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Agency and implementation: Understanding the embedding of healthcare innovations in practice

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ABSTRACT

An innovation is almost never a thing-in-itself. To be sure, there is often what looks like a thing – a newly invented or modified way of thinking or acting, or an artifact, or a system – that is identified in everyday talk as something new. In healthcare, as in almost every other area of human organization, innovations often involve highly organized, institutionally sanctioned, and systematically regulated changes in the structure and delivery of services. This paper presents a theory of implementation and embedding of innovations – Normalization Process Theory – and explores its application to a highly complex ensemble of socio-technical practices, clinical shared decision making. The theoretical analysis presented here shows how implementation as a process and embedding as a state can be conceptualized in terms of social mechanisms that effect changes in the ways that agents' contribute to normative restructuring, the reworking of relational conventions and group processes, the enacting of practices, and their projection into the future.

Introduction

An innovation is almost never a thing-in-itself. To be sure, there is often what looks like a thing – a newly invented or modified way of thinking or acting, or an artifact, or a system – that is identified in everyday talk as something new. In healthcare, as in almost every other area of human organization, innovations often involve highly organized, institutionally sanctioned, and systematically regulated changes in the structure and delivery of services. In such circumstances the specific focus of an innovation (a new drug, computer system, clinical intervention, professional role, and so forth) is never isolated from its social, technical, and spatial contexts. Indeed, innovations of these kinds both shape and are shaped by the social world(s) in which they are set, and by their associated ensembles of individual and collective beliefs, behaviors, and activities. A key problem for the social sciences remains that of understanding how innovations become routinely incorporated or embedded in everyday practice (Colyvas & Jonsson, 2011; May, 2006). This paper sets out an analysis of embedding processes from the perspective of Normalization Process Theory (NPT) in relation to innovations in healthcare.

NPT is a middle range theory that focuses on what people *do* – their agentic contributions to the social processes by which innovations are implemented, embedded and integrated in their social contexts (May, 2006; May & Finch, 2009; May et al., 2009). NPT characterizes implementation and embedding as agentic, dynamic, and as complex practices and effects that are unevenly distributed across social space and time. These practices mediate complex and non-linear relations between agents (who may be individuals or groups); objects (which are the real and virtual artifacts that agents possess and deploy to meet their goals and frame their identities); and their contexts (the multiple spatial, organizational, normative, and conventional locations in which they do so).

There are now many different ways of theorizing such socio-technical relations through analyses of the mutual constitution of technological and organizational change (Leonardi, 2009). In analyses of healthcare, these include, *inter alia*, Strong Structuration Theory (Greenhalgh & Stones, 2010), Actor Network Theory (Gad & Jensen, 2010; Jensen, 2008) along with more nuanced positions in Science and Technology Studies (Webster, 2002, 2007), and Neo-Institutionalist Theory (Barley, 1990; Orlikowski & Barley, 2001). NPT sits beneath these higher level perspectives and focuses on the specific set of activities that are involved in enacting and embedding ensembles of practices. In this context, NPT is concerned with 'implementation' has sociological significance because it characterizes human attempts to impose order and direction on contending, conflicting, contingent, and sometimes very turbulent

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patterns of social action and relations, and their distribution across social time and space. Understanding such phenomena was part of the classical mission of the social sciences, even though 'implementation' is a politically contentious concept that is imbued with managerial assumptions (May & Finch, 2009). Here, NPT helps us to understand – and also put in their place – the trajectories of contingency that run through processes of the implementation and embedding of innovations. In the contexts that NPT is concerned with, 'implementation' also has sociological significance in that it characterizes human attempts to impose order and direction on contending, conflicting, contingent, and sometimes very turbulent patterns of social action and relations, and their distribution across social time and space. Understanding such phenomena was part of the classical mission of the social sciences, but recent writings have pointed to the ways that 'implementation' must remain a politically contentious concept (Gad & Jensen, 2010) that is imbued with managerial assumptions (May & Finch, 2009). Here, NPT helps us to understand – and also put in their place – the trajectories of contingency that run through processes of the implementation and embedding of innovations.

In the first half of the paper, the problem of contingency is briefly discussed in relation to some recent debates in the general field of Science and Technology Studies (STS), where researchers have taken on contingency as a front and center analytic problem in recent years. The discussion of contingency leads to a discussion of the problem of plasticity of social processes and the work that goes into orderliness in action. In turn this is linked to a discussion of some key underlying features of NPT and their methodological consequences. In the second half of the paper, the problem of implementing and embedding innovations in clinical practice is used as a vehicle to discuss the application of NPT. Here the problem of implementing and embedding shared decision-making (henceforth SDM) techniques in the clinical encounter is used as a vehicle to discuss the application of NPT. Following from this a set of analytic propositions are offered that can be used to frame both quantitative and qualitative studies that test and develop the theory. Like all theories, NPT is work in progress. It is provisional, and needs to be developed, refined, and extended. This paper extends the theory by developing a set of propositions or hypotheses about the relationship between the mechanisms proposed by the theory and the agentic contributions made by individuals and groups as they seek to embed healthcare innovations in practice.

Contingency and embedding

Contingency is an important theme in many of the recent analyses of socio-technical change that has sought to show how assumptions about beliefs and behaviors are normalized through innovative health technologies. For example, studies of telemedicine systems by Nicolini (2006), Oudshoorn (2008), and Mort, May, and Williams (2003) have shown how socio-technical practices are contingent on these embedded assumptions. Similarly, in studies of protocols and decision-making tools their shaping effects on social relations and interactions are made evident in ethnographies that take as their focus attempts to operationalize and stabilize socio-technical systems in use (de Bont & Bal, 2008; van der Ploeg, Winthereik, & Bal, 2006). The same is true for studies of technologies that visualize the human interior and their effects on identity and social relations (Burri, 2008; Yoxen, 1989). These approaches are important because of their commitment to understanding the mutual and contingent co-constitution of the social and the technical.

Understanding uncertain trajectories is important whatever form they take. It raises the question of the relationship between what agents believe (or hope) will happen if they initiate some process, and what actually happens (or what they believe has happened) when the process is initiated, and how agents then work to reconcile the two. This returns us to the problem signaled in the Introduction to this paper. The business of implementing and embedding an ensemble of practices associated with some innovation reflects the interaction between stochastic and purposive social processes. That is, it reflects varying degrees of co-operation, collaboration and conflict in agents' attempts to make plastic and impose order and direction on contending, conflicting, contingent, and sometimes turbulent patterns of social action and relations, and their distribution across social time and space.

Before moving on to the problem of plasticity, it is useful to recapitulate the general assumptions of NPT. It focuses on purposive social action and its consequences, and in an earlier paper (May & Finch, 2009) four general assumptions were offered. The first is that (1) innovations become embedded in practice as the result of agents working, individually and collectively, to enact them. This is not a trivial assumption. It specifies the object of the theory as ensembles of practices, behaviors, beliefs, and operations that are accomplished by agents when they bring an innovation forth.

The second assumption of the theory is (2.a) that *the embedding of innovations is accomplished through generative mechanisms.* Following Bunge's (2004) well established definition, a mechanism is conceived of here as a 'process that brings about or prevents some change in a concrete system' (p. 193). In NPT mechanisms are generative (Lieberson & Lynn, 2002) in the sense that they are the product of investments of human agency. Stemming from this is the second part of this assumption which is that these generative mechanisms take the form of agentic contributions by individuals and groups in processes of (2.b) *coherence*; *cognitive participation*; *collective action*; and *reflexive monitoring*. In turn, the conditions of operation of these mechanisms are shaped by (3) organizing structures and social norms that specify the rules and roles that frame action, and the group processes and interactional conventions through which action is accomplished. These are explored in more detail in the next section of the paper.

Generative mechanisms become visible when human agents work individually or collectively to define and meet goals, and to make contingencies plastic. Their agentic contributions are founded on investments in the meaning, commitment, effort, and appraisal of innovations. These investments are temporally and spatially variable. This variability arises from agents' interactions with contingent conditions, events, and processes, and with the agentic contributions of others that may modify, confound, or amplify their own. So, what happens in one place and time may not happen in another. The final assumption of the theory is that (4) the reproduction of an innovation requires continued investments by agents in ensembles of action that carry forward in time and space. NPT thus offers a framework within which to trace and explain the agentic contribution of human actors to processes encountered in complex and dynamic conditions in social time and space. The three general assumptions of NPT form a framework for the analysis of a particular set of *applied* problems. To advance the theory, it must be formulated to further specify the relationship between action (the things that people do), objects (the things that people employ), and contexts (the opportunity and transaction spaces that frame action) within implementation processes by rendering these assumptions in the form of more specific propositions.

Performativity and normativity in the making of the clinical shared decision

The idea that patients should have an opportunity in the clinical encounter to express preferences about, and participate in decisions relating to their treatment and care has become an important