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APPLICATION OF SOCIAL NETWORK ANALYSIS FOR INFORMATION TO THIRD SECTOR PUBLISHING HOUSE

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ABSTRACT

This paper presents and discusses some of the results of practical application of Social Network Analysis for Information (SNA) to a nonprofit organization, the publishing house *Cidade Nova*. The article starts by presenting the empirical and methodological options and refers the social networks basic terminology, after which the research procedures are detailed. Lastly, results from the actors Information Social Network (ISN) and from the complete ISN (where alters are included) are presented, to which were used degree, closeness and betweenness centralities, the strength of weak ties of Granovetter and the lambda (λ) set measures.

Keywords: Flow Information; Information Social Network (ISN); Social Network Analysis (SNA).

1 INTRODUCTION

The 'network' offers the structure and dynamics through which society, in particular the information society we live in, promotes its continuous development and therefore the relationships and the links built between individuals are basic and essential elements for appearance and function of social networks, when understood as an artifact of social relationship whereby it promotes the circulation of socioeconomic and cultural objects. In the context of information´s society networked, characterized by human traits as they are differentiating the gift-reciprocity and relational dimension, the 'information' can be understood as a relational object that flows into social networks. This flow is, especially in its non-material forms, in many cases, characterized by mechanisms of 'giving, receiving and

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reciprocating', in other words, by reciprocity processes in network traffic and social appropriation of information (MARTINS, 2008; BRUNI; ZAMAGNI, 2010).

Additionally, it seems an evidence that producers of information and knowledge rarely work isolated, but embedded in large networks, where "[…] the information emerging from the practices of professional and social actors interact and when they come in - the network - begin to not be natural therefore will become collective" (TOMAÉL; MARTELETO, 2006, p.89). The network can then be used to study the processes of collective production of meaning and knowledge, the system of positions and interactions of the actors of these processes, the struggles for power informational prestige, social and symbolic capital.

For the dynamic characteristic of social networks, this article is leaded to a epistemological framework and the concept of information means information exchange process as a permanent flow of material and symbolic elements of knowledge, tacit or explicit, in that social context "in-form" the spirit of the actor (CAPURRO; HJØRLAND, 2007; MUCHERONI; GONÇALVEZ, 2011). The information´s perspective used in this work is seeking dialogue with two natures of social ties conceptions: reciprocity and social networking. According to Marteleto, the combination generates information networks and information flow, and in his words, "[...] when a 'information-system', which generates memory and registry, has remained in time and local coloring, it seems to give rise to an 'information-flow', fluid, rhizomatic, entangled in the movements of networks, devices and channels of communication and technical information" (MARTELETO, 2007).

2 PRACTICAL APPLICATION OF SOCIAL NETWORK ANALYSIS FOR INFORMATION (SNAI) IN ORGANIZATIONS

During June and July 2010 we carried out a research project in the Brazilian publishing house *Cidade Nova*. It coordinates the publication of books and CDs, and publishes a magazine, that intent to offer "[…] instruments of life and reflection on personal, familial and social spheres, with exciting and current themes such as politics, economics, theology and spirituality, art, environment, health, education, culture, communication, etc. They are works that promote knowledge, dialogue and

the meeting of people (of all ages, social, religious) among themselves and with their intimate true, good and beautiful thoughts" (CIDADE NOVA, company mission).

The choice of this organization as *locus* for the practical application of Social Network Analysis for Information (SNAI) was due primarily to four factors, namely: 1) the fact that the business is dedicated to be an information and knowledge company, 2) its small size and 'organic' which would allow the study of their entire network, 3) its principles and mission, since the publishing has a structure and organizational dynamics, a priori, characterized by the phenomena of networks and 4) personal relationships that one of the authors of this work has with managers and employees of the organization, a priori, would enable the successful development of the research project, as happened.

The subjects researched were information, in this context defined as a process of continuous exchange, flow of elements as material and symbolic knowledge, tacit or explicit, that in social context 'in-form' the spirit of the actor and Social Network Information (SNI), defined as a set of persons, with any pattern of contacts or interactions, between who is established various types of relations through which several information flows circulate.

The methodology used was the Social Network Analysis (SNA) applied to RSI publisher's *Cidade Nova*. The SNA is a multidisciplinary methodological tool (sociology, psychology, anthropology and mathematics) that established a new paradigm in research on social structure, and "[…] tries to understand the implications of the relationship patterns in a network for the development and performance of this network" (GUARNIERI, 2009). The SNAI as a methodology to study the phenomena of information was presented and discussed by Mathews (2005, p.27/61).

It was the initial objective of this research project obtain a complete picture of the network of relationships of *Cidade Nova's* employees, which conducted the research using the method of the complete network, so it allows collecting information on the relationships of each of the actors population with everyone else including alters that do not form part of *Cidade Nova*, but are part of the first circle of relationships of the actors.

Data collection was done through a process of sending questionnaires into Excel spreadsheets for each of the actors. These spreadsheets were later returned already filled with assessments of actors about the information on the company and their relationships, which concerned the performance of their duties in connection with the work within the organization.

To the extent that, the construction of questionnaires always uses some language that, by nature, is always limiting, had from the beginning is the awareness that it is not possible to construct a questionnaire totally free of constraints and guidelines implied, although unwanted and undesirable. So with the conscious goal of the issues that were not driving the answers, or at least those issues could influence the lowest degree possible answers and seeking to provide full autonomy to the actor, the questionnaires were constructed from questions suggested by several authors in the literature referenced subjected to an interactive process of fine tuning, semantics and syntax, between author and advisor.

Since this is a third sector company that seeks to promote reciprocity and runs in free flow allowing all actors and even alters feel part of the relationship, the analysis of organizational social networks was considered important by the company itself, factor extremely important since the openness and willingness of the company to the analysis was critical to this work. The names of the actors were chosen in conjunction with the company and replaced at the time of analysis for acronyms since the company itself wanted to make it clear to all employees that their only goal was functioning as this environment of collaboration and reciprocity.

3 BASIC TERMINOLOGY OF SOCIAL NETWORKS

The SNA uses some specific terms and expressions, hence has its own terminology.

Actors are social agents in which focuses SNA.

The employees responded to the questionnaires. Alters are the entities indicated by at least one actor, but who are not actors.

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Channels are a communication link, undirected, between one actor and another actor or alter. It is considered that there is a communication channel between A and B where there is at least one relationship between A and B, i.e. A indicates B, B indicates A, or A and B indicate each other. The existence of a channel denotes possibility of biunivocal relationship. The channel can be established in person and / or remotely.

Relationships are a directed link between one actor and another actor or alter. The direction of the arc is given by the relationship.

A flow is the event that is manifested in a relationship. For ex: work, sending information, advice, etc.

Totals relations are the set of all directed links indicated by the actors. Relations between actors are the set of directed links between actors. A Complete RSI is a Social Network Information where nodes are actors and alters. An RSI of Actors is a Social Network Information were there are only actors.

4 SEARCH PROCEDURES

This research project is divided in two parts and aims to investigate, on one hand, the way members of the *Cidade Nova* evaluate information (Part 1), and secondly, diagnose RSI information processes that underlie the *Cidade Nova* (Part 2), which covers part about this job.

The questionnaire was developed in an Excel spreadsheet emailed to 38 internal and external collaborators, then the objectives and methodology of the research project were explained by the author and tutor to employees at a meeting convened by the President of *Cidade Nova*, in which they reiterated the importance of truthfulness and accuracy of responses, further the confidentiality.

In Part 2 of the questionnaire, the employee was asked to consider the universe of people who are part and relate to the *Cidade Nova*, and were asked to answer four questions, indicating four types of relationships (named Q1, Q2 , Q3 and Q4), in a maximum of 10 people by relationship type:

- Q1. ‘The people you interact more on day-to-day work’;

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- Q2. ‘People who you demand / receive information on your day-to-day work’;
- Q3. ‘People who you demand / receive essential information to your work’; and
- Q4. ‘People who you relies for advice before making important decisions in your work’.

Note that, in this block, is not induce any responses to specific information, i.e., it was the interpretation of the employee if it is about any verbal or physical format, explicit or implied.

In the third block, it was imposed the restriction of considering only non-verbal information, and only physical format as computer files, books, newspapers, magazines, etc.. They were asked to answer three questions (Q5, Q6 and Q7), indicating more three types of relationship, also a maximum of 10 entities by type of relationship:

- Q5. ‘People, information systems, databases and documents that you demand / receive information in day-to-day work’;
- Q6. ‘People, information systems, databases and documents that you demand / receive information essential to’; and

  Q7. ‘People, information systems, databases and documents to which you provide information’.

Finally, the fourth block requested the characterization of all gear ratios of Q1 to Q7, i.e., all information sources which could be people, documents and information systems. This characterization of relationship was made indicating for each of these relationships the level of each of the following parameters: frequency (1. Daily, 2. Weekly, 3. Monthly, 4. Quarterly, 5. Less common); Proximity (1. beside, 2. Same floor 3. Another floor 4. Another building, 5. Another city) Relevance (1. Very relevant, 2. relevant 3. Shortly material, 4. Not relevant) Accessibility (1. Very accessible, 2., 3. Average, 4., 5. Not accessible) and influence (1. lot of influence, 2., 3. average influence, 4., 5. not influent).

Employees who answered the questionnaire are called actors and were respectively coded as A1, A2, until A28 (1 actor responded to only block 1, so only

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27 employees responded to Part 2) with the distribution department (coded) and hierarchical level in Table 1.

Table 1: *Cidade Nova* - Characterization of actors and alters.

Departments Collaborators	Others Collaborators	Hierarchical Levels Collaborators	Others Collaborators	Actors and Alters	Total
Alfa	4	President	1	Actors	27
Bravo	3	1° level	5	Others Collaborators	5
Charlie	4	2° level	21	Sources *Cidade Nova*	11
Delta	4			Organizations	22
Eco	4			Peoples	66
Foxtrot	8			Information Systems	45
Golf	1				
Total	**27**	**-**	**27**	**-**	**149**

In their responses to the blocks on the RSI, these 27 actors nominated five other employees of *Cidade Nova*, 11 internal sources of information to *Cidade Nova*, 22 organizations with which these actors are related, 66 people that individually are related as actors and 45 information systems where information is exchanged. These agents are called alters relationship, totaling 149 and are also detailed in Table 1.

The questionnaire responses were stored and organized in Excel files. At this stage, we proceeded to apply the methodology of SNA through the construction of several adjacency matrices, the construction and calculation of measures and indicators of network design and graph making use Excel, Ucinet and NetDraw, being two latest tools specific to SNA.

5 PRESENTATION AND DISCUSSION OF SOME RESULTS OF SNAI IN *CIDADE NOVA*

The period of response to the questionnaires was June 11 to July 23, 2010, whose absolute and relative figures are presented in Table 2. The 27 employees who

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responded to the questionnaire are therefore the 27 players on the RSI which named 149 alters.

Table 2: *Cidade Nova* - Questionnaires Part 2: numbers and rates of responses.

Collaborators	Selected	Responses	%
Internal Collaborators	24	23	96%
External Collaborators	14	4	29%
Total	**38**	**27**	**71%**

Were referred 875 flows between these actors and between actors and alters, which implied the existence of 421 relationships that were manifested in 315 channels, as shown in Table 3.

Table 3: *Cidade Nova* - Questionnaires, Part 3: number of flows, channels and relationships.

Items	Total	Between Actors	%
Question 1	177	153	86%
Question 2	147	106	72%
Question 3	116	75	65%
Question 4	82	60	73%
Question 5	130	37	28%
Question 6	108	29	27%
Question 7	115	56	49%
Flows	875	516	59%
Implied to...	Total	Between Actors	%
Relations	421	198	47%
The manifesting in...	Total	Between Actors	%
Channel communication	315	128	41%

5.1 The RSI Actors

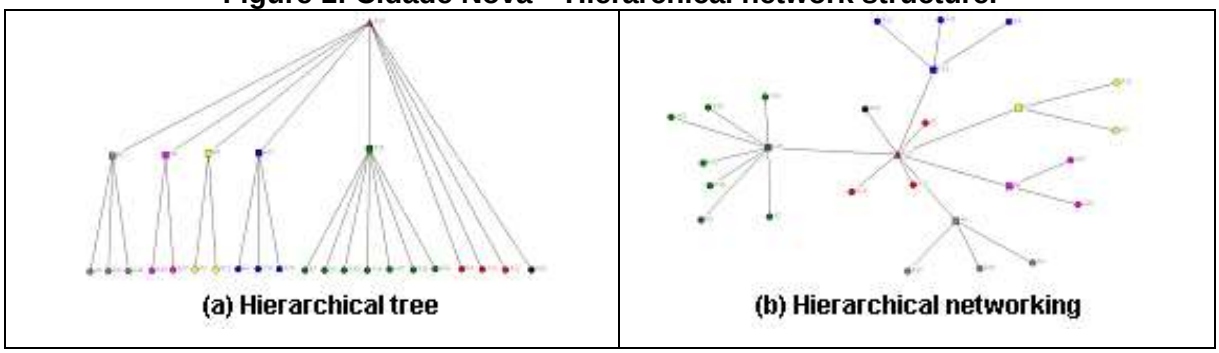
The network of actors is the RSI made of all relations between actors that resulted from Q1, Q2, Q3, Q4, Q5, Q6 and Q7. The networks resulting from each of the questions are called networking (Q1), advice network (Q4), information networks (Q2 and Q5), essential information networks (Q3 and Q6) and push information

network (Q7). The term 'information' in the context of the questions is used to trigger the device's individual cognitive actor and mobilizes it to make use of 'its definition' of information, perchance, different to 'information' object of this research referred to permanent exchange process flow of material and symbolic knowledge elements, explicit or tacit, in that social context in-form the spirit of the actor. Thus, in accordance with the concepts used in this study, all issues networks, networks of actors and networks of actors and alters (completed ones) are RSI.

In an organizational network analysis, identification of roles, positions of the actors and understanding of the network structure are extremely important, and the SNA often reveals "[…] real differences between the structure and the ideal organization chart, showing also the degree of rapport between different groups in an organization" (GUARNIERI, 2008).

Thus, the first network that matters, to which is always important to make comparisons to other networks, is the hierarchical network structure of the *Cidade Nova*, which can be seen in Figure 1, tree format (a) or network format (b), where the highest point in the first, and most central point in the second, is the most important point in the optic command and control of the organization, in this case, the president of the *Cidade Nova*.

Figure 1: Cidade Nova – Hierarchical network structure.

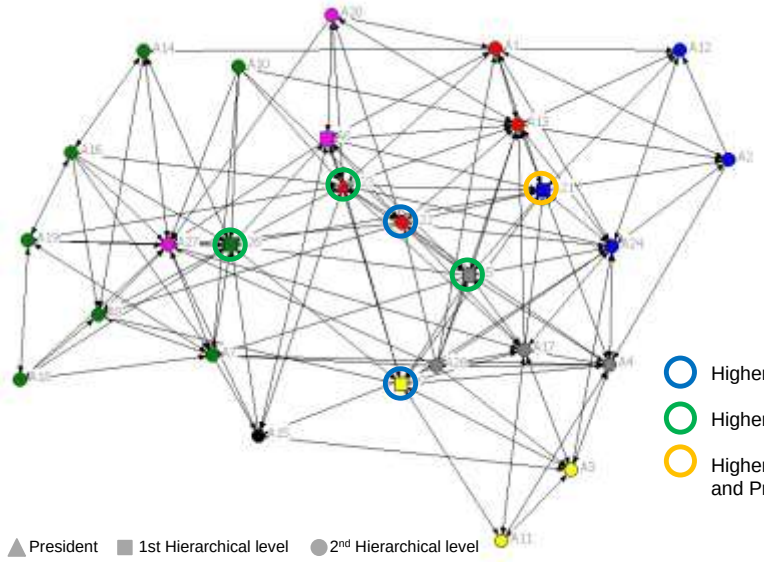


"The degree centrality is a measure that reflects the activity of a relational direct actor" (LEMIEUX; OUIMET, 2004, p.26). The number of links or connections an actor has with other actors represents the power of the actor in the network. Outdegree (OD) is the number of relationships or flows 'outgoing' and means the influence of actor, and indegree (ID) is the number of relationships or flows

'incoming', it means prestige. The more relations an actor has, the greater the power of this actor, and the number of relationships that an actor have affects how quickly and how he gets information. The greater the number of ratios, greater the chance of listening to something (WASSERMAN; FAUST, 1994, p.178; HANNEMAN, 2001, p.63). This measure, like all other measures presented in this study, was calculated for the three types of network actors of *Cidade Nova* analyzed here: the network of communication channels, the network of relationships and network flows.

The degree values of network flows are generally low, and correspond to a low use network flows potential by most actors. The president is not one of the most influential actors in this network showing in some level delegation of tasks and information, although it is prominently (65 flows in total flows of 182 possible questions = 7 x 26 'other' actors) the actor with greater prestige network flows, which may reflect the fact that he is reference to validate information and business performance (Figure 2).

Figure 2: *Cidade Nova* - Centralization degree in network flows.



OutDegree	OD	ODN
Network		13,6%
Average	19,1	10,5%
Std. Dev.	8,5	4,6%
A9	43	23,6%
A22	31	17,0%
A21	30	16,5%
A8	3	1,6%

InDegreee	ID	IDN
Network		26,2%
Average	19,1	10,5%
Std. Dev.	15,1	8,3%
A23	65	35,7%
A26	44	24,2%
A21	43	23,6%
A5	42	23,1%
A10	0	0%

"Looking jointly the degree centrality of the three networks (communication channels, relationships and flows), we note that the analyst department Foxtrot A10 has zero (0%) prestige (indegree) but it is not an actor without any power since is not in the group of players with the lowest influence levels, but he is an actor that other

actors do not relate proactively. Another analyst department Foxtrot A8 has levels of influence, outdegree values, well below the average, but at the same time is a point where relationships and flows appear in appreciable levels. Might be an actor whose function is final step(s) of a process(es) and whose integration with the organization may be revised, or someone who, perchance, did not feel motivated enough to indicate their relationship and whose motivation deserves attention from people management point of view . The president (A23) and managers Charlie (A21) and Foxtrot (A26) are prevalent in all measures of power and prestige, although only A21 has differentiated influence on network flows. Analyzing other employees of the 1st hierarchical level, the manager Bravo (A9) has great influence in networks of relationships and flows, but a prestige low, hereby is not part of the group with greater power; the manager Eco has a prestige relatively high in network flows, whereas Alfa manager (A5) holds no particular influence or prestige.

"The centrality of proximity is a measure based on the geodesic distance, i.e. the length of the shortest path that connects two actors [and allows] to measure the capacity for autonomy or independence of actors" (LEMIEUX; OUIMET, 2004, p.27). The distance of an actor in relation to all others in the network is based on the geodesic distance (shortest). InCloseness proximity is to be achieved and OutCloseness is the proximity to achieve. This measure represents the independence of the actor because means the ability to communicate with others, with minimum intermediaries, taking account the direct and indirect ties of each actor (WASSERMAN; FAUST, 1994, p.183; HANNEMAN, 2001 p.65).

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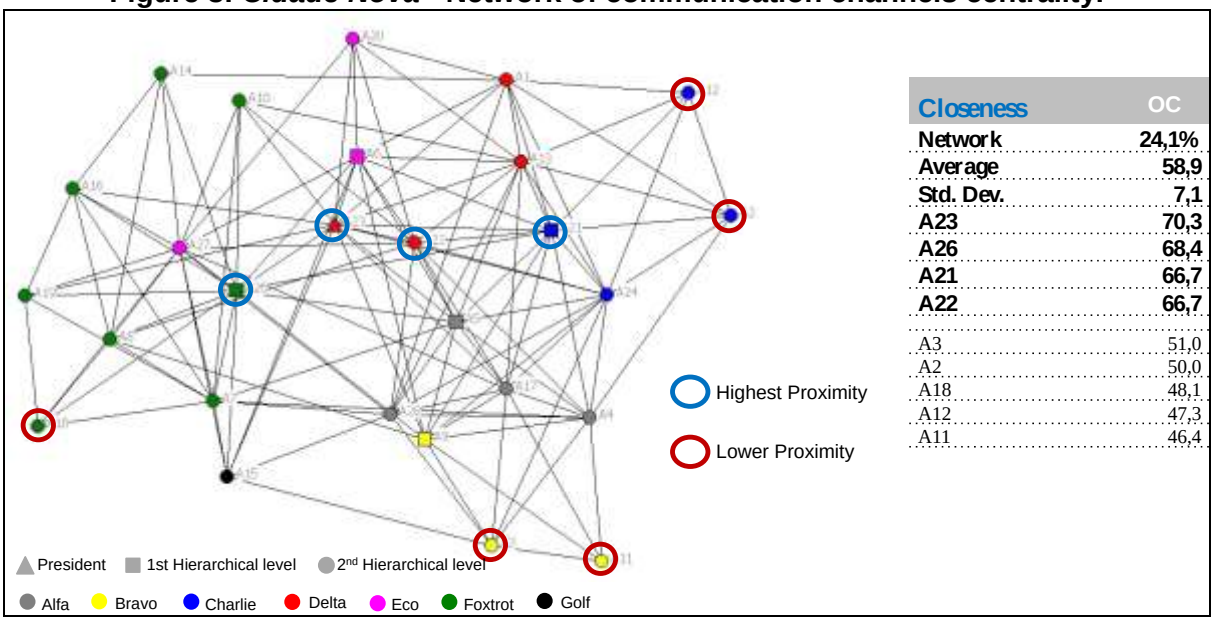
Figure 3: *Cidade Nova* - Network of communication channels centrality.



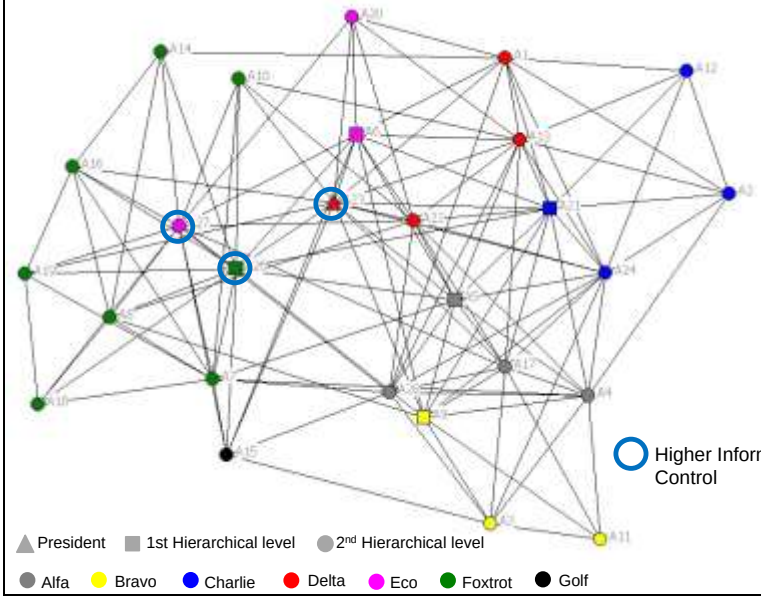
Closeness	OC
Network	24,1%
Average	58,9
Std. Dev.	7,1
A23	70,3
A26	68,4
A21	66,7
A22	66,7
A3	51,0
A2	50,0
A18	48,1
A12	47,3
A11	46,4

In that respect, the president (A23), managers Foxtrot (A26) and Charlie (A21) and analyst A22 Delta are the most central and therefore the actors with greater autonomy and independence. In contrast, analysts A2 and A12 Charlie, A3 and A11 to A18 of Foxtrot Bravo have the lowest levels of autonomy, being dependent on a small number of actors to be able to access the entire network (Figure 3). However, the developer of 2nd level department Foxtrot A10 is another actor who is not part of the most central group in the network of communication channels, but has high out-closeness in networks of relationships and flows, therefore, A10 depends less on the hierarchy than any other actor to get to the other actors. It is a particular analyst who has power and ability to reach all other actors in the network and therefore high potential to influence and to 'in-form'. Coincidentally, A10 is one of two players (the other is also an analyst Foxtrot, A16) that both networks, relations and flows, is less likely to be achieved.

"The betweenness centrality [or intermediation] measures the importance of the intermediate position occupied by the actors of a graph [e denotes the] capacity of actor in a graph have to ensure coordination and control" (LEMIEUX; OUIMET, 2004, p.28). This centrality of an actor arises from the fact that is within the geodesic paths between other actors, so this centrality considers an actor as a mean to achieve other actors. It is a measure of intermediation or information flow that runs

on the network, characterizing the power to control information and the path they're traveling through (WASSERMAN; FAUST, 1994, p.188; HANNEMAN, 2001, p.66).

Figure 4: *Cidade Nova* - Centralization of intermediation in network communication channels.

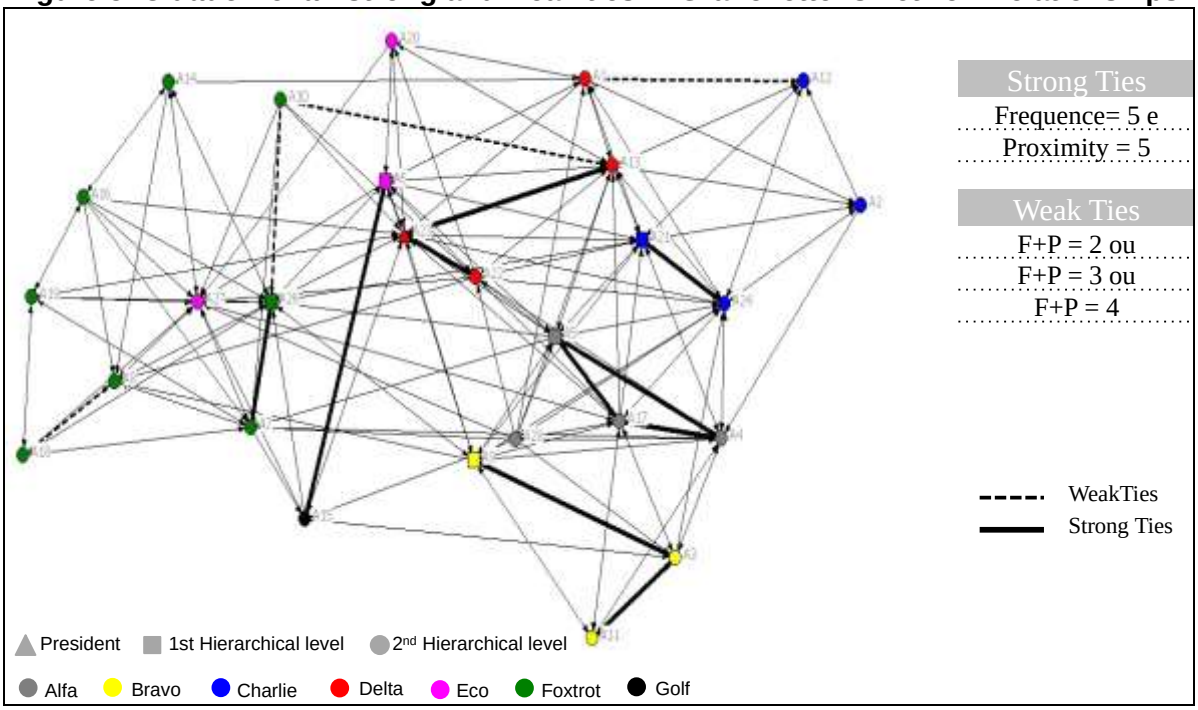


Betweeness	CIN	# caminhos geodésicos
Network	**6,0%**	
Average	**2,9%**	**9,4**
Std. Dev.	**2,5%**	**8,1**
A23	**8,7%**	**28,3**
A27	**8,1%**	**26,2**
A26	**7,5%**	**24,4**
A19	0,4%	1,2
A2	0,3%	1,1
A20	0,3%	1,0
A18	0,1%	0,2
A12	0,0%	0,0
A11	0,0%	0,0

The actors A23 (President), A26 (manager Foxtrot) and A27 (Eco analyst) are those with greater ability to control information, from the point of view of network communication channels, a network whose degree of centralization brokering is fairly low (6.0%), implying that most non-geodesic paths are controlled by specific actors (Figure 4).

Those whom are weakly tied are more likely to move in different circles from our own and thus have access to different information from what we have. On the other hand, strong bonds improve the local network cohesion. In the words of American sociologist who first defined the concept, "The 'strength' of an interpersonal tie is a linear combination of the amount of time, the emotional intensity, the intimacy (or mutual confiding), and the reciprocal services which characterize each tie" (GRANOVETTER, 1973, p.1361).

Figure 5: *Cidade Nova* - strong and weak ties in Granovetter's network relationships.

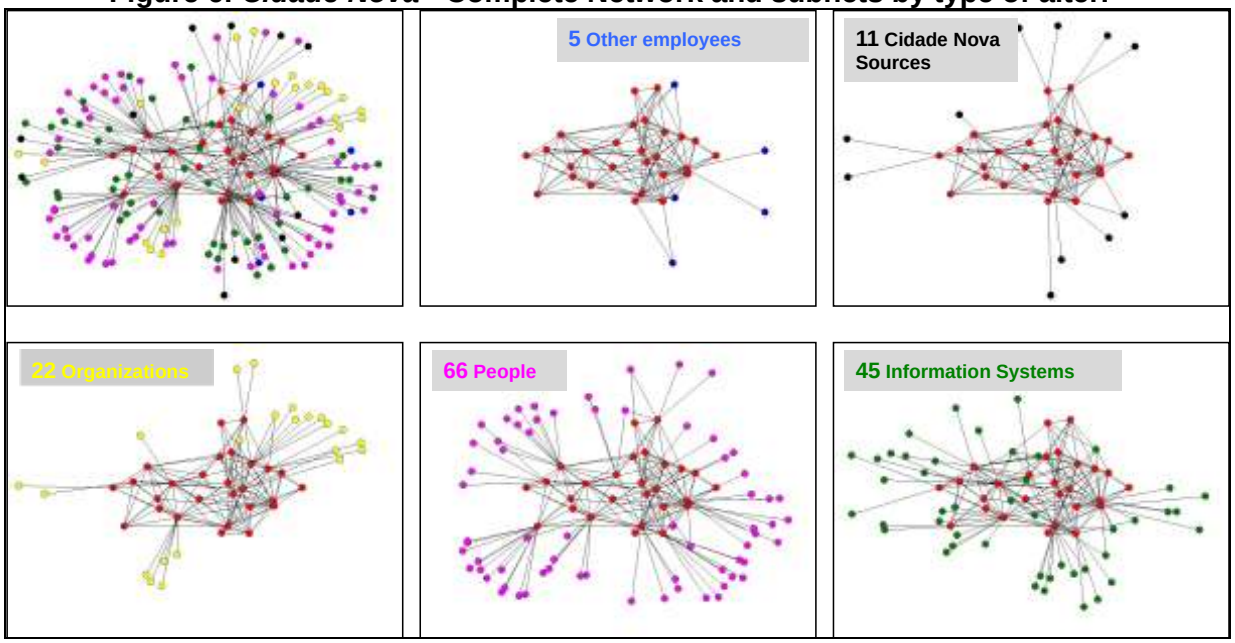


There is no unique definition and mathematical notation for the calculation of this measure; it should be calculated from the interpretation of qualifying elements of relations between actors inside the network. When trying to construct a measure that describes the intensity and reciprocity of the relation, we used in this study a combination of frequency and proximity of relationships to describe their strength. Thus, to define strong and weak ties, we take as parameters these: relationships are bidirectional or unidirectional, frequency (F) (5 - daily, 4 - weekly 3 - monthly, 2 - quarterly 1 less frequent), and proximity (P) (5 - beside, 4 - same floor, 3 - another floor, 2 - other building 1 - another city). In the network of relationships, strong bonds are defined by its highest frequency and proximity possibilities, i.e. bonds with bidirectional frequency (F) = 5 and proximity (P) = 5. Weak ties are defined as the lowest frequency and the shorter possibilities, in this case unidirectional ties with F+P = 2 or F+P =3 or F+P= 4 (Figure 5).

5.2 The Complete Cidade Nova's RSI

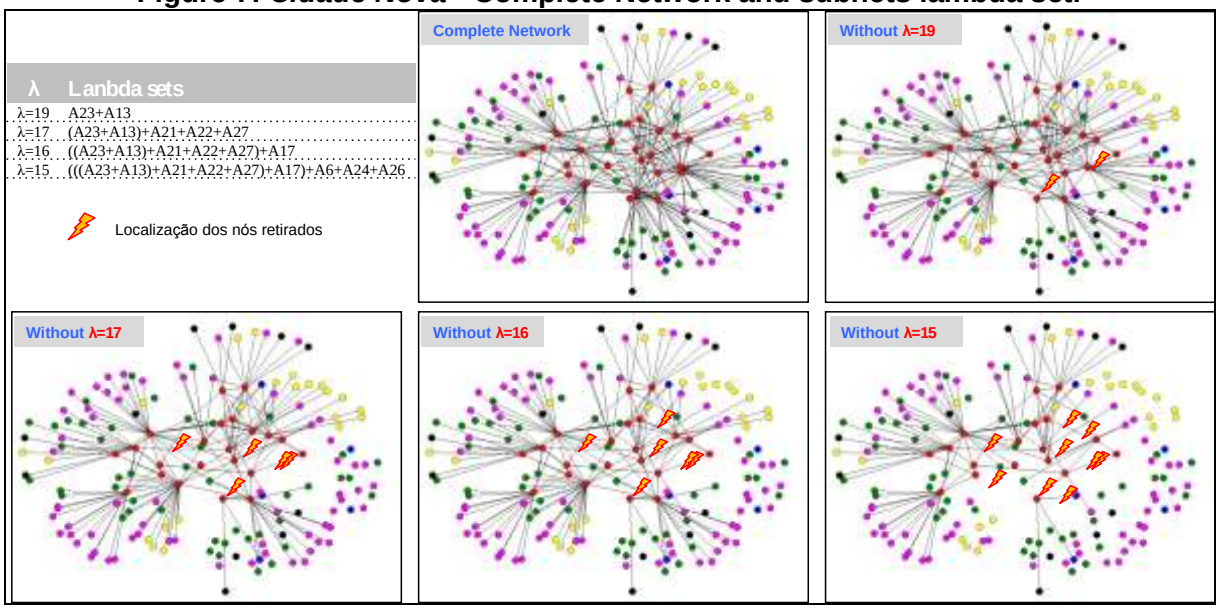
The complete networks are networks that include actors and alters, being an alter an entity, not an actor, indicated by at least one actor. In the case of the Cidade Nova, were referred five types of alters, namely 'Others Collaborators', 'Cidade Nova's Information Sources ', 'Organizations', 'Other People' and 'Information Systems'. The 27 actors in the Cidade Nova's RSI named 149 alters, with whom they have 315 channels of communication which reveal 421 relationships since there were 875 of flows reported in the questionnaires.

Figure 6: *Cidade Nova* - Complete Network and subnets by type of alter.



Lambda set (λ) is a measure that allows SNA to establish the ranking relations by evaluating how the network flows between actors in the network pass through each of these relationships. This makes it possible to identify the 'bridges', which are the relationships, that if removed can cause major disruptions or disconnections in the network. It is an approach to key relationships in the network structure (WASSERMAN; FAUST, 1994, p.269; HANNEMAN, 2001, p.87).

Figure 7: *Cidade Nova* - Complete Network and subnets lambda set.



In the complete RSI the most important bridge is made by the president, A23, and the analyst Delta, A13, which is particularly important in relations with alters, in this case, in relations with external entities to the organization. Employees Charlie, Delta and Echo, A21, A22, and A27 respectively, assume some roles and positions in the network of actors, make up with A23 and A13 the second most important bridge. Managers Echo and Foxtrot, A6 and A26, are not part of the group of six actors whose relations when taken up have most disruptive capacity. They are only in the group with the fourth highest delta value. Managers A5 and A9 are not part of the most important bridges which indicates that the power of these actors in the internal RSI finds no reflection in alters RSI (Figure 7).

The importance of information systems for cohesion of the *Cidade Nova's* RSI is illustrated in Figure 8 where it becomes possible to analyze visually the decrease of density and connectivity of the network by suppressing subnet information systems. This is just an unparalleled practical exercise but it allows in some degree to visualize and imagine how the *Cidade Nova* informational fabric depends in part to various information systems, whether electronic as blogs, websites or online relationship applications, even when physical as books or newspapers.

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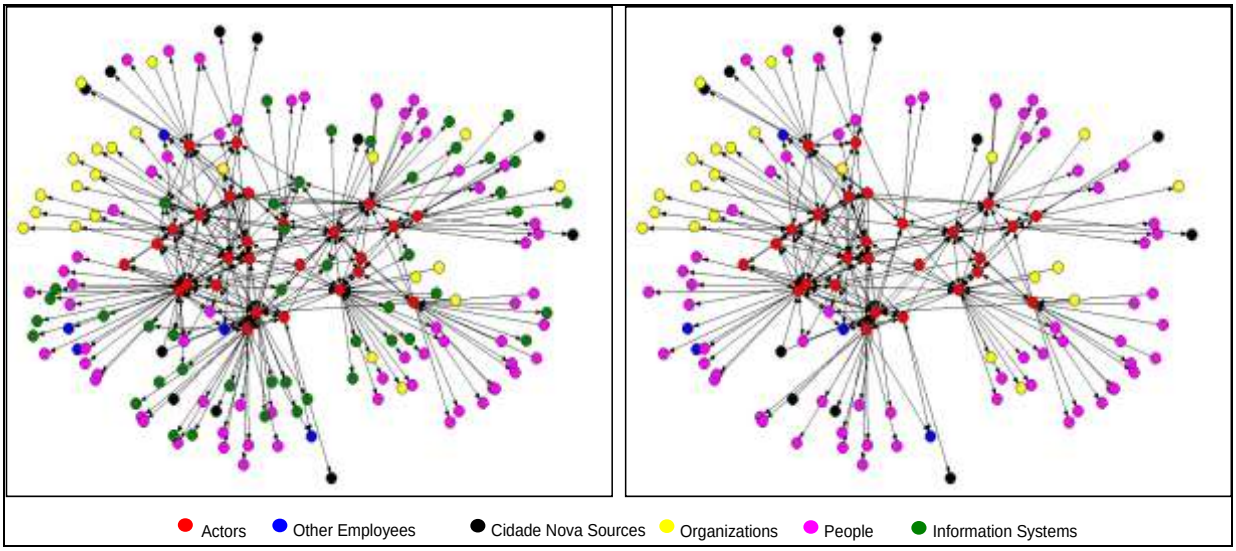
Figure 8: *Cidade Nova* – Complete network without information systems.



When addressing the roles and positions of actors and alters there is a power distribution similar to that found in the RSI of actors. Indeed, the president A23 and managers Charlie, Echo and Foxtrot again emerge as actors with more power, while the Alfa and Bravo managers have a lower degree centrality than many other actors of lower hierarchical level. In Figure 9, which presents the degree of communication channels of the complete network, the nodes come with their relative size measure degree, that is, with its power.

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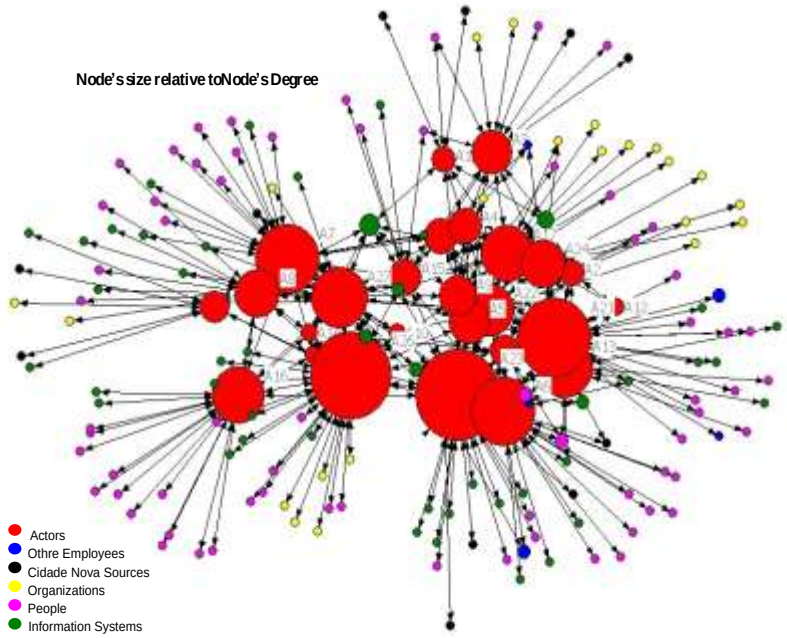
Figure 9: *Cidade Nova* - Centrality Degree in complete network.



Degree	D	DN
Network		18,5%
Average	3,6	2,0%
Std. Dev.	6,4	3,7%
A23	35	20,0%
A26	33	18,9%
A21	30	17,1%
A6	26	14,9%
A7	26	14,9%
A13	23	13,1%
A27	22	12,6%
A16	21	12,0%
A17	21	12,0%
A22	19	10,9%
A24	18	10,3%
A8	17	9,7%
A3	16	9,1%
A5	15	8,6%
A9	14	8,0%
A4	12	6,9%
A15	12	6,9%
A28	12	6,9%
A1	11	6,3%
A18	11	6,3%
A11	9	5,1%
A20	9	5,1%
A2	8	4,6%
SI10	7	4,0%
A10	6	3,4%
A14	6	3,4%

Degree		
Continuation...		
A19	6	3,4%
SI46	6	3,4%
A12	5	2,9%
B2	4	2,3%
B3	3	1,7%
P23	3	1,7%
P37	3	1,7%
SI37	3	1,7%
SI4	3	1,7%
SI44	3	1,7%
SI9	3	1,7%
B1	2	1,1%
CN4	2	1,1%
O4	2	1,1%
O5	2	1,1%
P33	2	1,1%
P6	2	1,1%
SI36	2	1,1%
SI6	2	1,1%
SI7	2	1,1%
SI8	2	1,1%
B4	1	0,6%
B5	1	0,6%
CN1	1	0,6%
CN10	1	0,6%
CN11	1	0,6%
CN2	1	0,6%
...	...	...

Within a total of 149 alters, in Table 4 below there is a list of 25 most relevant ordered by number of flows. The Table also shows the number of channels by alter that coincides with the number of relationships whereas in the channels with actors and alters there are only univocal relations, from actors to alters. Although in most cases, a larger number of channels correspond to a larger number of flows, the alter which has a greater number of flows is B2 (other collaborator 2), whereas the Internet (SI10) is the alter which actors establish greater number of channels.

Only four alters (Contributor 2, Internet, WinBooks 23 and person 23) receive more than 10 streams each; the following list (Subscribers, Other 3 and Site Contributor Reuters) have only five flows each; the fact that there are many alters with very few flows denotes that there is a great dispersal of relations. From 45 information systems, 10 (22%) are in the TOP25, is important to note that only two newspapers *Folha de São Paulo* and *Estado de São Paulo* and are not electronic information systems. The others are disaggregated with the ratings given by the actors, therefore 'Internet' arises separately from different sites and specific tools as Google, Twitter, Facebook and Reuters sites, and the *Folha de São Paulo* news

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newspaper. The importance of Internet and its services may therefore be gauged by the sum of all these Information Systems.

Table 4: *Cidade Nova* - 25 most relevant alters.

ALTERS		# Chanels	# Flows
B2	Other Employee 2	4	13
SI10	Internet	7	12
SI46	WinBooks	6	11
P23	Person 23	3	11
P6	Subscribers	2	5
B3	Other Employee 3	3	5
SI37	Site Reuters	3	5
O4	Caixa Econômica Federal	2	4
P33	Person 33	2	4
P37	Person 37	3	4
SI44	Twiter	3	4
SI9	Google	3	4
B5	Other Employee 5	1	3
O5	Câmara Brasileira do Livro	2	3
B1	Other Employee 1	2	3
SI36	Site Publishnews	2	3
SI6	Facebook	2	3
SI7	Newspaper Folha de São Paulo	2	3
SI8	Newspaper Folha S.Paulo online	2	3
SI4	Newspaper Estado de São Paulo	3	3
B4	Other Employee 4	1	2
CN1	Cidade Nova Database	1	2
CN10	Cidade Nova Magazine	1	2
CN11	Site Cidade Nova	1	2
CN4	Blog Inédito	2	2

Other Employees
Cidade Nova Sources
Organizations
People
Information Systems

From 66 people, only four (6%) were in the TOP25, being the 'Subscribers' appearing with only five flows. From this data we can infer something from the point of view of the organization's business that deserves careful consideration: very little contact is made with customers or, alternatively, these are not the 'top of mind' of the vast majority of the actors when they reflect on their work. The five ‘other employees’ comprise the TOP25 which underscores its importance to the organization, while within the 22 organizations mentioned, only two (1%) appear in that same group.

The 11 sources of *Cidade Nova* individually receive few flows, denoting almost univocal connections with the actors that use them. Is subject for further reflection the strategy and internal politics for the construction, dissemination and use of information sources of *Cidade Nova* as work tools, due to possible high costs per unit. In Figure 10, the graph highlights the eight alters with larger number of incoming

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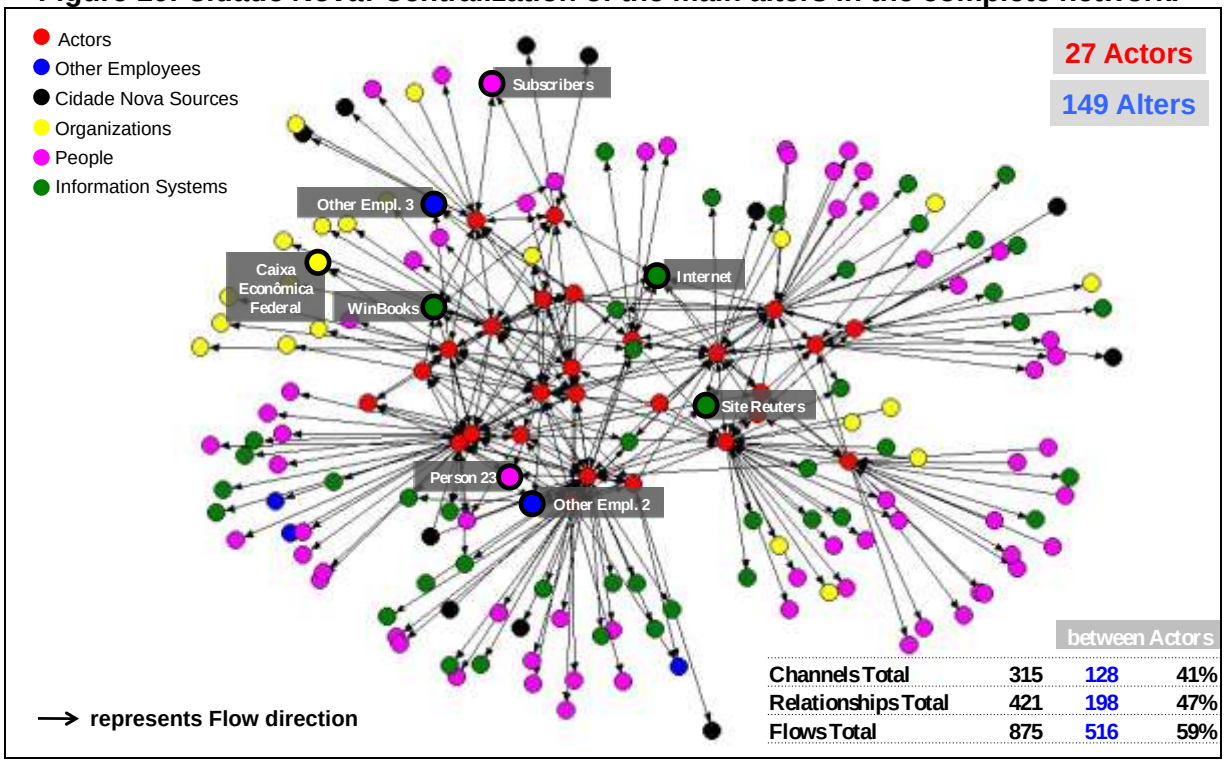
flows, i.e., those who receive five or more flows, and also the organization that protrudes in this analysis.

Figure 10: *Cidade Nova*: Centralization of the main alters in the complete network.



6 FINAL CONSIDERATIONS

This paper showed up and offered some interpretations of the results of SNAI in a third sector organization, *Cidade Nova* publishing house. The inclusion of analytical graphs serves to the purpose of highlighting some important aspects of visual dynamics and topology of *Cidade Nova's* RSI, but also has a purpose of seek and extend the possibilities in individual cognitive interpretation of RSI, appealing to different perceptions and sensations that the own esthetic of social network transmits to every analyst, every individual.

The SNAI in *Cidade Nova* presented here opens many possibilities for continued research and understanding of RSI. Here we suggest two possibilities for a next time search. The first concerns an analysis of the temporal evolution, longitudinal, of *Cidade Nova's* RSI. It is suggested reapplying the same questionnaire to the same actors, redo the analysis described here and compare the results. The

second suggestion is the inclusion of more links in the network of actors. It is suggested to use the snowball method (HANNEMAN, 2001, p.8) and apply the questionnaire to alters most cited, allowing the identification of these relationships with actors earlier and extending the RSI to other agents in the information processes of the *Cidade Nova*.

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