The concentration of urban violence in certain settlements in Latin America and the possibility of expansion have been latent concerns in slum upgrading. This intervention is potentially an urban peace strategy, especially when it is open to local participation and the promotion of capacities for collective action. However, the political economy behind upgrading shows that these are settings of competence for power and resources. Different factors (e.g., heterogeneity and population size, and project design) account for the bias towards a local elite, which is functional to the interests of public authorities. But, in contexts where power is fluid and challengeable, the informal arrangements between actors involved are more important as mediating social mechanisms of the peacebuilding efforts in the upgrading intervention and their outcomes.

This article focuses on the Vila Viva slum-upgrading experience in Aglomerado da Serra, starting in 2005 in Belo Horizonte (Brazil). Social Network Analysis (SNA) models were applied to study the ties linking activists with public and private community initiatives. Interviews and a sociometric survey were used to collect information. The analysed social mechanisms (closure and brokerage types) depicted interaction frameworks with public authorities of two profiles of community activists: traditional and emerging. The first one was functional to the situational crime control approach of Vila Viva, in contrast with territorial rooting defended by emerging activists. The Vila Viva program upgraded the area’s connectivity with the city and broadened the market share of the favela’s drug dealers. After which, they assumed situational control to protect external buyers.

**Keywords:** Participatory slum-upgrading; peace-building; favelas; social network analysis

1. Introduction

In Latin America, a region with the world’s highest murder rates, violence tends to be located mainly in cities (UNODC 2019). About a quarter of its urban population lives in settlements of irregular origin or slums (Magalhães 2016), which receive different names (favelas, chabolas, villas miseria, barriadas). Inadequate access to drinking water and basic sanitation, poor quality housing, overcrowding, and an insecure residential status are among its main characteristics, according to the United Nations (UN) (2003). Some settlements constitute sources of insecurity and behaviors that threaten life and personal integrity (homicides, physical injuries and armed robberies), and their young residents are usually victims or victimizers (Beato 2012). In general, their inhabitants are exposed to different forms of extortion practices, in exchange for access to basic goods and utilities, by criminal organizations, including drug trafficking gangs (Pérez 2011).

Although not all settlements exhibit insecurity, due to their socioeconomic condition and their history of clandestine or irregular configuration they are labelled as dangerous. In general, its inhabitants occupied
public or private land and built their houses, without the proper technical, urban and legal regulations (Perlman 2010).

Since the 1980s, slum-upgrading initiatives, in situ, have gained importance in the region, with the support of international agencies (World Bank, Inter-American Development Bank, UN). Unlike demolitions and relocations, this type of intervention first started with the recognition of settlements to then introduce legal and urban regularization measures that would allow the delimitation and titling of real estate property, the connection to utility networks, the construction of roads and the legalization of neighbourhoods. In addition to the legal and physical components, a social component increases its presence to address issues, such as the lack of opportunities—particularly among young people—and violence. During the intervention, infrastructure projects are combined with an extended offer of urban facilities and social services in education, health, sports, leisure, coexistence and security (UN Habitat 2011).

A participatory improvement is necessary to coordinate the physical and social components of the initiatives, that is, inhabitants getting involved in the prioritization, design, monitoring, evaluation and/or conservation of infrastructure projects. In accordance with the community-based development approach, this would ensure the people most in need are effectively benefited and promotes local capacity for coordination and collective action to face challenges in order to develop safety and urban peace. In this way, the intervention will be an opportunity to offer public support to develop a public-parish control of criminal behaviour (Carr 2003) when the inhabitants lack sufficient resources.

However, there are degrees of organization and social representation within settlements before the intervention that conditions its processes and the participatory character generate new spaces for competition for power and resources (Lund & Saito Jensen 2013). Even more so in local contexts where power is circumstantial and contestable. In those settings, the mechanisms of interaction between involved actors would be more important for understanding the practical possibilities of peacebuilding in slum upgrading than the usual explanations in the political economy of development, based on a relatively stable hierarchy of stakeholders with clearly defined scopes.

This article analyses the case of the Vila Viva program in Brazil, one of the most significant countries in the region for its experiences of participatory slum–upgrading (Magalhães 2016; Magalhães & Di Villarosa 2012). The intervention took place at a time of demographic transition and pressure for a generational renewal of community representation in the Aglomerado da Serra, the largest favela in Belo Horizonte—the capital of the state of Minas Gerais. This set a scenario of defiance towards the structure of local power that ended up conditioning the effects of the program in terms of the control and prevention of violence. Because the results at that matter were mixed and contradictory, what was the scope of the program, and its participatory design, in peacebuilding within the Aglomerado?

The following section of this article discusses the political economy behind slum upgrading and why the mechanisms of interaction between dwellers and local authorities are of relevance. The third section provides the research context, while the fourth describes the method and data. The social network analyses method was used to identify these frameworks of interaction and the structure of local power in the network of community activism. The fifth section discusses the meanings and degree of agency that these mechanisms represent for the peacebuilding efforts of their participants. The sixth section closes with the conclusions.

2. Slum-upgrading As a Peace Strategy: An Interpretation From the Local Political Economy

The concentration of urban violence in certain settlements and the possibility of expansion have been latent concerns in slum-upgrading. This partly explains the social component included in these interventions in terms of collective facilities construction and the offer of education, employment or entrepreneurship programs, within a broader framework of poverty reduction (Harris in press). Even so, in most improvement initiatives, the intention to counter violence has not been explicit, and its consideration was a subsequent outcome of the intervention (Muggah 2012; Pérez 2011). This would normally be a task for police and would depend on national, rather than local or municipal, guidelines, unless there is a suspicion of police involvement in contexts where their image has deteriorated and they are distrusted (Bénit Ghaffou, Fourchard & Wafer 2012; Leverentz & Williams 2016; Silva 2012).

However, Ramey and Shrider (2014) explain that not using security and coexistence goals may become an advantage, because it would prevent ‘dangerous’ from being used as a label for neighbourhoods when the criminal justice system intervenes. This would rather consist of improving inhabitants’ self-esteem by participating in promoting infrastructure projects, thereby changing the appearance of their neighbourhood. Thus, it is probable that there is a greater willingness for residents to commit themselves to interventions...
of this type. In addition, they would possibly support the identification and design of physical spaces that facilitate the operation of initiatives that allow crime prevention and support coexistence (Leverentz 2014; Velez & Lyons 2014).

The participatory nature of the improvement would normally guarantee that assisted populations are involved in developing adequate responses to those most in need of intervention. In this way, a local capacity for organization and collective management is expected to be developed to sustain the responses introduced to manage neighbourhood problems and to retain control over the dynamics of violence, once the intervention is over. In this way, the public-parish prevention of criminality and violence constitute a peacebuilding process. This entails changes in power relations with the State, and within populations, by giving voice to those who have been relegated from guidelines and collective decisions, as well as opposing different viewpoints on the arrangement of built spaces in the settlement, to the vested interests of everyone.

Several cases of how participation is used to persuade locals of improvement initiatives have been illustrated from the urban political economy (Özdemir & Eraydın 2017; Mayer, Thörn & Thörn 2016; Velez & Lyons 2014; de Vries 2016), although, by the end, the balance favoured the physical aspects of engineering over those of a social nature. Such results put the settlement at risk from real estate pressures in search of land enabled for higher socioeconomic status housing projects, while those of locals do not register significant changes. On the other hand, the irregular origin of the settlements, as well as the insecure tenure of the occupied land, has led some residents to obtain and negotiate votes in exchange for urban development with politicians that have influence on public administration. Consequently, patronage political systems with the ability to maneuver the inhabitants’ struggle for their neighbourhood have emerged, leading to episodes of violence (Auyero, Lapegna & Page 2009).

Residents acting as intermediaries in the accomplishment of works stand as settlement representatives, even if they concentrate the benefits of the constructions in their personal and neighbouring environments. Young people participating in delinquent actions in the settlements are almost inevitably relatives, neighbours and acquaintances of local representation elites. By accessing weapons, the most organized criminal groups assume functions of conflict mediation and social regulation, replacing authorities. During the elections, these groups press for voting campaigns to favour politicians who avoid affecting their activities and thus manage to instrumentalize local elites (Koonings & Kruijt 2007; Perlman 2010).

With an agenda of interest partially or completely their own, local representation elites can continue as a cog in relations between residents and public authorities, politicians and criminal actors, which would support their ability to impact participatory processes. From the political economy of development, Dasgupta and Beard (2007) propose four aspects from which the degree of control and capture exercised by local elites over the intervention processes would be explained: prior composition of the local population; initial capacity for collective action by inhabitants; global context of the intervention; and design.

Regarding the composition of population, power inequalities based on differences in economic income, status, gender, age, skin color and religion, among others, determine that insights and decisions of a particular section of residents prevail over those of others (De Geest & De Nys-Ketels 2019; Rigon 2014). Nevertheless, the effect would be the same for the reduced participation of the non-elite and their low disposition towards collective action due to a lack of resources (Jakimow 2018). In terms of context, the legal framework, the decentralized structure of government or the social emphasis of municipal administrations are included (Lara 2014; Muchadenyikaa & Waiswab 2018; Pimentel 2016). On the other hand, the lack of expertise and technical capacities of municipal governments end up being supplied by the criteria of the local elite (Das 2015).

The design seeks to establish guidelines to achieve a coordinated action between public authorities and inhabitants, reflecting the interests of those requiring assistance. Most of the suggestions are focused on participation (Fritzen 2007; Meredith & MacDonald 2017; Saguin 2018), meaning a democratic and plural selection of community representatives; control and verification of their performance; permanent instances of dialogue and assistance; ideal handling of information; fulfillment of expectations; a complementarity of infrastructure projects for a comprehensive coverage of needs, ultimately consisting of giving a voice to the non–elite, allowing interaction with the local representation elite and contributing to their empowerment.

However, given the multiplicity of factors at stake in participatory improvement plans, it is difficult to expect synergy between local elites and public authorities to achieve the social purposes of these interventions. Furthermore, assuming the existence of elites and non–elites is restrictive. Ruler and ruled depend on each other, and power can be disputed (Bénit-Gbaffou, Fourchard & Wafer 2012; De Feyter 2015; De Geest & De Nys-Ketels 2019). Bénit-Gbaffou and Katsaura (2014) state that in contexts where community leadership is more circumstantial, and less dependent on established rules, power is fluid and frequently challenged.
and will be associated with informal arrangements or mechanisms of interaction between different influential actors. Lund and Saito Jensen (2013) state that participatory initiatives open new spaces of competition for power and resources at local levels. In this sense, the impacts of these initiatives will be mediated by the current social mechanisms and alterations among power actors.

3. The Vila Viva Program and Its Mixed Outcomes
The participatory slum-upgrading program, Vila Viva, was launched in 2005 in Belo Horizonte to assist favela-type settlements. Earlier in the 1990s, an institutional architecture was established (Municipal Conference, Municipal Council and Urban Development Company—URBEL) for public discussion, preparation and implementation of the city’s housing policy (Pereira, Brasil & Carneiro 2014). Additionally, the Participatory Budgeting program was introduced. Through this, the population could decide on the allocation of public resources for urban development projects in their community (Conti 2004). In the 2000s, the federal government created the Growth Acceleration Program (PAC) through which Belo Horizonte’s mayor could finance approved and delayed projects from the Participatory Budgeting, as well as megaprojects to improve settlements. The Vila Viva program was started through PAC (Afonso & de Magalhães 2014).

One of the explicit goals of Vila Viva was to contribute to the guarantee of safety and coexistence. The Aglomerado da Serra, the site of the pilot intervention, was one of 6 favela sectors with a concentration of homicides during the 1990s, out of a total of 81 in the city, in a period where murders increased (Beato 2012: 144–192). Silva (2012) reaches similar conclusions for the period between 1998 and 2006. In general, those responsible for the aggressions in the Aglomerado were infants and adolescents living in a contextual lack of conditions and opportunities.

The Aglomerado da Serra also stood out because was built over public property land or ownership by absent private individuals and was located on high and sloping terrain, close to a neighbourhood sector with the highest socioeconomic status in Belo Horizonte and close to the main traditional centre of the city (DAM Engenharia 2000). This attractive location made it a recipient of migrant populations coming from municipalities in the state of Minas Gerais and other settlements in Belo Horizonte during the second half of the 20th century. Hence, it became the most densely populated neighbourhood (89.2 homes/ha.) in the city and with the largest number of settlers (approx. 40 mil) (DAM Engenharia 2000).

In the preview diagnostic of the Aglomerado, socio-economic, legal and urban disadvantages were revealed by the late 1990s. For instance, the proportion of the population earning below minimum wage was 43% (approx.); around 8.5% of the families declared having a deed for their property. In some subsectors of the settlement, also known as ‘vilas’, access to drinking water or sewerage was completely lacking, and the sewage drainage was open-air (DAM Engenharia 2000: 57–58, 60–62).

In contrast, at the end of the main set of infrastructure projects, in 2008 and 2009, Cruz (2010) confirmed a positive feeling from residents about their neighbourhood and current urban infrastructure. The greatest advances were made in urban planning. According to program officials, more than 2,500 residences were connected to the sewerage network; also, 30 km of alleys, 20 routes and an avenue were urbanized, which allowed 96% coverage of the main networks of drinking water, electricity and basic sanitation to be achieved (2010 Census). There were 2,554 removals carried out due to construction and landslide risks, and the number of housing built reached 10% of the homes registered in the 2010 census. Six new parks, a social assistance center and two mega-units for early childhood education (kindergarten) were built.

However, the results of the control of violence were less evident. The homicide rate decreased, meaning that Aglomerado was no longer recorded in the areas of highest murder rates according to official reports (Figure 1). This also happened with theft and armed robbery in the streets. Nonetheless, field observations of this study confirmed that there was a permanent surveillance system and drug dealing activity, with intermittent police presence. Children or teenagers surveilled external and internal access to the Aglomerado and reported movements in the neighbourhood. The places drugs were sold were distributed throughout the settlement, some of them in streets, parks or public squares. Similarly, in the main avenue crossing the Aglomerado (constructed by the Vila Viva), this meant that buyers did not have to get out of their vehicles. This drug trafficking operation was not visible in conventional official records.

4. Analysis Strategy
The method applied was the analysis of networks of social nature (non-virtual) from the relational approach in the social sciences (Crossley 2011). In this, power has a positional sense in a network of ties (Tarrow 2011).
That is, it depends on who you interact with and how. The ‘hows’ include social mechanisms or patterns of association between actors that reveal how their ties reproduce endogenously, defining the structure of how resources, meanings and values circulate among involved actors (McAdam, Tarrow & Tilly 2004). Network analysis recognizes the agency capacity of actors, and the instrumental nature of their decisions, without losing sight of the social influences to which they are subject and the ways in which these are produced and transmitted (Gould 2003).

Within the network analysis, there are ERG models (Exponential Random Graphs) (Lusher, Koskinen & Robins 2013) to identify the social mechanisms that support an observed network represented in the form of a graph, that is, actors and ties through points (nodes) and lines. In turn, this allows the mechanisms to be exposed through geometric figures. Under the principle of interdependence between ties, this type of model is based on a simulated and iterative sequence, Markov type, of random graphs forming a sample space. From there, an expected average value of the frequency with which each of the possible mechanisms under study occurs is obtained. On this basis, the statistical significance of the observed frequency of each mechanism is verified, in the network to be explained, to establish whether it constitutes an association pattern that supports the set of the network.

Figure 1: Murder concentration in Belo Horizonte (2015–2016).\footnote{Source: prepared by the authors. Estimates made on CrimeStat IV program (version 4.02), using Kernel interpolation under the normal distribution method, with a fixed interval to facilitate eventual comparisons over time. Cartographic design and visualization using ArcGis program (version 10.0).}
The mathematical expression for the ERG model is\(^2\)

\[
Pr(X = x | \theta) = P_{\theta}(x) = \frac{1}{k(\theta)} \exp \{ \theta_1 z_1(x) + \theta_2 z_2(x) + \ldots + \theta_p z_p(x) \}
\]

The probability of occurrence of the observed network is an exponential function of the weighted statistics of each mechanism included in the analysis. The particular form that the network ERG model assumes depends on the hypothetical mechanisms to be verified, which can be of three standard types: activity/popularity, closure and brokerage. The basic form of the first is the 'star' that reflects the degree of reception/emission of ties by an actor. That of the second is the 'triangle', which indicates the effective realization of all potential ties in meetings of more than two actors. That of brokerage is the 'simple two–path', in which an actor plays the role of an intermediary between two extremes. Thereafter, schemes that are more complex can be evaluated in each standard type, along with individual attributes of the actors.

The type of network representation chosen for this research is called 'two mode' because ties connect actors with events, and thus there are two levels of interaction, the first added in the second. Through this, the links of the Aglomerado da Serra social activists with different initiatives (public/private) of community assistance in the settlement (to account for the network ties of community work) were recorded. It was also used to identify the mechanisms of interaction with the public power making presence in the network and the response capacity that they constitute to face the challenges of violence and the role of the Vila Viva program in such a structure as a comprehensive initiative to the network. Activism was studied as a condition of community representation, because leadership in the Aglomerado is more associated with the work in favour of the residents demands than with a formalized election ritual.

In order to identify the activists, lists of names given by people and officials, who had been involved in some social intervention in the settlement, were used first. These lists were completed and checked using the snowball technique with people referred by the activists. In total, 40 activists were interviewed with semi-structured questions to inquire about their sociodemographic profile, initiatives in which they had participated and their characteristics (e.g., goals, source of resources and operation, scope of action) and insights regarding the Vila Viva program. The questionnaire was designed after covering an exploratory stage of open and in-depth interviews with 8 officials from the social programs, 10 residents and 20 random activists about the processes of urbanization and community organization, the implementation of the Vila Viva program and its effects in these processes and in peacebuilding. An informed consent to participate in the research was first obtained from the respondents, and the study was approved by the Research Ethics Committee (COEP) of the Federal University of Minas Gerais (UFMG) (process 1.532.423). The data was collected between August 2015 and March 2016 and could be made available through e-mail request sent to the Criminality and Public Security Studies Centre (CRISP) of the UFMG: crisp@crisp.ufmg.br.

5. Results and Discussion

**Activist profiles**

In previous statistical exercises\(^3\) of crossings between categories of information on the attributes of the activists, it was possible to verify two profiles, according to their origin. Those who migrated to the Aglomerado and had lived there most of their lives, and those who were born and raised in this settlement. The former made up the group of the most traditional in the settlement and were associated with the age range of older people (over 60 years), with basic and medium levels of education and declared activities, such as ‘community leader’, ‘political office assistant’ and ‘retired’. On the other hand, the Aglomerado natives, and emerging figures in their condition of activism, were linked to age categories ranging from teenagers to adults (between 18 and 59 years of age) and with activities that required higher job qualification: young people as ‘cultural producer’, ‘artist’ or ‘businessman’ tasks; young adults as ‘public official’; and adults as ‘educator’ or ‘community health agent’ (ACS).

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\(^2\) X is the sample space of random graphs; x the observed network; \(\theta_1, \theta_2, \ldots, \theta_p\) weighting coefficients; \(z_1(x), z_2(x), \ldots, z_p(x)\) the statistics of each evaluated local schema; \(P_{\theta}(x)\) the probability mass function; \(k(\theta) = \sum_{x} \exp \{ \theta_1 z_1(x) + \theta_2 z_2(x) + \ldots + \theta_p z_p(x) \}\) normalization term to make sure that the sum of the function of probability mass, \(P_{\theta}(x)\), especially the set of random graphs, is 1.

\(^3\) Through the multiple correspondence analysis technique, using SPSS program (version 15.0).

\(^4\) Words in single-quotes refer to the exact names of analysis categories used for the classification and the information processing, of a qualitative nature, collected in the semi-structured question questionnaires.
Activist participation in community assistance initiatives in the Aglomerado also exhibits distinct features. At the core of the involvement ties network of activists with different initiatives (Figure 2) are those with more convening power due to their centrality.

Three indicators were used to establish the initiatives that brought together the largest relative number of activists (degree); the closest ones, in the sense of requiring fewer indirect ties (contacts) to be known (closeness); and the most intermediate ones because it was possible to meet activists from various other initiatives (betweenness) thanks to them (Table 1). The three indicators range from zero (lowest) to one (highest) values.

The group of most central initiatives was made up of eight in total that coincided in the three indicators described, because of their value being significantly higher than the average. Activists were divided according to their similarity with the traditional or emerging profiles, and their relative participation in the core of the network was checked (Table 2).

---

**Figure 2:** Network of activists and initiatives of community assistance.  

**Table 1:** Centrality of initiatives of community assistance at the network core.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Degree</th>
<th>Closeness</th>
<th>Betweenness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claiming Meetings</td>
<td>0.68</td>
<td>0.77</td>
<td>0.17</td>
</tr>
<tr>
<td>Artistic Events</td>
<td>0.60</td>
<td>0.72</td>
<td>0.14</td>
</tr>
<tr>
<td>Participatory Budgeting</td>
<td>0.60</td>
<td>0.71</td>
<td>0.13</td>
</tr>
<tr>
<td>Political Mobilizations</td>
<td>0.50</td>
<td>0.70</td>
<td>0.11</td>
</tr>
<tr>
<td>Community Associations</td>
<td>0.45</td>
<td>0.64</td>
<td>0.06</td>
</tr>
<tr>
<td>Sports Events</td>
<td>0.38</td>
<td>0.64</td>
<td>0.07</td>
</tr>
<tr>
<td>School (Integrated or Open)</td>
<td>0.38</td>
<td>0.66</td>
<td>0.07</td>
</tr>
<tr>
<td>Fica Vivo (Stay Alive)</td>
<td>0.23</td>
<td>0.58</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>0.15</td>
<td>0.51</td>
<td>0.02</td>
</tr>
</tbody>
</table>

(± 0.07) * (± 0.03)  

* Confidence interval of 99.0%.

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1. Source: prepared by the authors. Visualization made on Ucinet program (version 6.625), with information collected during fieldwork.
2. Source: prepared by the authors. Estimates made on Ucinet program (version 6.625), with information collected during fieldwork.
Out of the eight core initiatives, half recorded the relatively higher participation of traditional activists, compared to the emerging ones, and were older than the Vila Viva. There, the traditional activists acted as the community representatives for the assistance of public authorities and the achievement of urbanization projects for the landmark occupation zones of the settlement, called ‘vilas’. Its growth gave rise to Community Associations. When the time came to head these corporations, traditional activists became partially functional to the Political Mobilizations in favour of votes and party affiliations. Since then, accusations have been heard about their alleged dealings with politicians in exchange for private benefits. Subsequently, a relative majority of traditional activists appeared in the Participatory Budgeting program and in the Reference Group (GR) or participatory instance of Vila Viva.

However, one of the main tasks of the Community Associations were carried out separately in the initiative of the Claiming Meetings, a more basic alternative to community organization. Generally, they were more independent from a specific group or person and arose from the spirit to mobilize requests and demand accountability from the authorities. This reflected a loss of functionality and representativeness of the Associations.

For their part, emerging activists showed a proportional majority in two initiatives older than the Vila Viva, Artistic Events and Sports Events. To make these happen, efforts were made by the activists themselves and by colleagues with a community background, or jointly with their apprentices. These events served as a platform for their exponents—as well as to cover public spaces besieged by drug trafficking—and as a way to show Aglomerado’s young people other forms of interaction and to make their lives meaningful.

The other two initiatives with the relative predominance of the emerging activists, Integrated or Open School and the Fica Vivo (stay alive), coincided with the arrival of the Vila Viva program. In addition, they evidenced a diversification in the public authorities’ assistance towards the Aglomerado with social programs designed for young people’s education, which at the same time valued the work of emerging activists in training and encouraging a culture of coexistence. Prior to Vila Viva, official actions on social matters, that had been used in the Aglomerado, used to have a more welfarebased character, with monetary and in-kind transfers, aimed at people with limited economic resources.

The initiatives, operated by ‘Schools’ and the ‘Fica Vivo’, recruited emerging activists and members of the Aglomerado cultural groups (called community agents), to offer disciplines to children and teenagers through workshops. In the case of ‘schools’, this type of work made it possible to extend daily school hours and to use educational centers or public settlement spaces (among them, those built in Vila Viva). It also introduced diverse and complementary pedagogical practices, which were added to conventional study plans and were carried out under the supervision of school teaching staff. Thus, the neighbourhood and school settings were integrated into the same learning experience. For Fica Vivo, the workshop scheme represented the community component of the program by working with young people who had already been involved in criminal acts or offenses to prevent them from dying during these events.

Initiatives reflected defined profiles of community activism and relations with the public authorities up to that point; so what are the social mechanisms that sustained them?

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Table 2: Network core initiatives.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Onset in relation with Vila Viva (VV)</th>
<th>Traditional Activists relative proportion</th>
<th>Emerging Activists relative proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Associations</td>
<td>Older than VV</td>
<td>1.00</td>
<td>0.29</td>
</tr>
<tr>
<td>Claiming Meetings</td>
<td>Older than VV</td>
<td>1.00</td>
<td>0.58</td>
</tr>
<tr>
<td>Participatory Budgeting</td>
<td>Older than VV</td>
<td>0.89</td>
<td>0.52</td>
</tr>
<tr>
<td>Political Mobilizations</td>
<td>Older than VV</td>
<td>0.56</td>
<td>0.48</td>
</tr>
<tr>
<td>Artistic Events</td>
<td>Older than VV</td>
<td>0.33</td>
<td>0.68</td>
</tr>
<tr>
<td>Sports Events</td>
<td>Older than VV</td>
<td>0.22</td>
<td>0.42</td>
</tr>
<tr>
<td>School (Integrated or Open)</td>
<td>Coincided with arrival of VV</td>
<td>0.11</td>
<td>0.45</td>
</tr>
<tr>
<td>Fica Vivo (Stay Alive)</td>
<td>Coincided with arrival of VV</td>
<td>0.00</td>
<td>0.29</td>
</tr>
</tbody>
</table>

7 Source: prepared by the authors. Information collected during fieldwork.
Social mechanisms and their meanings

In terms of networks of social nature, the search for mechanisms involves the exploration of tie frameworks that guide endogenous or interdependent reproduction of the same ties, thus the existence of the network in its observed form under analysis. Different estimates with framework combinations already typified within inferential models (ERG) were tried and followed the examination of situations described in the methodology section of activity/popularity, closure and brokerage. The definitive estimation model complied with the required convergence criteria, goodness of fit and reliability (Figure 3).

Statistically significant mechanisms in the model of the network of community activism were 'edge', ‘actor based two–points star’, ‘actor based three–points star’, ‘three–path’, ‘events based closure of multiple two–paths’ and ‘actor based mismatch of two–points star’. The ‘edge’ mechanism is useful to account for the

**Figure 3:** ERGM parameter estimates (and standard errors) for the network of community activism.⁸

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⁸ Source: prepared by the authors. Estimates made on MPNet program (version 1.04), with information collected during fieldwork.

‘Convergence’: absolute value of the $t$ ratio less than the standard limit of 0.1 in each mechanism. Therefore, the observed network occupies a central place in the sample space of random graphs.

‘Goodness of fit’ (complementary to the convergence): absolute value of the $t$ ratio less than the standard limit of 0.1, in each mechanism of the model under test, and less than 2.0 in all other possible mechanisms.

‘Reliability’: indicator of the sample auto-correlation function less than the standard limit of 0.4 in each mechanism.
existing degree of difficulty of the occurrence of a tie in the network. Furthermore, the frameworks that have coefficients with a positive symbol indicate that their observed frequency in the network is significantly greater, in statistical terms, than their expected average frequency by chance, so they account for the fundamental articulation patterns for the network. On the contrary, if coefficients are negative, then the linked frameworks register a significantly reduced observed frequency and don’t support the network altogether.

The star mechanisms in the model generate coefficients with alternate signs. The ‘actor based two–points star’ mechanism is positive, and the ‘actor based three–points star’ is negative. In other words, there was a tendency by activists to participate in two initiatives, some of them even in three. Due to this level of activity, it is possible for them to meet in one or more initiatives, which became brokerages through which mutual knowledge among activists circulated. This is the case described in the ‘three–path’ mechanism, composed of a connection in sequence and alternated by two activists and two initiatives, without closing the social circuit. If such closure occurred, it might not be in an isolated way but alternated by several activists around the same duo of initiatives. This is what would happen under the ‘events based closure of multiple two–paths’. The last two mechanisms described are linked to negative coefficients; consequently, their occurrence is restricted to specific and local situations within the network.

The last mechanism, ‘actor based mismatch of two–points star’, has a positive coefficient and reveals that activists tended to participate in two initiatives distinct from each other in their source of resources and operational organization. Additionally, there is a direct correlation between this attribute of the initiatives and their centrality. Actions with official or political support concentrated in the network core (66.6% of the total central initiatives), while 72.7% of less central initiatives corresponded to efforts by activists themselves (Table 3). Consequently, the ‘actor based two–points star’ also synthesizes an activist pattern consisting in relating to the network center and periphery by means of a combination that indicates its degree and interaction with authorities.

The central character of the initiatives, supported by the involvement of public authorities, transformed them into platforms for accessing and exchanging contacts, information and resources. If the central initiative was part of the ‘three–path’ mechanism, it would take the role of a brokerage platform. This mechanism would include activists participating in different additional initiatives that could share diverse focuses and discover unprecedented community work opportunities. In addition, if the framework mechanism was that of ‘events based closure of multiple two–paths’, it meant that activists known for their joint participation in other initiatives gathered on the platform. This way it would result in a social circuit with circulation of redundant resources. The first mechanism allowed flexibility and was useful to describe the trajectory of emerging activists. The second mechanism guaranteed stability and applied to traditional activists.

**Social circuit mechanism and situational prevention of crime through Vila Viva**

Since the creation of Participatory Budgets and in their role as leaders of Community Associations, traditional activists occupied official participation spaces en masse (e.g., Conferences and Municipal Councils) until they built a social circuit around these types of initiatives that also gained centrality in the network. In this process, traditional activists became the partners of public powers, which brought about official recog-

<table>
<thead>
<tr>
<th>Resources/Operational Organization</th>
<th>Centrality in the Network</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activists themselves</td>
<td>11.1</td>
<td>28.6</td>
</tr>
<tr>
<td>Public project or program</td>
<td>33.3</td>
<td>42.9</td>
</tr>
<tr>
<td>Activists themselves/public call</td>
<td>0.0</td>
<td>14.3</td>
</tr>
<tr>
<td>Partnership with colleagues</td>
<td>22.2</td>
<td>7.1</td>
</tr>
<tr>
<td>Partnership with public authorities</td>
<td>22.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Others</td>
<td>11.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: prepared by the authors. Information collected during fieldwork.
nition and stability. Similarly, by complementing their habitual tasks in political campaigns, it consolidated their role as intermediaries between public power and the Aglomerado, especially regarding urbanization needs.

In fact, the performance of the traditional activists in Vila Viva completed the social circuit they had established, as they did not lose sight of the fact that the grassroots project was part of the Participatory Budgeting program. For them, the community Reference Group (GR) of Vila Viva limited itself to the drafting of the Global Plan (PGE) that laid the foundation for this intervention, albeit from the Participatory Budgeting resources. Furthermore, their verification tasks were conducted by the Commission for the Accompaniment and Auditing of the Participatory Budgeting Execution (Comforça) of the Central-South regional administration to which the Aglomerado belongs, inside the city. Additionally, traditional activists joined the Civil Defence Nucleus (NUDEC) that monitored areas of constructive and geological risks determined in the Vila Viva as part of the Structural Program in Risk Areas (PEAR) of the URBEL.

The package of large infrastructure projects in the Vila Viva program responded to urbanistic necessities contemplated for years by the annual exercises of the Participatory Budgeting. The role of the traditional activists at that moment represented an achievement in their trajectory as activists. Their partnership circuit with public authorities favoured the assertion of a common vision, in a segment of the network, of an urbanization plan for the Aglomerado and on the strategies to counteract violence.

The Vila Viva program was part of a wave of official interventions in the Aglomerado characterized by an emphasis on the situational prevention of events considered adverse because they risked the lives of its inhabitants. The aforementioned PEAR and Fica Vivo already followed these guidelines. Controlling adverse events was done by means of reducing its probability of occurrence. In relation to crime, or transgressive behaviors, it attempted to act in its context of opportunity so that those responsible for it were detected; in other words, this consisted of qualifying the surveillance capacity of authorities and that of the population itself. From this point of view, the infrastructure projects in Vila Viva had to facilitate access and circulation of the police and permanent observation by neighbours of public and communal spaces.

Violent confrontation between factions in charge of drug distribution were out of control at the beginning of the infrastructure projects, and traditional activists demanded a decisive intervention that guaranteed police access to any place in the Aglomerado. Traditional activists did not use to question the designs and technical details of the infrastructure projects that were handled in a language not apt for laypersons. They lacked the expertise to think of how to make them functional for another focus of violence prevention. However, over time, some of these activists who were closer to their emerging colleagues perceived the weaknesses of Vila Viva in the matter.

**Drug trafficking and the contention of emerging activists through brokerage social mechanism**

The struggle between factions of drug traffickers in the years prior to the slum-upgrading program was based on competition for the internal market within the Aglomerado divided by the ‘vilas’ that made it up. In general terms, each faction operated within the boundaries of a ‘vila’, because the networks of kinship tended to follow the same spatial pattern; the boss of a faction knew who to hire and who to sell to. Violating these boundary rules was a motive for war. As population density and conurbation increased in the Aglomerado so did the probability of confrontation.

Infrastructure projects in Vila Viva facilitated access and circulation through the settlement; as attendance at events promoting a new image of the neighbourhood and its integration into the city increased, so did the numbers of clients, from outside of Aglomerado, in search of drugs. This expanded external demand, with greater purchasing power, changed the priorities of traffickers. Now it was more important to guarantee protection in order for buyers to enter and leave the Aglomerado safely. Therefore, drug traffickers, who were tied to relatives and acquaintances in the neighbourhood, took on surveillance and street crime control duties. Sales points at different access and places of the Aglomerado, as well as massive street parties at the vilas, granted incomes for all traffic factions. In addition, the police were mistrusted by inhabitants due to their ineffectiveness and their record of abuse of power. In this way, situational crime control was in the hands of the traffickers.

For their part, the group of emerging activists held critical positions, with some variations, in the reach Vila Viva had in the reduction of violence. In the different investigated actions that impacted safety and cohabitation, split opinions were held in terms of acknowledging decreases (in crime rates) and were unified in declaring increases, compared to their traditional peers. For emerging activists, surveillance was
insufficient, and adolescents needed to be understood. These activists had a more developed sensibility because they grew up in the Aglomerado and through the work they carried out with children and adolescents, from different initiatives for training and socialization.

Described distances between activists grew before the Vila Viva program, mainly during the process of the Participatory Budgeting program. Despite the hoped opening of this last initiative towards new leadership, it was challenging to verify the degree of community representativeness of each participant in the operational meetings of the program in each residential context of the city. Moreover, their inhabitants did not have the same resources, skills and experience to represent their neighbours. In the Aglomerado case, the central place of the traditional activists in the meetings was challenged by younger residents. Among other tactics, they saved themselves time by attending during decisive moments and avoiding the deliberations with the traditional activists.

There were also reiterated complaints about the permanence of traditional activists leading Community Associations for long periods and their election to these corporations. In fact, continuity in these positions made their relationship with their neighbours in the Aglomerado problematic, especially when the promised infrastructure projects took a long time to be executed. When the Vila Viva developed, discussions by emerging activists about its effects were practically ignored, so they had to adapt to the physical spaces built into the program to maintain their projects.

Emerging activists defended a territorial focus of crime prevention, in which spaces were designed according to the functional needs of the inhabitants of the Aglomerado. For example, public squares and parks, in addition to aesthetic considerations, must comply with structures and accessories that allowed the development of different recreational and social workshops for different age groups, along with activities related to skills and use of the space by residents, such as growing fruit trees and legumes. In this sense, violence and crime prevention started from understanding adolescent’s expectations and demands in order to offer them adequate activities and physical spaces for the construction of life alternatives, in addition to promoting a collective sense of public and communal spaces, as opposed to their use for sale and consumption of drugs.

The divergent views of emerging activists gained ground with the brokerage social mechanism that characterized them. The involvement of emerging activists as workshop facilitators and service providers in central initiative teams (Schools, Integrated and Open, and Fica Vivo) served as support and financial complements to their own initiatives. The diversity of workshops allowed the central initiatives to function as flexible and brokerage platforms for collective action and contributed to the permanence and opening of fronts of community work. For example, some workshop facilitators already led their own initiative when they entered Fica Vivo, making them known to other colleagues in the activist field and increasing their youth following. For others, being part of Fica Vivo was a stage for developing skills and plans to undertake their own initiatives. This way, the workshops supported by the Mayor’s Office enabled the possibility for the greater positioning of emerging activists’ own initiatives within the network. Some of those gained centrality and common colleagues, despite not reaching the network core, such as Lá da Favelinha cultural center.

Lá da Favelinha grew rapidly; whereas, Fica Vivo did not, because the first did not have the budget constraints and the bureaucratic and political nature of public programs. Fica Vivo directed its attention to the leisure time of 12- to 18-year-olds, prioritizing those involved in drug trafficking. After quitting Fica Vivo as a rap music workshop facilitator, the Favelinha director founded this cultural center, sustained by annual campaigns and donations, and became a creator and promoter of artistic activities and talent, without any age restriction, which allowed him to enter and work with the social context of young participants’ relatives, friends and neighbours.

The brokerage mechanism depicted linkages that increased the prevention potential of the different initiatives against drug trafficking. However, it ended up functioning as a containment mechanism, because the places built with the Vila Viva were inadequate for the work of emerging activists. Instead, these places were used by traffickers under situational logic with the installation of their surveillance device. On the other hand, given that emerging activists and traffickers belonged to and circulated in the same social fabric of the settlement, the position of the former was not that of an open dispute with the latter but rather to offer alternatives to young people to avoid a greater expansion of the trade in drugs.

6. Conclusions
In the midst of an atmosphere of generational renewal and challenge to the role as community representative in the Aglomerado da Serra, the existence of two mechanisms of interaction with public authorities (closure and brokerage types) was verified from two different profiles of activism: traditional and emerging. These mechanisms are configured as two informal agreements built by their protagonists, in gradual and
circumstantial ways, which conditioned the peacebuilding process of the Aglomerado, begun with the Vila Viva program, in terms of a public-parochial prevention of crime and violence.

The social circuit mechanism (closure type) characterized the relationship of traditional activists as a Vila Viva working group, while the brokerage mechanism allowed describing the relationship of emerging activists. In the last, the program worked more as a debate scenario to provide physical public spaces, which these activists used in their activities finally. The first of the mechanisms enabled an uncritical adoption of the situational approach to crime prevention, with an emphasis on vigilance. Reproducing a scheme with activists known to the authorities ensured the arrival of urban facilities expected for years, and as part of the responses to rising violence. However, the point of view of emerging activists was underestimated and, with it, the possibility of providing adequate physical spaces for their proposal for a territorial approach to crime prevention.

Later on, the cost of not balancing the field of community participation through Vila Viva would be noted, as no greater weight was given to the proposals of emerging activists, nor were the inputs provided to make their discourse technical. This cost would become evident in the standing achieved by the traffickers in the Aglomerado, and their exploitation of the situational approach by assuming the surveillance of the physical spaces built with the Vila Viva and the control of street crimes.

Somehow, in reacting to Vila Viva, traffickers were able to establish a confederation of vilas' to act jointly (in a similar manner to an Aglomerado organization), in a new approximation of the city. They reproduced the type of guideline that traditional activists had attempted since the start of the Participatory Budgeting program. Emerging activists explored a different political alternative by electing a representative to the City Council who was native to the Aglomerado. The experience failed, because the elected councillor could do little to attend to the needs of residents. In spite of this, the search for a more qualified representative continues among activists. Until then, the resilience of the illegal economy was more evident than the political bids by activists in their longing for peace in the Aglomerado.

On the other hand, the mechanisms of interaction also made it possible to reveal the scope of the community initiatives that would not be appreciated if they were considered separately. This type of relationship is often lost sight of in impact evaluations of social interventions, which is problematic when studying effects at an aggregate neighbourhood level where the fields of action of the interventions may intersect. Such a difficulty is not solved by control group evaluations, because the social fabric of a neighbourhood is what makes it unique. With network analysis, it is possible to make an approximate record of this fabric. Successive observations over time of the links and nodes that make it up allow correlations to be established with other indicators at the neighbourhood level. For now, in a first register of the community activism network in the Aglomerado da Serra, the aim has been to measure the characteristics (qualities) of a social process that conditions, and helps to explain, the results of an intervention that presents quantitative and official indicators that favour it, although qualitative observations reveal the opposite.

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**Competing Interests**
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**Author Contributions**
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