Territorial governance and proximity dynamics. The case of two public policy arrangements in the Brazilian Amazon

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Abstract. Using social network and proximity-based approaches, this paper analyses the effect of two territorial governance arrangements implemented in the Amazonian region in the framework of 'The Territories of Citizenship' programme, which aims to promote interaction and collaboration between the various actors of rural development. In the Amazon region, the great distances between actors made their interactions difficult. Our study reveals, however, that those distances are not insurmountable obstacles to collaboration. Indeed, the measures implemented in the framework of territorial policies promote communication between the different actors of the territories, thus allowing for the development and reinforcement of organized proximity.

1 Introduction

Changes in the implementation of public policy, adopted in a growing number of sectors and territories, have contributed to the emergence of notions such as territorial governance or participatory democracy, reflecting the desire for a better integration and participation of local stakeholders in development policies. Given the intersectoral nature of those policies and the fact that they involve the participation of local actors, there is now a need to develop governance mechanisms that respect the principles of subsidiarity and ensure the integration of local actors' representatives in decision-making processes (Torre and Traversac 2011). However, while these mechanisms appear to be appropriate means of ensuring the sustainable development of territories and of coping with the challenges associated with globalization, the benefits to be drawn from those mechanisms clearly depend on the capacity of the actors of the territory to co-ordinate their action (Storper 1997).

Regional science approaches that address the issue of local interactions consider that space plays an essential role in co-ordination processes. Geographical proximity, defined as the physical distance between two entities, weighted by the cost in time and money of covering that

distance (Torre and Rallet 2005), can reinforce interactions between actors and generate positive externalities, such as a reduction of transaction costs (Scott 1986), the development of innovations (Camagni 1995) or the production of non-relocatable know-how (Colletis-Wahl et al. 2008). However, activating the benefits of this proximity depends on the social relations developed between the actors. Thus, the spatial interactions between actors can be analysed through a dialectic between geographical proximity and organized proximity (Torre 2008).

A number of studies, using a proximity-based approach, have examined how actors interact in the same cluster (Ter Wal and Boschma 2011), in the same economic sector (Balland et al. 2013), in research activities (Hoekman and Frenken 2013) or in situations of land use conflict (Magsi and Torre 2014). However, little empirical work has been devoted to analysing the proximity dynamics at stake in the institutional arrangements, when they are implemented as part of territorial governance processes. Yet, those arrangements are intended to facilitate, through the construction of organized proximity relations, the development of interactions between actors who did not previously collaborate spontaneously with one another, but whose joint action can prove important in promoting local development. Co-ordination between those actors can then facilitate the implementation of public policies and the definition of development strategies tailored to each territory, including the provision of support to clusters, for example, or strategies of specialization in a particular sector.

The desire or the need to give more consideration to the opinions or wishes of the populations as well as their will to participate in local actions has led policy-makers to propose new instruments of governance of local territories (Lascoumes and Le Galès 2007). The territorial public policy for rural areas implemented in this spirit in Brazil since 2003, has focused on inter-communal spaces with low human development indicators. The objective was to generate a process of social and spatial rebalancing, by providing support to family farming and rural workers' organizations (Bonnal and Maluf 2009), so as to enable them to interact with public institutions and to participate in public actions for local development (Piraux et al. 2013). This policy led, in 2008, to the creation of an ambitious programme, 'the Territories of Citizenship', managed locally by collegiates for territorial development – or codeters. These arrangements comprise representatives of civil and of public institutions of each municipality, in equal proportions and aim to promote the economic development of territories, to facilitate the population's access to federal programmes, and to help reduce poverty (Cazella et al. 2013).

In particular, codeters are in charge of allocating funding for local initiatives (technical support, structuring production chains, training, production) and, more generally, must ensure the proper implementation of public policies, such as that of electrification, education, healthcare and development programmes. Their mission is also to promote collaboration between the various actors of the territories, whether they be actors of civil society, public institutions or residents of the different municipalities. To this end, they are provided with funding to organize regular plenary assemblies (including organizing and covering the cost of transport, meals, accommodation, etc.), during which decisions are made concerning the organization of joint projects.

The objective of this paper is to analyse the interactions and in particular, the proximity dynamics, that condition collaboration among the actors involved in governance arrangements, in order to be able to evaluate their capacity to generate collective dynamics. Our work is based on the study of two contrasted territories benefiting from the Territories of Citizenship programme and located in the Brazilian eastern Amazon: the Baixo Amazonas and Nordeste Paraense. Implementing public policies suited to the particular needs of each region is crucial for the future of the territories of the state of Pará. Indeed, territorial governance schemes are confronted with major challenges in the Amazon, because of the immensity of the region as well as the cognitive distances between various groups of actors with different perceptions and interpretation of various external phenomena.

These challenges raise the question of the capacity of the local actors to collaborate to set in motion a dynamic process of territorial development. In this context, we propose to analyse the mechanisms through which the different groups of actors decide to take part in territorial governance arrangements and what effects the latter has in different contexts. This field of inquiry proves particularly favourable to testing the framework of analysis of proximities, inasmuch as the emergence of new forms of organized proximities is hindered by the great geographical and cognitive distances separating the different actors. We seek to establish whether this initial low level of proximity between the actors – which *a priori* limits collaboration between actors – can be overcome through regular communication between them and effective territorial engineering support. Moreover, we hypothesize that the existence of relations other than strictly professional ones facilitates the establishment of new forms of organized proximity.

We present the analytical framework of our study in Section 2 and the methods in the Section 3. Section 4 is devoted to analysing the characteristics of the collaboration networks of the actors involved, networks which have formed within the arrangements we have studied. More specifically, we examine whether new collaborative relationships have developed between the two main categories of actors identified (civil society and public institutions), as well as between geographically distant actors. In Section 5, we look at the elements that play a key role in the formation of these networks. Finally, in the discussion, we compare the systems of interactions of the two programmes and their respective evolutions.

2 Analytical framework

2.1 Social networks, proximity dynamics and territorial governance

Our objective is to analyse how the actors collaborate with one another, within the framework of territorial governance arrangements; territorial governance understood as a set of processes and mechanisms through which different categories of stakeholders or actors (productive, associative, individuals, representatives of public institutions, etc.) contribute to processes – sometimes negotiated, sometimes conflictual – of development of joint projects for the future development of territories (Torre and Traversac 2011). Focusing on the local level enables us to study the actors' behaviour and to situate them within their economic and social environment.

In this study focusing on inter-individual interactions, we consider that economic relations are embedded in social relations (Grossetti 2008). Abundant literature, particularly on network approaches, has been produced since the works of White (1992) and his student Granovetter (1985) were published. Their research consisted of examining in depth how social exchanges and collective action develop within economic organizations, and of empirically analysing social interactions and their characteristics (Favereau and Lazega 2002). Analysing interactions makes it possible to study the structure of the social networks and to analyse the positioning of the actors within the territorial governance structures or within the groups they belong to, for example (Carrington et al. 2005).

The spatial dimension being considered an essential variable in the processes of co-ordination and collaboration, we wished to incorporate it in our analysis, and to elaborate it on the contributions of regional science. Among other things, regional science helps to understand and analyse local economic externalities, first highlighted by Alfred Marshall to explain the economic performance of industrial districts, and subsequently discussed further by different authors, including Porter (1998) in his cluster theory. In light of the doubts over the robustness of the cluster model, some researchers wanted to better understand the mechanisms that result from geographical proximity between local actors. They raised the

question of whether geographical proximity could or could not facilitate interactions between actors and contribute to the definition of shared projects and representations. They found that other forms of, non-geographic, proximity may be necessary to benefit from local positive externalities (Boschma 2005; Torre and Rallet 2005).

It is only recently that studies on social networks have started to take space into account. The importance of these networks in the functioning of regional clusters was highlighted in the 1980s (Piore and Sabel 1984; Scott 1986; Camagni 1991) in studies, which, on this basis, empirically analysed the functioning of clusters in order to understand the conditions under which local externalities occur as well as their effects. Beyond the mere density of market exchanges, the researchers have focused on the social linkages that allow for processes of economic development, through the characterization of social capital (Callois and Aubert 2007; Molina-Morales et al. 2013) or through the analysis of knowledge exchange network evolutions and firms' absorptive capacities (Giuliani and Bell 2005; Graf 2010, Brenner et al. 2011). Following from those works, more literature has been produced, examining the networks most likely to support innovation and collective action and therefore to strengthen regional clusters, especially in the rural world (Spielman et al. 2010; Crespo et al. 2012; Chiffoleau and Touzard 2013; Compagnone and Hellec 2015).

Building on the analysis of proximity dynamics at work between the actors participating in programmes of territorial governance and rural development, our pragmatic approach enables us to examine more thoroughly the effects of the geographical, economic and social dimensions of interactions on collaborations. In a sense, it is a continuation of the researches which, using social network analysis, have tested the impact of geographical proximity on the development of clusters (Weterings and Boschma 2009). We have chosen to use a simple framework, one that clearly identifies two main types of non-contradictory proximity that can lead actors to interact: geographical proximity and organized proximity (in the line of Torre and Rallet 2005). This approach is well suited for addressing our questions because geographical proximity – considered as the physical distance separating individuals, weighted by their representations and practices – is essential to analysing the actions of people situated in a given spatial context and is inherent to their relational context. The desire to move closer to other actors or places is an essential driving force behind economic development. It may take the form of co-location, but may also occur on a temporary or transitional basis. Temporary geographical proximity (TGP) offers individuals the possibility to fulfil a need for face to face interaction by travelling from one location to another (Torre 2008).

Two logics inherent to organized proximity, likely to facilitate these interactions, have been identified. These are the logics of similarity and belonging (Torre and Rallet 2005):

1. The logic of similarity corresponds to mental and cognitive adherence to common categories. It can facilitate interactions between people who did not know one another before, but share similar references. This concept is close to that of homophily or of adherence to common categories, used in the sociology of networks.
2. The logic of belonging refers to the interactions between two or more actors; interactions facilitated by their belonging to the same organization or to the same network, which shares a certain number of rules and behavioural routines.

Also our approach, based on the dialectic between geographical proximity and organized proximity, enables us to study the mechanisms of interaction and collaboration between actors given these spatial and socio-economic dimensions (Torre 2008). Thus, we shall analyse how these forms of proximity combine, not in the formation of a market or in the development of innovations stemming from the knowledge economy (Bathelt and Glückler 2011), but in construction of territories. The construction of various forms of proximity can be facilitated by

ad hoc institutional arrangements, which constitute a dynamic architecture of governance and must serve to both stimulate and support local development dynamics (Gilly and Wallet 2001).

2.2 Case studies

Our analysis is situated in the context of the 'Territories of Citizenship' programme in Brazil. Through this voluntarist programme, a number of institutional arrangements vested with important functions have been implemented with a view to promoting territorial development.

In Brazil, following the end of the dictatorial regime in 1984, civil society emancipated and structured itself, with growing demands for participation in public decision-making. From 1996, the federal government, led by the Brazilian Social Democracy Party (PSDB) at that time, responded to those demands by making the implementation of the various federal programmes at municipal level conditional on the creation of participatory municipal sector councils, including councils for rural development (Schneider et al. 2004). From 2003, the limitations of these councils, faced with the weakness of the municipal civil society organizations and the persistence of patronage relations (Delgado and Leite 2011), prompted the new government, led by the Workers Party (PT) close to the social movements, to carry out its actions at the level of inter-municipal territories characterized by a low Human Development Index and by a large family-scale farming population.

This process of territorialization of public action in the field of rural development occurred in three key stages (Figure 1):

1. Between 2003 and 2007, the CIAT (or Committees for the Implementation of Territorial Actions) were implemented at inter-municipal level;
2. The 2008–2011 period was marked by the transformation of the CIATs into collegiates for territorial development (codeter), which are responsible for co-ordinating the federal government's actions in the framework of the 'Territories of Citizenship' programme;
3. The years 2012 to 2014 corresponded to the period of *Paralysis*, during which funding for the programme was discontinued.

We have examined the implementation of the programme 'Territories of Citizenship' in the Pará state (Figure 2), which has achieved some success in terms of participation and of the
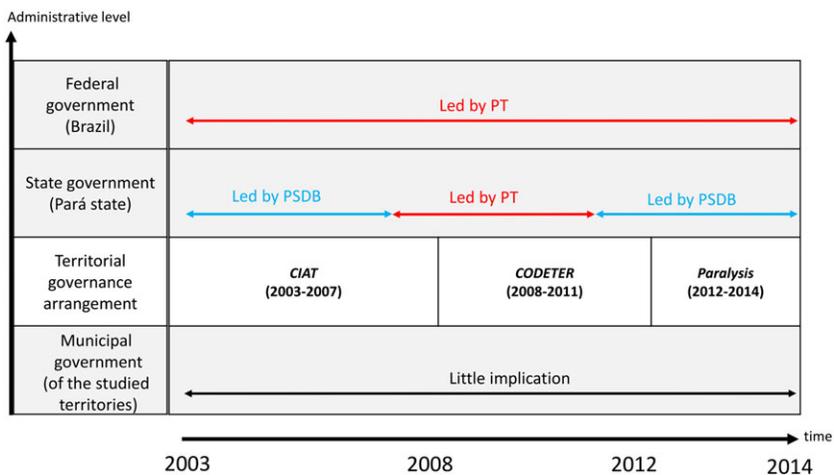

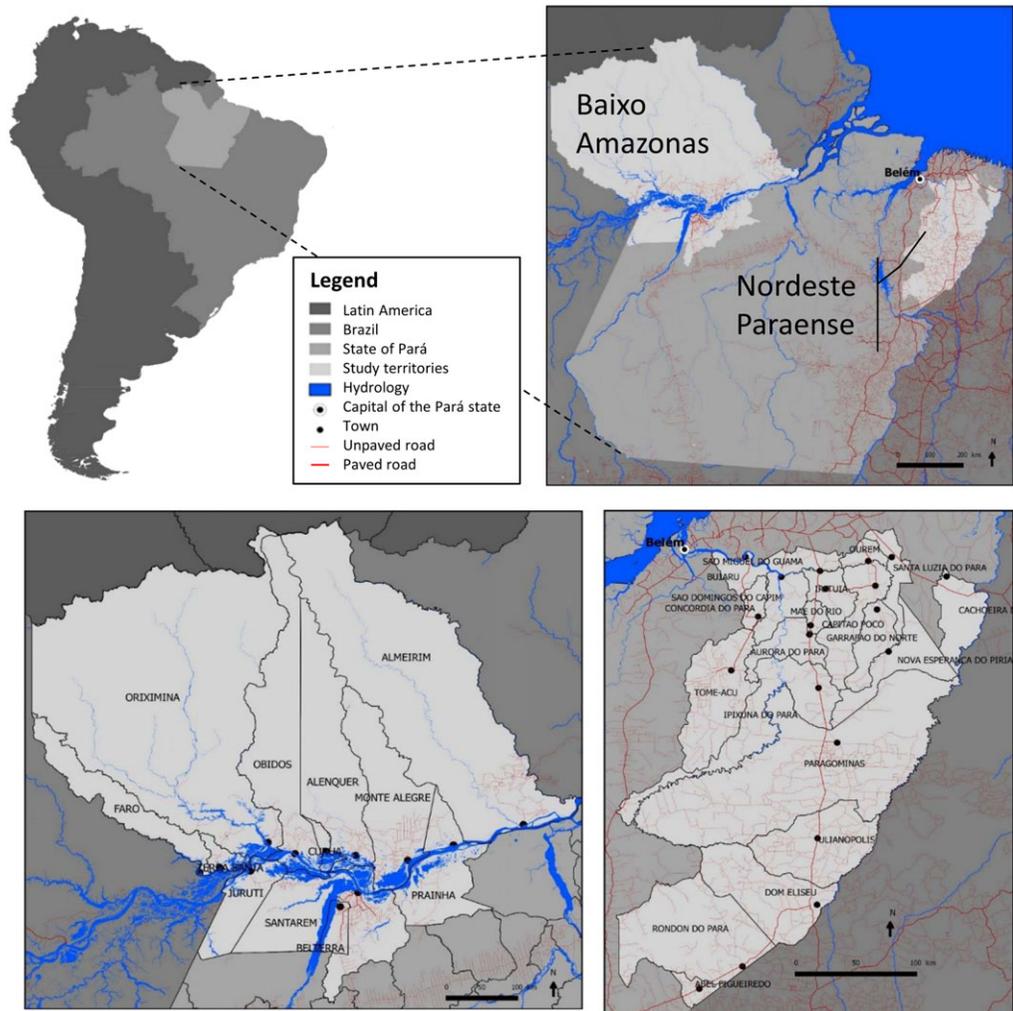**Fig. 1.** Government history and territorial governance arrangement

Fig. 2. Map of the study territories

actions implemented (Piraux et al. 2013), despite the low population density of the state, the weakness of its institutions and the environmental challenges they face. In this state, the emancipation of civil society materialized in the takeover of agricultural unions (formerly in the hands of local leaders) by the rural workers, then expressing social demands. From 2003 onwards, the trade unions of rural workers, which constitute the electoral base of the PT, took control of the CIATs. But the state's government, headed by an opposition party, did not support the territorial approach initiated by the federal government, accused of reducing the power of mayors. The implementation of the 'Territory of Citizenship' programme in 2008 coincided with a period of political concordance between the federal government and that of Pará state, both led by the PT. The public institutions of the state then became involved in the codeter. Finally, the period of paralysis of the programme, from 2012 to 2014, was caused by the freezing of federal funds and by the election of the opposition party at the head of the Pará government.

We have chosen to focus our study on two contrasting territories, in which the arrangements were particularly active but whose configurations could foreshadow the development of two

different modes of co-ordination. The Baixo Amazonas region (BAM) is an immense territory (equivalent to half the area of France, see Figure 2), with low population density. The regional capital, Santarém, was first colonized in the seventeenthth century by Portuguese explorers travelling by waterways. Following the dictatorship, social movements organized themselves into different regional co-ordination structures (rural workers' trade unions, fishermen associations, associations for women, training associations, etc.), gradually constructing a shared representation of their territory and becoming a major political force. Smaller in size and more densely populated, the Nordeste Paraense (NP) is close to Belém, the capital of the state of Pará. The area was colonized more recently (in the 1960s) by populations travelling mostly by road. The social movement organized at a more municipal level and the actions carried out at the territorial level were supported mainly by extension services.

3 Methods

In order to analyse the social networks and the factors likely to determine the collaborative processes between actors within the two institutional arrangements, we began by studying the different mechanisms of interaction between the actors who participate in them. Examining social networks helps us to quantify the different types of relationships that exist between the actors most involved in governance arrangements, their evolution and their influence on the logics of action.

From our initial interviews, we found that only a small number of people had participated on an ongoing basis in the meetings of the territorial arrangements. This finding is in line with studies carried out at the level of the country (Delgado and Grisa 2014) or of the state of Pará (Piraux et al. 2013), which reveal a high turnover of participants. They have prompted us to focus on the actors who are genuinely involved in the arrangements, that is to say, whose participation was significant and whose reasoning could have been influenced by the implementation of those arrangements. On this basis, we have developed a method for collecting the relational data necessary for analysing the entire networks, which can provide us with relevant information on their structure and characteristics.

An important difficulty is to define the boundaries of the population to be studied, which can be determined using several various tactics (Laumann et al. 1989) and at different stages of the research. In our case, access to the attendance sheets of the various plenary assembly meetings held between 2003 and 2014 enabled us to define a subpopulation immediately following the exploratory interviews. On the basis of those attendance records, we established exhaustive lists of the names of individuals who attended at least one meeting (over 300 in each territory), and then ranked them according to attendance numbers, which then enabled us to identify, in each of the two arrangements, a first subpopulation of some 30 people who participated in more than three plenary meetings. A first series of interviews with three or four key actors involved in each arrangement, who were then asked to test the lists thus established and to evaluate the participation of the other actors, enabled us to define these subpopulations more precisely and to reduce them to 25 actors whose presence and participation were perceived as significant (voicing of one's opinion, investing oneself in the implementation of actions, etc.). This can be likened to reputational approach defined by Laumann et al. (1989). It is from these two sub-populations that we have carried out the complete network analyses.

In each territory, we conducted interviews consisting partly of semi-directive questions of an ethnographic nature and partly of sociometric questions. The information thus collected enabled us to reconstruct the entire social network, such as it existed at three distinct stages in the governance arrangement trajectory, and according to the nature of the relationships identified. We asked each of the respondents to tell us about the background of their involvement and

how they came to participate in the programme. They were then invited to evaluate their relationships with the other interviewed participants during each of the three identified stages of operation of the programmes: CIAT (implementation period), Codeter (full operation), Paralysis (freezing of funding for the operation of the programme).

The sociometric questions, for each period, were related to the frequency of communication, coded from 0 to 4 (no communication, daily, weekly, monthly, annual), face-to-face meetings on the one hand (discussion of more than 10 minutes) and long distance communication via ICT (telephone or messaging) on the other. The interviewees were also asked to evaluate the absence (0) or existence (1) of collaborations, defined as joint work (excluding collective meetings) carried out with another actor in order to realize a project. We also asked the respondents whether they had relations based on friendship with other actors (extra-professional exchanges, leisure, etc.) or political relations (exchanges during partisan meetings), coded 0, 1 or 2 (none, few, many). But we did not examine those relations longitudinally, as the first interviews showed that the relationships between the different actors did not change much. Family ties (including cousinhood relations) or religious ties (meetings at religious events), were not included in the quantitative analysis of networks, because they were too few to be significant, but were taken into consideration in the qualitative analysis.

The actors were interviewed on the basis of this questionnaire, but they were also asked to provide additional information of a qualitative nature on the reasons for their choice. Because of the sometimes difficult conditions in which the interviews were conducted, we were not able to administer this questionnaire to all the respondents. In Nordeste Paraense, we administered the questionnaire to 12 people, only qualitative questions were asked to six other actors questions and seven were not surveyed. In the Baixo Amazonas, we administered the questionnaire to 17 actors, only qualitative questions were asked to three other actors and five were not surveyed. We were able to evaluate the relationship between the actors who were not administered the questionnaire thanks to the qualitative information collected (this option was chosen in view of the fact that most active members of the programme knew one another and that cross-sectioning the qualitative data enabled us to infer relational information). Finally, we chose to categorize the actors into two main groups: actors of civil society (CS) – associations/co-operatives, companies/NGOs, trade unions – or actors from public institutions (PI) – technicians from public enterprises and public authorities at the three administrative levels (municipal government, government of the state of Pará and federal government).

It should be noted that the interactions between these two groups were historically limited, largely because of the huge cognitive distances separating the different actors: for a long time, public institutions' technicians and political decision-makers supported a process of rural development based on productivist agriculture for export markets. A model contrasting with that supported by the civil society actors involved in the programme, who advocated a model based on family farming.

To consider the role of spatial interactions between actors (Boschma et al. 2014), we have used proximity theory as our analytical framework, following an approach based on the dialectic between geographical and organized proximity proposed by Torre and Rallet (2005). We distinguish permanent geographical proximity (PGP), which implies a co-location of the actors, from temporary geographical proximity (TGP), which implies a need for the actors to travel substantial distances in order to meet others.

In order to measure TGP, we constructed an indicator that weights distance with the time needed to cover the space separating the actors and the means of transport used in order to reach their destination. The indicator shows values ranging from 0 (when the actors are in geographical proximity to each other, which corresponds to a situation of PGP) to 6 (for the largest distance separating the actors (Table 1). In the NP, the score of the indicator varies according to the time needed by an actor to travel by bus (a well-developed transport system) to meet

Table 1. Indicators of geographical proximity

Score	Time and means of transport
0	Same municipality (PGP)
1	1 to 2.5 hours of transport by bus or high speed motor boat
2	2.5 to 4 hours of transport by bus or high speed motor boat
3	4 to 7 hours of transport by bus, high speed motor boat, or a one night boat trip
4	15 to 24 hours of transport by boat or one hour by plane
5	24 to 30 hours by boat
6	Results of the combination of transport means (added scores)

another. In the BAM, the large variety of transport option prompted us to consider not only the time necessary to reach a destination but also the cost and arduousness of the trip. TGP scores can add up when an actor has to use several transport methods to reach his destination. The analysis grid used in our surveys is summarized in Table 2, which lists the variables of geographical proximity and organized proximity.

In order to analyse how collaborative relationships develop between actors, we studied the correlations between the different variables: collaborations, on the one hand, face-to-face or distance communication using ICTs, temporary geographical proximity (TGP), relations of friendship and political relations on the other. All the networks were symmetrized (non-directed links), by keeping only the highest score when two actors evaluated their relationship differently.

We then conducted a longitudinal study of the mean scores of the variables (equivalent to the density for the symmetric networks), before analysing the interdependencies between the different variables, in order to identify those that lead the actors to collaborate. For this purpose, we have applied the quadratic assignment procedure (QAP), using the social network analysis software, Ucinet (Borgatti et al. 2002), which makes it possible to test whether the association between two networks is statistically significant. More precisely, we apply the logistic regression quadratic assignment procedure (LR-QAP), which consists of a multiple logistic regression of a dependent variable (here the collaborative network) on independent variables (here TGP, networks of friendships and networks of political relationships, and the group). These variables can be social networks (collaborations, friendships, political relationships, face-to-face, ICT) or present other characteristics (TGP, group). The successive introduction of the independent variables makes it possible to finely assess their relative influence on the dependent variable while comparing the results of the two arrangements, for the periods identified, enables us to evaluate the influence of contexts and trajectories on the networks thus studied.

Table 2. Survey analysis grid

Variables		Operationalization	Indicator amplitude
Collaboration		Collective work, other than collective meetings	1
Geographical proximity	TGP	Time necessary to travel to the location of another active member	6
	Face to face	Frequency of face to face meetings lasting more than 10 minutes	4
Organized proximity	ICT	Frequency of telephone or email exchanges	4
	Friendship	Extra professional relationships	2
	Politic	Exchanges during caucus meetings	2
	Status	Representatives of civil society or public institutions	1

4   Analysis of collaborative networks

The main objective of the territorial governance arrangement put in place by the public authorities in the territories of citizenship is to increase the amount of collaboration between actors in order to promote new joint actions for development. One of its missions is to encourage collaborations, which would not develop spontaneously in its absence.

To test the impact and the possible success of the system, we first analyse data sets on entire networks (Figure 3), from which we could conduct multiplex and longitudinal analyses.

Then we examine their progression according to the two potentially limiting factors we have identified: (*i*) the cognitive distances between the actors of civil society on the one hand and of public institutions on the other, and (*ii*) the geographical distances between the different actors, whatever groups they belong to.

4.1   Progression of the collaborations in the two governance structures

Figure 4, which shows how the collaborative networks developed over the three periods we have identified, reveals a strong underlying tendency: an increase in the amount of collaboration during the codeter period and a decrease following the paralysis. Thus, we can immediately conclude that the public governance arrangement contributed to building collaborative relationships, which have subsequently suffered from the programme being put on the back burner.

There are, however, some differences in the evolution of the relationships according to territories. In the Baixo Amazonas (BAM), the collaborative relationships strengthened during the codeter period, whereas they weakened during the period of *paralysis*. In the Nordeste Paraense (NP) on the other hand, collaborations developed during the CIAT but increased slightly but less significantly during the codeter period, until they unraveled almost entirely during the period of paralysis in the system. On the whole, and in the two territories studied, the networks of collaborations grew denser following the implementation of the 'Territories of Citizenship' programme (the codeter period) but considerably weakened following the paralysis of the system.

4.2   Collaborations between the actors of civil society and the public institutions

A key mission of the governance arrangements we have studied is to facilitate the collaborations between the actors of civil society (associations/co-operatives, companies/NGOs, trade unions)
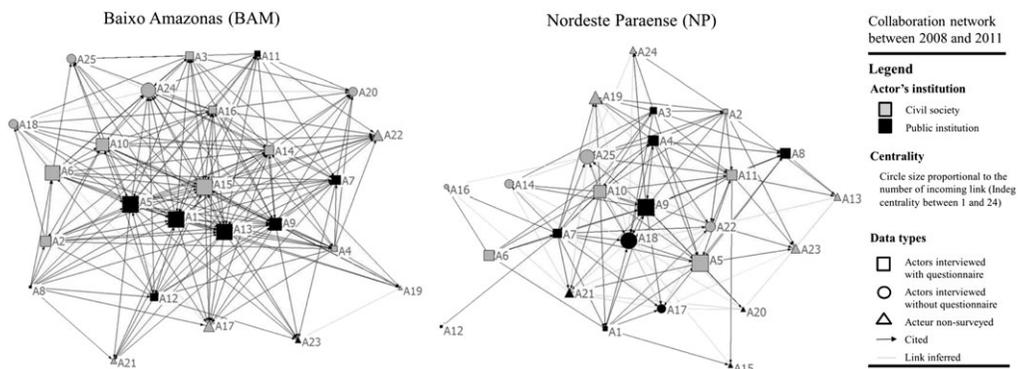

Fig. 3.   Networks of collaboration between the active members of the governance arrangement during the Codeter period
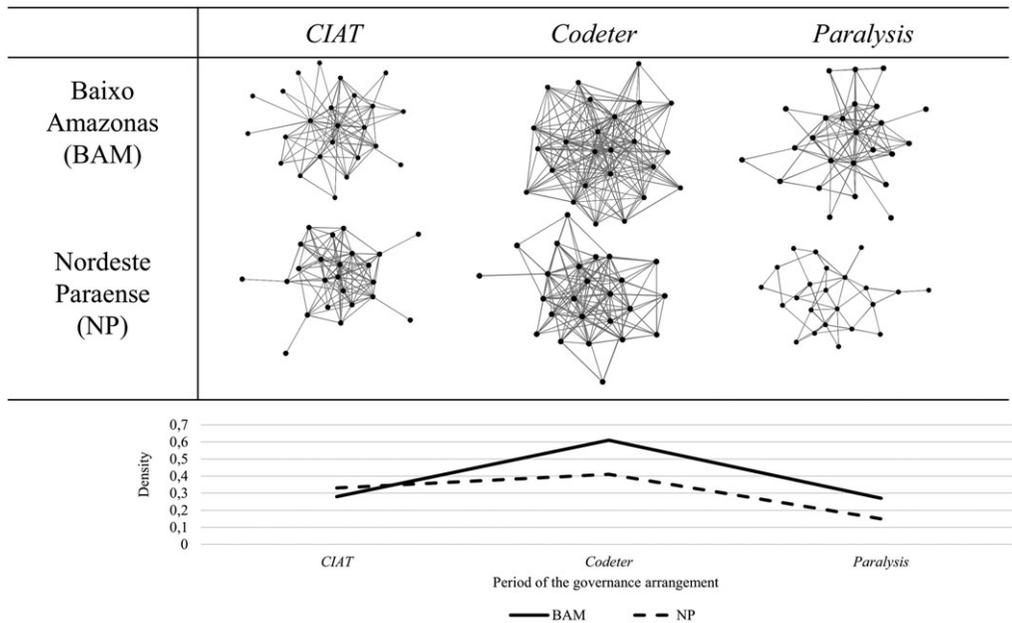
Fig. 4. Collaboration network changes in the Baixo Amazonas and the Nordeste Paraense

on the one hand and public institutions on the other hand (extension services and public authorities at the 3 administrative levels: municipal governments, Pará state government and the federal government). To analyse their process of development, we measured the number of collaborations between both groups as well as within each group, for the three periods identified (Figure 5), in order to assess changes in the weight of similarity (or homophily) effects, which cause actors to preferably form relationships with people who resemble them.

The results converge with the more general ones obtained previously. For the BAM, there is little collaboration between the two groups of actors, as well as within the public institutions (PI) group during the CIAT period, while there appears to be more collaboration within the Civil Society (CS). The increase in density of collaboration networks during the codeter period, as highlighted above, is mainly due to the increasing collaboration within the *PI* group, but also between the participants of the two groups. During the paralysis period, collaboration decreased significantly within PIs but remains higher than the collaboration within the CS, while the
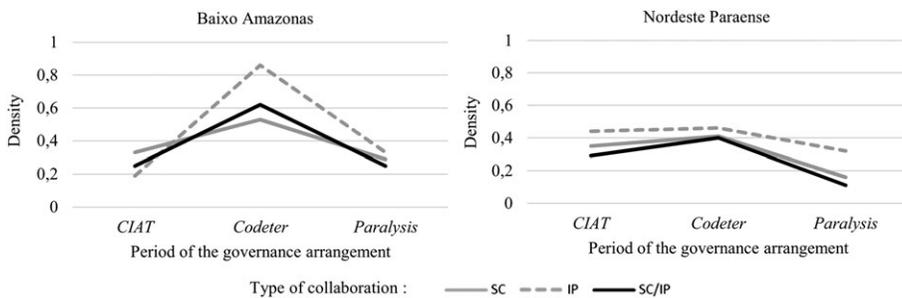

Fig. 5. Collaboration density within civil society (CS) and public institution (IP), and between the two groups

density of collaborations between CS and PI returned to its initial level. For the NP region, the measures shows that internal collaboration within each group and collaboration between the two groups are slightly higher than those observed in the BAM region, during the CIAT period. All densities somewhat increase during the codeter phase, especially the density of collaboration between the two groups. During the last period the collaborative relationships strongly weakened, though to a lesser extent in the case of collaboration within PIs.

In sum, collaboration evolves in a similar way in the two territories, although with a different intensity. We also note that the implementation of the codeter had a positive effect, above all, on collaboration between the two groups, and therefore helped to open up the relationships between people belonging to different social worlds. However, this positive influence waned when the programme came to a halt.

4.3 *Collaboration between geographically distant actors*

The second important mission of the programme is to encourage geographically distant actors to collaborate. In order to measure the effect of the arrangement on collaboration, we conducted a test of correlation between Temporary Geographical Proximity and collaborations (Table 3), applying the QAP procedure, to assess whether the collaborative relationships between distant actors formed with the implementation of the codeter and were maintained during the paralysis of the system. The β *TGP* coefficient reflects the influence of the TGP variable on the collaborations: the more negative the coefficient, the more difficult it is for co-operative relationships to develop between distant actors (Figure 6); the closer it is to 0, the weaker the effect of distance on collaboration.

Results for the BAM territory seem counter-intuitive at first reading. First of all, we observe that the negative influence of distance on collaborations, which is significant during the CIAT period, becomes slightly more marked during the codeter period: thus, collaboration occurs

Table 3. β TGP coefficient of correlation between collaboration and TGP

	Period	CIAT	Codeter	Paralysis
Territory	BAM	−0.262***	−0.284**	−0.084
	NP	−0.439**	−0.027	−0.356***

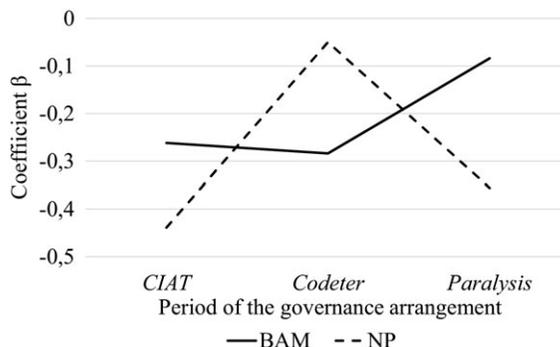*Notes*: N = 25, standard deviation: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

Fig. 6. Graphic representation of changes in the β TGP coefficients

primarily between actors who are geographically close to one another, which seems to be explained by the large size of the territory. But, subsequently, during the period of paralysis, the actors began to collaborate with one another in the same way whether they are distant or close, although one could have expected the collaboration between distant actors to decrease due to the fall in resources displacements. At this level of analysis, it is impossible to identify the factors that lead distant actors to collaborate more; further investigation is required.

In the NP, on the other hand, our initial intuition is confirmed: distance negatively impacts collaboration in the first period. But its influence is no longer significant during the codeter period, which seems to indicate the advantage of policies providing support for travel expenses and temporary geographical proximity. The influence of distance becomes significant again during the paralysis period, but less markedly than in the initial period, following the reduction in subsidies for travel.

We have seen that the implementation of the programme had a relatively similar overall effect in both territories in terms of collaboration. However, some differences can be observed: there was a sharp rise in intergroup collaboration during the codeter period in the BAM territory, but a much less significant increase in the NP territory; the rise in collaboration between distant actors occurred during the period of paralysis in the BAM territory during the codeter period in the NP.

These results are, in part, related to political and institutional changes in the two territories (Figure 1). However, further investigation is necessary in order to better understand the contrast effects of the programme, especially at the spatial level. Indeed, factors relating to the modes of interaction and the logics of belonging may also explain why the mechanisms of co-ordination between the actors participating in the programme, evolved differently. Let us now examine them in detail.

5 Analysis of the construction of collaborations in the territorial governance arrangements

Now that we have described and analysed the collaboration networks of the two territories and their process of development, particularly in terms of collaboration between actors of different groups and geographically distant from one another, we shall attempt to gain a deeper understanding of how these collaborative relationships developed or waned. To this end, we analyse the impact of the various proximity variables identified above (Table 2) – face-to-face and remote communications via ICT, TGP, friendship and political ties – on the level of collaboration between actors.

We first attempt to understand the development of co-ordination between actors participating in the programmes, by analysing the factors that cause their active members to collaborate. Tables 4 and 5 present the coefficients γ of correlation – between the collaborations (dependent variables) on the one hand, and the independent variables friendship, politics, face-to-face, PGT and group, on the other hand – calculated by applying the LR-QAP statistical procedure described above. For simplicity's sake, we shall give each coefficient the same name as that of the independent variable involved. The higher the coefficient, the greater the likelihood of the independent variable having a positive effect on collaboration.

In order to determine the precise measurements necessary to understand the mechanisms that lead actors to collaborate, we tested different combinations of independent variables and constructed four explanatory models. Model 1 includes the two independent variables, which reflect the two key missions of the programme: facilitating collaborations despite differences in group and the geographical distance separating the actors (TGP). In model 2, we tested the influence of the different modes of communication by including the independent variables

Table 4. Coefficient γ of correlation between collaboration and the independent variables, in the BAM governance arrangement

Period	CIAT				Codeter				Paralysis			
Model	1	2	3	4	1	2	3	4	1	2	3	4
Variables												
TGP	−0.410**	−0.253	−0.455***	−0.370*	−0.285**	0.112	−0.24*	0.064	0.410***	0.246	−0.201*	0.229
Face to face		1.752***		2.026***		1.196***		1.291***		3.345***		3.406***
ICT		0.727***		0.288		0.941***		0.578***		−0.408		−0.396
Friendship			2.509***	1.974**			2.111***	0.841*			0.769*	−0.674
Politic			0.38	0.313			1.112***	0.883***			0.911***	0.172
Group	0.352	−0.266	0.165	−0.058	0.141	−0.05	0.244	0.01	0.352	0.404	1.003**	0.385

Notes: N = 25, for standard deviation: ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

Table 5. Coefficients γ of correlation between collaborations and the independent variables, in the NP governance arrangement

Period	CIAT				Codeter				Paralysis			
Model	1	2	3	4	1	2	3	4	1	2	3	4
Variables												
TGP	−0.511**	0.042	−0.381	0.05	−0.048	0.002	0.149	0.052	−0.929***	−0.406	−0.815***	−0.438
Face to face		1.534***		1.545***		1.288***		1.22***		1.196***		1.169***
ICT		0.670***		0.537***		0.743***		0.664***		0.770***		0.821***
Friendship			0.928***	0.473*			1.034***	0.252			0.77***	0.162
Politic			0.508**	−0.082			0.3	0.042			0.092	−0.291
Group	0.224	−0.282	−0.474*	−0.395	0.238	−0.072	0.043	−0.129	0.587*	0.481	0.279	0.623

Notes: N = 25, for standard deviation: ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

face-to-face and ICT. In model 3 we tested the influence of networks of friendship and political ties. Model 4 includes all the variables, which enables us to assess which factors have the highest correlation with collaboration.

5.1 Construction of collaborative relationships in the programme implemented in the Baixo Amazonas region

Let us first analyse the correlations between the levels of collaboration and the various explanatory variables in the BAM arrangement (Table 4). The coefficients group (representative of Civil Society or of Public Institutions) and TGP often appear to be insignificant ($p > 0.05$) or to have less explanatory value (low coefficients) than the variables modes of communication (face to face and ICT variables) or networks of friendship and political ties.

Let us now examine the face-to-face and ICT coefficients in Model 2 (Figure 7) as well as the Friendship and Political ties coefficients in model 3 (Figure 8) so as to account for changes in them in the three periods considered. We observe that the face-to-face coefficient, which is high in the CIAT period, decreases during the codeter period, despite an increase in communication and collaboration. It then rises strongly in the period of paralysis, surpassing its initial level. On the other hand, the ICT coefficient, which changes in the opposite direction, is only significant during the Codeter period. The friendship coefficient, which is high during the CIAT period, decreases during the Codeter period, whereas that of the political ties, initially insignificant, increases markedly thereafter. Following the paralysis of the programme, the two coefficients decrease but that of the Political ties reaches a higher level than that of the friendship, which drops sharply. It is, therefore, the political ties, which rest above all on face-to-face interactions, which seem to contribute the most to maintaining collaboration between the active members of the system, despite its paralysis. These results must be seen in relation to the fact that the actors begin to collaborate in an undifferentiated manner whether they are distant from or close to each other (see subsection 3.3).

Examining the correlations between the different variables reveals the strong but decreasing influence of the frequency of face-to-face interactions on collaborations, which decrease in favour of ICT-based communication, during the codeter period. At the same time, the influence of the network of political ties on the development of collaborative relationships increases, while that of the friendship network decreases. With change in the political circumstances, in which the
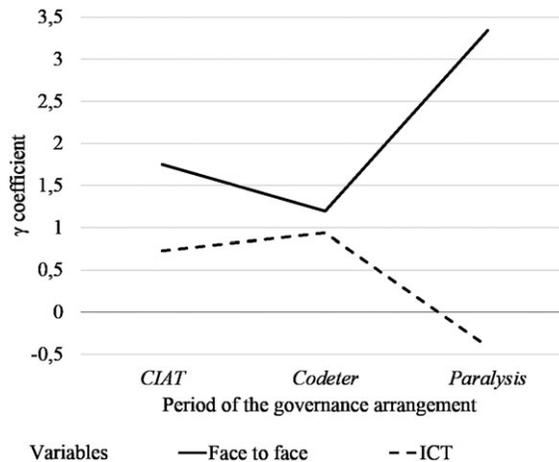

Fig. 7. BAM - graphic representation of changes in the coefficients γ of model 2
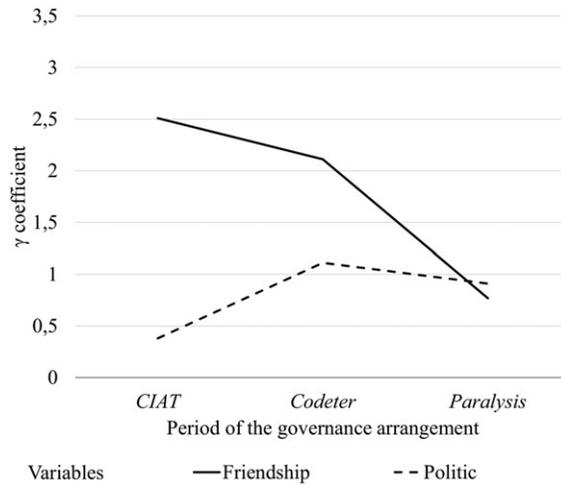
Fig. 8. BAM - graphic representation of changes in the coefficients γ of model 3

same political party (Workers Party) took the reins of both the governments of the Pará state and of the federal state, the programme seems to reinforce a particular political group, in which actors continue to collaborate regardless of the distance between them and the type of institution they belong to, thus limiting the openness of the system. Thus, the collaborative relations that survive are organized and conducted during meetings between members close to the political party in place (strong correlation between collaboration and frequency of face to face interactions, on the one hand, and collaboration and political ties on the other). This phenomenon, which leads to a monopolization of the resources obtained through by the programme (in particular funding), raises the question of the appropriateness of the territorial governance system, and in particular of the power and credit distribution mechanisms.

Thus, the apparent paradox of maintaining collaborations despite distance and the withdrawal of the funding for travel expenses (see subsection 3.3.) can be explained by the existence of strong ties between actors of the same political tendency, who continue to meet frequently and collaborate despite the geographical distance between them. The difficulty caused by distance is overcome, here, by the existence of ties of organized proximity built during the previous stages (the logic of belonging) and resulting from the history of the local institutional actors (the logic of similarity).

5.2 Construction of collaborative relations in the system implemented in the Nordeste Paraense region

Let us, finally, analyse the correlations between the collaborations and the various explanatory variables in the arrangements implemented in the NP region (Table 5). As in the BAM, the group and TGP coefficients are often insignificant and less explanatory than those related to the modes of communication or to the influence of the networks (friendship ties, political ties).

Let us examine the face-to-face interactions and ICT coefficients of model 2 (Figure 9), as well as the friendship ties and political ties coefficients of model 3 (Figure 10), in order to account for how they change over the three periods. We find that collaboration within the arrangement continues to take place primarily between people who communicate face-to-face (coefficient remains high) on a regular basis, but that this correlation weakens over time, while the correlation with ICT-based communication increases. Furthermore, the friendship ties coefficient increases during the codeter period, while that of the network of political ties decreases steadily. With
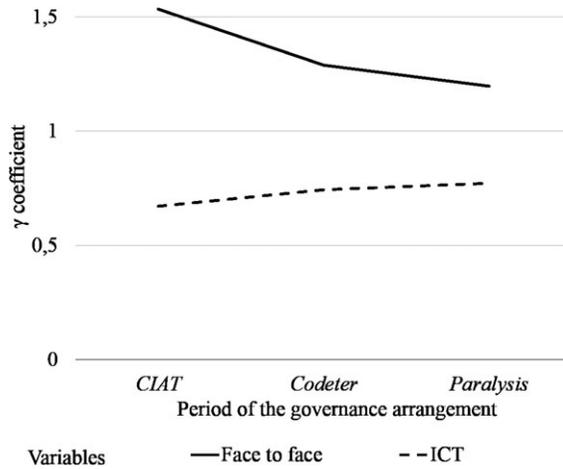
Fig. 9. NP - graphic representation of changes in the coefficients γ of model 2
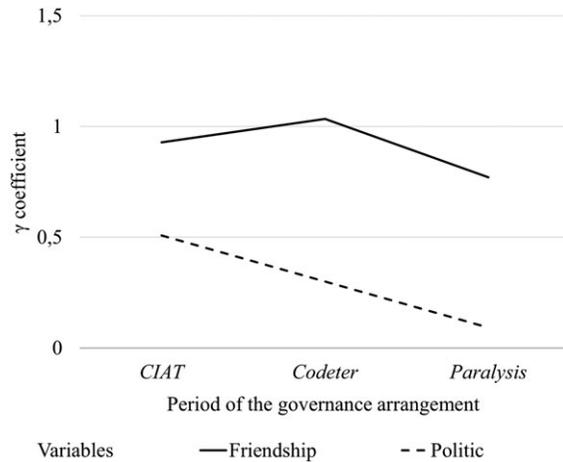

Fig. 10. NP - graphic representation of changes in the coefficients γ of model 3

the paralysis of the system, the role of friendship ties – primarily based on face-to-face interactions – in collaboration decreases but remains important, while that of political ties become negligible.

Examining the correlations between networks reveals that collaborations, less dependent on the frequency of face-to-face communication and political ties during the codeter period, are more strongly correlated with friendship ties and ICT-based interactions. During the paralysis of the system, correlation with friendship and political ties and face to face communication weakens, while the correlation with ICT increases. Thus, collaborative relationships are maintained at a more local level between members of public institutions – partly through friendship ties and ICT-based communication, which allow for the continuation of the projects initiated through the territorial governance arrangement – whereas collaboration with distant actors weakens. The dynamics of organized proximity, thus reinforced, developed more between actors linked by a logic of similarity (due to their group as representatives of public institutions), activated in particular by a project of support to the technicians of the territory, which endowed them with a leading role in the arrangement.

5.3 Comments

Analysing the networks of actors has enabled us to assess, in an empirical and quantitative manner, how the actors co-ordinate their actions in both territories, and to draw some general conclusions about how the implementation of the public governance programme of the 'territories of citizenship' has facilitated collaboration between the actors. It has also helped us to identify the factors that influence collaborations and promote (geographical or organized) proximity relations between local actors, as well as to reveal certain differences between the two territories, which we shall now attempt to explain.

Our study shows that when public policies truly promote territorial development, the actors succeed in overcoming the initial divide between public institutions actors and the civil society actors and in collaborating, despite the geographical distances between them. These collaborations develop more between actors who have formed relations of organized proximity, through political or friendship ties. However, those collaborative relationships can prove fragile and wane in the absence of support teams and can turn into relations from which other actors are excluded (political relations in the BAM, or between technicians and close actors in the NP). We also note that the use of ICTs, which played an important role in collaboration during the codeter period, became essential in enabling the technicians of the public institutions to continue to work together, even when, as a result of the paralysis of the system, the latter could no longer meet face-to-face on a regular basis.

Our analysis of the two territorial governance arrangements highlights the existence of strong collaborations between the actors of civil society and the representatives of public institutions – mostly technicians – during the most active phase of the territorial development programme. Those actors have a high capacity to collaborate in the BAM and the collaboration between members of civil society was maintained thanks to political meetings held on a regular basis, despite the paralysis of the system. This situation has revealed the importance of temporary geographical proximity and face to face relationships for the survival of collaborations in a time of crisis, but also of the logics of belonging of individuals with the same political belief system, on which those meetings depend. In the NP, on the contrary, the unions have tended to rely on the technicians to develop local projects launched through the territorial governance arrangement but were soon unable to continue collaborating from a distance.

Despite the immensity of the BAM region, the 'Territories of Citizenship' programme was able to rally a large number of people thanks to the involvement of the regional co-ordination teams of social movements, who identify with the territory, and to the funds provided for organizing meetings and for travel expenses. Nevertheless, the involvement of the technicians was too limited in time for the projects to be carried out and completed. In the NP, on the other hand, although the distances between actors were smaller, the volunteer involvement of a few personalities was not enough to create and especially to consolidate relations based on organized proximity. Thus, it appears that although a number of activities and one-off projects have been carried out within the framework of the programme, the current delimitation of the territory does not really correspond to a collective identity.

6 Conclusion

The research presented in this paper has aimed to explore the question of collaborations within institutional arrangements of territorial governance. It was based on a study of the implementation of a public policy intended to reinforce development, in two territories of public action situated in the Brazilian Amazon. Building on a theoretical and methodological framework for analysing how the actors of institutional arrangements of territorial governance co-ordinate

their actions, we were able to provide some insights into how those arrangements have evolved and into how local actors appropriate them.

Our work shows that the development of collaborative projects is strongly dependent on co-ordination support structures. While collaborative relationships are weaker between public institutions and civil society on the one hand, and between geographically distant actors, on the other, our social networks analysis reveals that collaborations within a territory are not only correlated with the frequency of face-to-face interactions, although the latter play an essential role. Indeed collaborations can also develop through long distance communication, via ICT, once the actors know each other and are used to working together. Other factors play an important role in collaborations as well: co-ordination between members of the same group, but also the existence of relations based on the logic of belonging between members of the same friendship or political networks. However, although, following the discontinuation of funding in the BAM region, the relations based on a logic of belonging helped to maintain collaborations, they can also have an excluding effect and cause the actors to form relationships exclusively based on a logic of similarity – on socio-economic attributes, for example.

These dynamics of interaction are particularly apparent in our case study but they can be extended to the situation of other regions or local systems with similar context. As a matter of fact, our analysis does provide some insights into the logics of co-ordination at work in institutional arrangements of territorial governance. Especially, we have been able to put some lights on the relations between distant actors and the way they behave by means of ICT, and to show the *modus operandi* of the two logics of belonging and similarity of the organized proximity relations. We also show that the implementation of institutional arrangements facilitate the collaboration between actors, be they separated by long distance or belonging to different institutional or cognitive worlds. Our work also provides some evidence that continuous institutional support must be afforded by the state or public authorities in order to avoid exclusion effects.

Moreover, it contributes to the growing literature on interaction dynamics in clusters, enlarging the focus to a territorial level and operates the junction with another important thematic of the regional studies which is the territorial governance arrangement studies.

However, our study has some limitations. First, the method used for selecting the subpopulations restricted us to choosing among the active members of the programme. Analysing the networks of all the participants would have provided explanatory data on the mechanisms of exclusion of certain groups of actors. A second limitation is related to the collection of relational data. Due to the local conditions, we were not able to administer the questionnaires to all the actors in the identified subpopulations, which forced us to infer, from more qualitative data, the existence of a number of relations and to abandon the directed nature of the linkages, reducing the scope of structural analysis. Finally, the longitudinal network analysis was carried out *a posteriori*, creating biases related to the difficulty of the actors to remember perfectly these past relationships, even though they can identify with accuracy the main three phases on the basis of which we have structured our research.

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