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NETWORK ANALYSIS TO EVALUATE PROJECTS IN CULTURE AND DEVELOPMENT

Saccone Donatella, Santagata Walter e Bertacchini Enrico

Dipartimento di Economia “S. Cognetti de Martiis”

International Centre for Research on the Economics of Culture, Institutions, and Creativity (EBLA)

Centro Studi Silvia Santagata (CSS)

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1. Introduction

Social network analysis is a technique increasingly used in a number of research fields and especially in social sciences. This methodology studies the society as a network of relationships between actors, starting from the assumption that individuals realize themselves in relation to the others and relationships give structure to individual and collective behavior. It allows a deeper understanding of social and economic interconnections, their structure and their development.

Cultural economics is looking for new methods of investigation going beyond the traditional techniques such as financial and econometrics analysis and enabling the mapping and measurement of cultural networks. The existing evaluation methods, indeed, assess the impact of a cultural project in a given period of time, usually coinciding with the duration of the project, but are not able to quantify the sustainability of cultural projects over time. In other words, they do not estimate if economic and social benefits created by a project can survive after its end. The sustainability of a cultural project, in fact, is closely related to the creation of new networks and social dynamics. Without the creation, durability and dissemination of cultural networks it is unlikely to guarantee the sustainability of cultural projects.

Cultural networks provide the substrate in which ideas are conceived, implemented and sustained over time. Cultural sectors can be viewed as a network of actors who support the creative atmosphere and whose actions are closely interrelated and interdependent. The creative atmosphere in local clusters of cultural production is a crucial factor for the vitality and competitiveness of places. When a creative atmosphere exists, creativity and innovation permeate the cultural production. Clusters of innovative business and talented workers in the most creative phases of the production chain, jointly with ties to other relevant hot spots around the globe, may underpin complex and thick webs of interactions that nurture creative outcomes and generate competitive advantage for the regional production of culture.

Culture and cultural sectors are more and more the bulk of projects promoted by international organizations as a strategy of local development and poverty reduction since the 90's (Pagiola 1996; Cernea 2001; OECD 2005). The development of cultural and economic activities is indeed seen as an
important pro-poor tool. In this context, network analysis can be an effective methodology to verify at which extent development projects create local networks and understand which are the key actors in their implementation. Moreover, network analysis can help to evaluate the sustainability of projects by assessing what could happen once the project will be concluded and the temporary actors of its management will drop out.

At the same time, differentiating in the type of network relations may provide a more comprehensive picture of the local systems as activator of local development. Economic, information and social networks may overlap or differ within subjects in the local area. For this reason, different strategies and policies should be devised to enhance the optimal network structure and evolution according to the actors’ needs. In some cases, cultural policies may address investments in hard infrastructures, such as IT and R&D centers, which eventually could become hubs of the economic network of cultural producers providing intermediate products and services which support cultural and creative output of the local system. In other cases, cultural policies may develop institutional infrastructures that strengthen network linkages and consequently facilitate flows of information and promote trust and collaboration among interlinked producers (Mizzau and Montanari, 2008).

Finally, network analysis is arguably better suited to capture the complexity of local development. Economic variables describing local development, such as increased employment or revenues, may be easily incorporated as variables of the nodes. At the same time, the creation of new companies and spin-offs may be captured through an expansion of the network. Crucially, identifying new connections developed between nodes or evaluating their increased strength may capture other more subtle and intangible dimensions of local development.

In the light of the above considerations, the aim of the paper is to deeply explore how and why network analysis could become a valuable and complementary tool to evaluate cultural projects. Paragraph 2 presents a brief review of the main project evaluation approaches adopted by national and international organizations financing cultural projects and discuss their limits. In paragraph 3 we illustrate the methodology: we show at first how a cultural project can be represented as a network and, then, what network analysis can tell about the projects and their sustainability over time. Paragraph 4 reports the results of an empirical application to a cultural project implemented in Bosnia and Herzegovina under the support of the MDG Achievement Fund. Paragraph 5 concludes.

2. Brief Overview of Project Evaluation Approaches

Traditional analysis put forward in the literature concerning monitoring and evaluation of project effectiveness generally distinguishes between evaluation of outcomes and evaluation of outputs. The former is defined in terms of the impact on the economy and society. The latter simply checks the correspondence between what has been planned and forecasted ex-ante and the effective achievement of the proposed objective.

A second distinction is methodological and refers to different approaches and tools developed to monitor and evaluate projects. Among the several approaches developed for project evaluation and monitoring, the most relevant and at stake for our study are: i) Performance indicators, ii) Cost-Benefit and Cost-Effectiveness Analysis, iii) Impact Evaluation. These tools should not be seen as merely substitute, but more generally as complementary methodologies to evaluate outcomes and outputs, depending on many characteristics of the project.
Performance indicators are measures of inputs, processes, outputs, outcomes, and impacts. When supported with sound data collection and analysis (i.e. involving formal surveys), indicators enable analysts to track progress, demonstrate results, and take corrective action to improve the projects outputs and outcomes. The main advantage of such an approach is to provide comparable and quantitative measures of the project relevant variables, so to facilitate benchmarking comparisons between different organizational units, districts, and over time. However, in many contexts, and especially with regard to projects in culture and development, performance indicators risk to be poorly defined or ill-suited because of the lack of data availability. For this reason, participation of key stakeholders in defining indicators is important because they are then more likely to understand and use indicators for management decision-making.

Cost-benefit and cost-effectiveness analysis are tools for assessing whether or not the costs of an activity can be justified by the outcomes and impacts. Cost-benefit analysis measures both inputs and outputs in monetary terms. Cost-effectiveness analysis estimates inputs in monetary terms and outcomes in non-monetary quantitative terms. These methodologies particularly suited for taking decisions about the most efficient allocation of resources or for identifying projects that offer the highest rate of return on investment. At the same time, it is also recognized that requisite data for cost-benefit calculations may often not be available, and projected results may be highly dependent on assumptions made. This is particularly evident in the context of cultural projects, where the results are often made up by intangible and less material outcomes and benefits to local communities. In these cases, Cost-effectiveness analysis can be a second-best option.

Impact evaluation is the systematic identification of the effects – positive or negative, intended or not – on individual households, institutions, and the environment caused by a given development activity such as a program or project. Impact evaluation helps us better understand the extent to which activities reach a community and the magnitude of their effects on people’s welfare. Impact evaluations can range from large scale sample surveys in which project populations and control groups are compared before and after, and possibly at several points during program intervention; to small-scale rapid assessment and participatory appraisals where estimates of impact are obtained from combining group interviews, key informants, case studies and available secondary data. One of the main advantages of impact evaluation is that such an approach is able to provide estimates of the magnitude of outcomes and impacts for different demographic groups, regions or over time. However, impact evaluation may be less effective if difficulties emerge in identifying appropriate counter-factual evidence. For instance, evaluation design involving the collection of information on project and control groups at two or more points in time, provides the most rigorous statistical analysis of project impacts and the contribution of other factors. But in practice it is rarely possible to use these designs for reasons of cost, time, methodological or ethical constraints. Thus most impact evaluations use less expensive and less rigorous evaluation designs, which can be ultimately a problem.

All the presented approaches, although well refined, present some shortcomings in properly evaluating the effects of culture and development projects. First, they tend to rely on the quantitative dimension of the project outcomes, so neglecting more complex social and intangible dimensions of cultural enhancement and local development, such as the level of creative and cultural atmosphere developed by actors’ interaction and cooperation. Second, the use of economic multipliers takes into account the final effects but does not provide a sound methodology to capture the dynamics which lead to these effects, such as how the spillovers spread through the links between actors of the local system or how new businesses or projects are created as spin-off. Finally, and most importantly, these approaches only partly address with a proper methodology the sustainability of the project outcomes, which in many cases comes from the stability of stakeholder relations and interactions in the long term.
3. A new approach for project evaluation: Social Network Analysis

How? - What is network analysis and how it can be applied to cultural projects.

A network is defined as set of \( n \) nodes, taken along with the relationships between them. In a cultural project, nodes are represented by all the actors involved in the project (stakeholders). A node can be a distinct person, but can also represent firms, groups, institutions and organizations. Moreover, also immaterial actors, as for example single events or outputs, can be seen as nodes.

Examples of categories of nodes can be found below:

- UN AGENCIES
- OTHER INTERNATIONAL INSTITUTIONS
- NGOs
- COMMERCIAL AND INDUSTRIAL FIRMS
- CULTURAL AND CREATIVE FIRMS
- ARTISANS
- PUBLIC LOCAL INSTITUTIONS
- PUBLIC NATIONAL INSTITUTIONS
- PRIVATE INSTITUTIONS (FOUNDATIONS)
- INDIGENOUS GROUPS AND COMMUNITIES
- MUSEUMS
- EVENTS, FESTIVALS

Relationships between nodes are conceptualized in terms of binary variables so that the relationship either exists or does not exist. Every time two actors interact, a direct link between them is created. Indirect links are created when two actors interact with a same third actor but not between them. Indirect links are of course weaker than direct links. For example, two actors participating to the same event have an indirect link (they have the possibility to interact during the event, but it is not sure).

If data allow us, it is also important to measure the intensity of the relationships, counting for the number of times an actor has a relationship with another actor. The higher is the intensity of the relationship, the higher is the possibility that the actors (nodes) will interact again in the future. As we will see, this point is fundamental to guarantee project sustainability. Moreover, measuring the number of total relationships an actor has and their intensity tells us which actors have been at the center of the network (see next section for details). Actors with a high degree of centrality are called hubs.

Table 1: A simplified example.

<table>
<thead>
<tr>
<th>Symmetric matrix of data:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Number of relationships by actors

<table>
<thead>
<tr>
<th></th>
<th>SUM OF RELATIONSHIPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGO A</td>
<td>2</td>
</tr>
<tr>
<td>NGO B</td>
<td>9</td>
</tr>
<tr>
<td>FIRM A</td>
<td>3</td>
</tr>
<tr>
<td>AUTHORITY A</td>
<td>8</td>
</tr>
</tbody>
</table>

This table tells us that, for example, NGO A has collaborated with NGO B and FIRM A once, while there has been no contact between it and AUTHORITY A. The most intense relationship has been between NGO B and AUTHORITY A (seven times). The following table counts the number of total relationships by actor. We can see that NGO B has been a hub, i.e. a central actor of the project.

The simplest way to have an idea of a network, it is to represent it graphically. The greater the graphical size of an actor, the higher the number of its relationships. The “greatest” actor or actors are the hubs.

Figure 1: A simplified example.

Why? - What network analysis could tell about the projects and their sustainability over time.
We can see a project as a network in which stakeholders are the nodes. To this regard, network analysis can typify the structural and relational dimension of a project. Indeed, there are at least four categories of questions to which network analysis is able to answer:

1) **Which have been the key-actors and the key-beneficiaries of the project? Are the key-beneficiaries coherent to the original aim of the project?**

By studying how and how much actors (stakeholders) have interacted with the project, we can individuate which have been the key-actors involved during the project. This can be done for both the design, inception and implementation phase and the evaluation of the project effectiveness:

- **DESIGN, INCEPTION AND IMPLEMENTATION:** we can understand for example if the project has involved all the local stakeholders or if some important stakeholders have been marginalized. Moreover, by individuating the key-actors (hubs) during the design, inception and implementation phases, we can understand which actors should be incentivized to guarantee the project sustainability for the future. If they will be properly incentivized to maintain their activities, the future existence of the network will be guaranteed.

![Figure 2: An example of network during the design, inception and implementation phase.](image)

What emerges from the figure is that private sector has been completely marginalized from the project during the design, inception and implementation phase. On the contrary, the representatives of civil society have been key-actors, revealing that strategies and new programmes to guarantee the sustainability over time should be built on them.

- **EVALUATION OF PROJECT EFFECTIVENESS:** by comparing the original aims and targets to the real beneficiaries of the project, we can evaluate the project effectiveness. This is a useful way to verify if targeted-MDGs have been met.

![Figure 3: An example of network of beneficiaries.](image)
In the example above, secondary school students, university students and ethnic minorities have been marginalized in terms of benefits. If they were included among the main targets of the project, it means that the project has partially failed to meet the target.

2) Which actors have realized permanent networks and/or permanent outputs, and how have they been related among them?

The creation of permanent output and permanent networks is fundamental to guarantee that the benefits created by the project will continue when the project will be concluded.

*Example of a permanent network created by a cultural project in Bosnia and Herzegovina:*


*Example of a permanent output created by a cultural project in Bosnia and Herzegovina:*

- Actor creating the output: ONG “Association Of Artists Deblokada”. Output: Stolac Summer Academy established in 2011 and operational as a permanent centre.

To verify the effective sustainability of a project, it could be precious to have the possibility of observing the network some time after the end of the project, in order to understand what remains of these output and network, and if they have been able to create new contacts and new actors. For example, how many tourists have visited or continued to visit the touristic route? Has it been integrated with new cities? How many people joined the Summer Academy? Has it created partnerships and activities with other Academies?

3) Which network potentiality once the project will be over?

Once two actors have interacted, there is the potentiality that they will do the same in the future. For this reason it is important not only to know whether two actors interacted, but also to measure the number of times they did (intensity of the relationship). As noticed before, the higher is the intensity of the relationship, the higher is the potentiality that the actors will interact again in the future. A desired
outcome of a project and, especially, of a cultural project should be to improve local relationships and create the ground for future collaborations. To this purpose, it is important that stakeholders do not dialogue just with the project management, but also among them. By removing temporary actors from the network, we can understand which local network potentiality will remain once the project will be concluded. By periodically monitoring the network creation and its future potentiality during the implementation phase, we can understand how to correct and improve them, as well as if target-groups are being involved in a network that have the potentiality to continue in the future.

Figure 4: An example of network with low potentiality.

During the project (temporary and permanent actors):

![Network with low potentiality during the project](image1)

After the project (the project, which is a temporary actor, has been removed):

![Network with low potentiality after the project](image2)

Figure 5: An example of network with high potentiality.

During the project (temporary and permanent actors):

![Network with high potentiality during the project](image3)

After the project (the project, which is a temporary actor, has been removed):

![Network with high potentiality after the project](image4)
After the project (the project, which is a temporary actor, has been removed):

4) Which actions and policies should be taken to improve the sustainability?

The network analysis could be useful both for mid-term evaluation and final evaluation. In the mid-term, we can understand if the project is creating networks and if they are potentially sustainable. In the light of this, the project management should be able to design intervention guidelines correcting the drawbacks. In the final evaluation, moreover, the network analysis could be an useful tool to individuate best practices and drawbacks in terms of sustainability.

Moreover, the network analysis makes possible quantitative comparisons among the projects. Indeed, it produces not only a mapping of networks, but also a series of indicators measuring the main characteristics of the network and the degree of centrality of every single actor.

4. A case-study

The methodology is here applied to one of the 18 UN Joint Programmes (JP) financed by the MDG Achievement Fund in the area "Culture and Development" and aiming to contribute to the achievement of the Millennium Development Goals.
The JP was implemented in Bosnia and Herzegovina, started on May 2008 and was concluded on May 2011. The title of the programme was “Improving Cultural Understanding In Bosnia And Herzegovina”. The programme covered the cultural sectors of performance and celebration, arts and crafts, books and press, media, design, and tourism, and presented a large amount of objectives, that can be synthesized as follows:

- strengthening of institutional capacity and achievements, in terms of availability of tools and information, policies and legal framework
- promotion of the inter-cultural dialogue
- promotion of culture-based economic activities
- preservation and promotion of the national heritage
- improvement of population’s participation to the cultural life

A programme is defined as a sum of projects aiming to the achievement of common goals and it is composed by a series of actors and phases. First of all, there is the JP management, that selects a number of partners usually represented by local NGOs, civil associations, and national and local authorities. In turn, the JP partners select their own sub-partners and with them design and implement the single projects that compose the programme. Finally, each project creates a series of outputs benefitting the JP recipients. This structure is illustrated in figure 6.

Figure 6: The usual structure of a project/programme (sum of a series of projects).

On the whole, the JP in Bosnia and Herzegovina presented the following structure:

- 19 JP partners (19 nodes)
- 53 sub-partners (53 nodes)
- 19 projects (19 nodes)
- around 40000 beneficiaries (19 nodes)

For the sake of simplicity, rather than to consider each single beneficiary as a node, we consider the grouped beneficiaries of a single project as a node (ex. beneficiaries project1, beneficiaries project2,....., beneficiaries project19), and their number as the number of relationships among them and that project.

The representation of the JP network is reported in figure 7, where the size of each node is proportional to its centrality degree.

Figure 7: The network of the JP in Bosnia and Herzegovina.

Since we still not have data on the network one year later the end of the JP, we simulate two different scenarios: one virtuous (positive) and one not virtuous (negative).

**Negative scenario**

For this scenario, we hypothesize that:

1) only the collaboration between two JP partners and their sub-partners continue: VIZART with its 6 sub-partners (Narodno pozorište Republike Srpske, Banja Luka; Kulturni centar Biha, Biha; Pozorište Prijedor, Prijedor; NGO Millenium, Srbac; Bosansko pozorište Tešanji, Tešanj; Scena Talija, Bijeljina) and EVPROPSKE with 10 out of its 19 sub-partners (Ju Gradiska Galerija Biha – Biha; Demokratski Centar Nove Nade Biha – Biha; Ju Muzej i Zasjedanja Avnoja – Jajce; Omladinski Centar – Jajce – Jajce; Ju Pozorište Prijedor – Prijedor,
Ju Muzej Kozare – Prijedor; Ug Društvo Urbanih Umjetnika Manifest – Prijedor; Ju Kulturni Centar Gradiška – Gradiška; Ju Centar Za Kulturu I Sport Srbac – Srbac; Omladinski Centar Bijeljina – Bijeljina). These correspond to the projects that will continue. We assume that the number of beneficiaries remains constant in the first case (all the collaborations remain) but halves in the second case (half number of collaborations).

2) We know from the original data that only 7 out of 19 projects have created permanent output. Then these projects remain on the network (even if it only refers to its permanent output), but the number of their beneficiaries will decrease since all the beneficiaries related to nonpermanent outputs will disappear. Collaborations are all deleted.

**Positive scenario**

For this scenario, we hypothesize that:

1) all the projects are refinanced by national or local institutions or by the partner associations themselves (now aware of the importance of culture for development) and, then, they continue after the JP end; as a consequence, the number of their beneficiaries remains constant (the same as the previous year).

2) for projects that have created permanent outputs: not only the number of beneficiaries remains constant, but we add the number of new beneficiaries related to the permanent outputs (the effectiveness of a permanent output makes the project not only able to replicate the number of beneficiaries, but also to create new beneficiaries).

3) 5 JP partners (Fenix, Proni, Dobri Medo, Biosplus, Viva) enrich their collaborations by joining to new additional partners.

4) new collaborations arise among partners and across projects, so that 4 new projects are created and new beneficiaries take advantage from their activities (100, 74, 200, 87 respectively).

The resulting networks are represented in figure 8 and 9 respectively, where the size of each node is proportional to its centrality degree.

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Figure 8: The JP network under the negative scenario.
Figure 9: The JP network under the positive scenario.
Now we have the possibility to compare, graphically and quantitatively, both the scenarios to the network of the JP one year before to typify how it has evolved. A graphically comparison is illustrated in figure 10.

Figure 10: A comparison between the network at the end of the JP and the network one year later.

5. Conclusions
Applying network analysis to cultural projects is an innovative approach to map and verify their potential or real sustainability in the creation of networks as a base on which to build a creative atmosphere. It is important to take into account that it is not a substitute but a complementary tool for project evaluation. Its added-value is to determine the potential for sustainability of cultural projects as well as to typify the structural and relational dimension of a project. The rationale relies on the fact that a project should be able to create new networks capable to sustain the benefits after its end, improve local relationships and create the ground for future collaborations. Results emerging from network analysis can be used to design, monitor, reprogram on the way as well as capture and showcase foreseen and unforeseen achievements of cultural projects.

Bibliography

