



## IRREGULAR WASTE DISPOSAL IN INFORMAL AREAS: THE COLLABORATIVE ACTION AS TACTIC FOR SPACE QUALIFICATION

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### ABSTRACT

The Rio de Janeiro metropolis is composed by formal and informal areas with some abandoned places, given its historical urban configuration. Some of these places have been receiving irregular waste disposal, such as the Capitão Carlos Street, located between an industrial area in disuse and the Favela da Maré. A group of street sweepers realized that the continuous sweeping of these points was not enough to implement definitive urban cleanliness, thus they started an unusual intervention process. Through the "Sustainable Gardens" project, the group mobilized the community to get together to remove the irregular waste disposal. The purpose of this article is to present the intervention carried out on the Capitão Carlos Street and discuss the importance of collaborative actions and user participation in projects that aim the qualification of the space. The collaborative intervention encouraged the citizen's responsibility and presented as result the revitalization of the street, showing the importance of the local users' participation in the transformation process. An experimentation method was applied that added local participation and greater connection between actors, which, based on informal actions, can be considered an alternative for urban planning of "true participation".

**KEYWORDS:** Irregular waste disposal. Urban planning. Participation. Informality.

### RESUMO

A metrópole do Rio de Janeiro tem uma constituição de áreas formais e informais que apresentam alguns espaços abandonados, dada a sua configuração histórica urbana. Alguns desses espaços viram depósitos irregulares de lixo, como é o caso da rua Capitão Carlos, localizada entre uma área industrial em desuso e a Favela da Maré. Uma gari percebeu que a contínua varrição era insuficiente para implementar a limpeza definitiva do local, e, por meio do projeto "Jardins Sustentáveis", mobilizou a comunidade para, juntos, atuarem na remoção dos depósitos irregulares de lixo. O objetivo deste artigo é apresentar a intervenção realizada na rua Capitão Carlos e discutir a importância de ações colaborativas e da participação dos usuários na qualificação dos espaços. A intervenção colaborativa incentivou a responsabilidade cidadã e teve como resultado a revitalização da rua, mostrando a relevância da participação dos moradores no processo de transformação. Foi aplicado um método de experimentação que agregou participação local e maior conexão entre os atores o que, a partir das ações informais, pode ser considerado alternativa visando o planejamento urbano da "participação verdadeira".

**PALAVRAS-CHAVE:** Descarte irregular de lixo. Planejamento urbano. Participação. Informalidade.



## INTRODUCTION

In the metropolis of Rio de Janeiro, the formal city, the planned one, and the informal one, built on the margins of the municipality's regulatory measures and by the "own hands" of its users, are mixed, in response to the accelerated growth that accompanied the industrialization and urbanization processes.

The Complexo da Maré was born in this context. The occupation of that territory was consolidated from the construction of the current Avenida Brasil, where an industrial belt was created. The slopes and wetlands that exist in that section of Guanabara Bay and the proximity to the center and the industries have become favorable conditions for the emergence of this slum (COELHO, 2007). While the industrial belt on the margins of the Maré moved to even more peripheral areas, generating underutilized or idle areas, the slum continued to grow and currently has almost 140 thousand inhabitants (REDES DA MARÉ, 2019).

In Rio de Janeiro, the production of garbage expanded concomitantly with the demographic growth. In addition, from the industrialization and consumerist character of contemporary societies, it has become a serious problem of contamination of the environment and public health. Although, more recently, there are regulations for the proper disposal of waste, there are still irregular garbage dumps throughout the city. These are part of the landscape of most Brazilian metropolises and, in general, are located in natural and urban, formal and informal areas.

With regard to urban areas, abandoned or underutilized sites are generally the first destination for waste: vacant lots, walled sidewalks, spaces under bridges are some examples. The urban form enhances irregular discharges and, consequently, they alter the dynamics of the environment in which they are located, devaluing these areas even further and compromising the quality of life, as they constitute unhealthy areas, with bad smell and sources of diseases.

In the area that limits – or unites – the disused industrial area and the Complexo da Maré, irregular daily discharges occurred. A collaborative action idealized, initially, by a street sweeper from the group of street sweepers where the waste was deposited, changed the reality of that space. This change took place from the conception and implementation of a project that involved different community actors: local residents, merchants, group of sweepers. Through the management and participation of users, solutions were created to eliminate the garbage on that street. The initiatives implemented contributed to the creation of a more welcoming, friendly and more inclusive place.

Considering the importance of giving greater visibility to this collective project, in this article, we present the experience "Sustainable Gardens" that eliminated irregular garbage deposits on the Capitão Carlos Street in the Complexo da Maré, with the objective of highlighting the participation of users as a quality of informality and the importance of their integration in urban planning.

First, we bring the urban context of the Complexo da Maré and its situation in relation to the collection of urban waste. Next, we describe the "Sustainable Gardens" experience and, finally, we analyze the importance of local knowledge and the participation of the population in transformative and qualifying interventions in the place where they live.

## THE CITY AND GARBAGE

The occupation of the Complexo da Maré began with the industrialization of the region in which it is located. In the 1940s, the installation of different factories in this area was the main factor that gave rise to the slum in its vicinity, for offering work opportunities. The industries later moved to more peripheral places in the city, leaving, in their passage, the urban shape that characterizes the current urban fabric. Even today, the region has a roughness due

to industrial activities from another time, alongside a complex of slums with intense density and population growth.

The territory was consolidated between the 1940s and the early 2000s, based on the organization and initiative of the residents and housing programs promoted by the government, currently having 16 territories (REDES DA MARÉ, 2019). Its first inhabitants settled, initially, in the Morro do Timbau, with the construction of houses of spontaneous occupation and, soon afterwards, in the Baixa do Sapateiro, of houses on stilts, today landed territory. Since then, the different slums have received infrastructure in relation to basic sanitation, the distribution of water and energy, but not enough for

the growing demand. Today, the Complexo da Maré presents one of the areas with the highest density in the city, with 393 inhabitants/ha, while the density of Rio de Janeiro is 110 inhabitants/ha (PULICI et al., 2016). It has a population of 139,073 inhabitants, 4.8% of whom live in the Morro do Timbau and 6.7% in the Baixa do Sapateiro (REDES DA MARÉ, 2019), spatially distributed as shown in Figure 1.

In the Morro do Timbau and the Baixa do Sapateiro, self-built territories, “mixed uses, with vivid public spaces and a vital urban society” are configured – characteristics of a compact city, according to the descriptions of Neuman (2005). Other territories have a more residential character, without losing their liveliness, reflecting the high density and use of the

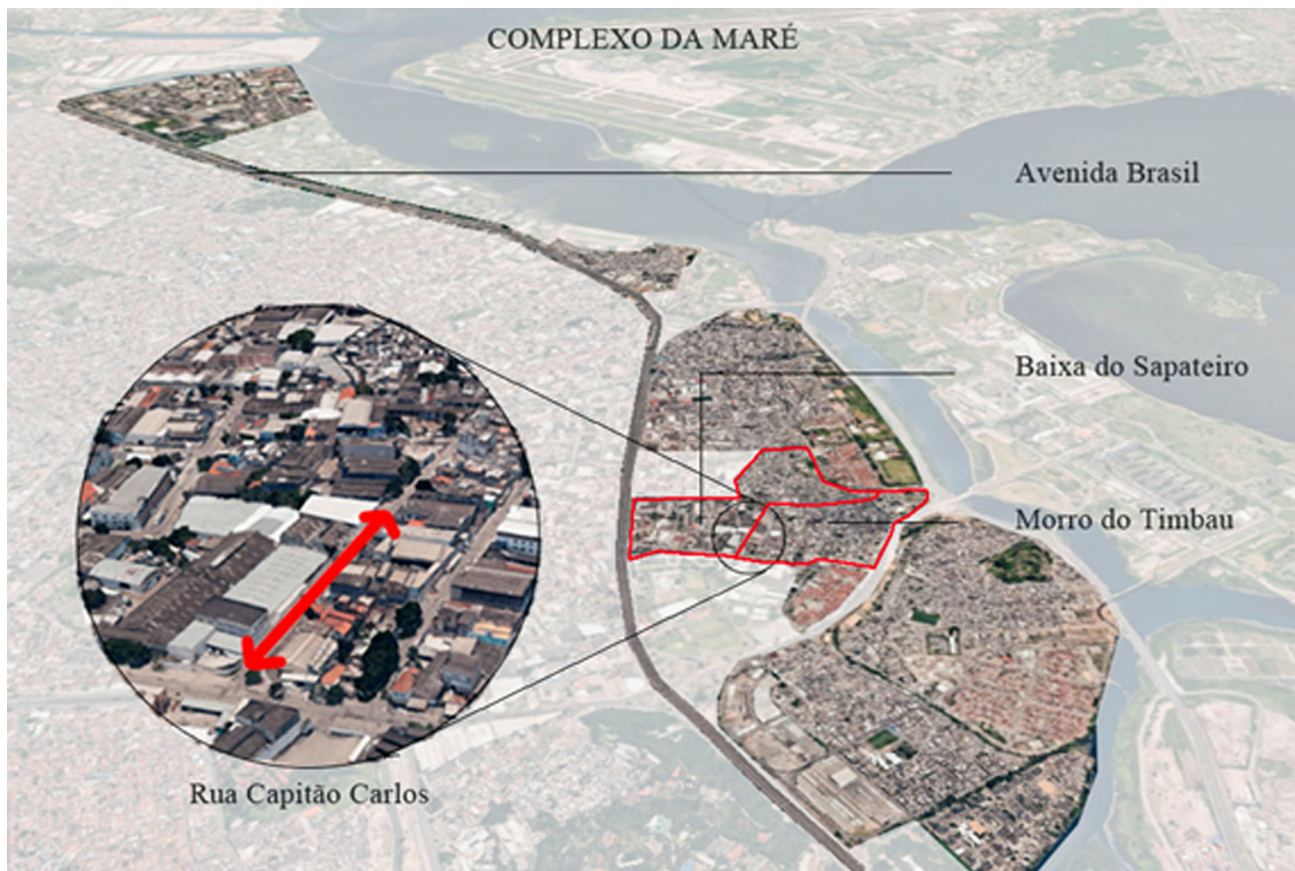


Figure 1: Spatial distribution of the 16 territories of the Complexo da Maré, highlighting the limits of the Morro do Timbau and the Baixa do Sapateiro, expanding the stretch of the Capitão Carlos Street.

Source: Authors, from Google Earth image, accessed on 11/26/2020.

street as circulation and leisure. There are also those territories that serve only as a passage, one could say decadent, of urban voids that can be found not only in the Maré, but also throughout the city.

The Capitão Carlos Street, located on the border of the Morro do Timbau and the Baixa do Sapateiro, is mainly a passing street. In its urban configuration, the street limits – or unites – an industrial area in disuse with this cluster of houses and informal but consolidated trade. In the gables that delimit the profile of the street, on one side, there are doors and windows of the houses that resist and form “the eyes of the street”<sup>1</sup>. On the other hand, “blind”<sup>2</sup> walls have the function of dividing private space from public space. This configuration, by itself, limits the possibility of interaction among residents like the one that occurs inside the slum, where the unplanned street is narrower and where doors and windows are located on both sides of the street. The existence of “blind walls” enabled the irregular daily disposal of waste, negatively influencing the quality of life of the local residents.

In 2010, the National Policy on Solid Waste (Portuguese acronym: PNRS), through Law No. 12,305, required municipalities to elaborate municipal plans for integrated solid waste management, to implement selective collection and composting and, mainly, to eradicate the final disposal of solid waste in open-air dumps, and that the final disposal of the tailings<sup>3</sup> was environmentally appropriate by the end of 2014. However, until 2015, the dump was still the final disposal for 50% of Brazilian municipalities (CNM, 2015).

According to city documents, Rio de Janeiro was the first city to comply with the National Policy on Solid Waste, with the closure of the Gramacho landfill

and the inauguration of the Waste Treatment Center CTR-Rio, located in Seropédica, in Metropolitan region. This Center receives around 10 thousand tons of solid waste from the municipality of Rio alone, including household and public waste, construction waste, large generators and free removal. Still, according to the City Hall, paradoxically, the city was cited as a “national example in the management of urban waste”, considering criteria such as population engagement, financial sustainability, recovery of collected waste and environmental impact (PREFEITURA DO RIO, 2019).

Regular garbage collection is one of the essential services for a city and its consistency depends on the demand, generally greater where there is a higher population density. In the Maré, approximately 98% of garbage is collected (71.5% is collected at the door of households and 26.4% from collection points, alternative to sites where the garbage truck does not have access). However, 3.9% of the population that uses other forms of disposal (REDES DA MARÉ, 2019). The reasons that lead people to resort to alternative discharges are mainly: the low frequency of regular service in relation to demand, the lack of space in the residence for storage, the lack of knowledge about the collection service offers (which can be scheduled free of charge). There are also discharges from companies or carters who provide the waste collection service in other areas of the city and dispose of them irregularly, mainly due to the high cost of formal disposal at the Seropédica Landfill. These factors are also associated with the lack of civility, the lack of collective spirit and environmental awareness on the part of the population.

According to Filho (2019), irregular waste disposal is a chronic problem of Brazilian cities. In addition to the bad smell, contaminating the soil and air, it

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<sup>1</sup> Jane Jacobs, in her book “The Death and Life of Great American Cities, from 1961, defines doors and windows as “eyes of the street”, as they are always attentive to events, thus making the street safe.

<sup>2</sup> Blind walls is what we call walls without openings, in this case, they do not have the eyes of the street.

<sup>3</sup> Waste is solid waste that does not have possibilities for recycling, reuse, recovery or treatment, with the final disposal being environmentally appropriate.



causes serious risks to public health as it opens up space for “breeding insects, mice and venomous animals”, “where there are more than 22 associated diseases, such as dengue, tetanus and hepatitis A” (FILHO, 2019). In addition, the waste dumped on urban surfaces is carried away by the rains, which can clog the rain pipes and cause flooding. According to Adriana Nolasco:

“[...] there is no way to face this problem without the implementation of public policies. It is up to the municipalities to develop action programs, offering efficient services for the collection and disposal of different materials as well as complementary services, such as installing recycling bins for the small generator in volumes of up to 1 m<sup>3</sup>.” (FILHO, 2019).

The Maré is one of the few neighborhoods in Rio de Janeiro that collects waste daily, using three trucks and small tractors that enter where the truck has no access. However, given the demographic and built density, it is difficult to maintain efficiency without citizen collaboration. The existence of disposal sites is not enough, so whoever produces the garbage must look for ways to properly dispose of the waste. The main obstacle to these practices is the lack of citizenship and responsibility of generators, caused by the lack of formal education, without the citizen’s awareness of the collective (FILHO, 2019).

In this context, the intervention described here, named as “Sustainable Gardens”, was created to give another destination to the space where waste is illegally disposed of. Experimentation is a tactic that transforms “empty” or “useless” urban spaces in active places. Through the recycling of some useless materials, taken from the collection itself, these spaces of irregular garbage deposit are transformed into areas of public interest, usually through the planting of vegetation or the creation of furniture such as children’s toys, tables and dumpsters, as will be presented below.

## INFORMAL COLLABORATIVE ACTION

The project was born unpretentiously, due to the initiative of a street sweeper hired by the Rio de Janeiro Municipal Cleaning Company (Comlurb) that acts at the Complexo da Maré. She realized that, to obtain the elimination of irregular waste deposits, there would need to be awareness actions. One of the actions of the Sustainable Gardens project took place at the old dump that gave way to a children’s square. A space with the potential to aggregate residents and children from where they were removed, using a mechanical shovel and truck, four tons of garbage every day, as can be seen in Figure 2. The street sweepers themselves cleaned the space and built toys with elements that they recycled from the dump that existed there. The Comlurb itself recovered other toys, such as the slide and the swing, from other city squares. As can be seen in Figure 3, there was no need for major investments, since all the material was recovered from the “garbage”.

Another example of the Sustainable Gardens project is the Capitão Carlos Street. It took three trucks a day to remove garbage from the street, around 12 tons a day. At the same time, the street and the sidewalk, despite the blind walls, should have another urban function, different from the one imposed on them: their use by people. It is the place of passage, but also the stop and the meeting, the chair on the sidewalk, the plastic pool, the weekend barbecue, common practices in the slabs of the houses and in the streets inside the slum. It should be, above all, a healthy place for its inhabitants. Moreover, why not, a place for cultivation?

Whoever sweeps the street every week knows that removing the accumulated debris would not make the street clean, it would only make room for the garbage to accumulate again the next day. Whoever lives in that space is often aware that the street has another potential, despite its “blind” configuration. Life on the street needed to be reactivated, that place



*Figure 2: Garbage deposit prior to the intervention.  
Source: Julia Rossi, 2015.*



*Figure 3: Revitalized square, named as Praça da Paz (Peace Square).  
Source: Julia Rossi, 2015.*



needed to be valued and, at the same time, people should be “convinced” not to deposit garbage there anymore, disqualifying the urban space.

In Figures 4 and 5, one can see the need for removing garbage from the Capitão Carlos Street and its expansion along the street, which encouraged the street sweeper to transform that space as well. The collaboration of an architect has ensured that the implementation of the flowerbeds kept a passageway to ensure the universal accessibility of the sidewalk. Based on a sketch, street sweepers began construction

of the flowerbeds. Based on this movement and the conversation with the residents, the local population joined the street sweepers and a task force made it possible not only to complete the construction of the almost 15 flowerbeds with approximately 150 meters in length, but also combine alternatives of joint activities and relay among the neighbors for their maintenance.

The street sweeper articulated the community that embraced the cause, which resulted in around 10 people actively participating in the construction work



*Figures 4 and 5: Before the intervention: Capitão Carlos Street and the sidewalk where the garbage was deposited. Source: Comlurb, 2019.*



of the flowerbeds, and other residents who supported the initiative through donations. The merchant who uses a shed on the street as a deposit donated the building materials. The residents brought the plants and the snack. In other words, a simple and low-cost intervention, initiated by those who experience the space, in which the participation of the population was essential. What used to be a garbage deposit became a space for passing and for stopping and cultivation. The residents who followed the execution appropriated again the sidewalk, the street and the

flowerbeds where they now grow ornamental and edible plants, such as sunflower, corn and beans, as shown in Figures 6, 7 and 8.

Residents happily report that the bad smell and the mice attracted by the garbage are gone. Across the street, residents are also excited to plant on their sidewalks and, in fact, it is clear that the place is not only cleaner, but is being looked after. To the extent possible, people are putting back chairs on the sidewalk. The neighbors have met and communicated



*Figures 6 and 7: After the intervention: sidewalk and flowerbeds full of vegetation and care.*  
Source: Authors, 2020.



more on the street, as shown in Figure 7. The street is slowly resuming its urban functions and becoming a more welcoming street.

According to Zillmann (2000), the informal city is more than simply a response to the lack of provision of public housing; it is a dynamic process in the production of cities. It reflects local knowledge, production skills and self-regulation that should be considered as the basis for the development of fast-growing cities. Moreover, in fact, self-regulated collaborative action provided the valorization of public space.

## INFORMALITY AS A MODE OF ACTION

According to Jacobs (2011), unique uses of large proportions in cities, such as very wide walled blocks, create borders, generally seen as “passive” or “limits”, characterized by the decay. Certain borders restrict use by allowing circulation only on one side, such as walls. These borders, which can also be seen as residual spaces – the “*terrains vagues*” (SOLA-MORALES, 1995) – are a direct consequence of the urban changes that the metropolitan territories have been undergoing when moving from an industrial to a post-industrial city (LEITE, 2012).



Figure 8: Residents gathered around one of the flowerbeds.  
Source: Authors, 2020.

According to Sola-Morales (1995), residual and decadent spaces are also potential spaces, full of expectations, but also full of history. They are waiting, not necessarily for a radical transformation, but for the possibility of continuity “through attentive listening to flows, energies, rhythms that the passage of time and the loss of limits have established” (SOLA-MORALES, 1995). Jacobs (2011) states that:

“[...] the streets of the cities serve various purposes in addition to supporting vehicles; and sidewalks serve many purposes in addition to housing pedestrians. These uses are related to circulation, but they are not synonymous with it, and each is, in itself, as fundamental as circulation for the proper functioning of cities.” (JACOBS, 2011, p. 29).

Major urban transformations, whether state or private, from the “top to bottom” style, without the participation of local actors, can lead to more underutilized spaces in the city because they are not committed to the local scale (JACOBS, 2011; ROSA, 2011).

According to Randolph (2008), urban planners – those “from above” in general – contributed to the consolidation of a capitalist state, based on a “vision of formal rights and formal citizenship”. Segundo ROY (2005), According to ROY (2005), the “informal” concept was created by the State and by modern planning that excluded the poorest citizens from the aesthetics of modernity, as such spaces must be “improved” and “integrated” with the “formal” city, with the limitations of urban improvement being equivalent to the limitations of the ideology of space.

Therefore, it is necessary to reorient conceptual and epistemologically planning to make it able to provide “participation true” and “true participation” to the citizens involved in the planning processes (RANDOLPH, 2008), so that they become inclusive, generating democratic spaces aimed at the well-being of users.

Any intervention in the territory, when it counts on interdisciplinary and transversal collaboration and,

mainly, with the participation of residents, tends to obtain greater positive results for the collectivity. This collaboration/participation becomes effective in planning when it occurs from diagnosis to its post-intervention assessment, which is essential to understand and make visible the knowledge that a community accumulates about its own territory. In addition, citizen participation in urban issues means engagement and co-responsibility for the future of the environment in which they live (MUXI, 2011).

In this way, areas classified as “*terrains vagues*” have the potential for local actions of appropriation from the experience of those who experience their day-to-day lives. Committed to the local scale through experimentation, they seek “new tools capable of dealing with emerging urban realities” (ROSA, 2011, p. 14). One way to act in the urban voids is through microplanning through experimentation, which, according to Rosa (2011):

“[...] is a vital way of approaching the growing complexity of cities, looking for new types of alternative planning, capable of absorbing what emerges and is generated by urban means. Providing spaces for this – the meeting place – requires an appreciation of the discovery of qualities of space, in addition to its reinterpretation.” (LEITE, 2011, p. 14).

The city becomes “a laboratory and field of experimentation” (LEITE, 2011, p. 14) where it is possible to test real solutions to urban problems.

Creative urban practices are generally spontaneous and driven by the lack of spaces for coexistence with quality on a human scale. The reinterpretation of wasted spaces enables urban restructuring committed to the local scale (ROSA, 2011, p. 14). Civil society’s involvement in urban projects and achievements generates new non-hierarchical and strategic connections. The possibility of incorporating bottom-up methods in urban planning can be considered the most important innovation for the realization of the “inclusive city” (HEHL, 2011, p. 150).



Still, for planning to be appropriated by a political project aimed at the emancipation of citizens, it must act as a subversive agent and turn towards forming an “insurgent citizenship”. Planning must break with its autocratic paradigm and instrumental rationality, assuming the role of “mediator” or “translator” between different spheres of contemporary pluralistic societies – “between the State and the community, and the world-system”, from a “proactive” perspective of specialists and the daily experience of social groups (RANDOLPH, 2008). The everyday spaces of social and spatial practices “can give rise to substantive forms of exercising citizenship, taking advantage of other sources of information and providing new guidance for planning practices” (RANDOLPH, 2008, p. 2).

According to Ananya Roy (2005), one must overcome formal versus informal dichotomous simplification and see informality as a series of transactions that connect different economies and spaces to each other. Informality is the state of exception determined by the sovereign power of the planning apparatus. It is possible to use the state of exception strategically to structure public policies. It can be seen as a “way” or “method” of urbanization of the metropolis (ROY, 2005). It can be said that effective participation in the various processes is an essential feature of this urbanization methodology. In this way, it is proposed to learn from informal actions and understand them as a possibility of action in urban planning of “true participation”.

## FINAL CONSIDERATIONS

The problem of urban waste in a metropolis is quite complex and its solution is not limited to the frequency and quality of the collection service. It is necessary to complement it with alternative services, in which the citizen also becomes responsible and assumes his/her part in the management and quality of the production and disposal of waste.

Urban voids, useless spaces seen by the eyes of those who deposit what has been rejected are, almost always,

neighbors of someone who would not like to have such deposits in his/her surroundings, as it disqualifies and deteriorates them. The experience of the Sustainable Gardens Project showed that small changes in the urban form can generate major changes. Despite not having solved the problem of waste disposal, the modification of the space influenced many people who use the street to change their habits and act with more environmental and citizen awareness. This transformation, perhaps, would not have occurred if it were imposed from the top down. It was possible because it emerged from users and the dialogue of its various actors who, concerned with the quality of everyday space, sought alternative solutions and implemented them collectively.

For this purpose, the collaborative action used as a tactic was fundamental to modify people’s behavior, aiming at a greater involvement of the population in community management. In this sense, the experience proved to be successful, showing that it is possible to end the irregular deposits of urban waste and activate the vitality of an underutilized space without major works that require high investments. It also appears that specific collaborative interventions can act as a trigger for the appropriation of the street and urban well-being.

Collaboration between users and technicians is essential for the success of the intervention when “success” means having a participatory and inclusive process and the result responds to local demands. In addition, collaborative actions are possibilities for bringing public managers closer to the community and have a directive potential when it comes to urban and metropolitan planning in view of the complexity of cities. It is not, at all, an alternative that justifies the absence of the State in the transformations and investments in infrastructure, but a method of experimentation that adds knowledge and local participation and a greater connection between the actors, and that could be incorporated into the management of cities to make them healthier, more inclusive and humane.

“Part of this work will be presented at the 27th World Congress of Architects - UIA 2021 RIO and will be published in its annals.”.

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