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Structured Democratic Dialogue: An application of a mathematical problem structuring method to facilitate reforms with local authorities in Cyprus

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A B S T R A C T

This paper reports on a Community Operational Research (Community OR) project consisting of ten applications of a problem structuring method (PSM) with the Local Government Authorities of Cyprus. The PSM, Structured Democratic Dialogue Process (SDDP), is a systemic methodology that sits somewhere between Soft OR and traditional OR methods. It uses natural language constructs to support stakeholders explore similarity and influence relations between their distinct observations, and directed graphs to illustrate and communicate the consensus results. Matrix operations that take place behind the scenes make it possible for people from all walks of life to deal with complex societal problems without needing to master systems science. The application of the SDDP methodology in the case of the Local Government Authorities of Cyprus created the trust and the momentum necessary to achieve large-scale consensus and facilitate envisioned societal reforms. SDDP may have value for Community OR more broadly because of its emphasis on meaningful stakeholder and community participation.

1. Introduction

Community Operational Research (Community OR) is concerned with meaningful community participation, and this requires a methodology and practice that is genuinely participatory and democratic (Midgley, Johnson, & Chichirau, 2017; Ufua, Papadopoulos, & Midgley, 2017). To this end, the authors present a Problem Structuring Method (PSM), centered on the theory and practice of Dialogic Design Science (hereafter referred to for simplicity as Structured Democratic Dialogue, or SDD), which has previously been known as Generic Design Science and/or Interactive Management (Warfield & Cardenas, 1994). The methodology is referred to as a Structure Democratic Dialogue Process (SDDP).

The influences on the early development of SDDP were from Systems Engineering (Sage, 1977). Applications in policy and planning started in the early 1970s (Warfield, 1973). Indeed, the first ‘real-world’ applications in 1973–74 were in transportation planning and urban budget planning in a budget-deficit situation with the City Council of Dayton (Fitz & Troha, 1977). The work was characteristically participative. The transition of the practice from large-scale engagements to engagements at the level of community is presaged by the career trajectory of the practitioner of those first engagements, Brother Raymond Fitz. Fitz conducted the Dayton applications while at the Kettering Foundation and moved to work on long-range planning for the Sahel region of Africa. But then he came to focus on issues of inner-city poverty at the neighborhood level. Fitz, a Jesuit, went on to become the President of the University of Dayton. These community interventions can be seen as missionary work with the oppressed in the Jesuit tradition (see Midgley & Ochoa-Arias, 1999, for a discussion of religious influences on Community OR). Early on, Fitz referred to the practice as a “technology of social learning” (Fitz, 1974). His work may represent the first applications of SDD at the community and neighborhood level, but it can only be found in practitioner reports and a few conference proceedings (e.g., Fitz, 1974; Fitz & Troha, 1977), and documentation of those applications has not been prepared for journal publication.

The approach was further developed and written up for refereed publication by systems thinkers in the Club of Rome (Özbekhan, 1969, 1970). Özbekhan, Jantsch and Christakis were responsible for conceptualizing the original prospectus of the Club of Rome, which is titled *The Predicament of Mankind* (Club of Rome, 1970). This prospectus was founded on a humanistic architecture and the participation of stakeholders in democratic

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dialogue. However, in the summer of 1970, the Club of Rome Executive Committee chose to refocus on simulation using System Dynamics (Meadows, Meadows, Randers, & Behrens, 1972), and they limited participation to technological and policy-making experts. Özbekhan, Jantsch and Christakis resigned from their positions. Driven by their passion, they (and other scientists) continued to develop a science of dialogue capable of addressing contemporary complex problems.

The theorizing of the science was systematically refined through years of deployment in Interactive Management (IM) by Warfield and his colleagues (Warfield, 1982; Warfield & Cardenas, 1994). Warfield and Christakis researched and developed the science at the Academy of Contemporary Problems of Batelle Memorial Institute, the University of Virginia, and George Mason University. Warfield developed the Interpretive Structural Modeling (ISM) algorithm (Warfield, 1974a, 1974b, 1976), which uses matrix math and digraph theory to allow ordinary people to use natural language to explore influence relations. The application of ISM in the context of face-to-face deliberations of stakeholders gradually produces influence maps between their observations. These maps represent, in a graphical way, the consensus on the problematic situation among the participants.

A characteristic of this approach is that it enables people from all walks of life to act as systems scientists and to harness their collective wisdom, but without needing them to understand all the complexities and jargon of systems science. The Christakis group, through their Institute of 21st Century Agoras, further refined the methodology into a scientifically and methodologically grounded dialogue practice that is supported by software specifically designed for the purpose (see Christakis, 1996, for the original CogniScope™ system; and Laouris & Dye, 2017, for IdeaPrism™, a new piece of software that exploits digital technology and enables the scaling up of dialogues). In the 2000s, the methodology became known as Structured Democratic Dialogue and the underlying theory as Structured Dialogic Design.

The Agoras Group has managed to address challenges of implementing efficient dialogues in small face-to-face groups using technology (i.e., using Warfield's original ISM Software, or Cogniscope™) to facilitate interactions and processes. A typical SDDP application manages to counteract phenomena such as Groupthink (Janis, 1983; Whyte, 1952), Clanthink (Warfield, 1994; Warfield & Teigen, 1993, pp. 4–5, 31) and the Erroneous Priorities Effect (Dye, 1999; Dye & Conaway, 1999), which are explained below.

Groupthink describes situations in which members of a group go along with what they believe to be the general consensus. Because of the fear of violating group norms, individual doubts or disagreements are set to one side. A Groupthink case has been observed in the period leading up to the Cyprus referendum on the UN's Annan Plan for reunification in 2004. One political agenda dominated, thus polarizing the public and discouraging experts and stakeholders from considering other options (Laouris & Christakis, 2007; Laouris et al., 2009, p. 362).

The extreme case of Groupthink is Clanthink, where "an incorrect view is held by *all or almost all members* of the group" (Warfield, 1994, p. 490), and yet that view is considered so obviously right by the members that it does not occur to anyone to question it. Groupthink and Clanthink are the main causes of what Warfield (1994) called "underconceptualization", and they can generate significant blind spots (François, 2004, p. 643). They ultimately lead to inferior decisions and solutions.

The Erroneous Priorities Effect, in contrast, refers to the fact that individual preferences may be 'erroneous' if those individuals vote for the most important ideas relevant to the problem situation prior to a relational inquiry among the ideas (Dye, 1999; Dye & Conaway, 1999). The key point is that it is the *relationships between* people's observations that matter most if intervention is to be targeted effectively, getting to the root causes of systemic problems (Laouris & Dye, 2017). The SDDP is particularly attractive because of its inherent capability to ameliorate or even completely preclude Groupthink, Clanthink and the Erroneous Priorities Effect (see later for the methods to enable this).

The implementation of a successful SDDP is not mired in obscure science. The basic principles of a good dialogue and their formulation into scientific axioms and laws have been well documented. The process is scientifically grounded on seven laws and four axioms of cybernetic/systems science (Schreibman & Christakis, 2007; Laouris et al. 2009; Laouris, Laouri, & Christakis, 2008). For full reviews see Christakis and Bausch (2006) and Flanagan and Christakis (2009); and for an introductory paper, see Laouris (2012). The key fundamentals of the science have been repeatedly confirmed in two- to three-hour co-laboratories (this term is preferred over 'workshop' to emphasize the fact that participants explore and discover together) in which participants are asked to identify the basic obstacles they face in attempting to harness collective wisdom during a dialogue (Christakis & Laouris, 2010; Laouris, 2012). When the observations of the participants are clustered into categories, the headings of these categories correspond more or less to the actual laws and axioms.

The typical SDDP is specifically designed to assist heterogeneous groups *deal with complex issues in a reasonably limited amount of time* (Banathy, 1996; Warfield & Cardenas, 1994). More recently, the Future Worlds Group started experimenting with virtual models of SDDP and hybrid applications (i.e., combinations of face-to-face with virtual phases) in an effort to engage larger numbers and reduce the time required in face-to-face interactions (Laouris & Christakis, 2007; Laouris et al., 2008). For reviews of large group methods, see Bunker and Alban (1997), Pratt, Gordon, and Plamping (1999) and White (2002). The effort to scale-up the process introduces new technological requirements (see, for example, Concertina™ or IdeaPrism™) and possible violations of the underlying SDD laws. For a critical discussion around the presentation and application of SDDP, see Chapter 7 in Romm (2010). For an on-going discussion around the continued development of the theory and practice of dialogic design science (and what it might mean to call it 'scientific'), refer to the community's wiki (Dialogic Design Science Wiki, 2016).

The authors have applied the SDDP in more than 100 different contexts, including peace and conflict resolution (Laouris et al., 2008, 2009); government and societal challenges (e.g., "Wine Villages" and "Merging of taxation systems," conducted by CAPA); discovering and collectively agreeing on research agenda priorities, thus influencing European Commission funding (CARDIAC, 2013); the support and capacity building of youth and civil society (Medevnet, 2011; Uniting for Citizenship and Participation, 2008); envisioning and designing new educational systems (Reinventing Education, 2017); and reinventing democracy (Reinventing Democracy, 2016). For a complete list of Future Worlds SDDP applications, see Future Worlds (2017).

In most cases, the SDDP application has been a one-off intervention and the lack of an orchestrated set of follow up activities makes it difficult to evaluate the possible impact. However, more recently, the authors have begun to experiment with a new approach to using SDDP, where it becomes just one among a number of systems approaches used in a coordinated manner to address issues where the SDDP methodology on its own would not suffice. In the OR literature, this practice of mixing methods is commonly called 'multi-methodology' (e.g., Mingers and Gill, 1997) or 'methodological pluralism' (e.g., Boyd, Brown, & Midgley, 2004; Jackson, 1987a, 1991; Midgley, 1992, 2000), and it is particularly useful for adding a follow-up process to an SDDP event. So far, there have been comparatively few such applications, but