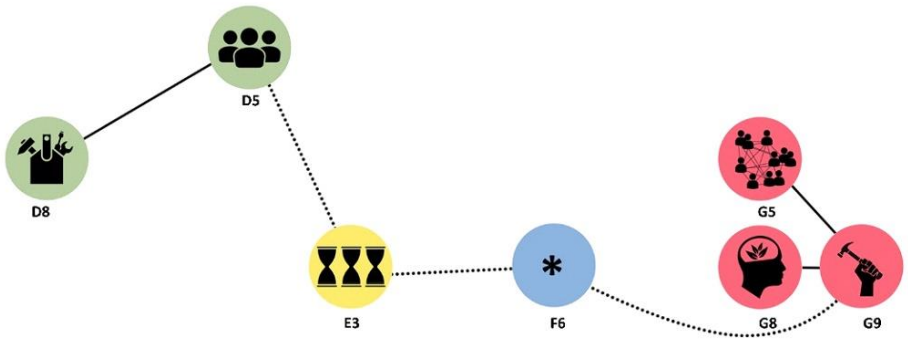
We were able to briefly classify participatory practices into three basic types of participation. The first are community practices, which are also sometimes associated with grassroot movements. These are generally self-organized and traditional examples exist. The second are actions in urban spaces in reaction to an established, rather rigid order. Some of these actions have recently evolved into participatory practices. The third are the results of participatory urban planning that lead to a wide range of participatory practices. Consideration of these three types of participatory practices represents an opportunity to build new mechanisms for participatory urban planning to empower a community of citizens and provide methods for democratic urban planners.

Traditional examples, such as “el tequio” in Mexico, can be seen as a model of participation and community action that demonstrates users’ concerns for their natural and built environment. El tequio is still well-established in several parts of the country and considered a pre-Hispanic custom in the state of Oaxaca. It is defined as the collective work that every adult resident of a town owes to its community (García Escamilla, 2007). It establishes the moral obligation that each person or group of people must participate in some work for general benefit, such as the construction and

E-ISSN 1886-4805

conservation of roads, schools, temples and wells or canals to extract water for the community. Although the tendency is to centralize work in the state of Oaxaca and send more resources to the municipalities, communities claim their status as "self-governed". They defend this tradition because of the material result of the work and the social value, as it fosters coexistence and integration of members of the communities. The study of this participation is a living example of the social organization of many ancestral urban settlements in various parts of the world. If we look at the tequio from the perspective of the taxonomic table, we can understand its operation as follows. Through assemblies (D5), a community makes self-construction and intervention decisions (D8) to create municipal buildings, and on other issues such as reforestation or maintenance of public space. The timescale is considered long and slow (E3) as these are actions of a long duration. The space can be multiple, including all categories (F6). The main objective is an action and a direct use (G9), which raises community awareness about its environment (G8), and through weekly activities it allows the community's social relations to be reinforced (G5) (Figure 7). Note that the taxonomy can be interpreted in a more complex way, as shown in Figures 7, 8, 9, 10, 11 and 12, where dotted lines connect the main pictograms in different categories. The solid lines show how the secondary pictograms (in a given category) connect to the main pictogram. That is, convergence of lines on a pictogram can emphasise its importance.

Figure 7. Tequio. Taxonomy



..... Link between main category pictograms
___ Link in a specific category of secondary pictograms to the main pictogram that is analysed
Source: Authors.

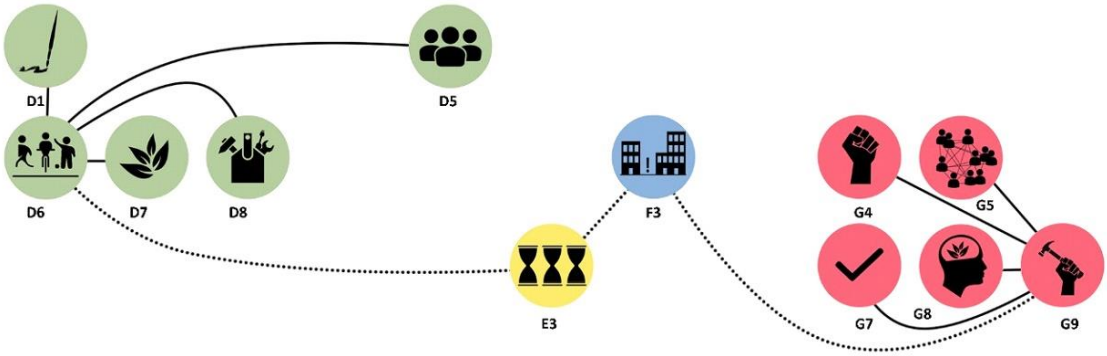
Less traditional, but also involving community action, "green guerrillas" were founded in 1974 by neighbour Liz Christy as an urban community garden group to clean up, create and conserve a vacant lot in Manhattan, New York. The plot was successfully transformed, for a rent of $1 a month, until 2002 when it was protected as a community garden by law (Carmody, 1976). Today "guerrilla gardening" is a popular action in the urban environment that takes place in many parts of the world and is active in more than thirty countries (Reynolds, 2008). Back in Europe, Doina Petrescu stated that in European cities such as Paris or Barcelona today, there are new practices in the urban context that temporarily transform available, reused spaces through everyday life activities that help to preserve urban "biodiversity" and somehow reclaim the right to the city. For Petrescu, these new practices are directly related to the urban reclamation of the 1970s (Petrescu, 2005).

In Barcelona, since 2012, one of the most interesting initiatives has been the "Pla Buits": a city council urban plan that allows plots or disused land in the city to be occupied with provisional public interest activities, promoted by public or private non-profit entities, such as urban gardening associations. One example is Quirhort, an open project of nomadic urban agriculture and the organic community. An analysis of the taxonomic template shows that this is a mixed process that was strong in creative tools, with deliberate occupation of an urban space (D6) to create an urban garden (D7). It involved

E-ISSN 1886-4805

artistic activities and mural design (D1), as well as urban DIY (D8), with decisions taken in assemblies with consensus (D5). This is a long participatory practice (E3), which acts on an unoccupied plot (F3). Its objective is direct ephemeral use (G9), but it reinforces a community of neighbours (G5), makes a claim (G4), provides environmental education for the neighbourhood (G8) and tests the integration of some activities, such as an urban garden, in the programme for new neighbourhood facilities (G7) (Figure 8).

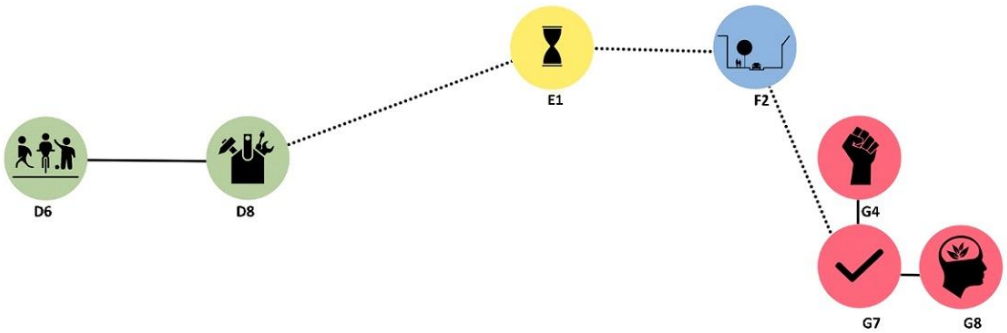
Figure 8. Quirhort. Taxonomy



Source: Authors.

Problems related to mobility and waste of public space are other areas that are addressed. In the search for greener urban space with less pollution, the Massa Critica is a monthly bike ride to demand the rights of cyclists and promote a sustainable city model. Decentralized rather than having a hierarchical structure, the event originated in 1993 in San Francisco (Garofoli, 2002) but now takes place in more than 300 cities worldwide (Madden, 2003). The Park(ing) Day is another well-known event that is held in several cities around the world, in which any participant can temporarily transform public parking spaces into parks, gardens or other forms of public space. This event represents an action of urban occupation (D6) with the intervention of groups and people through urban DIY (do it yourself and tactical urbanism, D8), for a few hours (E1), in the public space, more precisely in car parks (F2), to test an alternative use of space (G7), such as micro gardens or a resting place, demand the ecological transition of cities (G4) and generate collective environmental education (Figure 9).

Figure 9. Park(ing) Day. Taxonomy

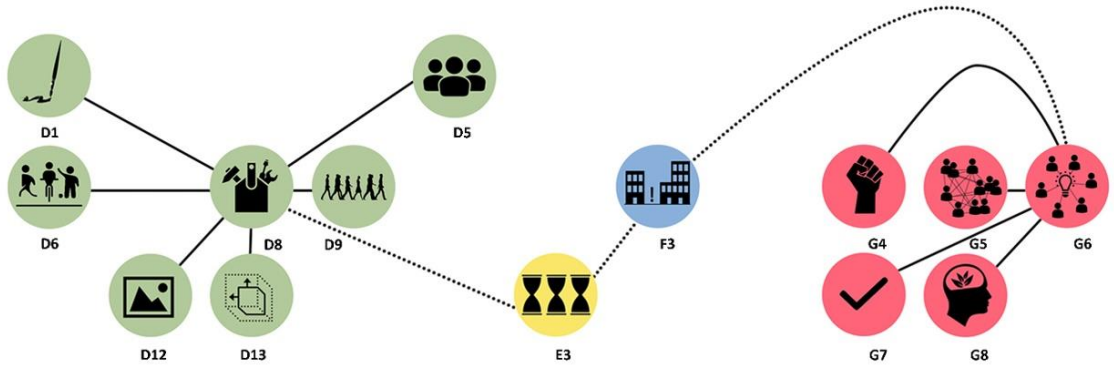


Source: Authors.

E-ISSN 1886-4805

The “Taller Espacios Abiertos” is an urban DIY workshop on a 1/1 scale. In the project, students and local community transformed an abandoned railway station into a cultural centre in the city of Oaxaca de Juarez. The project started from a simple idea: giving a group of architecture and design students the opportunity to interact artistically on a real scale with the local neighbourhood. The workshop generated new cultural spaces as old train cars were adapted to create multifunctional areas, and modular street furniture was created. The main activity is urban DIY (D8) but also observation of the place through routes (D9), urban drawing in situ (D1), occupation of space (D6), use of images (D12) and evolutionary models (D13) to propose them to the city, the museum directors and the neighbourhood. The action was long (8 months) (E3), in an industrial enclave (F3), with the main objective of co-creating (G6) and strengthening the social canvases between the student body and the local community (G5), to claim long-term transformation (G4). This action allowed others to build ingenious prototypes and check their potential (G7), and helped raise awareness about industrial heritage so close to the historic centre (G8) (Figure 10).

Figure 10. Recycle the railway station. Taxonomy



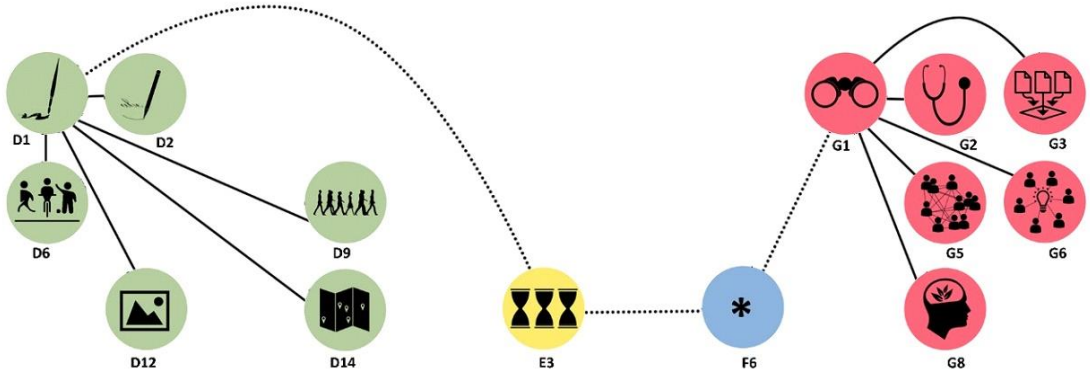
Source: Authors.

Finally, participatory urban planning includes methods can be drawn up for architectural and urban projects. Models have been devised by sociologists, architects, urbanists, artists or other qualified specialists in the field. Pioneers include Kevin Lynch (The Image of the City, 1960), who used mental maps to define how inhabitants are aware of their urban environment, and Lawrence and Anna Halprin, who carried out sensorial and artistic experiments to activate and involve citizens in the design of their environment. In addition, Giancarlo De Carlo (2007) defined the architectural project as a process that deserves a scientific method starting with the discovery of users’ needs, the formulation of hypotheses, and implementation before the use phase begins. More recent examples are projects led by new types of emerging architectural collectives that have integrated ways of working collaboratively and diversely (Luck, 2018): in Paris the Atelier d’Architecture Autogérée (AAA) (Petrescu, 2005) and in the UK, Assemble, Matrix and Muf (Luck, 2018). In Barcelona, other activities that improve neighbourhoods and their public spaces include the work of the urbanists Col·lectiu Punt 6 and Zaida Muxi on urban security from a gender perspective (2018), and the work of Raons Públiques (2019) with their participatory games that build urban assessments and specifications based on the experience of users. Generally these activities involve urban perceptual maps, meetings, interviews, exploration walks, assemblies, participatory games, tactical urbanism, and new information and communication technology tools (such as virtual interactive innovations used for digital urban transformations research in the department of Architectural Representation, Architectural School of Barcelona [ETSAB] (Sánchez-Sepúlveda *et al.,* 2019) or the works of the firm 300,000 km/s, and other uses of participatory planning geographic information (PPGIS).

E-ISSN 1886-4805

Urban Notes is an elective subject for architecture students at ETSAB that involves the local community and Urban Sketchers groups to give their urban artistic visions and perceptions at street level. The main tool used is drawing (D1), with notes (D2), urban routes (D9), occupation of public space (D6) and the use of maps to locate the drawings (D14). The experience is relatively long (E3) with several sessions to work on a wide range of spaces (F6) for conscious observation of the place (G1), which allows an urban diagnosis (G2), collection of information (G3), the formation of social ties and affinities between participants (G5), the co-creation of an exhibition (G6) and the generation of environmental awareness of the place (G8) (Figure 11).

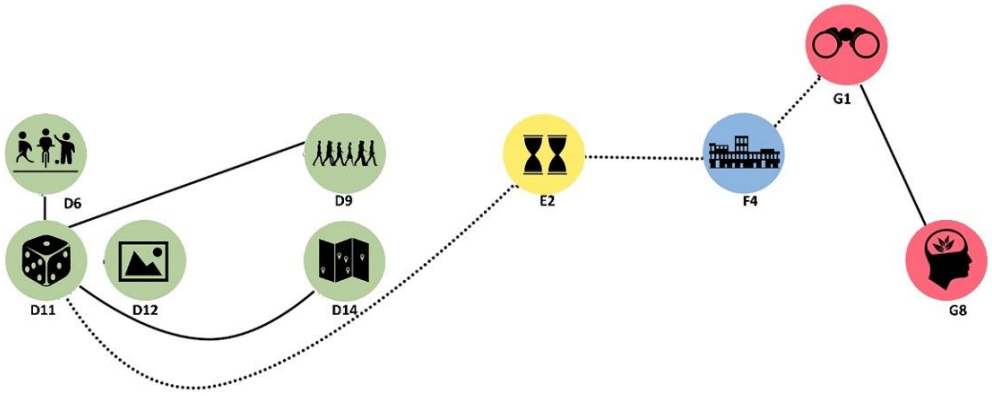
Figure 11. Urban Notes. Taxonomy



Source: Authors.

The last example “Cromos de Barrios” is a practice created by Raons Públiques, a cooperative of urbanists in Barcelona (Figure 12). It can be difficult to engage children in the participatory process and beyond to obtain effective results in time and space. The Neighbourhood Cards encourage children and their families to go to selected public spaces, so that they can complete the collection of stickers. Interest and knowledge of these spaces is fostered, since the participants obtain practical information and at the same time visit places that are within their reach that they did not know about previously. In summary, a set (D11) of cards with images of historical places (D12) and an exploration map (D14) allow families to go around (D9) and occupy public space (D6), over a medium length of time (days) in a neighbourhood (F4), for observation and exploration (G1) and environmental and heritage education (Figure 12).

Figure 12. Cromos de barrios. Taxonomy



Source: Authors.

E-ISSN 1886-4805

3. Conclusions

The creation of a bottom-up, participatory taxonomy for urban spaces represents an advance in a theoretical context. It systematizes versatile participatory experiences and proposes combinations of tools to effectively engage participants in decision-making processes or in other bottom-up processes that could be integrated into urban planning contexts, including informal participation, tactical urbanism and co-creation experiences; consultation processes such as community interviews, participatory surveys and other dynamics (snowball etc.); and new technologies like a public participation geographic information system, virtual reality and the use of other serious games (i.e. using Minecraft for Youth Participation; Westerberg & Von Heland, 2015). It helps to explain participatory, bottom-up processes in an easy, exhaustive way. The classification is simple and can be useful to create methodical sheets. The main weakness of the template, the fact that it is not exhaustive, also represents its strength as it frees the imagination. Hence, the taxonomic template can be used to help propose new experiences and create a greater range of practices. In other words, the template does not provide a magical or mathematical formula for the conception of a new participatory practice or a participatory process. Instead, it is a flexible guide for imagining and creating the transformation of our environment collectively, for the common good.

A lot of effort has been made over almost two decades to implement more participatory decision-making processes and involve new community practices in the transformation of our cities, engaging citizens and stakeholders in the various stages of a planning process, and even in the stage of use at urban level. Current participation must go further in that direction. Unfortunately, in some cases, urban space and its design is still considered in a linear way, with participation used only at the beginning of a project in an urban assessment. If efforts were made to propose new measures that engage citizens in their environment, genuine participation could be attained (Petrescu, 2005; Querrien, 2002). For instance, although there is a legal framework for participation in France that starts with a good gesture towards the population, “la Loi de la solidarité et renouvellement urbain” (Law of solidarity and urban renewal), this does not guarantee real and effective participation (Petrescu, 2005). The situation is similar in Barcelona, where Lacol (2018) also criticizes “participatory” processes based on consultations in which professionals and politicians have the last word. The case studies and their tools demonstrate that it is possible to introduce participation in many phases of the life cycle of a transformable urban space. They help us to clarify the means we have to carry out real participation and to integrate participatory practices that arise from the communities themselves (grassroots, etc.). In this new model, users not only give their opinions, but also interact, conserve, adapt and improve the urban space, as in community gardens. This means that the taxonomy serves to match the participatory tools in each phase of the project and constitutes a step forward for the urban project. Direct, circular, continuous participation means the personal commitment of a community associated with the decisions that are taken. It also generates a virtuous circle of social benefits in which we again find some notions of community.

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Authorship

The first author has conducted, conceptualized, designed and written the research. The second and third authors (directors of the doctoral thesis) have collaborated in the organization of the work and have provided numerous clarifications to it, as well as revisions, and contributions of the text.

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