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Participation methods, System Dynamics and society – some notes

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The discussion of the problematic of participation methods in System Dynamics from a sociological perspective involves multiple questions.

Lane systematizes relations between Social Theory and System Dynamics practices on ontological, epistemological, theoretical and methodological levels, and introduces a metatheoretical proposal based on the need of a dialectical view to transcend the structure/agency divide (Lane, 1999, 2001).

The paper “Dynamics of participation: system dynamics and participation – an empirical review” by Gabor Kiraly, in this volume, starts with these references and then follows with a systematization of metatheorizing reflexions by Ritzer et al (2001) and Zhao (2001) in Sociology. These two authors highlight three main approaches in sociological metatheorizing: interpretative, nomological and normative. Based on this work by Ritzer and Zhao, Kiraly considers that the aim of the interpretative “is not the production of context-free universal knowledge, but a new understanding and new interpretative frames”, of the nomological “is to develop mental models that can grasp the internal dynamics, processes or causal mechanisms of a phenomenon”, and of the normative sociology “is not ‘knowledge production’. Instead of asking how the world ‘is’, it asks which way it ‘ought to be’, and instead of clarifying facts, it aims to bring about a preferred social order” (Kiraly, p. 3). This author then focuses on the interpretative and nomological approaches and introduces a sketch of its relations with participation methods. On this ground, he then develops an important contribution, dedicated to theoretical and methodological problems, by synthesizing basic characteristics of three major participation methods advanced in System Dynamics – Group Model Building, Participatory System Dynamics Modelling and Community Based System Dynamics.

The input of Ritzer and Zhao certainly foster sociological reflexion on metatheorizing but may be questioned. There are different modes to approach and accomplish metatheorizing, with distinct legitimacy, scope and outcome. We can, for instances, question if normative, interpretative and nomological approaches to sociological metatheorizing are adequate, exhaustive, comprehensive and up to date. This partition seems to integrate decisive contributions from classical sociology, like marxian and durkheimian different types of structuralism and the weberian theory of action, but it’s questionable that it fully comprises contemporary theories like those from Anthony Giddens, Pierre Bourdieu and Jeffrey Alexander, considered “synthetic” theories and involving – in different extents, naturally – normative, nomological and interpretative sociological sensibilities.

Furthermore, since the work by Ritzer and Zhao is a proposal of a typology of sociological metatheorizing and not a sociological metatheory in itself, and, as Kiraly says, the normative, interpretative and nomological categories “should be treated as ideal types which help our understanding, and many (if not all) actual research initiatives cannot be put solely into one category” (Kiraly, p. 3), we may be moving away important reflexion if we search for privileged connexions between some of these categories and distinct participation methods within System Dynamics.

The focus on the interpretative and nomological approaches by Kiraly and the omission of the normative approach (although not complete, since the author considers that his “review of sociological metatheories contrasted nomological with interpretative sociology, noting that participatory research and practice stands closer to the latter (also with a connection to normative theories, because of the ‘world-changing’ and action-oriented tendencies)” (Kiraly, p. 10), could benefit if the normative approach was altogether integrated envisioning a more comprehensive

work. In gross terms, one could say that the collaboration of sociology in participation methods could be considered, in its nature, procedures and outcomes, a feature of normative dispositions in sociology, since participation methods presuppose the inherent ethical primacy of citizenship – to enhance not only cognition, but also decision-making and action in society through the enrolment of different people in these processes.

The reflexion that normative dispositions in sociology proposes opens space to address other general relevant issues beyond ontological, epistemological, theoretical and methodological ones, like those of the interactions comprising science and society, namely social responsibility, ethical and deontological questions – crucial subjects when participation methods are the main challenge. Naturally, the question of the relation between science and society is not absent in the interpretative and nomological sociological modes, but it's crucially stressed in the normative approach.

Ethical and deontological topics in particular are implicit in some reported concerns in the paper "Dynamics of participation: system dynamics and participation – an empirical review", namely on the contacts implicating stakeholders and the researchers that coordinate the participation method. These concerns are mainly expressed by Vennix, within the Group Model Building, who raises questions like: "who defines the problem for the group to work on?"; "the thinking process of the participatory process must be structured, imposed to the group, or unstructured?"; "should the process begin with a blank slate or with a previously defined model structure"? (Kiraly, p.7)

The relevance of ethical and deontological questions must be stressed because in participation methods researchers cooperate as scientists (frequently from different areas of knowledge) but also as social agents expressing and debating social representations and values, influencing political developments and engaging in social change (for instances, in the formulation of what is better for society and the environment, in the elaboration of recommendations for decision-making, in promoting participation, in the assessment of projects and in full implementation of decisions), sharing with non-scientific social actors cognitive procedures in the social construction of reality (in the definition of the problems to address, causal factors for distinctive phenomena and relations between these factors, for example), and assuming coordination responsibility for the whole method.

Scientifically-coordinated participation methods may impact society and the environment decisively and require urgent and deep debate and work on ethical and deontological questions along theoretical and methodological developments.

This debate must ponder basic constituents of the participation methods like the purpose of the participation process (cognitive, assessment, decision-making) and the type of participants (a multidisciplinary and/or multi-agent team).

The resulting participation model involves several issues.

Within multidisciplinary labour, how can we shape and articulate the roles of different scientific spheres? And if interdisciplinarity or transdisciplinarity is needed for a participation method, how to organize and distribute tasks among distinct scientific experts?

When we consider multi-agent practices in participation methods, how legitimate is its organization and outputs? Which are the limits for the cooperation of politicians or citizens in general, for example, in procedures that are predominantly cognitive, requiring objective and cumulative knowledge commonly tackled by scientists? How to define legitimate and efficient roles for the various institutional and individual stakeholders in cognitive procedures? How to deal correctly with different values expressed by diverse institutions, organizations and individuals? In recent collaboration (Videira et al, 2012), evidence of "multiple realities" among stakeholders was stressed and concerns about ethics in participation methods emerged, although they weren't then directly addressed.

And how legitimate is to foster consensus among stakeholders in a participation process? Is it legitimate to decide which conceptual frameworks will be applied and which actions should be implemented on the basis of the majority of the stakeholders? If distinct institutions and individuals have unequal social responsibility, is it correct to attribute equal weight to them in participation actions?

Participation in general as a scientifically-coordinated method also raises important questions: which is the legitimate role and function of participation methods in society? As a cooperative platform incorporating science, citizenship and the political system, which are its scope and limits? The role of participation methods is mainly cognitive? Under which conditions can it produce decisions and which type of decisions?

In a synthesis, how to articulate citizenship and diverse scientific skills in participation methods? Are researcher's Deontological Codes sufficient to regulate the responses to these questions? Do we need additional ethical, deontological and social responsibility regulation?

Given the wide-ranging impact and extreme variability of participation methods and of social agents implicated (e. g., scientists and researchers from distinct domains, entrepreneurs, politicians, organizational managers and officers, technicians, citizens with different social classes and cultural values), ethical and deontological questions are not only critical but also complex. Should every participation process involve a previous ethical and deontological reflexion and a Conduct Code definition?

Work on ethics and deontology within System Dynamics is scarce but following Pruijt et al (2007) we can find it early since the Forrester Seminar Series on System Dynamics, where professional ethics is already tackled, in Meadows, Richardson and Bruckman (1982), who demand attention for moral consequences (consequentialist ethics) of System Dynamics practices, and in Heffron (2004) claiming the need for inclusion of deontological ethics. However, these contributions don't address ethical and deontological questions related to participation methods specifically.

This is more directly handled by Pruijt who systematizes underlying ethical theories of multi-actor systems research and decision-making arguing that these implicit ethics should be exposed, and that ethical choices should be justified and developed according to the different types of multi-actor systems research and decision-making (Prujt, 2010). This paper builds on previous reflection by this author on the urgent need to consider ethics in System Dynamics (Prujt and Kwakkel, 2007; Pruijt, 2007; Pruijt, 2006).

More recently, Palmer (2017) also asks for an ethical reflection and elaboration in System Dynamics practices as an imperative need for the sake of the field's credibility.

Out of System Dynamics, work centred on responsible innovation also address ethical questions. A recent paper reflects on these questions within assessment methods, mainly Risk Assessment, Cost Benefit Analysis and Environmental Impact Assessment focusing on problems of predictability, how to choose among alternatives and whether certain consequences of a project should be mitigated or avoided, and recommending that future effort under these methods should be preceded by the clarification of the broadest variety of cultural values that are at stake and its implication on each assessment study (Behnam et al, 2016).

Reflection and decisions on ethics and deontology related to participation methods in System Dynamics may take advantage from earlier work in ethics and principles for public participation, responsible innovation, and ethics in science and technology.

There is an International Association for Public Participation founded in 1990 that provides a Code of Ethics for Public Participation Practitioners.

The UNESCO integrates a World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), set up in 1998, intended to formulate basic principles for decision-makers.

The European Union is currently developing a funding programme within Horizon 2020 on Public Engagement in Responsible Research and Innovation, and the European Commission has recently publicized a report on *Options for Strengthening Responsible Research and Innovation* (2013) with the state of art in Europe on responsible research and innovation.

Reflection on ethical principles across scientific disciplinary and institutional boundaries is also growing, and some proposals have already been put forward, like *Rigour, Respect, Responsibility – A Universal Ethical Code for Scientists*, by the Government Office for Science (2007) in Great Britain.

Scientifically-coordinated participation methods are a crucial advance in the interactions involving science and society (beyond former scientific and technical closure practices), and an important topic and work for sociologists, but to increase its legitimacy, credibility and efficiency we need further reflexion not only on ontological, epistemological, theoretical and methodological grounds but also on the relations between participation methods, multidisciplinary and transdisciplinary work, citizenship, social responsibility, ethics and deontology.

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