Decision Support

Understanding participant actions in OR interventions using practice theories: A research agenda

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ABSTRACT

Practice theory is a collective concept embodying a group of social theories that take practice, in other words *actions*, as the central focus of their theorising. In this paper we examine the intellectual development of practice theory, highlighting the importance of the key ideas that have shaped thinking on organisational activities and show their relevance to OR. In particular, we examine the social theories that OR researchers have adopted, what data was captured, and how it was analysed in order to establish empirical grounding in case studies involving workshops and meetings published by OR researchers. The cases thus provide a useful empirical basis for comparison to outline the prospects for the use of practice theories by OR academic researchers. Finally, we propose an agenda to advance the understanding of practice theories and their contribution to the theory and practice of OR.

1. Introduction

For the things we have to learn before we can do them, we learn by doing them, e.g. men become builders by building and lyre players by playing the lyre; so too we become just by doing just acts, temperate by doing temperate acts, brave by doing brave acts. (Aristotle).

What is OR practice? Despite decades of the broad acknowledgement of this question's prime importance for theorising on OR (see for example, Keys, 1997), it remains largely unresolved. Early debates focus on either the philosophical basis of the developing practice of OR (Dando & Bennet, 1981), or concern for understanding the development of OR in terms of the broader context in which OR activities take place (Jackson, 1999), or by which models of practice are suitable to non-traditional clients (Rosenhead, 1996). These are mostly concerned with the macro context in which OR practice is based. Recently, attention to micro understandings of OR practice is beginning to emerge (e.g., Ackermann, Yearworth & White, 2018), which, it is claimed, holds the promise for developing a more nuanced perspective on the practice of OR. However, what is clear from this view is the lack of an overarching framework, in that concerns about micro-processes continue to take an individualistic, behavioural perspective (Brocklesby, 2016; White, 2016). In contrast, in earlier developments, a collective perspective draws on an interpretivist stance to understand what is generally referred to as the process of OR (Horlick-Jones & Rosenhead, 2007; Keys, 1997; White, 2009). Fortunately, we see no need to choose one perspective over another; we argue that by taking a practice theory view we learn how to accommodate both. In fact, we argue for the possibility of extending an understanding of the process of OR by blending these perspectives by adopting a practice theory lens (Reckwitz, 2002). Thus, this paper extends thinking by building on the growing interest in practice in OR scholarship. This is to further a view of OR practice as a nexus of activities (Nicolini, 2012) conducted by OR practitioners; it is also to adopt the notion of practices as performed in the world and that this performance in turn also shapes what we do (Pickering, 1995). It is a *performance* (Latour, 1993); in fact, everything we do can be considered as performing a practice – including doing our academic research and writing this paper. The notion of practice also brings with it a sense of belonging, of having shared interests with a group of people also engaged in the intervention, who share language and jargon such that we can enjoy and understand a conversation with a fellow OR practitioner. However, while the current interest of OR scholars in some of the ideas from practice theory have advanced our understanding of the process of OR, understanding of the implications for OR

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from an extended practice perspective remains under-examined. Thus, the aim of this paper is to expand insights from practice theory, the opportunities and challenges it represents to OR scholarship.

In the paper, the main contribution made is theoretical, addressing the question: what is practice theory and how can OR scholars make use of it? To do this we review practice theory and what is involved; in so doing we examine the implications of the theories for OR scholarship. In particular, we contribute to debates on OR micro processes by aligning them with a performative view of OR practice (Ormerod, 2017). In this way we also show how OR practices are not disconnected from the macro perspective, but may be potentially enhancing this perspective by supplementing it with a micro processes view. To do this, rather than presenting new empirical evidence, we draw on published reports of cases or vignettes of OR interventions; from this, our theorising has an empirical grounding. Where the data of interest to our theorising has been found in these publications, we undertake our analysis of these case studies and across them. To achieve the blended (micro, macro) perspective we alluded to above, we analyse our data by 'zooming-in' and 'zooming-out' as a more *fluid* approach (see Nicolini, 2012).

These concepts are not new to OR. Horlick-Jones and Rosenhead (2007) set out quite clearly the complementarity of an ethnographic approach (a practice theory) with the use of PSMs in establishing both "insights into the nature of organizational processes" (zooming-out/macro) as well as "insights into the nature of PSM practice" (zooming-in/micro). In their review of historical examples, they draw out the existence of "quasi ethnographic" practices – exemplified by concepts such as "regard lontain" (distant gaze), "operational outlook", and "operational facts of life" as zooming-out/macro; and "participant observation", "vulgar competence" and "observational fieldwork" as zooming-in/micro – as inherent in the way in which the "craft skills of the profession" of OR as it has developed in the UK. Thus, our study explores the distinctive perspective that practice theory, generally, offers for the analysis of participant action in OR interventions. Our findings suggest that the advantage of adopting practice theory is that it enables OR scholars to interpret, at the micro level, data recordings of what an actor says or does (in isolation or interactively with others) and integrating it with the macro perspective (cultural, social, political and material) analysis of the actor's situation; in other words, it helps the researcher gain insight into each actor's performance in their operational context.

The next section, Section 2, examines the social and economic context of the development of OR, the development of OR academic research, and the way that OR scholars have made use of philosophy and sociological theory to guide the approaches they have taken in conducting their research. In Section 3 we turn to practice theory, and the philosophers and sociologists who have contributed to the development of their ideas. We believe that it is important to introduce an understanding of practice theory and scholars have grappled with scrutinising practices at the micro level in order to elevate addressing concerns at the macro level. In Section 4 we examine the published cases in which OR scholars describe their analysis of the practice as performance of both OR specialists and participants in an intervention. Our aim is not to evaluate the success or otherwise of the performances themselves and the supporting methods they use; rather it is to explore and fill some important gaps in our understanding of the social analysis of the process of OR undertaken by these OR academic researchers, the theories and methods they favour in their research, the data they collect and their method of analysing the data. Section 5 focuses on the implications of adopting practice theory as a framework for OR academic research and identifies both a research agenda and a few practical recommendations for

conducting future research. Finally, in Section 6 we discuss the implications for OR practice itself.

2. The philosophical and sociological foundations of or academic research

The recent paper by Franco and Greiffenhagen (2018) contained a section on research which addressed "the need to understand and unpack the complex nature of OR interventions" (p. 674) (see also, Horlick-Jones & Rosenhead, 2007, for a discussion addressing similar issues). Their purpose was to provide the motivation and background for their focus on field studies which provided detailed data of real-time OR activity, and sociological analysis based on ethnomethodology. Franco and Greiffenhagen raise the problem of theorising OR practice when empirical investigation presents methodological challenges. Their ethnomethodological approach (Garfinkel, 1967) relies on micro-level observations of participant and facilitator behaviours in workshops and is enabled by the data logging capabilities of the *Group Explorer* platform that supports the creation of causal maps for strategy making (Franco & Greiffenhagen, 2018; Yearworth & White, 2019). However, such opportunities to study the activity of OR practice with this level of data collection are rare. Notwithstanding Ormerod's exhortations for OR practitioners, of both 'hard' and 'soft' inclinations, to write in-depth case studies (Ormerod, 2014, 2017), most of what we know about OR practice at a detailed practice level arises from the Soft OR/PSM community and specifically academic researchers writing about workshops (for instance, White, Yearworth & Burger, 2015). Much of the material Franco and Greiffenhagen cite is relevant here, but our interest is not limited to the sayings and doings at the micro level, we also want to consider the macro contexts deemed relevant to action at the micro level by practice theory, as exemplified in the work of Bourdieu (1972/77; 1980/90a,90b) and Giddens (1979; 1984). For example, both these authors stress the importance of the social influences on decision-making.

Thus, the review of OR scholarship we offer in this section briefly considers the historical development of efforts against a background of the changing social context and technological change. After WW2, OR's initial self-image was that of scientists applying the scientific method to develop mathematical models in order to clarify the facts during decision making (Blackett, 1995/1948). This self-image applied to both practice and academic research. While practitioners struggled to establish the value of OR in non-military organizations, OR scholars fought to establish OR as a distinct academic discipline; the prestige associated with science was vital to them. The scientific credentials of OR, the arguments for adopting science as the foundational philosophy for OR, were laid out by Miser, 1991a, 1991b, 1991c, 1993). In the 1970s the dominance of science in OR academic research started to be strongly criticised. One of the earliest critics was Churchman who had a background in the American philosophy of pragmatism; he was intent on bringing systems theory into the discussion including the concept of the "whole system", and in raising the central importance of ethics (Churchman, 1968a, 1968b, 1970, 1971, 1979). His book, *The Systems Approach and its Enemies* (Churchman, 1979), was particularly influential. As Ulrich, a student and research collaborator of Churchman, explains:

> [The Systems Approach and its Enemies] represents yet another attempt by Churchman to pursue his fundamental vision. Improvement implies learning; can systems design secure learning? His idea was to look at different epistemological conceptions in the philosophical tradition as designs for 'inquiring systems', that is, systems that would be capable of learning. What could we learn from Leibniz, Locke, Kant, Hegel, and Singer about the possibili-

ties and limitations of systems design in securing improvement? (*Ulrich, 2004, p. 212*).

Churchman opened up a debate about the inclusion of subjective rationality of morality, politics, religion and aesthetics. He was promoting an interpretive approach. Ulrich continued to explore philosophical ideas, developing a *critical* stance based on American pragmatism, Kant and Habermas (Ulrich, 1980; Ulrich, 1983). But it was Ackoff, also a PhD student and colleague of Churchman, who provided the stimulus for a debate about the philosophical and social foundations of OR in his paper, published as the very first paper in this journal, "*optimization + objectivity = opt out*" (Ackoff, 1977), and two further papers, delivered and published in the UK (Ackoff, 1979a, 1979b). Together, these three papers directly challenged the objective, scientific approach which was assumed by operational researchers, that is, building and analysing mathematical and statistical models, and assuming that they can be taken to represent reality. He was questioning the very foundations of OR, the epistemological stance and the ontological assumptions. A number of researchers in the UK were already thinking about the relative merits of scientific, interpretive and critical foundations (for instance, Checkland, 1981, Checkland, 1983; Dando & Bennet,1981; Eden, 1980; Jackson., 1982; Mingers, 1980). At the University of Hull in the UK a cluster of researchers became engaged in exploring the relative merits of using different methods with different foundations for different situations and purposes (see for instance, Flood & Jackson, 1991; Jackson & Keys, 1984). New directions were explored, for instance, post-modernism (White & Taket, 1993; White and Taket, 1996).

Economic growth has sustained and increased the opportunities for OR professionals, and the greater complexity of modern society in economic and social terms has ensured a richer variety of complex problems, which clients may want help in addressing (Keys, 1995; Kirby, 2003; Morse, 1977). On the other hand, it has also put OR in the position where its self-professed claims of objectivity are contested. Considering Ackoff's '*optimization + objectivity = opt out*' equation today suggests a re-interpretation of the right-hand side, not so much as an opt out but instead raising the question "for whom?" [1]

Opportunities for OR practitioners provide the context for OR academic researchers; but academic researchers are also affected directly by economic, social and technological developments. Like practitioners, researchers benefit from healthy economic conditions; since WW2, higher education has grown continuously, at times rapidly. OR teaching and research groups have been located within mathematics and business faculties (or business schools). A healthy higher education system has ensured that lecturers can obtain time and support for their research activities including conferences and visits, which enable collaboration. The growth of the higher education sector has also ensured that there has been a growing population of researchers in other disciplines offering new ideas and affording possibilities for collaboration (see for instance, Jackson, Keys & Cropper, 1989; Lawrence, 1966). However, the increasing marketization of higher education introduces competitive pressures that can constrain interdisciplinary collaboration. Another important social context, in this case shared with practitioners, has been the growing supply of graduate and postgraduate students available for recruitment as OR lecturers and researchers.

Like practitioners, researchers have benefitted from the growing power and scope of information and communication technol-

ogy (ICT). In the first instance it was simply the availability of, what we would now consider to be, low powered computers to run relatively simple computing tasks such as linear programming and critical path analysis. As computing power advanced, more complex, computer hungry, applications such as integer programming, optimization (hill climbing) and simulation could be explored (Kelly & Walker, 1989; Ranyard, 1988). On the other hand, the same availability of computer power and access to big data that has enabled the burgeoning of machine learning techniques, has contributed to the detriment of OR *practice* as the problematising (Sandberg & Alvesson, 2011; White, 2009) role of the practitioner is squeezed-out by the direct connection from data to algorithm to decision maker (Burger, White & Yearworth, 2019; Vidgen, Shaw & Grant, 2017).

Past and present reflection on OR practice still leaves us needing to understand and unpack the complex nature and context of OR interventions. While these reflections have improved our understanding, we now explore whether practice theory can elevate this further.

3. The development of practice theory by philosophers and social theorists

So, what is practice theory? In the first instance, as the name suggests, practice theory takes practices, in the sense of what is said and done, as the unit of analysis. Practice theory stresses the importance of social influences on practices, in other words on an actor's sayings and doings. For example, a practice could be doing research and writing this paper. It is a performance which consists of several elements interconnected to one another – forms of bodily activities, things and their use, a background knowledge in the form of understanding and know-how, and states of emotion and motivation. A practice is constituted by a bundle of these elements whose existence depends on the interdependencies of its elements. An individual, as a bodily and mental agent, acts as the carrier of a practice and, in fact, of many different practices which need not be coordinated with each other. Thus, they are not only carriers of patterns of bodily behaviour, but also of certain routinized way of understanding, knowing how and desiring. These conventionalized 'mental' activities, of understanding, knowing how and desiring, are necessary elements and qualities of a practice in which an individual participates, but they are not qualities of the individual. Moreover, a practice is not only understandable to the agent who carries it out, but also to potential observers within the same culture (Reckwitz, 2002, pp. 249–250). We examine some of these ideas below.

Alexander and Smith (2010), suggest the following historical pattern of development of sociology during the second half of the last century: "Wittgenstein's linguistic philosophy emerged in the 1940s and 1950s. The French structuralists and semioticians peaked in the 1950s and 1960s. The great cultural anthropologists Douglas Turner, and Geertz wrote their most influential works from the mid-1960s to the early 1970s. … The revolt against Parsons in particular [see Ormerod, 2020], and functionalism more widely, instigated a sharp turn away from culture as a valid mode of explanation. In the mid-1980s, things started to change." (Alexander & Smith, 2010). It is from here we pick up the story that leads to practice theory. But first we need to briefly reach back to Karl Marx and Heidegger and learn a bit about Wittgenstein. No-one can doubt the profound effect of Marxist philosophy and sociology, and Reckwitz (2002, p. 250) suggests that everything that is original in practice theory is already to be found in the works of Heidegger and Wittgenstein.

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[1] The contested nature of objectivity is simply revealed whenever any OR practitioner mentions optimization. Optimal for whom? Contested stakeholder viewpoints and worldviews emerge from this simple question – if it is treated seriously. Of course, the OR practitioner can still opt out, but would this be ethical today? Or indeed at any time? We can imagine that Churchman might have posed a similar question.

3.1. Foundational work

Marx (1818–1883), in developing his theoretical framework for the economic, social and political structures of society, focused on the activities of capitalists and workers in the bourgeois state (for a simple account see Ormerod, 2008a). Marx adopts a similar approach to Hegel, for whom labour is a central feature of human existence through which men and women come to know and understand their worlds. For Marx, labour defines humanity; society develops out of the activity of labour; the object of scientific enquiry, should be *praxis*, the practical real-life activity of people in the social circumstances in which they find themselves. Marx opened a new, and in many ways revolutionary way of thinking. He introduced the idea that humans were corporeal beings, with minds developed by action, and knowledge derived from the interaction between social subjects and between such subjects and objects.

Martin Heidegger (1889–1976) provides one of the two key building blocks of Bourdieu's and Giddens' work; the other being provided by Wittgenstein (see below). Nicolini (2012, p. 34) points to Blattner (2000) who argues that "Heidegger's project to rebuild the Western tradition on the ruins of Cartesian metaphysics is firmly rooted in what he calls the 'primacy of practice.'" Although Heidegger did not develop a coherent account of practice theory, Nicolini (2012, p. 34–37) observes that "according to Heidegger's 'everydayness', the basic ontological dimensions of our being in the world is, in fact, meaningfully structured by a texture of social and material practices that remain unthought of as such, but that we more or less share in common…. starting with *Being and Time* and throughout his career Heidegger moved towards granting a primacy of one type of practice – discursive – over all others. Heidegger was extremely influential on most contemporary authors that have contributed … to the 'practice turn,' from Michael Foucault (who once said that his entire philosophical development was determined by his reading of Heidegger) to Pierre Bourdieu, Schatzki, and many others." A brief explanation of Heidegger's approach can be found in Appendix A and Foucault's position is briefly described in Appendix B.

The later work of Ludwig Wittgenstein (1889–1951), captured in *Philosophical Investigations* (Wittgenstein, 1953/67) and published lecture notes (Wittgenstein, 1969), is found by (social) practice scholars to be highly relevant. For instance, Schatzki (1996) draws on Wittgenstein's critical work on how to conceive the psychological and bodily activities (practices) of everyday life. In *Philosophical Investigations* Wittgenstein addresses 'the concepts of meaning, of understanding, of a proposition, of logic, the foundation of mathematics, states of conscious, and other things' (Wittgenstein, 1953/1967, p. vii). Central to his approach is his analysis of language, how it is constructed (grammar) according to structural rules (syntax), how it conveys meaning (semantics), how it is used (praxis). Wittgenstein uses the term *language game* to indicate that language is a game with rules. This theme has been adopted by OR scholars (see e.g., Gregory, 1993). A brief explanation of his approach giving examples of his method of exploring everyday language can be found in Appendix C.

3.2. The development of structural functionalism and the interpretivist response

Talcott Parsons' grand social theory, referred to as functionalism or structural functionalism, sets out to characterize the social system and the actors within it in a descriptive model consisting of two elements. First, the *theory of action* (Parsons, 1937) provides the motivation for actors to act: it provides the element which allows the actor freedom to act, or not; to choose. Second, the *structure* of society (Parsons, 1951) provides a characterization

of the context within which an actor takes decisions; the structure both constrains and enables. For a brief account of structural functionalism see Appendix D. Empirical sociologists in the 1960s and beyond found the detailed structure of society very useful, but many social theorists felt that the attention paid to the structural element overly constrained an actor's freedom to act, particularly those actions that broke with societal conventions – deviant and revolutionary acts. This led to the development of interpretivist theories, and reinvigorated others such as conflict and critical theories (which will not be considered further here). Two interpretivist theories, the symbolic interactionism of Mead and Blumer, and the ethnomethodology approach of Garfinkel, illustrate the interpretivist stance.

While Parsons emphasised shared social context, Mead's *symbolic interactionism* places the emphasis on micro-scale interaction, a model of action that followed more closely the actor's conscious awareness of what they are doing, a model that does not involve explanations at a radically different level. Thus, whereas Parsons contended that a person's behaviour responded to values, norms, roles and status, Mead argued that the self is far more than an internalization of components of structure and culture. Mead, according to Blumer, suggested that it is 'a social process, a process of self-interaction in which the human actor indicates to himself matters that confront him in the situation in which he acts, and organises his action through his interpretation of such matters' (Blumer, 1975 p. 68). Blumer's contribution was to clarify the methodology of research, the result being 'grounded theory', an approach used by many academic researchers including cases featured here (see for instance Franco, 2008; Henao & Franco, 2016).

Ethnomethodology was founded by Harold Garfinkel who took Parsons' *Structure of Social Action* as his starting point and set out to remedy Parsons' sketchy treatment of the actor's knowledge and understanding. Drawing on the phenomenological approach of Alfred Schütz (1899–1959), ethnomethodology examines how people make sense of their everyday lives (Garfinkel, 1967; Heritage, 1984). Taking common sense as the starting point, the ethnomethodologist asks 'How do people present to others an orderly social scene?' or "How do people render scenes or situations intelligible or reasonable?" (Wallace & Wolf, 2006, pp. 268–270). Both functionalism and ethnomethodology take underlying trust as the basis for human behaviour, but Garfinkel denies that social facts have a reality of their own that impinge on the individual. 'Order' is to be treated, not as something that is 'out there', but as the lived experience of the individual. "Neither does ethnomethodology study how role expectations are created in the interaction process, as does symbolic interactionism. Instead, ethnomethodology studies the process by which people invoke certain taken-for-granted rules about behaviour with which people interpret an interaction situation and make it meaningful" (p. 271). Ethnomethodologists, like symbolic interactionists, employ a rich variety of methods. They do not aim to explain human behaviour or to show, for example, why places and generations vary in their suicide and divorce rates or why religions exist. The emphasis of ethnomethodology is on description; the object of study is the methods by which people make sense of their social world (Wallace & Wolf, 2006).

3.3. Anthony giddens: from interpretivism to structuration

Giddens approaches sociology from a theoretical perspective. His aim was to produce, like Parsons, an all-embracing social theory, but which did not fall into the functionalist trap of over emphasis on social structure, nor into the interpretivist trap of an over emphasis on the agents themselves. Giddens wanted to reconcile the tension, then current in social theorising circles, between structure and agency, developing an approach which he called

the 'theory of structuration' (Giddens, 1993). Giddens argued that no matter how 'macro' the concerns of social theories are, they demand a sophisticated understanding of agency and the agent just as much as an understanding of the complexities of society. (Giddens, 1993, p. 5). To understand the 'interpretive' approaches favoured in the 1960s, Giddens examined the phenomenology of Schütz (1972/1932) and, the ethnomethodology of Garfinkel (1967), which seeks to distance itself from phenomenology by moving towards the analysis of 'situated actions' as 'publicly' interpreted linguistic forms (p. 42). Giddens concludes that Garfinkel's approach "cuts off the description of acts and communication from any analysis of purposive or motivated conduct, the strivings of actors to realize definite interests" (Giddens, 1993, p. 46). An account of Giddens's analysis of Schütz's phenomenology and Garfinkel's ethnomethodology is given in Appendix F.

Giddens concludes from his examination of Schutz, Garfinkel and interpretive social theory in general, that "the mediation of frames of meaning is a *hermeneutic* task …" (p. 46; italics added). Hermeneutic philosophy's central concept is *verstehen* whereby a researcher, in trying to understand another person's experience, should try to put himself in the other person's shoes. However, the understanding of philosophical hermeneutics took a new twist when Hans-Georg Gadamer, building on Heidegger, argued that interpreting the past actions of people (*verstehen*) was not a subjective matter, but rather a question of entering another *tradition* (or as Wittgenstein would put it, 'form of life'), such that past and present constantly mediate one another (Gadamer, 2004). The hermeneutic circle provides Giddens with a way of reconciling the agency versus structure dilemma; both could be conceptualized as working together in a hermeneutic circle with actions giving rise to structure which subsequently influences actions. (Giddens, 1993, p. 63).

Giddens says that social life may be treated as a set of *reproduced practices* and argues that the interpretivists fail to achieve what they set out to do, namely, to develop a satisfactory way of relating to everyday life and the common sense of lay actors (Giddens, 1993, pp. 119–120). He describes the process whereby structure is engaged in practice as 'structuration'. Structuration is the process by which structure is deployed in practice at a particular time in a particular situation and by which structure is updated in the light of the experience of interaction at different times in different places. See Appendix E for a fuller version of the above including the example of a doctor/patient relationship. See Appendix G for Giddens' theoretical analysis of everyday social interactions in terms of structure.

3.4. Ethnographic study and Pierre Bourdieu

Pierre Bourdieu (1930–2002) does not approach the development of his social theory from a theoretical perspective. Bourdieu's seminal text on practice theory, *Outline of a Theory of Practice* (Bourdieu, 1972/1977), opens with a detailed analysis of data collected during his ethnographic study of the Kabyle people of Algeria at the time of the Algerian war (Bourdieu, 1958/62). Unsupervised and without prior allegiance to any particular ethnographic method, Bourdieu's approach can be described as learning-by-doing. To throw light on the situation he engaged with a great variety of methods, instruments and strategies; he used questionnaires, qualitative interviews, participant observation, photographs, sketches, and so on (p. 5). As a result, he was critical of the 'theoreticism' dominant in France, in particular the structuralism of the anthropologist Claude Lévi-Strauss (1908–2009) and the phenomenology of the philosopher Maurice Merleau-Ponty (1908–1961). In observing the Kabyle people, in interacting with them, and in trying to fathom out what was going on when they give gifts, marry, engage in honour disputes, and interact with neigh-

bouring tribes, he was struck by the difficulties of ascertaining the rules and customs of the tribesmen both from his own observations as an outsider and from the explanations given by the people themselves. Bourdieu (1972/77, p. 29) quotes Wittgenstein's neat summary of the difficulty of reconciling different accounts in *Philosophical Investigations*:

> *What do I call 'the rule by which he proceeds'– The hypothesis that satisfactorily describes his use of words, which we observe; or the rule which he looks up when he uses signs; or the one which he gives us in reply if we ask him what the rule is? – But what if observation does not enable us to see any clear rule, and the question brings none to light? – For he did indeed give me a definition when I asked him what he understood by "N", but he was prepared to withdraw and alter it. – So how am I to determine the rule according to which he is playing? He does not know it himself. – Or, to ask a better question: What meaning is the expression "the rule by which he proceeds" supposed to have left to it here?* (Wittgenstein, 1953/1967, #82).

Bourdieu attacks attempts to model (describe the structure of and predict) behaviour in terms of the rules and customs which inform decisions and actions; any attempt is found to be wanting, requiring special cases to reflect different situations, at different times, with different ends, and with different histories (for instance, the giving of a gift could be an expression of respect in some circumstance at certain times and an insult at others). Bourdieu concluded that it was necessary to abandon all theories which explicitly or implicitly treat practice as a mechanical reaction. Having abandoned existing social theories, Bourdieu constructs his own theory with a focus on practice, actions, what people do. The resulting theory rests on three key terms: field, capital, and habitus. The concept 'field' is taken to be the location of the social action, where the everyday practice under consideration takes place; it is what other scholars variously describe as the situation or site of the action. The notion of capital indicates the relevant assets that agents bring to the game; the capital can take the form of social capital, cultural capital, symbolic capital or financial capital, all of which affect the disposition of the agents on the 'field of play'.

An example: the OR offer. In the OR consulting field, consultants bring to bear social capital in the form of networks of contacts, the clients bring financial capital in their ability to fund the assignment, both bring their understanding of how the game should be played, the rules of the game, both bring their own symbols in the form of the names and reputations of their organizations, and their learnt cultural understanding which enables those concerned to decode the signals of others. The agents, or players develop dispositions over time as a result of playing game after game (assignment after assignment). A particular assignment both draws on the deeply engrained habits, skills and dispositions developed when working on previous assignments, and in turn provides new experiences which will affect the habits, skills and dispositions carried forward to the next assignment. The players thus develop a 'sense of the game', a practical sense involving both intuitive and reflective thinking, of combining both an objective and subjective understanding of the situation.

A system of evolving dispositions is referred to by Bourdieu as 'habitus'. Bourdieu (1977) takes the term habitus to mean "the durably installed generative principle of regulated improvisations" (p. 78). Habitus makes it possible to inhabit social structures as fields, to draw on them practically, enacting their principles allowing for revisions and change. Bourdieu has described this system of evolving dispositions as a 'logic of practice', expressed in the relationship [(habitus) (capital)] + field = practice (Bourdieu, 1984,1984/1979. p 101). Further explanation of Bourdieu's position can be found in Appendix G. A critique of both Giddens and Bour-

dieu by Schatzki can be found in Appendix H. Schatzki's own approach is then summarised in Appendix I. The ideas of Bourdieu have not been extensively taken up by OR scholars. There are but a few examples (e.g., Johnston, 1995).

3.5. Actor Network Theory (ANT), the mangle perspective, and Activity Theory (AT)

Like Bourdieu, the authors of actor network theory (ANT) base their approach on their experiences of conducting ethnographic studies (Callon, 1984; Latour, 1987; Law, 1984). ANT takes as its focus the relationship between natural entities and social actors and seeks to recast our understanding of this relationship within a new epistemology. ANT considers both people and technologies as enacted through networks, in particular in terms of what people and things become as a result of their position in the network, and the power that emerges. (Callon, 1984, 1999; Latour, 2005; Law, 2008). Actor networks are often highly dynamic and are prone to instability. They can be stabilized to some extent when people, technologies, roles, routines and so on are aligned. This alignment is achieved through *translation* (Callon, 1984), an analytical framework from ANT that describes four distinct 'moments' (problematization, interessement, enrolment, and mobilisation) in the ongoing process of researchers imposing their conception of a problematic situation on others. ANT's emphasis on the dynamic and relational aspects of an intervention is a useful lens for the study of change and the unintended outcomes of intervention (Keys, 1995; White, 2009).

The mangle perspective is an extension of the academic research programme known as the sociology of scientific knowledge (SSK) (Bloor,1976). ANT expands the human-centred view of SSK with the claim that material, machinic things (such as radar and computers) can also be taken to provide agency; Pickering goes a step further allowing agency to reside in 'concepts' as well. Pickering (1995) starts from the idea that practice should not be viewed in terms of facts and observation but should rather be approached from the perspective that scientific practice involves actions through time. This he refers to as the "performative idiom, an idiom capable of recognizing that the world is continually doing things and so are we" (p. 144). Such a view requires the concept of agency: who or what motivates and controls the forward momentum of action? As agency passes from one human, material or conceptual entity to another, so does power. The mangle and ANT provide social theoretical lenses which operate at the same sort of micro-level as ethnomethodology (Franco & Greiffenhagen, 2018), through the idea of translation and its constitutive elements, and at a much finer granularity of analysis than the Bourdieusian lens envisages.

Activity Theory (AT) was developed during the 1920s in the Soviet Union principally by Vygotsky (1981, 1986). It was based on two assumptions; the first is that knowledge is mediated through tools and artefacts; the second is that *activity* (big or small) is the basic unit of analysis. It didn't reach the West until Engeström popularised it in the 1970s (Engeström, Miettinen & Punamäki, 1999). The central concern of AT is the relationships between material action, mind, and society: the approach explores links between thought, behaviour, individual actions and collective practices. Thus, AT is seen as rooted in practice (Schatzki, 1996; White, Burger & Yearworth, 2016, p. 986). AT is also referred to as cultural historical activity theory (CHAT), emphasising that it is a cultural theory which pays attention to the preceding history. AT is very similar to ANT; both comprise a unique combination of material, mental, social, institutional and historical factors and both provide analytical tools to understand the nature of the reciprocal action-shaping of humans and non-humans; theoretically they are very

close, particularly in adopting theories of language and semiotics (White et al., 2016, p. 988).

In this section we have highlighted some of the efforts and insights of key philosophers and social theorists of practice, each one of whom warrants much deeper coverage than we can offer here. However, some of the ideas have penetrated OR scholarship, others not so much. In the next section we turn to work we believe provides a basis for further elaboration of the value of PT for understanding OR practice.

4. Case study comparison

In this section we examine existing published cases of facilitated workshops and meetings and present our analysis of them. We selected cases relying on the principle of representing diversity (White and Taket, 1996). This method selects cases such that they reflect the variety within important, theoretically relevant dimensions. The analysis has an empirical dimension but does not present new data, the data being found in existing publications. The aim is to select case study papers written by OR scholars which present records of the activities (the sayings and doings) of facilitators, clients and participants engaged in workshops and meetings. Such workshops and meetings provide examples of actual practice and are not designed as experiments.

We have concentrated on papers which examine in depth (as advocated by Tsoukas, 2009a) participant and facilitator actions and in which decision support, problem structuring, and other methods were being used in workshops, meetings or interviews. We have chosen to focus on cases about workshops because they provide a context in which researchers, who are generally interested in philosophical and social aspects, have been able to study interventions in detail (in other words at the micro level). Moreover, participants are committed to attend workshops in a particular place at a particular time enabling recording technology to be deployed in advance. On the day of a workshop the participants generally include a facilitator, the work usually utilizes problem structuring methods, and sometimes software support. However, our concern here is not with the methods being used to conduct the workshops per se; rather it is research into how the participants act and interact; how they take decisions and how these are affected by the cultural, social, political and material context. Nor are we concerned with whether the workshop was a success or not, nor the issue of how this can be assessed. Rather, we are interested in the social theory adopted explicitly or implicitly and the implications for the design and conduct of OR academic research. Some papers on workshops featured here include records of pre- and post-activity (meetings/interviews); these are potentially useful sources of information and can themselves be studied; some reports may involve interviews and meetings but no workshop. These may be of interest from a practice theory perspective if suitable records are kept (such as audio or video recordings).

The selection of papers chosen for examination was based on a systematic search of the Scopus database. We initially searched on journals in which we judged we might expect to find suitable papers. The OR journals selected were: The European Journal of Operational Research, the Journal of the Operational Research Society, Omega, Management Science, Operations Research, and the Annals of Operations Research. We also included Systems Dynamics Review and Group Decision and Negotiation, since we have observed that they sometimes publish articles by OR authors that are potential candidates for inclusion in our analysis.

The Scopus search was narrowed on the basis of (i) form of engagement (for instance, workshop, problem structuring, group support system, model supported group); (ii) social theory (for instance, practice theory, actor network theory, ethnomethodology, activity theory, personal construct theory, psychology); and (iii)

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data analysis method (for instance, narrative analysis, attribution theory, conversation analysis, cognitive map, key incident analysis, intersubjective analysis, structuration moves, purposeful text analysis, quantitative analysis, thematic analysis, themes, coding). The Scopus search query was never conceived to be a surgical extraction of precisely the case studies we have chosen to analyse, but a net cast just wide enough to provide us with a manageable number of papers from which we could select our final case studies by applying our collective judgement. The resultant query retrieved 164 articles for further analysis. The exact search terms and the full list of papers can be found in Appendix K.

All 164 papers returned by the Scopus search were reviewed and discussed by the author team. By agreement they were then further down-selected to eliminate those where experiments were conducted with students or consultants as participants. After eliminating those that didn't include video, audio, or computer recordings of participant behaviour, the resulting data set contained 18 papers to which were added a further two papers, (d) and (n), to provide examples of using other, albeit less desirable, sources of relevant data - causal maps, and transcriptions of interviews. Thus the final data set consisted of 20 papers.

A summary of the 20 selected papers is presented in Table 1 , which shows key words for five issues for each paper: the nature of the activity analysed (ACT); the context (CON) in which the activity took place; the underlying social theory (ST) adopted; the main methods of data capture (DCM); and the data analysis method (DAM) used. ACT simply indicates the focus of our attention, usually one or more workshops. CON identifies (i) the substantive focus of the paper (usually the intervention method used) and (ii) the sector and country in which the activities took place. The final three sets of issues form a natural set: the social theory ST can influence the data required DCM and its analysis DAM.

The analysis of the 20 selected papers (a) to (t) addresses two further questions: what were the *outcomes* of interest to our investigation into practice theory, and *what is lacking* from our point of view. The results are shown in Table 2 . To be clear, the outcomes we are interested in are not the substantive outcomes (the success or otherwise of an intervention using particular methods); rather our concern was the outcomes from the application of the ST, DCM and DAM chosen by the authors of each paper. The outcome column entry for each paper consists, whenever possible, of quotes from the paper being considered. It was not always easy to pick appropriate quotes and judgement had to be applied. The results are not even; more insight could be obtained by questioning the authors. On reviewing outcomes, we detected a theme – learning. At the beginning of each outcome statement, we have indicated in square brackets where learning at the individual or group level is indicated from the accounts of the authors. The term 'lacking' could be misunderstood. It should not be taken to indicate criticisms; rather it is meant as a factual indication of additional information that would have been pertinent for our study. For instance, video and audio recording may have been considered unnecessary in a computer centred analysis, but from our point of view they would have provided additional information – they were lacking.

The outcomes and lacking columns provide the motivation for the research agenda addressed in the next section and some themes for the direction which further research might take.

As a set of empirical reports, these 20 papers might be expected to provide the data for a formal cross case analysis, but the great variety of methods used, the unique situation of each intervention, and the varied methods of data capture means a structured comparison is not viable. We have to be content with general observations, and we can immediately make two. First, half of the cases are located in the UK: two each are located in, Denmark, Colombia, and in the US; one is located in Vietnam, one in New Zealand and two are international. Second, the cases are based on interventions

in a great variety of sectors from retail and construction to community and public sector – however, it is the latter that tend to predominate, perhaps because there are likely to be fewer commercial constraints in reporting detailed accounts and outcomes from engagements.

Given that we are investigating social theory as utilized in academic research into the process of OR and the behaviour of those involved, the question we need to address is whether the choice of ST leads to a significant difference in the way that data is collected and analysed, in other words, how are the ST, DCM and DAM issues, the practical conduct of academic research, addressed?

The ST theories adopted in the case studies are varied. For several papers, discussion of the ST used was clearly not a focus for the authors and was not made explicit; see for instance, (e). More significantly there are clusters of cases using the same or similar STs. Six papers were based on philosophical pragmatism, one explicitly (d) and five implicitly (e), (h), (l), (n) and (q); two are based on adaptive structuration theory (a) and (s), two on activity theory (m) and (o). One paper was based on attribution theory (b), one on actor-network theory (g), two on ethnomethodology and/or conversation analysis (p) and (c), one took a positivistic perspective (k), one based on a dialogical approach to the creation of new knowledge (i), one on natural language analysis (f), one on pragmatic iterative-deductive process (Orton, 1997) (r), and one on social psychology (t). Four of the selected cases (b), (j), (p) and (r) are based on causal mapping and JOURNEY making – the PSM involved draws on a psychological theory; however, it does not follow that the researchers involved have to adopt an ST that is primarily psychologically/cognitively orientated. On the other hand, case (t), which is based on system dynamics, does adopt a psychological perspective applying positive text analysis.

On the data capture issue, as we have seen, there are essentially four choices: (1) Group Support Systems (GSS) software, which may be preferred because it is integral with the conduct of the workshop and brings in no extra complexity, cost, or negative feelings associated with being continually watched; (2) video recording, which, in addition, enables bodily/facial reactions to be observed; (3) audio recording which is less intrusive than video but lacks any data about bodily movements and facial expressions; and (4) purpose built physical laboratories equipped with a group support system. Making observations and taking notes, usually complement the data collected. Many of the cases mention pre-workshop meetings between the facilitator, clients and participants (and sometimes a researcher who will not be a participant in the workshop) to clarify the objectives and to discuss the methods to be used (for instance, explaining *Group Explorer*, Soft Systems Methodology or the Viable Systems Model). In those cases which do not mention such meetings, they almost certainly occurred but the authors assumed that they were not of sufficient interest to detail in their paper or because the convention is not to do so. More significant are meetings in which an attempt is made by facilitators and researchers to deliberately discover more about the historical and cultural context of the participants and their organization (in other words at the macro level). In case (c), Horlick-Jones and Rosenhead (2007, p. 592–3) the authors describe the history of the issue being addressed (preparation for the Notting Hill Carnival in London) and the many unstructured and semi-structured interviews/meetings aimed at gaining an understanding of the roles, perspectives, cultural background and attitudes-to-risk of the many people involved in the planning and controlling of the Carnival.

> *During two successive Carnivals, we carried out coordinated exercises in group ethnography, the first involving the entire team of five researchers. This included following police officers on patrol, and spending time at the police operations HQ at New Scotland Yard and at the Carnival Trust offices…. The Carnival involves*

Table 1
Key attributes of the papers selected.

	Article	ACT nature of the activity	CON the context	ST	DCM	DAM
(a)	Niederman, F. and Bryson, J. (1998). Influence of computer-based meeting support on process and outcomes for a divisional coordinating group.	six meetings of single group	GDSS; professional services sector US	adaptive structuration theory (AST)	video, audio, software aided meeting management (SAMM) system	social information processing analysis (SIPA) manually coded
(b)	Shaw et al. (2003). Approaches to sharing knowledge in group problem structuring.	four workshops in four different organizations	group sharing of knowledge: 1 business 2 public sector 1. community UK	social psychology/ attribution theory	cognitive maps developed on computer with activity log Decision Explorer	attribution theory; structure coded in terms of themes, links and networks
(c)	Horlick-Jones, T. and Rosenhead, J. (2007). The uses of observation: combining problem structuring methods and ethnography.	several workshops, embedded in a process of interviews and meetings	problem structuring methods (PSM); community UK	ethnographic understanding of context	audio recording, observational notes, flip charts	conversation analysis
(d)	Vo et al. (2007). Developing unbounded systems thinking: using causal mapping with multiple stakeholders within a Vietnamese company.	three workshops	unbounded systems thinking (UST); retail sector Vietnam	philosophical pragmatism, Unbounded systems thinking (Mitroff & Linstone; 1993a)	causal maps	technical, personal and organizational perspectives
(e)	Franco, L.A. (2008). Facilitating collaboration with problem structuring methods: A case study of an inter-organisational construction partnership.	three workshops embedded in a process of interviews	problem structuring methods (PSMs); construction industry UK	philosophical pragmatism (implicit)	audio recording of meetings, questionnaires, notes	grounded theory: coding and categorizing using Atlas.ti
(f)	Volkema, R. (2009). Natural language and the art and science of problem/opportunity formulation: A transportation planning case analysis.	one meeting	linguistic analysis of natural language; transportation US	linguistic analysis	audio recording, note taking	coded hierarchical issue maps, discursive temporal flow, self-interests (individual and group) qualitative and qualitative
(g)	White, L. (2009). Understanding problem structuring methods interventions	two meetings and final workshop	problem structuring methods (PSM); public sector UK	actor-network theory	flip charts, observer notes	narrative analysis
(h)	Franco, L.A. and Lord, E. (2011). Understanding multi-methodology: Evaluating the perceived impact of mixing methods for group budgetary decisions.	two workshops and interviews	application of multi-methodology; Health and social care sector UK	philosophical pragmatism (implicit)	audio recordings and maps on paper from interviews; maps, diagrams and notes from workshops Decision Explorer	grounded theory; coding and categorizing
(i)	Ackerman, F. and Eden, C. (2011). Negotiation in strategy making teams: Group support systems and the process pf cognitive change	three workshops in different parts of the organisation, and one plenary	group support systems (GSS); multinational	social psychology	cognitive maps developed on computer with activity log Group Explorer and Decision Explorer	Data attribution theory; structure coded in terms of themes, links and networks
(j)	Tavella, E. and Franco, L.A. (2015). Dynamics of group knowledge production in facilitated modelling workshops.	one two-day workshop	problem structuring methods (PSM); community UK	dialogical theory of new knowledge creation (Tsoukas, 2009a)	audio recording, flip charts, observation notes	knowledge creation and maintenance using conversational analysis
(k)	Tavella, E. and Papadopoulos, T. (2015). Expert and novice facilitated modelling: A case of a viable system model workshop in a local food network.	one two-day meeting	facilitated viable systems method (VSM); local food network Denmark	positivism (inductive reasoning on limited data)	audio recording	coded according to theoretical definitions of facilitators
(l)	Velez-Castiblanco, Brocklesby and Midgley (2016). Boundary games: How teams of OR practitioners explore the boundaries of intervention.	one meeting between OR team	intervention boundaries; public sector New Zealand	philosophical pragmatism (implicit), language games, boundary theory, relevance theory	observations, audio recording, note taking, and identifying background of participants	an analysis of participants' discursive actions to change the boundaries of their shared cognitive environments using relevance theory

Table 1 (*continued*)

	Article	ACT nature of the activity	CON the context	ST	DCM	DAM
(m)	White et al. (2016). *Understanding behaviour in problem structuring methods interventions with activity theory.*	participatory planning; one workshop	understanding behaviour in PSM; public/private UK	activity theory	video recording flipchart	multimodality coding scheme based on activity theory to tag talk, bodily movements and interactions with materials/tools
(n)	Henao, F. and Franco, L.A. (2016). *Unpacking multimethodology: Impacts of a community development intervention.*	interviews and workshops	multimethodology; community Colombia	philosophical pragmatism (implicit)	transcripts of interviews	grounded theory interactive-inductive approach with coding using *Atlas.ti*
(o)	Burger et al. (2019)). *Why so serious? Theorising playful model-driven group decision support with situated affectivity.*	participatory planning; one workshop	model-driven group decision support (GDS); public/private UK	activity theory	video recording flip chart	multimodality coding scheme based on activity theory; analysis of vignettes chosen to highlight 'playful' moments in a group model building session
(p)	Franco, L.A. and Greiffenhagen, C. (2018). *Making OR practice visible: Using ethnomethodology to analyse facilitated modelling workshops.*	one workshop	facilitated modelling; private sector UK	ethnomethodology and conversation analysis	video recording, group support system, diary of events before and after workshop	fragments of a vignette analysed using ethnographic insight without scripts
(q)	Velez-Castiblanco, Londono-Correa and Naranjo-Rivera (2018)). *The structure of problem structuring conversations: A boundary games approach.*	nine workshops	facilitated boundary games analysis; education sector Colombia	philosophical pragmatism (implicit), boundary games theory	video, audio, white board, photos, *PowerPoint*	boundary games theory
(r)	Franco, L.A. and Nielsen, M.F. (2018). *Examining group facilitation in situ: The use of formulations in facilitation.*	one workshop	formulations in facilitated workshops; university sector UK	conversation analysis; pragmatic iterative-deductive process (Orton, 1997)	video and audio, *Group Explorer*	coded using Jefferson (2004); multimodal conversational analytic process analysis (Goodwin, 1981; Stivers & Sidnell, 2005)
(s)	Tavella et al. (2020). *Artefact appropriation in facilitated modelling: An adaptive structuration theory approach.*	one workshop	facilitated modelling; food cooperative community Denmark	adaptive structuration theory (AST)	audio recording, flip charts	structuration moves
(t)	Valcourt, Walters, Javernick-Will and Linden (2020). *Assessing the efficacy of group model building workshops in an applied setting through purposive text analysis.*	multiple interviews and workshop, prior field work	group model building (GMB); community, water, international (multi-cultural/multilingual)	social psychology	audio recording, notes	structural analysis of mental models and causal loops using purposeful text analysis (PTA) coded in *Dedoose* for causality

a complex web of relationships between culturally diverse parties with sometimes competing interests. (Horlick-Jones & Rosenhead, 2007, p. 593).

Here we see the gathering of the sort of data which could help explain how individuals (representing their organization's interests; for instance, the organizers, the council, the police, and artistic and community groups) might react to certain suggestions, reflecting their habits, dispositions and tendencies.

A second example of seeking a deeper understanding of context is given in case (**d**), Vo, Chae and Olson (2007). Here, considerable time was invested in gaining an understanding of different communities in Vietnam and their languages/vocabularies. The main objective seemed to be to make sure that the translation of transcripts and notes correctly captured the intent of each speaker. No doubt much was also learned about the habits, norms and ac-

ceptable behaviour along the way, but there is no indication in the paper of what use was made of this information about the cultural context. As for all the other papers, such cultural understanding was taken for granted or not thought relevant to the paper's main theme. However, authors who frequently work in a particular sector such as in the public sector (e.g. healthcare) would undoubtedly have, prior to the collaboration, a good understanding of the ethos, acceptable attitudes and behaviour in that sector.

We are left with the impression that, apart from the two examples highlighted, the other papers, beyond the description of the workshop itself, generally spend a lot of space reviewing and developing theory and relatively little space reporting on the doings and saying outside the workshop, meetings or interviews where much might have been learned about the way the participants act and interact in relation to their cultural backgrounds and context. We speculate that this could reflect (i) the phase

Table 2
Outcome and what is "lacking" from the papers selected from a practice theory perspective.

	Article	Outcome	What is Lacking?
(a)	Niederman, F. and Bryson, J. (1998). *Influence of computer-based meeting support on process and outcomes for a divisional coordinating group.*	[Learning by the group for performance] "Adaptive structuration theory (AST) emphasizes that variations in outcomes depend not only on the features inherent in a technology but also on how the group appropriates the technology and its various features. The AST perspective is useful in explaining performance differences between groups given essentially constant input that appropriated GDSS differently. This study is not inconsistent with the AST approach, in that it takes an input-process-output approach (…) focusing on the influence of GDSS on outcomes and selected behaviours and outcomes for one group over a series of meetings. It does not, however, focus on the specific constructs designed to measure amount or nature of appropriation".	use of ACT for data analysis purposes. Analysis of the influence of the cultural context – professional service providers with positive attitude to computers
(b)	Shaw et al. (2003). *Approaches to sharing knowledge in group problem structuring.*	[Learning from others, extend understanding by learning within the group] "[Our] explorations suggest a typology of knowledge sharing … a participant might naturally access knowledge about a problem through four approaches, called here stories, expanded sequences, broadcasts and newsflashes". "[evidence of] stories were found in the maps". "[evidence of expanded sequences] were found through the analysis of the participant-entered links ". Evidence of broadcasts and newsflashes were also found in the links.	video or audio recordings; empirical evidence of how the flow is constructed in the interactions; personal cognitive maps analysed in terms of cultural, social, political and material context
(c)	Horlick-Jones, T. and Rosenhead, J. (2007). *The uses of observation: combining problem structuring methods and ethnography.*	[Tacit learning from the problem owners, social learning] "as we are aware, this specific context [the Notting Hill Carnival] did not significantly influence our fieldwork practice." "with orthodox PSM deployment … the PSM analyst's emerging appreciation of the nature of the problem situation develops through tacit learning processes from the accounts provided by problem owners. In contrast, the form of ethnographic investigation we utilized views such accounts as topics for further investigation, rather than as resources that can be used to inform OR practice in unproblematic ways".	analysis of the relationship between cultural, social, political and material context and the observed micro behaviour of participants; video recording
(d)	Vo et al. (2007). *Developing unbounded systems thinking: using causal mapping with multiple stakeholders within a Vietnamese company.*	[Learning how to design a research system by the group] "this research has demonstrated that an [unbounded systems thinking] UST process gave the stakeholders an opportunity to consider other perspectives in learning about the problem situation". "The issues range from personal (what personal perspectives may inhibit the acceptance of other perspectives) and organizational (what organizational factors are influential such as culture, political environment, etc.) to technical (how to design a research system that is able to monitor the changes in mental models of the stakeholders)".	audio, video recordings or computer logs; notes on dynamics of individual behaviour
(e)	Franco, L.A. (2008). *Facilitating collaboration with problem structuring methods: A case study of an inter-organisational construction partnership.*	[Learning how to improve method/practice by the group] "The use of a grounded theory framework for data analysis was found particularly appropriate in gaining a further understanding of the perceived role and impact of PSMs in this particular collaboration. This paper argues that the grounded theory approach to data analysis has potential for use in a variety of contexts for group decision support researchers".	video, audio or computer recording of the workshops
(f)	Volkema, R. (2009). *Natural language and the art and science of problem/opportunity formulation: A transportation planning case analysi.s*	[Better tacit understanding of the problem by the group] "understanding group or team-based problem/opportunity formulation requires an appreciation for the syntax and semantics of natural language". "the study demonstrates the viability of a framework and method for identifying linguistic structures. … This grammar … allows for further investigation into the manner in which problem/opportunity-space is explored, the role that the chair or leader can play in this exploration, and the means by which radical reformulations can occur". "researchers must re-focus their own goals and agendas, tracking the development of issues in real time, rather than focussing on decisions or decisional outcomes as the unit of analysis".	video recording; analysis of the interaction of cultural, social, political and material context with linguistic behaviour
(g)	White, L. (2009. *Understanding problem structuring methods interventions*	[Learning the value of seeking collaboration with those not involved] Use of a PSM brought clarity to the situation and helped shift the objective for the project from a competitive to a collaborative one. In particular "in recognizing which voices were missing from the situation (farmers)". "The use of ANT provides a means for realising the importance of context and politics and for recognising the shifting interest and alliances".	Field notes, audio recordings, context analysed through narrative analysis
(h)	Franco, L.A. and Lord, E. (2011). *Understanding multi-methodology: Evaluating the perceived impact of mixing methods for group budgetary decisions.*	[Organisational learning about working in a multi-organisational context] "the intervention reported shows that in the multi-organisational context within which the intervention was carried out, no particular criteria or values associated with decision making effectiveness were dominant. The values embedded within our approach to and in decision support as illustrated in the multi-methodology intervention also show no particular concern or criteria as dominant". "we could have spent more time researching the context and budget processes within the TPSC [Tenage Pregnancy Strategy Committee] to further increase our awareness of the political implications of different recommendations during the intervention design phase". "We hypothesise that the intervention impacts observed may be related to the organisational context within which the multi-methodology is undertaken, and the contested nature of budgetary decisions".	audio or video recordings of the workshops. While the salience of political considerations and the norms of rationality are mentioned, no analysis of the links between the micro data and the cultural, social, political and material aspects are reported.

Table 2 (continued)

	Article	Outcome	What is Lacking?
(i)	Ackerman, F. and Eden, C. (2011). *Negotiation in strategy making teams: Group support systems and the process of cognitive change.*	[Learning to develop the potential of the DCM utilised] "The research involved the analysis of detailed time series data logs that exist as a result of using a GSS that is a reflection of cognitive theory". "As a result of analysing the logs, it became clear that the data logging process should be enhanced by additional facilities, for example, inclusion of on-line statistics (both for links and preferences)". "this study cannot be regarded as a study of cognition per se".	No video or audio recording; no cultural, social, political data; GSS at this time under developed for data analysis purposes.
(j)	Tavella, E. and Franco, L.A. (2015). *Dynamics of group knowledge production in facilitated modelling workshops.*	[Need for micro-level analysis to learn how to develop better group processes] "We have identified certain facilitated modelling practices linked to generative and collaborative patterns that resemble a relational mode of engagement amongst those involved, as well as to assertive patterns that resemble a calculative mode of engagement amongst those involved". "there is a need for more micro-level analyses of other facilitated modelling workshops to examine what is it that facilitators and workshop participants actually do as they interact in a model-supported discussion".	participants' cultural, social and political reality and its reflection in observed micro behaviour; video recording
(k)	Tavella, E. and Papadopoulos, T. (2015). *Expert and novice facilitated modelling: A case of a viable system model workshop in a local food network.*	[Analysis of social learning required] The DAM, clearly allowed the research aims of the project to be reached in a structured way. "we do not examine their different experiences before the workshop and how these impacted their behaviour … this would be an avenue for further research".	video recording; analysis of non-facilitating participants; analysis of the impact of the cultural, social, political and material context on behaviours (see outcome)
(l)	Velez-Castiblanco et al. (2016). *Boundary games: How teams of OR practitioners explore the boundaries of intervention.*	[From power and influence to collective learning] "Using the theory of boundary games, an intervention process can be expressed as a succession of actions on boundaries. It is possible to identify the actors carrying out the actions, and processes of generating, strengthening and weakening boundaries and their associated assumptions can be traced through analysis. This allows for an understanding of how individual actors affect the shared cognitive environment of a group (e.g., how an individual OR practitioner affects the thinking of his or her team), and it is also possible to trace how individual communications condition the possibilities for future actions through their effects on boundaries".	video recordings; more cultural background information about individual participants to support application of relevance theory
(m)	White et al. (2016). *Understanding behaviour in problem structuring methods interventions with activity theory.*	[Individual and collective learning resulting in emergent properties] "The analysis using AT helped to theorise the micro level dynamics that characterised the collaborative group model building processes in the case study. By applying AT to study how workshop participants use mediating artefacts to grapple with the object of a 'zero carbon zone', it was possible to show how a co-constructed, shared activity system can be developed to accommodate contradictions between the subjects' activity objects". "For practitioners, this approach should help them think about the intervention process and recognize and intervene when there are problems. Specifically, understanding that collective behaviours are emergent properties can help in planning the interventions and managing expectations". "By applying AT concepts to the empirical analysis of problem structuring work, the *process of relational co-construction* of collective and joint intentions, which are precursors for collective action, may thus be understood".	connection between participants' reported cultural, social and political reality and observed micro behaviour
(n)	Henao, F. and Franco, L.A. (2016). *Unpacking multimethodology: Impacts of a community development intervention.*	[Individual and group learning as reported by those involved] "The research reported here identifies a range of cognitive, task and relational-related impacts experienced by the management team". "our analysis helped us to develop a process model that explains the mechanisms for the personal, social and material changes reported by those involved. The model explains how the intervention's analytic and relational capabilities triggered effortful decision-making processes and integrative behaviours, which underpinned the reported impacts and changes".	audio and video recordings
(o)	Burger et al. (2019)). *Why so serious? Theorising playful model-driven group decision support with situated affectivity*	[Creativity and group learning] "Applying this perspective [situated affectivity] to study what's going on inside the black box of a model-driven GDS [group decision support] intervention, we have illustrated a micro-moment of human creativity in-situ which may be seen as indicative of our joint ability, drawing on reciprocal scaffolding processes, to overcome obstacles in the context of model-driven GDS".	cultural, social, political and material contextual data on individuals involved and their organizational roles and status
(p)	Franco, L.A. and Greiffenhagen, C. (2018). *Making OR practice visible: Using ethnomethodology to analyse facilitated modelling workshops.*	[Plea for more analysis of behaviour and learning in OR practice] "The ethnomethodology-informed perspective adopted here both complements and broadens the approach and level of analysis typically used to evaluate the impact of OR in practice". "The use of ethnomethodology to examine video recordings of actual OR practice allows us to show what seem at first unremarkable events (e.g. person A doing x led person B doing y as an example of z". However, what events are chosen for fine-grained analysis (and why they are important) is always driven by the theoretical and practical considerations of the researchers". "If the interest is on revealing not what is said about OR practice, but what is actually done as OR in order to assess and improve it, then undertaking this type of research is needed and complementary addition to more conventional studies"	a complementary analysis of the influence of cultural, social and political factors

Table 2 (*continued*)

	Article	Outcome	What is Lacking?
(q)	Velez-Castiblanco et al. (2018)). *The structure of problem structuring conversations: A boundary games approach.*	[Practitioners need to learn how process elements connect including the interaction between the micro and macro levels] "In the context of workshops, we came to realize the importance of the multimodality, namely, the possibility that actors can combine different modes (e.g. speech, gesture, image) to produce multimodal communications". "For BGT, models are just another mode that are part of a multimodal process. Their role, as it happens also with speech, gesture or writing, can be understood through their effects on the boundaries present during the interaction". "The interaction of a micro and a macro level in a workshop calls for developing practitioner's skills to consider both levels when dealing with complex problem-solving settings. Those skills can help the practitioner to understand how flows, configurations and stages of the structuring process connect".	an analysis of the impact of cultural, social, political and material context on the micro behaviour observed
(r)	Franco, L.A. and Nielsen, M.F. (2018). *Examining group facilitation in situ: The use of formulations in facilitation.*	[Detailed analysis indicates the facilitator's role in encouraging individual and group learning] "By adopting a conversation analytic approach to examine our video recordings, we were able to provide a fine-grained analysis of the use and interactional impacts of three different types of formulations used by the facilitator." "We see formulations being produced by the facilitator throughout the whole workshop." "Formulations, however, are not to be seen as verbal phenomena alone. As our empirical material demonstrates, formulations are also embodied social actions." "A key requirement of effective facilitation is to support a group process without influencing the content of group discussions …. Our findings show how facilitators use formulations to draw out the participants' contributions on their behalf without influencing content.".	a complementary analysis of the influence of cultural, social, political and material context
(s)	Tavella et al. (2020). *Artefact appropriation in facilitated modelling: An adaptive structuration theory approach.*	[Individual and group learning through time (longitudinal case studies) and across different contexts are called for] "our paper extends the literature on the material aspects of group dynamics". "In terms of practical implications, we offer managers and organisations an innovative lens to analyse decisions in complex group settings, as well as a framework to influence group settings and outcomes through artefacts"." Future investigations could thus consider more workshops in the same or across different contexts … [and] longitudinal studies that look into how artefacts and group interactions are intertwined."	video recordings; analysis of the impact of cultural, social, political and material context on micro behaviour
t)	Valcourt et al. (2020). Assessing the efficacy of group model building workshops in an applied setting through purposive text analysis.	[Group learning, in the form of collective and shared mental models, deduced from interview transcripts] [purposive text analysis] "The insights gleaned from this work have also demonstrated a beneficial use of PTA [Positive Text Analysis] for generating [causal loop diagrams] CLDs of collective and shared mental models from multiple individual interview transcripts".	video recordings, analysis of relationship between records of micro behaviour and the cultural, social, political and material context

of theory development, the authors were preparing the theoretical basis for more comprehensive reports of all the activities, formal and informal in the future, and presumably (ii) the judgement of the authors about what material should be included in an article to support their theoretical and/or methodological contribution in an OR journal (Ormerod, 2017), a point we return to later.

The 20 cases introduce a wide variety of DAMs including: (i) social information processing analysis, (ii), coding by attribution theory, (iii) conversational analysis, (iv) technical, personal and organizational perspectives, (v) grounded theory: coding and categorizing using *Atlas.ti*, (vi) coded hierarchical issue maps, discursive temporal flow, self-interests, (vii) narrative analysis, (viii) grounded theory; coding and categorizing using *Decision Explorer* software, (ix) data attribution theory; structure coded in terms of themes, links and networks, (x) knowledge creation and maintenance using conversational analysis, (xi) cognitive mapping, (xii) coded according to theoretical definitions of facilitators, (xiii) coding guided by relevance theory, (xiv) activity theory, (xv) grounded theory interactive-inductive approach with coding using *Atlas.ti,* (xvi) multimodality coding scheme based on activity theory, (xvii) boundary games theory, (xviii) multimodal conversational analytic process analysis, (xix) structuration moves, and (xx) structural analysis of mental models and causal loops using purposeful text analysis (PTA) coded in *Dedoose* for causality.

The choice of DAM depends crucially on the social theory (ST) explicitly or implicitly adopted. Cases (**b**), and (**c**), provide further examples of how DAMs are associated with STs. Case (**b**) uses attribution theory for its DAM. The authors of the paper explain that:

Attribution theory suggests that people think about a problem in terms of chains of events. Attribution theory suggests that knowledge is accessed by thinking of, for example, the causes of (chain down) or consequences from (chain up) a particular action. … Attribution theory suggests that the causal links made during the workshops under consideration are likely to be indicative of how participants have thought about the problem. (Shaw, Ackermann & Eden, 2003, p. 939).

The DAM of Case (**b**) is therefore a derivative of its ST of personal construct theory. Case (**c**), the Notting Hill Carnival paper, explicitly adopts ethnographic understanding of context for its ST, and uses conversation analysis for its DAM:

Conversation analysis is an approach to the study of social interaction and talk-in-interaction that, although rooted in the sociological study of everyday life, has exerted significant influence across the humanities and social sciences including linguistics. Drawing on recordings (both audio and video) naturalistic interaction (unscripted, non-elicited, etc. [ethnographic data]) conversation analysts attempt to describe the stable practices and underlying normative organizations of interaction by moving back and forth between the close study of singular instances and the analysis of patterns exhibited across collections of cases. (Sidnell, 2016).

From the 'lacking' and 'outcome' columns of Table 2 and elsewhere we can detect a number of themes for consideration: (i) video or audio recording were often not available; in fact only 4 papers featured video recordings, the 'gold standard' as far as

practice theory is concerned; (ii) 6 papers used pragmatism either directly or indirectly (implicitly because of their use of either grounded theory or boundary theory, both of which derive from the work of pragmatist scholars); (iii) many papers did not report on the cultural, social, political and material context, although as has already been mentioned the authors may have simply considered such matters irrelevant for the main purposes of the paper; what they had learnt was taken for granted. However, a key feature of practice theory is the influence of contextual features on an agent's interests, identities, networks and allies, and hence on an agent's sayings and doings; (iv) no papers in the selection report on the process of developing hard OR solutions; (v) interviews and meetings were seldom the subject of analysis though they might have provided additional insight (vi) none of our selected papers featured Bourdieu's or Schatzki's approaches; (vii) seldom were academics involved as observers without also being the facilitator; (viii) learning was a common feature identified by the authors as 'outcomes'; and (ix) a small set of scholars were involved in many of the papers.

Practising our own form of 'zooming-out', we provide an overview of the cases. Here, we identify a characterisation that consistently relates to the outcomes of the OR interventions, which can be considered to range from *substantive practice*, *modest practice*, and *indifferent to practice*. From our reflections this characterisation can be made, or literally plotted, on each of the dimensions (or factors) of the generic context-mechanisms-outcomes (CMO) framework (Pawson & Tilley, 1997), which allow us to analyse our cases without predeterminations or prior assumptions. These reflections also allow us to consider previous studies of OR practice that have suggested focusing on the relationship between context and process (Eden, 1982) and context and outcomes (White, 2006). The characterisation of practice over each of the CMO dimensions is flexible enough to allow reflection on the broad range of cases in our study.

To illustrate our characterisation, we identify some exemplary results. An example of a contextual factor is the setting for the intervention described as more or less policy-relevant, or organisational or group relevant. The mechanism factor is described as consolidative, or novel processes adopted or used (see Yearworth & White 2014). Finally, descriptions of the modes of organising that emerge through the practices of OR and can be seen as insights regarding the outcomes of the intervention (White, 2009). In short, context matters for the range and types of mechanisms adopted and the range of outcomes that are possible; but we note mechanisms generated or adopted and outcomes achieved may differ considerably under different conditions of context (White, 2006). We can thus now characterise the range of practices that have distinct implications for our understanding of all OR practice. These characterisations also open up the possibilities for further insights into communicative action perspectives on stakeholder engagement (see Mingers & Rosenhead, 2004). At the substantive practice end of the range we find that the context in terms of policy relevance is high, and mechanisms are novel and have the highest potential regarding broader, more macro outcomes. Exemplary is case study (**q**), where novel methods were adopted, underpinned by strong social theory and applied in policy-relevant settings. Towards the middle of the range (modest practice) we see equivocation on context, but the mechanisms are consolidative in either using well-established methods or combining commonly used approaches. The exemplar here is case study (**n**). The study focuses on group processes and is concerned with activities of actors within a group. Studies of this type also focus on internal (group) outcomes. Finally, identified as indifferent to practice, is group-orientated in context using conventional methods in a single workshop or intervention, with social psychology mostly assumed. The exemplar here is case study (**b**). Stud-

ies mostly lead to modest outcomes and related to stakeholder engagement.

As we have seen in this section, there are OR examples in the literature of utilizing activity theory (**k**), pragmatism (**n**), actor-network theory (**g**), and adaptive structuration theory (**p**). Adopting practice theory as a framework to study OR processes and practices can have a significant impact on the way a workshop is conceived, data are gathered, and the results analysed. Tavella, Papadopoulos and Paroutis (2020), for instance, use Giddens to address the research question: how are material and conversational elements imbricated[2] during FM (facilitated modelling)? The authors draw on AST (adaptive structuration theory) to operationalise the process of FM through talk and artefact use. As they explain:

> AST is a version of structuration theory (Giddens, 1979; Poole, Seibold & McPhee, 1985; Poole et al., 1996) suitable for the analysis of group interactions. Importantly, from a structurational perspective, group interactions 'can be conceived as the production and reproduction of positions regarding group action, directed toward the convergence of members on a final choice' (Poole et al., 1985, p. 84). Appropriation occurs by members adopting particular structuring moves, for instance, explicitly or implicitly referring to structures, substituting a structure with another one, combining or contrasting structures, and rejecting structures (Poole & DeSanctis, 1992; Poole et al., 1996). Production and reproduction occur within communicative interactions through an increasing stakeholders' joint understanding and coordinated actions. Structures-in-use impose conditions for structuration, thus determining the range of possible actions within the system, in other words, enabling and constraining group action. (Tavella et al., 2020, p. 4).

What is striking in the above case is the way, on adopting a practice theory lens, attention is focused on the analysis of the entwining of materiality and human interaction, the material agency of artefacts, and the way that knowledge is produced or reinforced and used by participants.

5. Adopting practice theory for or academic research

To engage in research into the sayings and doings of those participating in a workshop, meeting or interview, academic researchers engage in social research. Any social research is fraught with difficulty. What social activity to focus on? Where and what data to collect? How to collect the data? And perhaps the most difficult question, how to interpret the data? An additional complexity is added when workshops are being studied by an academic researcher who is also the facilitator pursuing the ostensible purpose of the workshop. This immediately places strong boundaries on objectivity and naturally steers the academic researcher towards an interpretive stance in their analysis.

A starting point can be to determine the research question such as how participants generate ideas, engage in analysis and come to conclusions (if any); but equally, one could start from a given set of data (perhaps originally gathered for some other purpose) and see what of interest can be gleaned from it. It is also possible to start from somewhere else entirely; for instance, if a new method of gathering data, such as a GSS, becomes available, how can it be utilized, what new can be learned? Sociology researchers also have to decide on the underlying social theory which they are going to adopt, providing them with a framework. All of the factors entering the research design have to be consistent with one another if the understanding developed from the data is to be credible and stand up to critical scrutiny.

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[2] To imbricate: to arrange distinct elements in overlapping patterns so that they function interdependently

There are also important enabling factors to be taken into account. The most important requirement is to ensure the OR researcher is equipped with the necessary practice research skills so that they are familiar with the issues involved and relevant methods and technologies; secondly, funds will be needed to support the cost of researchers, transcribers and sometimes translators and any technology used; and thirdly, permission will be needed from participants to observe the sayings and doings of interest, obtain access to data, and make findings public.

Advice on 'how to conduct a practice-based study' can be found in Gherardi (2012); methodological reflections on practice orientated theories can be found in Jonas, Littig and Wroblewski (2017); and suggestions as to how to go about studying practice, including what to do, what to watch out for and how to write about it, can be found in Nicolini (2012, Chapter 9). In each of these sources case studies can be found to illustrate the issues. Table 2 above indicates where the case studies could have been improved in the light of practice theory i.e., the 'what is lacking' column. We have summarised these observations as recommendations, expressed as a set of questions to be addressed by the OR practitioner/scholar, in the next Section.

5.1. Recommendations

Our conclusion from having immersed ourselves in the literature is that practice theory is best understood, in the context of OR, as an evolving form of interpretive theory. Although practice theory provides a change of perspective markedly different from other interpretivist lenses, researchers currently working within an interpretivist framework should have little difficulty in using and exploring practice theory approaches and implications. We thus do not suggest a call to arms to embrace a new paradigm; rather we suggest the implications of practice theory in OR academic research need to be further developed and tested in practice. To do so requires on the one hand, setting out a guiding context for research in this space; and on the other, practical recommendations for taking action. We first address the guiding context by the following recommendations – our agenda:

A. *Broadening the literature reviews for theory and methodology contributions in OR* – for (a) theoretical development of practice theories; (b) critiques of practice theory; and (c) papers describing and evaluating the use of practice theory in other disciplines.

B. *Considering practice theory in its various forms as a foundation for theoretical contributions to OR practice* – such as actor network theory, action theory, ethnomethodology and structuration theory, and the approaches of Bourdieu and Schatzki.

C. *Encouraging as standard practice the collection and reporting of cultural, social, political and material contextual data (perhaps as supplementary information)* – whether needed for the immediate purposes of the paper or not. Authors of already published papers could revisit their records for unreported cultural data relevant to practice theory analysis. To operationalise this requires a commitment between authors and editors that the inclusion of such data becomes normalised for any paper that is reporting on an OR study. As suggested earlier in our analysis of the selected papers, the absence of such data likely represents a mutual understanding between authors, reviewers and editors, on the whole, that such details are not necessary, apart from the exceptions noted.

D. *Considering the use of practice theories for application in specific cases as a methodological contribution to OR practice more widely* – in other words, going beyond workshops to identify opportunities for application at all the interaction points

within an OR intervention, such as advocated by Franco and Hämäläinen (2016). This then looks beyond the binary of OR practitioner and client.

E. *Being alert to the potential that new technologies offer for the collection of data about OR engagements* – to (a) support and collect data from workshops, meetings and interviews; and (b) assist in the analysis and interpretation of data. For instance, recordings of videoconferencing interactions (Zoom, MS-Teams and so on) could be the subject of analysis. The use of computer logs from Group Support Systems, such as *Group Explorer,* has become a standard data collection device for practitioners. As the use of such GSS becomes more prevalent in an online setting for same time/different places workshops (Yearworth & White, 2018) then the conference systems that are used to connect participants can also provide recordings of participant interactions via audio, video, shared screens, and chat.

F. *Conducting comparative studies* – of (a) different research frameworks; (b) projects involving a hard positivistic/scientific perspective or mixed hard and soft interpretivist OR interventions (c) different contexts.

G. *Active seeking of opportunities to observe and record hard OR practitioners working with their clients* – opportunities have been found in 'Soft' OR interventions and reported but opportunities to record behaviour could also be sought in 'hard' OR interventions across the board.

Items F and G suggest the prospect for the OR academic practitioner/researcher devoting more time and effort to the study of the complete range of OR practices, bringing to bear an interpretivist approach even when analysing hard positivistic/scientific interventions. Echoing Dando and Bennett (1981), the positivist outlook is still held by a significant segment of the OR community, who are unlikely to be troubled by the theoretical considerations discussed here. Yet analysis from such studies/observations could add considerably to the pedagogy of OR, by contributing examples of learning through reflective practice such as suggested by Ormerod (2008b) and Ackermann, Alexander, Stephens and Pincombe (2020). Franco and Greiffenhagen (2018) make a similar observation and suggest that OR training can be improved if learning materials are derived from recordings of actual practice. Furthermore, our reflections on the set of case studies identify a range of practice that we have so far characterised as substantive, modest, and indifferent. These characterisations of practice were thus arrived-at through our own process of zooming-out. According to Bourdieu's logic of practice introduced in Section 3.4 these can be further analysed in terms of what has changed in the system of evolving actors' dispositions and consequent impact in the field of play.

Ultimately the purpose of adopting practice theory is to improve our understanding and practice of OR. We see this as being applicable at the level of the performative elements that make up everyday OR practice (zooming-in) and ranging out to the ways in which the methods and tools of OR practice intersect and interact with wider practices (zooming-out) (Nicolini, 2012).

Table 2 indicates where we believe the existing best examples that we have found of case studies in OR practice could have been improved in the light of practice theory. These observations have been collected together here as a set of recommendations expressed as a set of questions to be addressed by the OR practitioner/scholar. Further, we have linked these recommendations to elements from the "palettes" – in the sense of a composition drawn from materials on an artist's palette – in Nicolini's conception of a theory-methods package (2012, pp. 219–235). These Nicolini elements are identified in square brackets following each question.

Performative Elements (Zooming-In)

Q1. Is there a sequential record of the flow of participant-to-participant and participants-to-OR practitioner/scholar interactions over time? For example, audio or video recordings of workshops (especially video), computer logs from Group Support Systems, field notes, interviews, email records… ['sayings and doings', 'interactional order', 'timing and tempo']

Q2. Has the report of the OR study been situated within the everyday activities of the OR practitioner/scholar? Why did they get involved? What was their motivation? Was their contribution successful? What happened next? ['practical concerns']

Q3. How were meetings and/or workshops between the OR practitioner and participants/clients organised e.g., onsite, offsite, online… ['bodily choreography']

Q4. Have the results, recommendations, action plans, models, boundary objects of the OR study been recorded and analysed for their intermediating role and function? ['tools, artefacts and mediation work']

Q5. How did the OR study, as performed by its actors, align with, or challenge, its ownership? How did the interplay of organisational roles and status constrain or expand the OR study? To what degree did constitutive rules of methods lead to generative practices? To what extent was the OR study a recognisable and reproducible (by others) method ['tension between creativity and normativity', 'processes of legitimation and stabilisation']

Intersectional Elements (Zooming-Out)

Q6. Have the performative elements of the OR study (Q1-Q5 above) been analysed in terms of their cultural, social, political, and material context?

Q7. How has the OR study impacted wider practices within the organisation? Has it supported existing ways of working, created new socio-technical configurations/assemblages (translations), and/or led to tensions or conflicts?

Q8. What possibilities have the OR study opened-up? Where are we now? What is different as a consequence of the intervention?

In terms of zooming-in to the performative elements of practice it is no surprise that Soft OR/PSM engagements provide a rich source of empirical examples, as these questions are frequently addressed in the reporting of interventions. All the questions in the intersectional elements, zooming-out, are generally noted as lacking in Table 2. Question 5 provides an interesting pivot between the performative and the intersectional by specifically looking at issues of legitimation and the challenges of actors' alignment, or breakdown, with ownership. For example, whilst the workshops in cases (**k**) and (**m**) have been analysed extensively at a micro level (zooming-in), the lack of integration with the macro view, or absence of zooming-out, led to what Freeman and Yearworth (2017) diagnosed, from an ANT perspective, as a problem of ownership and a failure to achieve interessement and thus translation. Zooming-out in the early stages of the project and (re-)engaging with the cultural, social, political and material concerns (especially political) would potentially have mitigated this problem.

The zooming-out to intersectional elements, especially through the use of Q7 and Q8, would have enabled a re-framing or re-interpretation of the outcomes listed in Table 2 following the Bourdieusian logic we mentioned above. These are directly addressing the question of what has changed in terms of actors' dispositions (habitus) and field. See for instance, cases (**e**), (**g**) and (**q**), with (**e**) being exemplar adopting a grounded theory approach. We believe that thinking in terms of Bourdieu's habitus and field would be a better way of framing discussions, i.e., learning from engagements as a change in habitus (following from our identification of modest practices) and group learning or social learning as a change in field (following from our identification of substantive practices).

Implementing these practical recommendations would lead to a breaking down of the (artificial) time-bounded barriers of the OR intervention and offer a much broader and longer view of the impact of an intervention. This would extend beyond evaluation of interventions, which is still necessary, and lead us to a view of OR as a continuous practice, both for the customer and the practitioner, and bound up in Bourdieu's logic of practice such that it transcends the start and end of any specific intervention.

6. The potential impact on or professional practice

While researchers are interested in designing research and utilizing methods that tell us as much as possible about organizational life – and are thus useful projects, in that they contribute to our stock of knowledge – managers' understanding of 'useful research' usually rests on what the outcome of such projects can actually do for the organization regardless of their efficacy in generating new insights. (Warren, 2009, p. 568; italics in the original).

In the Tavella, Papadopoulos and Paroutis cases, for instance, the authors claim that, in terms of practical implications, they offer:

… managers and organisations an innovative lens [AST] to analyse decisions in complex group settings, as well as a framework to influence group settings and outcomes through artefacts. For instance, managers could use artefacts during a workshop to keep the discussion going (supportive device) or may need group knowledge to discuss a topic/issue of strategic importance (in this case, groups could use artefacts as strategizing devices). (Tavella et al., 2020, p. 10).

Research must eventually offer generalities of some sort or another which can be taken as relevant in particular situations. But as Tsoukas (2009b) explains, "The more researchers are concerned with capturing situational uniqueness, the more descriptive they become and the more theoretically open-ended their accounts will be. By contrast the more the researchers try to situate their study within what is already known about the phenomena of interest, in order to decide what a particular case study is a case of, the more they will describe the phenomenon in terms that have already been defined in the literature" (p. 286). Practice theory requires account to be taken of past history and the context of participant values (societal, cultural and ethical norms). As we have already noted, from Table 2 we see that this has been mostly lacking from the case studies we have analysed and suggests we are only beginning to grapple with the implications of practice theory for OR practice. The agenda and practical recommendations we set out above show how we can raise the bar. Adoption of practice theories thus points away from the possibility of generalising in a way that is useful for practitioners. Tsoukas, however, argues that all is not lost when small numbers of very varied cases are considered: "It is not so much analytical generalization that small-N [only a small number of cases] studies aid, as *analytical refinement* (or *heuristic generalization*). By doing so, the craving for generality is not the craving for subsuming particular instances under general laws or mechanisms, but the craving for a clearer view – higher elucidation. The analytical refinement achieved does provide general concepts, which however, are inherently open-ended – generalizations are heuristic. They are generic understanding without annihilating the epistemic significance or the particular" (pp. 286–287; italics in the original). The OR research community (and we include ourselves in this) has yet to understand this issue. We therefore suggest two additional possibilities to be considered alongside the recommendations listed in the previous section.

First, we should be considering theories and methods that suggest the implications of practice theory for OR practice, deriving

appropriate generalizations from case studies, and engaging in the discussions. The impact of this should contribute directly to the managerial implications of theory, and methodological contributions in OR more broadly e.g., connecting to the wider practice literature to position the work – such as technology as practice, strategy as practice, learning and knowing phenomena as situated practices (Nicolini, 2012; p11). What is clear from reading, for instance, Gherardi's 'tricks of the trade' (2012; pp. 201–225) is that there is a rich set of methods available to study practices "that elicit the tacit bricolage of meanings and matters in the field" and that we have hardly scratched the surface in drawing on them in OR scholarship. The zooming-out method we developed – of characterising practice in the range substantive, modest, to indifferent on each of the context-methods-outcomes framework dimensions – provides a practical reflexive approach that could be easily employed.

A problem also arises that mitigates against the possibility of communicating the nature of practice theory. In theory, practitioners might learn about practice theory directly by reading this paper, or attending a conference, or working on a client project with an academic practitioner; they could also learn about it by reading or writing case studies, or from lectures/exercises/case studies at universities, short courses from OR professional societies, or from the internet. Despite the great variety of possibilities, we suspect that not many practitioners would be interested in spending their time pursuing such a theoretical issue, seemingly distant from their day-to-day affairs. However, there are two significant groups of people who might take a different view, namely practitioners who were once academics, and current academics who engage in practice either to enhance their salaries, or as a pro bono activity, and/or to enhance their research.

The most direct way to reach practitioners is to offer something tangible that they could use; for instance, Horlick-Jones and Rosenhead concluded that "added value arises in particular from the insight provided by ethnography into informal and real-world aspects of problem situations, and into the modes of reasoning adopted towards these problems by relevant actors" (Horlick-Jones & Rosenhead, 2007, p. 599). Perhaps a new method based on a practice theory could be developed. Another possibility could be to introduce some sort of participant approval/disapproval system into existing group decision software such that participants can display their attitudes (a FaceBook 'like' or emoji) when any change to a model is proposed by another participant. These could alert the practitioner/facilitator as to which a participant is influencing others (for instance, as a result of cultural/social capital in the form of role and status) as the group makes choices. For instance, GSS such as *Group Explorer* (for causal mapping or JOURNEY making), which already supports preferencing and voting, could be developed further to support participant/facilitator alerts. Yearworth and White (2019) make the argument that GSS for PSMs should be enhanced with such capabilities.

Second, we thus suggest a possibility to consider – developing tangible GSS-based feedback mechanisms for use by practitioners. Such approaches would consider how practice theory can inform improvement in practice by the incorporation of dynamic feedback from participants/clients to the OR practitioner during an engagement. This tangible feedback will need to include elements concerning participants' actions that previously would have been considered part of an evaluation process. For example, the evaluation framework of (Midgley et al., 2013) could be re-purposed and incorporated into the GSS.

In summary we have suggested a total of seven recommendations with specific actionable questions to be addressed and two more speculative activities to be included on the agenda of any researcher intent on exploring practice theory and its implications for research and for practice. Within this broad agenda we have further provided a specific set of 8 questions that can be used by

OR scholars and practitioners alike in the process of "bringing it all together" (Nicolini, 2012. p213). Such an agenda we think is rich with possibilities.

7. Conclusions

Practice theories potentially enable OR scholars to analyse the behaviour of participants in OR interventions. Workshops and meetings provide the opportunity to observe behaviour; video, audio, GSS and now videoconferencing platforms provide opportunities for data capture; practice theories and related data analysis methods provide the theory and tools with which to derive insights into the interaction between OR practitioner and client/participant. Having examined the theoretical development of practice theories, and the use of a range of social theories in published OR case studies, an agenda is proposed to advance the exploration of practice theory, its application in OR scholarship, and its potential impact on OR practice. We suggest that it is unhelpful to consider whether the adoption of practice theory should be viewed as a paradigm shift, primarily because in practical terms it seems perfectly possible for individual researchers currently utilising an interpretive framework to adapt their current research practices to the new way of thinking; practice theory is a development of, rather than an overturning of, interpretive theory. We note that most adherents of a positive/scientific persuasion, the approach favoured by most OR scholars, have yet to be persuaded to change their perspective and take advantage of interpretive theories. However, an agenda has been proposed – a practice-theory-for-OR (PT4OR) agenda – to advance understanding of practice theories, its application in OR academic research, and its potential impact on OR practice that can be operationalised by any OR practitioner.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.ejor.2022.08.030.

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