CREATIVITY AND THE STRUCTURE OF TOURISM DESTINATION NETWORKS

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ABSTRACT

Creativity and innovation have long been considered as fundamental factors in economic growth. This is especially true in tourism today, where intense and globalized competition put firms, groups and destinations under a very heavy pressure. In this contribution, after a brief introduction to the issue and its different facets, we adopt a social network perspective. In this framework, using a recently proposed measure, we analyze a number of destinations whose stakeholders networks are known. We compare them to a series of networks made of *creative* entities and assess the difference.

KEYWORDS

tourism destinations, network analysis, creativity

INTRODUCTION

In a highly globalized and competitive environment, tourism destinations (and their stakeholders) have a recognized impellent necessity to innovate their offers or, at least, the ways they offer their products and services to the market (Hjalager, 2010).

Besides any consideration on the individual (firms in our case) capabilities to be creative and to turn new ideas into practical and beneficial innovations, the recent literature on this subject has pointed out the importance of the network of relationships in which the different organizations live. We are thus now ever more convinced that the social side of creativity is at least as important as the individual side (Amabile, 1988; Brass, 1995; Perry-Smith & Shalley, 2003; Uzzi & Spiro, 2005).

If we accept this idea, it is easy to conclude that the structural (topological) characteristics of the network in which tourism companies are embedded must play an important role. Therefore, we aim here at dealing with these issues, and in particular with those related to the effects of the topological structure of a tourism destination network on the capability to be creative and innovative as a whole (Ohly et al., 2010). What we seek to achieve is a way to assess the structural characteristics of a system (a destination and its stakeholders) that influence the generation of creative and innovative ideas.

To do that we resort to the methods developed by *network science* and use a recent proposal by Latora et al. (2013) for a metric, termed Simmelian brokerage, that combines the measurements customarily used in the literature for this type of investigations: network closure and structural holes. As it will be discussed in the next sections, in fact, beyond the recognition of the crucial effect of network structure on knowledge dissemination and the formation of social capital, there is a debate on what topological characteristics are those that mostly favor these processes: whether high densely compact groups (closure) or loosely connected systems with long range ties (structural holes).

Based on the Simmelian brokerage metric, a number of tourism destinations networks are examined. Their values are then compared to those calculated on a group of networks that might be reasonably considered as representing creative and innovative environments. The main objective here is to provide a method to better assess the structural characteristics of a tourism destination network for what concerns facilitating the formation and the validation of creative and innovative ideas.

The paper starts with a brief review of what creativity and innovation mean in general, and how they are connected with human and social capitals. Following that, after a short outline of network science, the role of social networks is discussed. Then the methods and the data used are described. Results, discussion, implications and concluding remarks close the paper.

CREATIVITY, INNOVATION AND SOCIAL CAPITAL

Creativity and innovation are undoubtedly essential factors for tourism destinations. They are increasingly considered as important bases for designing and proposing those experiences that may make the difference between a successful product and a serial reproduction of massified offerings, thus increasing the attractiveness for the increasingly sophisticated and demanding tourists (Richards, 2011).

Creativity, although rather vague as concept, is traditionally considered to be an individual characteristic, critically linked with (but different from) intelligence in the manifestation of *genius* (Galton, 1869). Recent neurological analyses of the brain regions associated with creative thinking, have shown that cognitive control of information flow among brain areas is a critical factor for creative cognition (Flaherty, 2005; Jung et al., 2010).

Academic discussions on the definitions of this notion have been quite extensive. They embrace reflections on the creative person, on the cognitive and informational processes that stimulate creativity, on its products, and, obviously, on the influence of the environment in which the creative individual is embedded (Batey & Furnham, 2006). In this varied scenario, some consensus has emerged around a characterization that seems to put together these disparate topics. Creativity is, according to Sternberg and Lubart (1999: 3): "*the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints)*". The same can be said when considering creativity in a business or economic environment and when the firm is the unit of analysis (Devanna & Tichy, 1990; Van Gundy, 1987).

A more recent strand of research has started recognizing that a creative process is, at least partially, a social process (Woodman et al., 1993: 294). "*Individual creativity is a function of antecedent conditions (e.g. past reinforcement history, biographical variables), cognitive style and ability (divergent thinking, ideational fluency), personality factors (self-esteem, locus of control), relevant knowledge, motivation, social influences (social facilitation, social rewards), and contextual influences (physical environment, task and time constraints)*".

There is the idea here that collectives are more creative than isolated individuals because their members bear diverse knowledge contributions, and better and more numerous creations emerge out of their interactions (John-Steiner, 2000; Paulus & Nijstad, 2003). In this regard, some scholars (Amabile, 1988; Woodman et al., 1993), propose that factors in the work environment, such as supervisory support and social influences resulting from group interactions, are crucial determinants for creativity.

Creativity and innovation are frequently associated and frequently confused. Creativity, as said, means having new ideas. This is an often long and troublesome process, although known for a long time. It passes through a series of steps that include the observation of a need, its analysis, the collection and review of as much information as possible, the design of possible solutions and their assessment in terms of advantages and disadvantages. Eventually, the new idea is made apparent and needs to be tested and verified (Wallas, 1926). Innovation, instead, is the engineering process through which new ideas are transformed into products or services or ways to distribute them, so that they can be implemented and offered to a public in order to satisfy needs (or solve problems) in a way that is advantageous for the supplier (Amabile, 1988). Innovation and creativity rely on what sociologists have named human capital, the set of individuals' knowledge and abilities that allow for changes (Coleman, 1988).

If these phenomena are really social processes, they may be fully understood only by adding a consideration of the environmental conditions and the effects of the social linkages that contribute to their manifestation. This role is today well acknowledged, and Bourdieu defines social capital as (1986: 249): "*The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual ... or less institutionalized relations of mutual acquaintance and recognition*".

A number of studies have shown a clear indication of the fact that the different aspects of an organization's intellectual capital, which can be seen as a combination of human and social capital, influence the capabilities for incremental and radical innovations (Subramaniam & Youndt, 2005). Diverse forms of social capital seem to contribute significantly to explain both the decision to innovate or not and the decision to undertake innovations (Landry et al., 2002). Moreover, there is evidence that support the mediating role of intellectual capital and the moderating role of entrepreneurial orientation on innovation. Firms with higher levels of social capital and entrepreneurial orientation tend to amplify the effects of intellectual capital (Akçomak & Ter Weel, 2009; Wu et al., 2008), and tend to perform in a more successful way (Sainaghi & Baggio, 2014). With this approach, it is clear that the network of relationships established among a set of actors plays an important role (Brass, 1995; Lin, 1999).

THE ROLE OF SOCIAL NETWORKS

The social networks analysis tradition and the recent advances in network science have provided a number of studies that have sought a link between social capital, creativity, innovation and the structural and dynamic characteristics of the networks in which the actors are embedded, so that we could now speak of a *network capital* (Brass, 1995; Huggins et al., 2012; Perry-Smith & Shalley, 2003).

In this regard, however, there is no wide consensus on what characteristics are the most favorable for nurturing the innovation process. Clusters and regional networks have been studies with the aid of diverse cases, data and empirical methods (Cantner & Graf, 2011; Ter Wal & Boschma, 2009). Together with many valuable insights, the literature has posed numerous questions on the characteristic structures of innovation networks and the dynamics that drive them. However, it has not been possible, up to now, to univocally identify the responsible factors (Brenner et al., 2013), although some attempts to reconcile different positions have been made (Fleming & Marx, 2006 ; Fleming et al., 2007; Podolny & Baron, 1997).

The main question is whether creative and innovative networks are characterized more by a dense, closely clustered, structure or by a loose set of connections between different parts of the system.

A closed network is supposed to enhance social capital because information flows are more effective due to the presence of more direct connections and communications. Moreover, redundant ties create stronger bonds and a sharper sense of obligation that favors higher level of trust and cohesiveness, thus easing the pursuit of collective goals (Coleman, 1988; Reagans & McEvily, 2003). Therefore, cohesively clustered structures are supposed to greatly enhance the development of an idea. On the other hand, it has been argued that being connected to other actors who are loosely connected to own group (structural hole) builds a bridge between disconnected clusters that favor accessing and controlling other resources otherwise inaccessible. Network structures rich in structural holes may thus provide more diverse and timely information compared to other structures and give rise to a fresher set of new ideas (Adler & Kwon, 2002; Burt, 1992, 2001, 2004). Ideally the most creative system could come out from a good combination of *weakness* of the network ties (Granovetter, 1973) and quality of the information spread (Hansen, 1999), with *strong* ties transferring more fine-grained information and providing a more efficient exchange (Uzzi, 1996). Recently some more arguments towards dynamicity in connections which translate into the structural holes idea have been provided (Eagle et al., 2010; Huggins et al., 2012; Uzzi & Spiro, 2005).

As said previously, the two positions could be reconciled as proposed by some authors. Podolny and Baron (1997), for example, acknowledge the benefits typically related to networks rich in structural holes, but also support the positive effect of cohesive relationships. Fleming et al. (Fleming & Marx, 2006 ; Fleming et al., 2007) note that despite the contradictory empirical results, both interpretations may be correct. They maintain that the contradiction arises from seeking a purely structural explanation from the collaborative relationship or treating creativity as a single outcome rather than a social process.

The hint can be that cohesively clustered structures greatly enhance the development of an idea but make groundbreaking creativity less likely, essentially because they insulate groups from new information, ideas, and opportunities. If we add bridging connections, however, we counterbalance insularity by bringing in fresh and non-redundant information that can facilitate the creative and innovation process.

Traditionally, closure and structural holes have been assessed by resorting to a series of measurements on the network formed by the actors under study. In the next section we briefly recall some basic concepts of network analysis in order to better understand these measurements.

The measurement of closure and structural holes

Social network analysis has a long history as a tool for the study of human society to describe the structural properties of human relationships (Freeman, 2004). In recent times, a wide multidisciplinary effort led by physicists, mathematicians, neuroscientists and biologists, has benefited from a large availability of data and tools (hardware and software) that have helped in achieving a deeper understanding of the field, leading to what is now commonly called *network science* (Watts, 2004). Network analysis is based on the conceptualization of a system as a network of entities (nodes, vertices) linked by relationships (links, edges). In tourism, the key to investigating destinations using network analysis is to represent the stakeholders as nodes and the relationships between them as links. It is then possible to apply network analysis techniques to understand the properties of this complex system (Baggio et al., 2010; Scott et al., 2011).

We may identify a number of structural characteristics (the network topology) such as (da Fontoura Costa et al., 2007; Newman, 2010): degree (the number of connections each node of the network has to others), density (number of actual connections between a set of nodes compared to the number of links if nodes were fully connected), assortativity (correlation between nodal degrees), average path length (average distance between any two nodes), betweenness (measure of the extent to which a vertex lies on the paths between others, thus acting as a bridge between different parts of the network), efficiency (measurement of the ease with which information flows), clustering coefficient (degree of non-homogeneity in the density of links), and modularity (extent of division in denser sub-networks, also called communities). The statistical distributions of these quantities (degree first of all) have shown to be strong influencers for the dynamic behavior of the system as a whole, and have been found to empirically explain and control a number of processes from the diffusion of ideas to the robustness to external or internal shocks, to the optimization of the relationships among network components.

Depending on their topology, networks can be classified into a few broad classes (Newman, 2010):

- single-scale: the degree distribution has an exponential form (Gaussian or Poissonian). Members of this class are the random graphs (links are randomly distributed) and small-world networks. The latters are characterized by large clustering coefficients and short average path lengths while still exhibiting a Poissonian degree distribution;
- scale-free: they have a power-law degree distribution (form is: $N(k) \sim k^{-\gamma}$). They are characterized by having few nodes which act as very connected hubs and a large number of low degree nodes. No characteristic mean nodal degree (scale) exists;
- broad-scale: a large class of networks with mixed types of degree distributions. Most of these have a basic power-law shape with sharp cut-offs of the low degree tail (exponential or Gaussian decay).

Closure and structural holes are usually assessed by measuring two quantities: clustering and effective size.

The clustering coefficient of a node C_i having more than one neighbor is defined (da Fontoura Costa et al., 2007) as the ratio between the number of links in the neighborhood G_i of a node (the set N_{Gi} of nodes directly connected to the node) $K(G_i)$ and the maximum possible number of links in the neighborhood: $C_i = K(G_i)/[N_{Gi}(N_{Gi}-1)/2]$. It gives the probability that two neighbors of node i are connected by a link, and is normalized by definition ($0 \leq C_i \leq 1$).

Effective size S_i is the metric defined by Burt (1992) to assess the redundancy of the links between a node with degree k_i and the rest of the network. The definition is rather complicated but essentially consists of the difference between the node’s degree and the average degree of its neighbors (not counting node’s degree).

In a recent paper, Latora et al. (2013) show that these two measures are linked by a simple functional relation:

$$S_i = k_i - (k_i - 1)C_i$$

When normalized, this becomes: $S_i = 1 - C_i (k_i - 1)/ k_i$, that in the limit of very large k_i can be written as $S_i \sim 1 - C_i$. In other words, clustering coefficient and the normalized effective size are complementary measures that can be defined one in terms of the other. More interestingly the authors propose a new measure, Simmelian brokerage. For this, they use a metric called local (nodal) efficiency E_{loc} defined as the inverse of the harmonic mean of the minimum path length d_{ij} between node i, and the nodes in its immediate neighborhood:

$$E_{loc,i} = \frac{1}{k_i(k_i - 1)} \sum_{i \neq j} \frac{1}{d_{ij}}$$

As clustering and effective size, this measure is sensitive to structural gaps in a node's local network, but is also sensitive to variations in the position of links across local networks of the same density.

The Simmelian brokerage metric is then defined as:

$$B_i = k_i - (k_i - 1)E_{loc,i}$$

The metric is able to render the extent to which the node belongs to multiple groups that are both closely connected and separated from each other.

TOURISM NETWORKS AND OTHER CREATIVE ENSEMBLES

From the previous discussion we may conclude that we now have a quantity (Simmelian brokerage) able to give us a measurement of the structural conditions for a creative and innovative environment. Apart from any other consideration on the qualities that single actors have, a system with a good average Simmelian brokerage should be one that favors the birth and diffusion of innovative and creative ideas. If we accept this interpretation, we can calculate B_i for a number of tourism destination networks and compare the average and median values to those obtained for a set of systems which could be reputed to be *creative environments*.

The destination networks used here are:

- Elba: the Island of Elba, off the coast of Tuscany in central Italy (Baggio et al., 2010);
- Fiji: the Fiji archipelago in South Pacific (Baggio et al., 2007);
- Gallura: Costa Smeralda-Gallura, North-Eastern Sardinia, Italy (Del Chiappa & Presenza, 2013);
- Livigno: Livigno, mountain destination in northern Italy, close to the Swiss border (Mulas, 2010);
- Sibiu: the Sibiu county in the hearth of Romania (Grama, 2013).
- TourAT: the Austrian tourism websites (Piazzi et al., 2012);

Details about these networks can be found in the literature cited. Here we only say that these are well-known destinations of an average size (a few hundreds to one thousand elements) with similar characteristics for what concerns the tourism activities (flows of tourists), therefore they can be taken as good examples of the structure of a tourism destination. Moreover these are the only examples of networks, to our knowledge, for which a relatively good and complete sets of data exist. It must be noted that for Fiji and Austria the networks refer to the websites of the tourism organizations present in those areas. For these we use the conjecture proposed by Baggio et al. (Baggio et al., 2010) and verified by Baggio and Del Chiappa (Baggio & Del Chiappa, 2013) about the representativeness of the virtual representation of a destination (its website network) for its *real* counterpart (the companies and their relationships).

The networks used for comparison are the following:

- Astro: a collaboration (co-authorships) network of scientists posting preprints on the astrophysics archive (Newman, 2001);
- CPManuf: intra-organizational networks from a consulting company (Cross & Parker, 2004);
- Email: e-mail interchanges between members of the University Rovira i Virgili, Spain (Guimerà et al., 2003);
- Facebook: Facebook's friendship network of author at December 2012 (unpublished);
- HT2009: Hypertext 2009 conference dynamic contact network (Isella et al., 2011);
- Jazz: network of jazz musicians (Gleiser & Danon, 2003);
- OClinks: online community for students at University of California, Irvine (Opsahl & Panzarasa, 2009);
- School: face-to-face contacts in a primary school (Stehlé et al., 2011).

These were chosen because of their manageable size (largest is of about 5000 nodes) and for the public availability of the full data. All networks were used in their symmetric unweighted version. Obviously, judging the level of creativity is an unresolved task, and no *metric* exists that can render the idea, but we might reasonably assume that the networks chosen can be classified as composed of *creative* individuals and therefore can be a useful touchstone.

Both groups of networks share similar topological structures. Figure 1 shows an average cumulative degree distribution from which the scale-free behavior is evident. Exponents for the power-law distribution $N(k) \sim k^{-\gamma}$ calculated according to Clauset et al. (2009) are: $\gamma_{Tourism} = 1.427 \pm 0.087$ and $\gamma_{Others} = 2.232 \pm 0.144$.

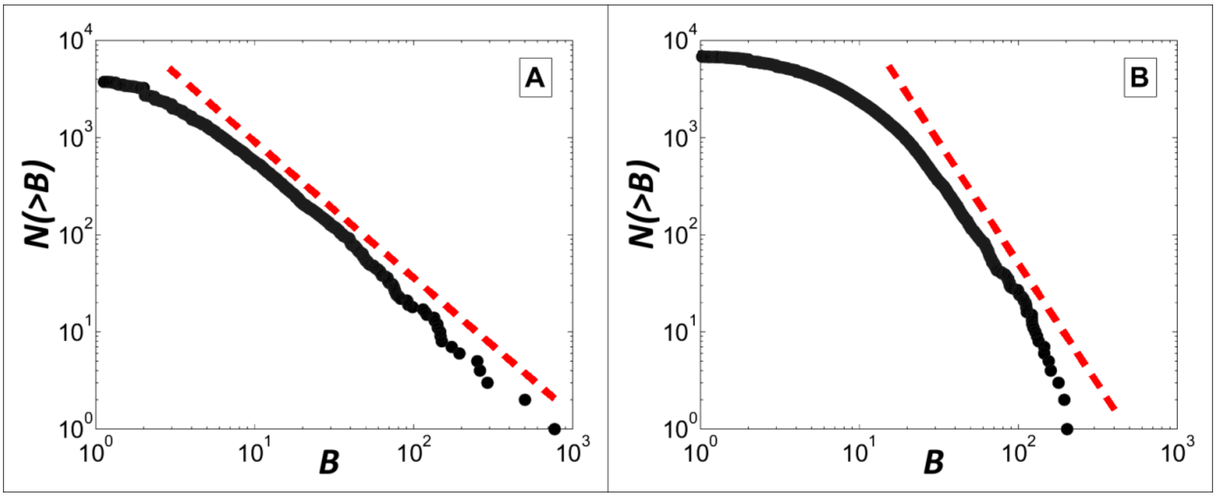

Figure 1 Average cumulative degree distributions for Tourism (A) and Others (B). Dotted lines indicate power-law relationships

The calculations for the Simmelian brokerage are relatively simple and result in what shown in Figure 2. For better comparison all values have been min-max normalized.

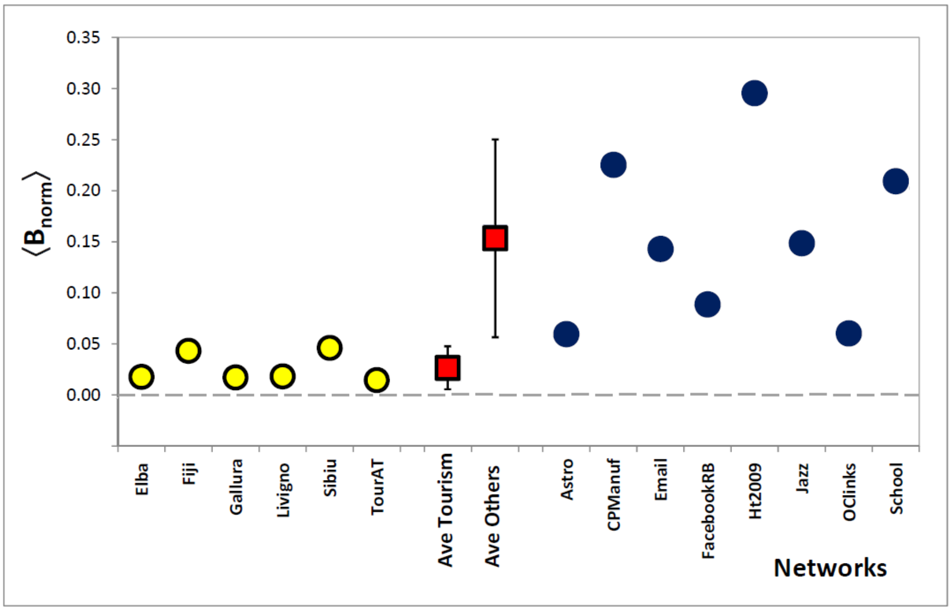

Figure 2 Mean normalized Simmelian brokerage ($\langle B_{norm} \rangle$) for the networks examined. The central values (squares) are the average values for the two groups (bars are 95% confidence intervals)

The difference between the mean Simmelian brokerage for the two groups is evident. The mean values are: $B_{Tourism} = 0.019 \pm 0.014$, and $B_{Others} = 0.147 \pm 0.085$. The same can be said for the medians: the grand median (median of the medians) values are: $M_{Tourism} = 0.00487$, $M_{Others} = 0.06989$.

As stated above, we may conclude that tourism destinations (at least those examined here) show a low level of *creativity*, compared to other systems. These result is in line with the considerations made in the literature cited above on the destinations considered here. On the average, the literature stresses the relative stagnating level (in the sense of Butler (1980) lifecycle model) of the development of these destinations and suggest a higher degree of creative innovation for their future lives.

CONCLUDING REMARKS

Creativity and innovation are deemed today to be fundamental factors for the economic growth. In tourism, also given the recent incredible development and diffusion of technological tools, intense and globalized competition put firms, groups and destinations under a very heavy pressure, and call for increasingly high levels of novelty in their offers and in the ways their products and services are brought to the market.

Apart from the due considerations on individual characteristics, the recent literature has stressed the idea that the structure of relationships in a socio-economic system have a great influence in favoring creative innovations. In the debate, a line seems emerging that recognizes in networks which are highly clustered but with a good set of weak bridging ties between different groups. Following the most recent results, we use here a metric, termed Simmelian brokerage, as a measure for this type of structure. We analyze a number of tourism destination networks and compare them to a number of system that can be considered to be creative and innovative environments. The results of the analysis show a clear difference and a lower level of average brokerage for the tourism destinations. It is possible to conclude that, at least from this point of view, the destinations studied have a structure that does not favor particularly the emergence of new ideas. Fact that is in line with other studies, calling for more creative innovation in the field (Akçomak & Ter Weel, 2009; Hjalager, 2010; Richards, 2011; Romeiro & Costa, 2010).

The small number of networks examined obviously prevents us from expressing a general (and generalized) statement. But our main objective here was to provide a relatively easy method to assess the structural characteristics of a tourism destination system for what concerns the possibilities to facilitate the formation of creative and innovative ideas. The results presented seems confirming this idea and we can conclude that the method used is a reasonable and practicable one for a diagnostic valuation.

Destination managers and stakeholders can use this type of measure to better understand their position. Then, adding their knowledge of the real conditions, they can derive the most suitable strategies and actions to improve the situation (globally or individually) by reconfiguring the network of linkages and providing more effective connections, even in the simple form of information exchange. The only possible difficulty is in the initial collection of the data needed to obtain the full network. Today, however, a good literature exists on these methods, for example by using the webspace (see Baggio & Del Chiappa, 2013; Baggio et al., 2010, for details and discussion). The same literature has provided the demonstration of the effectiveness of this approach and the usefulness of network analytic methods for the governance of destinations and tourism stakeholders so that a not excessive initial effort in building the network may be considered well worth the while.

Once assessed the situation, destination and stakeholders managers will have a guideline for increasing their potential in facing the challenges that tourism markets today pose by improving their capability to find new and innovative solutions looking for a new configuration of their networks. This is an important determinant for their economic well-being as much works have shown. Here we only remind, as an example, the case described by Ingram and Roberts (2000). They discuss the advantages created by informal 'friendship' linkages in a group of otherwise highly competitive hotel managers. In their work, beyond the usual considerations, the authors even provide an estimate of the monetary value for this setting, calculating an annual total benefit of about 15% of total revenue, which is, to all extent, a quite convincing argument for the effectiveness of the increased innovation capability.

REFERENCES

Adler, P. S., & Kwon, S. W. (2002). Social capital: prospects for a new concept. *Academy of Management Review, 27*(1), 17-40.

Akçomak, I. S., & Ter Weel, B. (2009). Social capital, innovation and growth: Evidence from Europe. *European Economic Review, 53*(5), 544-567.

Amabile, T. M. (1988). A model of creativity and innovation in organizations. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (pp. 123-167). Greenwich, CT: JAI Press.

Baggio, R., & Del Chiappa, G. (2013). Real and virtual relationships in tourism digital ecosystems. *Information Technology and Tourism,* (doi: 10.1007/s40558-013-0001-5).

Baggio, R., Scott, N., & Cooper, C. (2010). Network science - a review focused on tourism. *Annals of Tourism Research, 37*(3), 802–827.

Baggio, R., Scott, N., & Wang, Z. (2007). What network analysis of the WWW can tell us about the organisation of tourism destinations. *Proceedings of the CAUTHE 2007, Sydney, Australia, 11-14 February*.

Batey, M., & Furnham, A. (2006). Creativity, intelligence, and personality: A critical review of the scattered literature. *Genetic, Social, and General Psychology Monographs, 132*, 355–429.

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). New York: Greenwood.

Brass, D. J. (1995). Creativity: It's all in your social network. In C. M. Ford & D. A. Gioia (Eds.), *Creative action in organizations* (pp. 94-99). Thousand Oaks, CA: Sage.

Brenner, T., Cantner, U., & Graf, H. (2013). Introduction: Structure and Dynamics of Innovation Networks. *Regional Studies, 47*(5), 647-650.

Burt, R. S. (1992). *Structural holes: The social structure of competition*. Cambridge MA: Harvard University Press.

Burt, R. S. (2001). Structural Holes versus Network Closure as Social Capital. In N. Lin, K. Cook & R. S. Burt (Eds.), *Social Capital: Theory and Research* (pp. 31-56). Hawthorn, NY: Aldine de Gruyter.

Burt, R. S. (2004). Structural holes and good ideas. *American Journal of Sociology, 110*(2), 349-399.

Butler, R. W. (1980). The Concept of a Tourist Area Cycle of Evolution: Implications for Management of Resources. *The Canadian Geographer, 24* (1), 5-12.

Cantner, U., & Graf, H. (2011). Innovation networks: formation, performance and dynamics. In C. Antonelli (Ed.), *Handbook on the economic complexity of technological change* (pp. 366-394). Celtenham, UK: Edward Elgar Publishing.

Clauset, A., Shalizi, C. R., & Newman, M. E. J. (2009). Power-law distributions in empirical data. *SIAM Review, 51*(4), 661-703.

Coleman, J. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*(Supplement), S95-S120.

Cross, R., & Parker, A. (2004). *The Hidden Power of Social Networks*. Boston, MA: Harvard Business School Press.

da Fontoura Costa, L., Rodrigues, A., Travieso, G., & Villas Boas, P. R. (2007). Characterization of complex networks: A survey of measurements. *Advances in Physics, 56*(1), 167-242.

Del Chiappa, G., & Presenza, A. (2013). The use of Network Analysis to Assess Relationships Among Stakeholders Within a Tourism Destination: An Empirical Investigation on Costa Smeralda-Gallura, Italy. *Tourism Analysis, 18*(1), 1-13.

Devanna, M., & Tichy, N. M. (1990). Creating the Competitive Organization of the 21st Century: The Boundaryless Corporation. *Human Resource Management, 29*(4), 455-471.

Eagle, N., Macy, M., & Claxton, R. (2010). Network diversity and economic development. *Science, 328*(5981), 1029-1031.

Flaherty, A. W. (2005). Frontotemporal and dopaminergic control of idea generation and creative drive. *The Journal of Comparative Neurology, 493*, 147–153.

Fleming, L., & Marx, M. (2006). Managing Creativity in Small Worlds. *California Management Review, 48*(4), 6-27.

Fleming, L., Mingo, S., & Chen, D. (2007). Collaborative Brokerage, Generative Creativity, and Creative Success. *Administrative Science Quarterly, 52*, 443-475.

Freeman, L. C. (2004). *The Development of Social Network Analysis: A Study in the Sociology of Science*. Vancouver Empirical Press.

Galton, F. (1869). *Hereditary Genius: An Inquiry Into Its Laws and Consequences*. London: Macmillan/Fontana.

Gleiser, P. M., & Danon, L. (2003). Community structure in jazz. *Advances in complex systems, 6*(4), 565-573.

Grama, C. N. (2013). *Netzwerkanalyse der Destination Kreis Hermannstadt.* Unpublished MA Thesis, FH Wien - Institut für Tourismus-Management der WKW, Wien.

Granovetter, M. (1973). The strength of weak ties. *The American Journal of Sociology, 78*(6), 1360-1380.

Guimerà, R., Danon, L., Díaz-Guilera, A., Giralt, F., & Arenas, A. (2003). Self-similar community structure in a network of human interactions. *Physical Review E, 68*, 065103(R).

Hansen, M. T. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly, 44*, 82-111.

Hjalager, A. M. (2010). A review of innovation research in tourism. *Tourism management, 31*(1), 1-12.

Huggins, R., Johnston, A., & Thompson, P. (2012). Network Capital, Social Capital and Knowledge Flow: How the Nature of Inter-organizational Networks Impacts on Innovation. *Industry and Innovation, 19*(3), 203-232.

Ingram, P., & Roberts, P. W. (2000). Friendships among competitors in the Sydney hotel industry. *American Journal of Sociology, 106*(2), 387–423.

Isella, L., Stehlé, J., Barrat, A., Cattuto, C., Pinton, J. F., & Van den Broeck, W. (2011). What's in a crowd? Analysis of face-to-face behavioral networks. *Journal of theoretical biology, 271*(1), 166-180.

John-Steiner, V. (2000). *Creative Collaboration*. New York: Oxford University Press.
Jung, R. E., Segall, J. M., Jeremy Bockholt, H., Flores, R. A., Smith, S. M., Chavez, R. S., & Haier, R. J. (2010). Neuroanatomy of Creativity. *Human Brain Mapping, 31*(3), 398-409.
Landry, R., Amara, N., & Lamari, M. (2002). Does social capital determine innovation? To what extent? *Technological forecasting and social change, 69*(7), 681-701.
Latora, V., Nicosia, V., & Panzarasa, P. (2013). Social cohesion, structural holes, and a tale of two measures. *Journal of Statistical Physics, 151*(3-4), 745-764.
Lin, N. (1999). Building a network theory of social capital. *Connections, 22*(1), 28-51.
Mulas, C. (2010). *Destination Management e Network Analysis: il caso Livigno.* Unpublished MSc Thesis, Libera Università di Lingue e Comunicazione IULM, Milan.
Newman, M. E. J. (2001). The structure of scientific collaboration networks. *Proceedings of the National Academy of Sciences of the United States of America, 98*, 404-409.
Newman, M. E. J. (2010). *Networks - An introduction*. Oxford: Oxford University Press.
Ohly, S., Kase, R., & Škerlavaj, M. (2010). Networks for generating and for validating ideas: The social side of creativity. *Innovation: Management, Policy & Practice, 12*(1), 41-52.
Opsahl, T., & Panzarasa, P. (2009). Clustering in weighted networks. *Social Networks, 31*(2), 155-163.
Paulus, P. B., & Nijstad, B. A. (Eds.). (2003). *Group Creativity: Innovation Through Collaboration*. New York: Oxford University Press.
Perry-Smith, J. E., & Shalley, C. E. (2003). The Social Side of Creativity: A Static and Dynamic Social Network Perspective. *The Academy of Management Review, 28*(1), 89-106.
Piazzi, R., Baggio, R., Neidhardt, J., & Werthner, H. (2012). Destinations and the Web: a network analysis view. *Information Technology and Tourism, 13*(3), 215-228.
Podolny, J. M., & Baron, J. N. (1997). Resources and relationships: Social networks and mobility in the workplace. *American Sociological Review, 62*, 673-693.
Reagans, R., & McEvily, B. (2003). Network structure and knowledge transfer: The effects of cohesion and range. *Administrative Science Quarterly, 48*(2), 240-267.
Richards, G. (2011). Creativity and Tourism: the State of the Art. *Annals of Tourism Research, 38*(4), 1225–1253.
Romeiro, P., & Costa, C. (2010). The potential of management networks in the innovation and competitiveness of rural tourism: a case study on the "Valle del Jerte" (Spain). *Current Issues in Tourism, 13*(1), 75 - 91.
Sainaghi, R., & Baggio, R. (2014). Structural social capital and hotel performance: is there a link? *International Journal of Hospitality Management, 37,* 99-110.
Scott, N., Baggio, R., & Cooper, C. (2011). Network analysis methods for modeling tourism inter-organizational systems. In C. Megehee, A. Ogle & A. G. Woodside (Eds.), *Advances in Culture, Tourism, & Hospitality Research* (Vol. 5, pp. 177-222). Bingley, UK: Emerald - JAI Press.
Stehlé, J., Voirin, N., Barrat, A., Cattuto, C., Isella, L., Pinton, J. F., Quaggiotto, M., Van den Broeck, W., Régis, C., Lina, B., & Vanhems, P. (2011). High-resolution measurements of face-to-face contact patterns in a primary school. *PloS one, 6*(8), art.e23176.
Sternberg, R. J., & Lubart, T. I. (1999). The concept of creativity: Prospects and paradigms. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 137-152). Cambridge: Cambridge University Press.
Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal, 48*(3), 450-463.
Ter Wal, A. L., & Boschma, R. A. (2009). Applying social network analysis in economic geography: framing some key analytic issues. *The Annals of Regional Science, 43*(3), 739-756.
Uzzi, B. (1996). The sources and consequences of embeddedness for the economic performance of organizations: The network effect. *American Sociological Review, 61*(4), 674–698.
Uzzi, B., & Spiro, J. (2005). Collaboration and Creativity: The Small World Problem. *American Journal of Sociology, 111*(2), 447-504.
Van Gundy, A. (1987). Organizational creativity and innovation. In S. G. Isaksen (Ed.), *Frontiers of creativity research* (pp. 358-379). Buffalo, NY: Bearly.
Wallas, G. (1926). *The Art of Thought*. New York: Harcourt Brace.
Watts, D. J. (2004). The "New" Science of Networks. *Annual Review of Sociology, 30*, 243-270.
Woodman, R. W., Sawyer, J. E., & Griffin, R. W. (1993). Toward a Theory of Organizational Creativity. *Academy of Management Review, 18*(2), 293-321.

Wu, W. Y., Chang, M. L., & Chen, C. W. (2008). Promoting innovation through the accumulation of intellectual capital, social capital, and entrepreneurial orientation. *R&D Management, 38*(3), 265-277.

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