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## Identifying sustainability communicators in urban regeneration: Integrating individual and relational attributes

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### ABSTRACT

The paper advances a conceptualization of sustainability in urban regeneration as communicative practice taking place within networks of social actors. To demonstrate the potential of this perspective, we propose an interdisciplinary methodology integrating social network analysis from sociology and multi-criteria decision analysis (fuzzy logic) from operations research to calculate a sustainability communicator score for each actor involved in a regeneration network. The score is based on three dimensions: a sustainability vision (relying on the three pillar model of sustainability), a formal network influence dimension (based on organizational practice and decision-making position) and an informal network influence dimension (drawing on degree, betweenness, eigenvector and closeness centrality measures from social network analysis). The framework allows the identification and ranking of sustainability communicators, based on the preferences of specific users, while also allowing for variable degrees of vagueness. We illustrate the methodology by means of a case study of a social network of actors ( $N = 28$ ) involved in the sustainable regeneration of a brownfield site in Porto Marghera, Venice, Italy. The methodology is expandable beyond the actor level to allow for the ranking of more complex network configurations for promoting sustainability.

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### 1. Introduction

It is widely recognized today that the discourse on sustainability, whether global or local, is in some uneasy relationship with the practices of managing natural and human resources (Becker et al., 1999). Researchers concerned with the sustainability of urban regeneration have similarly noticed a persistent gap between the rhetoric of sustainable development and its real-life application (Dixon, 2006; Dixon et al., 2013). On the one hand, sustainability exists at the level of policy formulation, in which the rationales and aims of sustainable regeneration are stated in conceptual and policy terms (Nathanail, 2011). On the other hand, the actual regeneration practices and the sustainability outcomes of regeneration processes are under the influence of various contextual “structuring forces” such as economic imperatives, legislation and various government policies (Doak and Karadimitriou, 2007a).

Scholars have pointed out that the power of sustainability “lies in the discourses surrounding it, rather than in any shared substantive [...] value it may have” (e.g. Redclift, 2007, p. 71). Other scholars have advanced a metatheoretical understanding of sustainability, in which communication and dialogue are seen as actual conditions of implementing social sustainability (Åhman, 2013).

In this article, we built on Åhman's insight and posit that between the rhetoric of sustainability and the reality of translating sustainability into practice there is a relational social space that connects discourse and practice but displays its own logic (Bodin et al., 2011). This space is inhabited by actor networks that are complex configurations of individuals and organizations that transform “ideas into concrete reality” (Cannone, 2009, p. 239) and “generate meaning which is then embodied into matter” (Doak and Karadimitriou, 2007a, p. 210). Actors do not act in a random fashion, however, but on the basis of practices of communication (Redclift, 2007, p. 73) by which actors seek to accomplish their goals. Goals and actor networks can thus be seen as the two components of the relational space in which sustainability is thought-out and worked-out by social actors.

Our goal is to open up the relational space of communicating

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sustainability to analytical scrutiny and quantification. This is important because it transforms our understanding of sustainability from being a property of stakeholders to its working as a process of persuasion. In the latter, each stakeholder is not an isolated bearer of a certain sustainability vision or discourse, but a communicator who can potentially convey that vision to others and persuade them to act in light of a certain discourse on sustainability. This approach offers thus an alternative way to promote sustainability in urban regeneration by means of social persuasion. The first step, which is undertaken in this paper, is to identify the stakeholders who can act as the most promising “persuaders” or what are called here sustainability communicators. Subsequent steps are to explore the communication ties, the configurations of sustainability communicators and the behavioural changes produced by communication, but these are the topics of future research.

The specific objective of the paper is to develop a methodological framework to identify and rank sustainability communicators within social networks. Since sustainable regeneration activities are carried out by actors embedded in social networks, we aim to identify those actors who endorse sustainability and are also influential within their regeneration networks. The latter seem to be best placed to communicate and potentially influence other actors to move towards sustainability in regeneration projects. The framework is developed based on social network analysis (SNA) and multi-criteria decision analysis, fuzzy logic in particular, and is illustrated via a case study.

Our study begins with a discussion of sustainability and briefly shows how this concept can be conceptually linked to networks of communication. The third section shows in detail the methodological steps involved in integrating SNA and fuzzy logic. The fourth section illustrates the results obtained with data from a case study of sustainable regeneration in Porto Marghera, Venice, Italy, while the conclusions and possible ways forward are outlined in the final section.

## 2. Sustainability: from discourse to communication

It is nowadays a trite observation to remark on the conceptual fuzziness and often oxymoronic nature of the sustainability concept. There are vigorous efforts underway to critique and clarify the ideological undertones of sustainability at global (Redclift, 2007) and local levels (Lorr, 2012). Still, the concept continues to be employed and its users borrow from different sustainability discourses when articulating their development goals. While these discourses continue to be important in their own right (Åhman, 2013), researchers may gain a better understanding of what sustainability may mean in practice by looking at how it becomes an object of communication among actors. Before briefly sketching the theoretical background of this proposed concept, we review the current understandings of sustainability.

### 2.1. Contemporary understandings of sustainability

It has become common practice to discuss sustainability in operational terms, by distinguishing different themes or dimensions of sustainability. Littig and Griessler (2005) distinguish between one-pillar and three- or multi-pillar models. The former emphasize the ecological dimension of sustainability and subordinate economic and social goals to the need of making human society environmentally sustainable.

Multi-pillar models recognize the existence of sets of sustainability goals that need to be pursued simultaneously rather than competitively. For example, there are two alternative three-pillar models of sustainable development (Dixon, 2006). The first is the

well-known “three pillar model” (Elkington, 1999, 1994) that assumes a balancing of economic performance, social justice and wellbeing and environmental protection (see Fig. 1a). The second model is composed of the same three pillars, with the noteworthy difference that it also recognizes the environmental and social limits of economic growth (Dixon, 2006) (see Fig. 1b).

There are, however, also sustainability models including four or even more dimensions. Omann and Spangenberg focus on the social pillar and add an institutional dimension to sustainability (2002), Stoilkov-Koneski (2015) underscores the importance of the social and cultural context, while Littig and Griessler (2005) include the cultural-aesthetic, religious-spiritual, or political-institutional pillars under the umbrella of sustainability. Scholars have therefore not limited their attention to the three pillar model, although this is still the most common conceptualization (Åhman, 2013).

The three pillar understanding of sustainability has also been adopted in brownfield remediation and regeneration research. Hou and Al-Tabbaa (2014) operationalize the three pillars for sustainable remediation by linking the environmental aspect to reducing the risk of harm from contamination and minimizing the secondary adverse effects of remediation. The economic pillar is set in relation to the cost of remediation and also to the impact of site restoration on the surrounding economy. The authors recognize that, despite its breadth, the social pillar, including worker safety, community impacts, stakeholder engagement, public participation, environmental justice and social inclusion, has received the least attention in brownfield management (Hou and Al-Tabbaa, 2014).

Sustainable brownfield regeneration is defined in terms of the three pillars as “the management, rehabilitation and return to beneficial use of brownfields in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations in environmentally sensitive, economically viable, institutionally robust and socially acceptable ways” (Rescue, 2003). Nathanail (2011, p. 1085) distils from the work of CABERNET seven principles of effective (and potentially sustainable) regeneration which he labels as follows: “people matter”, “places for people”, “having a shared vision is vital”, “there is no I in team”, “build and they will come”, “waste is a resource in the wrong place” and “leaders serve others now and in the future”. With one exception, all these invoke the participation of stakeholders in one form or another.

It is common in the brownfield revitalization literature to consider stakeholder involvement as one of the “vital [components] in sustainable development” (REVIT, 2007, p. 11). Sustainable development strategies that include stakeholder inputs and contributions are defined as a key requirement within several European research networks and projects (Cundy et al., 2013; Harclerode et al., 2015). The underlying expectation appears to be that by their involvement in regeneration, stakeholders will “bring to the table” (Doak and Karadimitriou, 2007a), and force the consideration of, a diversity of economic, social, environmental or institutional interests, that will make the process more robust and sustainable (Rizzo et al., 2016).

To conclude, sustainability scholars have achieved at least a partial consensus on the need to recognize the multiple pillars of sustainability, most often identified as the social, economic and environmental dimensions of sustainable development. At the same time, they have come to regard the involvement of stakeholders, having diverse needs, expectations and representations, as crucial in moving towards sustainability. We contend that further progress can be achieved by integrating the two and considering how different visions of sustainability (in terms of the three pillars) can be communicated among stakeholders jointly involved in regeneration practices.

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