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TRACK: ORGANIZATION: Theory and Design

**DETECTING NEW FORMS OF ORGANIZING THROUGH TIES ANALYSIS AND MIRROR NEURONS' PERSPECTIVE.**

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# **DETECTING NEW FORMS OF ORGANIZING THROUGH TIES ANALYSIS AND MIRROR NEURONS' PERSPECTIVE.**

## **1. The purpose of the paper**

The paper refers to the emerging of new forms of organization through practice management and its location in the theory assuming the perspective of mirror neurons. This approach could be applied in Simulimpresa considered, from one side, as the reproduction of a real organization in a simulated environment and, from the other side, a didactical methodology addressed to develop behaviours oriented to networks management.

These topics are discussed considering the case of Perting Ltd, the practice firm (PF) established since 2001 in Forlì School of Economics, Management and Statistics – University of Bologna that represents, still today, an unique laboratory to test managerial practices.

PF (also known as simulated enterprise, training firm, virtual enterprise) is a simulated business set-up experienced by students, during their studies, under the supervision of teachers/tutors (Tampieri, 2014) with the main aim of developing managerial and technical skills, according to the “learning by doing principle” (Krasniqi et al., 2011) and, starting from 2010, to test the organizational behaviour and theoretical hypothesis on the dynamics of networks.

In particular the research detects the dynamics of internal ties (with teacher/tutor and other units) and external ones (with individuals/organisations such as: central office, customers, suppliers, consultants, business partner and University partner projects) developed by Perting units during the period September – December 2014.

The hypothesis we want to test is the existing of a correspondence between internal and external ties produced during experimental tests and as a tentative study on the appliance of mirror neurons theories to the building of organizational forms starting from the virtual ones realized by PF as a way to facilitate the reproducing of organizations from a model working in the real.

The paper, after briefly outlining the theoretical background, illustrates the methodological structure together with the main findings and future researches.

## **2. The theoretical background**

Many scholars investigated a multiplicity of streams related to interorganizational ties dynamics (Ferriani et al. 2012; Ahuja et al. 2012), network analysis (Owen-Smith et al., 2015; Quintane et al. 2013) and new organizational forms (David et al. 2013) contributing to widen the variety of management approaches that may be used.

On these topics a way of interpretation can be connected to the theory on Mirror Neurons' System (MNS) that could facilitate the explanation of Simulimpresa methodology effectiveness for the experimenting new forms of organizing as a result of the creation and implementing intra and inter organizational ties.

On this purpose Oberman et al. (2005) explored many fields of study related to mirror neurons as they are primarily thought to be involved in perception and comprehension of motor actions, but they may also play a critical role in higher order cognitive processes such as imitation, theory of mind, language and empathy.

Many studies have been realized on MNS with the purpose of examining its role on two directions: action understanding and imitation (Borenstein & Ruppin 2005). In particular MNS is considered an adaptation for imitatory behaviour (Ramachandran 2000).

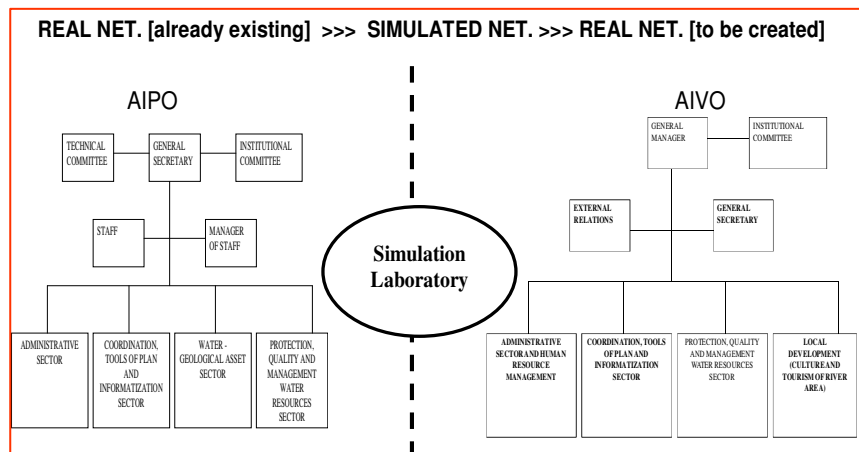
Scholars (Becker et al 2011) suggested on MNS that much of what people learn during socialization is processed unconsciously within the brain. So employees automatically and often unconsciously imitate one another's behaviour and feeling through the operation of MNS.

The paper considers the organizational ways of reproducing intra and interorganizational ties in simulation laboratory in which the socialization and the networking play the central role in the learning process.

So far the ties analysis allows detecting organizational forms created in laboratory as a result of symmetric behaviours between simulated and real environment.

In Simulimpresa this reproduction is realized by the support of a real organization (named "Business partner") that assumes the role of advisor or facilitator. This connection is needed to make clear to PF participants, mostly without a business experience, how works the market environment and the functioning of main organizational structures and processes. This facilitates business and relationships management in the specific sector chosen for the simulation application.

Figure 1 – The process Real Organization → Simulated Organization → Real Organization<sup>3</sup>



The organizational symmetry real-simulated environment can be showed in Figure 1 in which the real organization supported the Simulimpresa application in the laboratory as an experimental attempt to reproduce, after the simulation, a new real organization with its network of relationships (C/S) in a process as: Real O. → Simulated O. → Real O.

### 3. The method of analysis

Several previous researches were realized on Simulimpresa methodology first of all focusing on the Customers/Suppliers links through a mathematical model (Bianchi & Tampieri 2013a,b). Furthermore the analysis took into consideration the reproduction of organizational assets. This didactical process could be facilitated by the creation of symmetric behaviours between real and simulated environment implementing the feedback among real and simulated operators.

In particular last research carried out by Bianchi & Tampieri (2013c) pointed out a ties longevity curve of C/S, obtained by a mathematical model, similar to the one detected in a real sample<sup>4</sup> and arguing that the same curve could be extended to interorganizational links.

In next table we show the educational profile of Simulimpresa application in Bologna University, together with the Networking profile of Perting in terms of C/S and distinguishing the period of experimentation (in bold) starting from 2010 to the one (A.Y. 2014/2015)

<sup>3</sup> Project MIUR “Exploratory seminar on models and methodologies for the entrepreneurial and touristic development of low Volga”. International Interuniversity Cooperation (2009-2010).

<sup>4</sup> Research on Italian SMEs sample in the period 1980-2013 (Bianchi & Barzanti 2004).

examined in this paper and featured by the reproduction of organizational forms with external partners (Table 1).

Table 1 - The educational profile of Simulimpresa and the networking of Perting.

Academic Year	Educational profile of Simulimpresa course				Networking profile of Perting	
	No. teachers	No. tutors	No. students	No. hours	No. customers	No. suppliers
2001/2002	1	1	51	50	0	0
2002/2003	1	1	52	50	10	7
2003/2004	1	2	48	50	34	7
2004/2005	1	2	57	50	13	6
2005/2006	1	2	63	50	25	10
2006/2007	1	2	54	50	53	7
2007/2008	1	2	55	50	28	29
2008/2009	2	7	120	50	122	30
2009/2010	2	2	76	50	51	22
<b>2010/2011</b>	<b>1</b>	<b>2</b>	<b>116</b>	<b>50</b>	<b>23</b>	<b>12</b>
<b>2011/2012</b>	<b>1</b>	<b>2</b>	<b>75</b>	<b>50</b>	<b>28</b>	<b>7</b>
<b>2012/2013</b>	<b>1</b>	<b>1</b>	<b>36</b>	<b>50</b>	<b>27</b>	<b>25</b>
<b>2013/2014</b>	<b>1</b>	<b>1</b>	<b>23</b>	<b>40</b>	<b>26</b>	<b>1</b>
<b>2014/2015</b>	<b>1</b>	<b>1</b>	<b>28</b>	<b>40</b>	<b>21</b>	<b>3</b>

In order to analyse the ties reproduction through PF methodology, we made a distinction between the internal ties (with teacher/tutor and other units) from the external ones (with individuals/organisations such as: central office, customers, suppliers, consultants, business partner and University partner projects) developed in the period September-December 2014<sup>5</sup> and after, during the experimental modules on Simulimpresa in Resilience undertaken within the project RESINT, "Collaborative Reformation of Curricula on Resilience Management with Intelligent Systems in Open Source and Augmented Reality" (Table 2).

<sup>5</sup> The survey has been realised on the operative meetings of 30 September, 3,7,10,14,17,21, 24 October, 11,14,21,25,28 November ,2,5 and 9 December.

Table 2 - Summary of operative units and tasks in the RESINT Experimental Course

No	O.U.	Code	No. participants	Tasks
1	Human resource Administration and General Affairs	HRD - GA	4	Contracts of employee's assumption of Perting; elaboration of Perting microstructure, signing of labour contracts; administration and management of human resources. Communications with Italian and foreign simulated enterprises and reopening of the activities and sending promotions. Exchange of information with the Advisory department and verbal recruitment of Perting's employee, in connection with Project Units
2	Accounting	AC	4	Learning on the usage of software OS1; view of the balance before adjustment to produce the balance of the previous exercise in connection with Project Units
3	Management Control	MC	4	Annual Budget : training on OS1. Adjustment entries: Draw up financial statement before the closure
4	Treasury , finance and Tax	TF / TX	2	Economic situation and IBAN; check of bank communications. Sending F24 filled by the fiscal office. Printing tickler made by accounting department and check customers and suppliers expired. Sending payment reminder to customers and suppliers. Treasury budget. Preparing F24 for treasury. Increasing Fiscal variation on gross profit and calculating Ires.
5	Marketing	MK	3	Market analysis through European database; communication with Italian and foreign enterprises; updating the catalogue in paper and on line; production of promotional materials; customer satisfaction surveys, in connection with Project Units
6	Sales and Warehouse	FS / NS / OW	5	Learning about the procedures for fulfilment of modules to foreign firms; execution of received foreign orders; issuing of sale documents to both European Union (EU) and non-EU countries. Elaboration of adjustment records; issuing of national invoices. Updating stock management and online orders based on goods received from customers. Purchases from other Italian simulated enterprises : process.
7	CAMUS Project	CAMUS	2	Project management, preparation of proposal on "Recovering the Historical Heritage on catastrophic events in the Museum of Post and Telecommunications". Contacting university partners to implement Simulimpresa. Organisation of videoconferences with foreign universities.
8	CARO Project	CARO	2	Project management, preparation of proposal on "Education for Operative Room Staff". Contacting university partners to implement Simulimpresa. Organisation of videoconferences with foreign universities.
9	CARG Project	CARG	2	Project management, preparation of proposal on "Creation of an Agency for river governance". Contacting university partners to implement Simulimpresa. Organisation of videoconferences with foreign universities.

Owing to the limited duration of each operative meeting (3/4 hours) the frequency of internal and external ties is not relevant (as it is one for all ties) for the purposes of this analysis.

The survey has been realized through a questionnaire submitted to 28 participants and composed by two parts: internal networking with questions about the number of ties with operative units and teachers/tutors and the typology of contact and the external one with the number of ties to external bodies and the typology of contact.

#### 4. The main findings and contributions

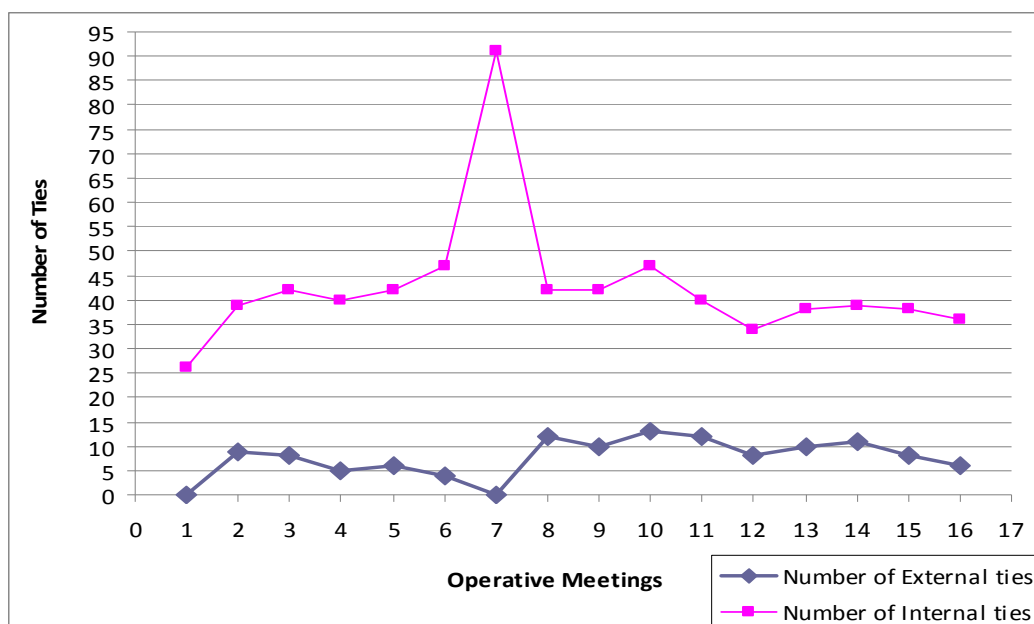
The Figure 2 shows the emerging orientation of Perting units towards internal ties respect to external ties. This evolution was connected to the necessity to create an initial relational asset within the boundaries of Perting and to exploit this internal network over the time to ensure the efficiency of PF methodology.

In particular in the first meetings (1-3) the involvement of teachers and tutors was higher to explain and support the PF application and to make clearer the operative working as most of participants hadn't a business experience.

After the start up of activities the PF, in this case representing a firm of project management, will reproduce an organization in touch with external organizations.

In the 2014-15 Pilot Course, the external ties were created mostly by CAMUS, CARO, CARG units that were engaged in preparing project ideas together with the support of other internal units (mainly HRD – GA, AC, MK) and directed to the collaboration of external partners<sup>6</sup>. The purpose was to create new organizations or restructuring the existing ones through the reproduction of the model experimented in the didactical environment of Simulimpresa.

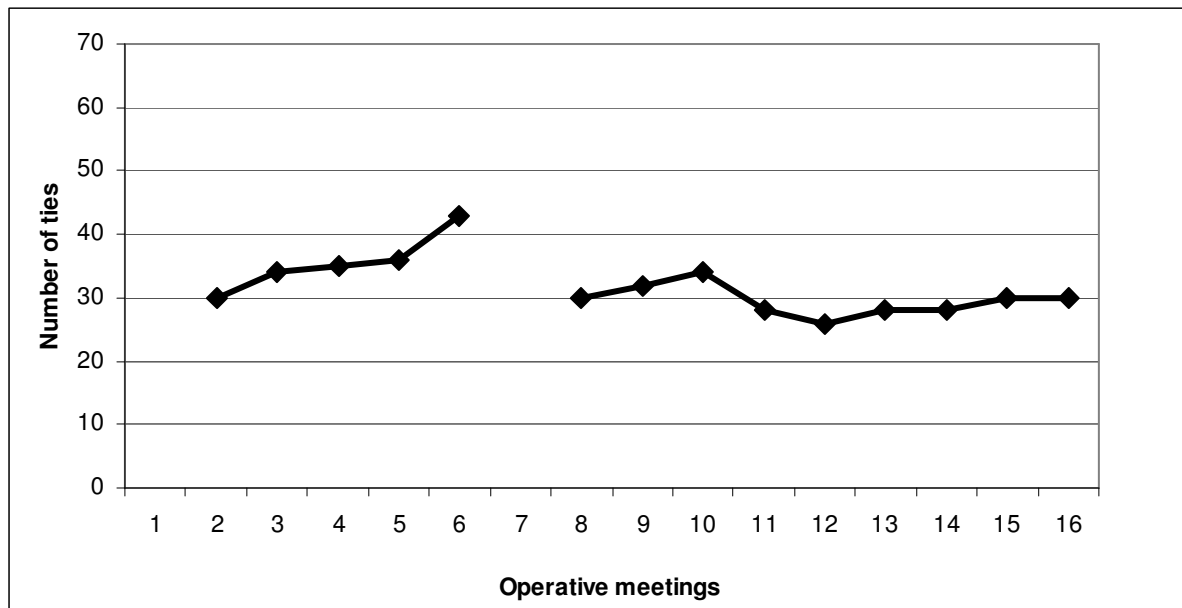
Figure 2 – The evolution of internal and external ties



The findings (Figure 3) underline a correspondence between internal and external ties. Two exceptional cases of none external ties refer to the first operative meeting as it was addressed to simulimpresa illustration, selection colloquium, division of participants into Perting units (with the creation of 26 internal ties) and to the seventh operative meeting in which each unit presented the intermediate results to the others creating 91 internal ties.

<sup>6</sup> Respectively with Poste Italiane, Interregional Agency of Po river and the Operative Room of the Ravenna Municipal Police with the aim to create a Museum on Resilience in Post Service, an Agency for the Governance of Big Rivers and an Operative Room for resilience management.

Figure 3 – The gap between the level of internal and external ties.



The emerging parallelism between the frequency of interorganizational relationships created within the laboratory and those developed with external organizations, could be a sign of reciprocal influences between Simulimpresa internal and external actors. As well as the organizational activities realized in the laboratory to reproduce an organization and the building of ties reflect themselves on the external environment the simulated organization is in touch.

Summarizing: the intra-inter organizational ties developed by Perting in simulation laboratory seem to have a significant relation to the new forms of organizing created by the symmetry real-simulated environment and as a structured feedback from managerial activities realized by participants.

This study could open the way to several future researches addressed to an extended confirmation and to examine further variables in measuring the intra-inter organizational ties in other sectors of simulation.

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