

Original citation:

Nicolini, Davide, Scarbrough, Harry and Gracheva, Julia (2015) Communities of practice and situated learning in healthcare. In: Ferlie, Ewan and Montgomery, Kathleen and Reff Pedersen, Anne, (eds.) Oxford Handbook of Health Care Management. Oxford: OUP. ISBN 9780198705109

Permanent WRAP URL:

<http://wrap.warwick.ac.uk/69489>

Copyright and reuse:

The Warwick Research Archive Portal (WRAP) makes this work by researchers of the University of Warwick available open access under the following conditions. Copyright © and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable the material made available in WRAP has been checked for eligibility before being made available.

Copies of full items can be used for personal research or study, educational, or not-for profit purposes without prior permission or charge. Provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

Publisher's statement:

Nicolini, Davide, Scarbrough, Harry and Gracheva, Julia. Communities of practice and situated learning in healthcare edited by Ferlie, Ewan and Montgomery, Kathleen and Reff Pedersen, Anne 2016, reproduced by permission of Oxford University Press.

Link to final published version:

<https://global.oup.com/academic/search?q=Oxford+Handbook+of+Health+Care+Management&cc=gb&lang=enn>

For more information, please contact the WRAP Team at: wrap@warwick.ac.uk

To appear as:

Nicolini, D. Scarbrough, H. Gracheva, J. (2015). 'Communities of Practice and Situated Learning in Healthcare'. In E. Ferlie, K. Montgomery, A. Reff Pedersen (eds.) *Oxford Handbook of Health Care Management*. Oxford: University Press.

COMMUNITIES OF PRACTICE AND SITUATED LEARNING IN HEALTHCARE

Davide Nicolini, Warwick Business School, University of Warwick , UK

Harry Scarbrough, Cass Business School, City University, London, UK

Julia Gracheva, Independent researcher, New York, USA & IKON, Warwick Business School, UK.

Abstract

In this chapter we examine the origins, nature and practical implications of the idea of 'community of practice'. We argue that the concept has been used both to illuminate the challenges of creating a 'learning culture' in healthcare and to establish initiatives promote knowledge transfer and sharing. After clarifying some of the key concepts under discussion, in the chapter we illustrate the general features of this broad family of interventions, discuss their characteristics and summarise their key success factors. We also show how the ideas of community of practice and situated learning have been

applied in diverse ways by healthcare organizations and funders, how these ways of knowing and learning have been inserted into the established institutional order, and the mixed, but sometimes promising, outcomes which have flowed from them.

Key words: communities of practice; learning; socialization; knowledge management; organizational development; online communities; knowledge sharing; change; healthcare improvement

This chapter deals with an issue which goes to the heart of healthcare policy and management: how to reconcile an established structure based on professional expertise with the multidisciplinary strategies that are increasingly needed to address chronic conditions, link research to practice, and improve processes? This tension between fundamentally different ways of organizing knowledge and expertise has been heightened by the challenge of delivering high-quality and safe care within tight resource constraints. This has placed healthcare organizations under acute policy and managerial pressure to learn from their failures, and to support the rapid application of new knowledge and evidence in practice. In the USA, for example, explicit calls to establish specific processes to learn from failures goes back at least to the Institute of Medicine report “To Err is Human “ published at the turn of the millennium (Kohn, Corrigan et al. 2000). In the UK context, these pressures have been highlighted most recently in the Francis Report on the failings of the Mid-Staffs hospital trust (Francis 2013) and the Berwick report on patient safety (Berwick 2013). In both cases the emphasis is on the need to ‘learn lessons’ from and establish a ‘culture of learning’.

The established professionalized role structure of the NHS and other healthcare systems has consistently struggled to produce the kind of multidisciplinary collaboration and organization-centred learning which these reports (and their precursors) so cogently advocate (Ferlie, Fitzgerald et al. 2005, Addicott, McGivern et al. 2006, Battilana 2011). As a result, in the last two decades a large number of healthcare organizations and funding bodies have developed initiatives around learning and knowledge sharing which congregate under the banner of ‘communities of practice’. This notion has become widely used within the healthcare field as a way of talking about the many forms of knowledge and learning which fall outside the boundaries of established professional expertise. Communities of practice resonate with healthcare professional as they promise to foster mutual learning and knowledge sharing building on the affinities which stem from doing the same work. The idea

of communities of practice has thus achieved widespread currency internationally, both as a tool for understanding how learning unfolds in healthcare settings and as a tool for promoting knowledge transfer and sharing, with studies or interventions reported in Australia, Canada, Denmark, UK, and USA (Ranmuthugala et al., 2011).

In this chapter, we show how the ‘community of practice’ concept helps to illuminate some of the challenges of creating a ‘learning culture’ within healthcare systems. We also show how it has been applied in diverse ways by healthcare organizations and funders, how these experiments in new ways of knowing and learning have been inserted into the established institutional order, and the mixed, but sometimes promising, outcomes which have flowed from them. To do this, we examine the origins and nature of this broad family of interventions, discuss their characteristics and summarise their key success factors. We begin, however, by clarifying some of the key concepts under discussion, starting with the concepts of situated learning and community of practice.

WHAT ARE SITUATED LEARNING AND COMMUNITIES OF PRACTICE?

The concept of situated learning also known as situated learning theory emerged in late 1980s as an alternative to the traditional cognitive theory’s understanding of learning as a process of knowledge transfer between teacher and learner, the acquisition of a stock of skill and the development of mental structures. For situated learning theorists, learning is much more than the transfer and accumulation of information and should be rather conceived as a continuous active and social process arising from the involvement in the socially constructed practice and the interpretation of personal experiences associated with it (Elkjaer 1999; Lave & Wenger, 1991, Brown & Duguid 1991; Gherardi, Nicolini & Odella, 1998). Learning has

thus less to do with acquiring or accumulating information and is rather a process of becoming socialised in a particular way of doing and knowing:

“Absorbing and being absorbed in the “culture of practice” (...) might include (knowing) who is involved, what they do, what everyday life is like, how masters talk, walk, work, and generally conduct their lives, how people who are not part of the community of practice interact with it, what other learners are doing, and what learners need to learn to become full practitioners. It includes an increasing understanding of how, when, and about what old-timers collaborate, collude, and collide, and what they enjoy, dislike, respect, and admire. In particular it offers exemplars (which are grounds and motivation for learning activity), including masters, finished products, and more advanced apprentices in the process of becoming full practitioners” (Lave and Wenger, 1991, p. 95).

In short, situated learning is associated with engagement, belonging, inclusiveness and developing identities rather than acquiring concepts and theories while sitting in a class. To explain the process of situated learning, Lave and Wenger (1991) introduced the two key notions: legitimate peripheral participation and communities of practice.

Legitimate peripheral participation refers to the progressive involvement of new arrivals in the practice as they acquire growing competence in the ongoing activity. The term “legitimate” emphasises that a necessary condition to learn anything at all is to become part of an activity; to learn one needs both to immerse oneself in what is going on, with all the risks and emotions that this implies. “Participation” indicates that learning always takes place because (and thanks) to the interaction with others. Learning cannot take place if participation is not possible. At the same time, the context of learning is shaped by historical conditions (learning how to become a nurse today and twenty or eighty years ago is very

different) and articulated according to a specific division of influence and power (for example between teacher and knower but also advance learners and total novices). One of the consequences is that no matter how compliant and subservient the novice is, there is no such thing as learning without conflict; any modification of the knowledge distribution is perceived as a way of subverting the established knowledge/power relations within a social context. One example, is when advanced novices start to usurp the hierarchical position of other practitioners when they begin to acquire decisional discretion. For this reason, legitimate peripheral participation always entails some unresolved ambivalence, as between revealing trade secrets to novices to enable their socialisation, against hiding them to preserve the status quo; and between attempts by novices to try to steal the knowledge with their eyes against their search for new and emancipating ways of doing things that may affirm their autonomy. Finally, the adjective “peripheral” suggests the existence of a variety of positions that members can occupy with respect to the activity carried out and the people involved in it. Peripherality, that is sitting at the boundary of what is going on and simply making copies or serving tea, both exempts and empowers: ‘where’ novices stand with respect to the responsibilities for the final product is highly significant both to them and to others. Peripherality, however, is a key condition as it allows novices to make mistakes, experiment and learn, and not only from their mentors (as in the traditional model), but also from other participants in the practice, including other novices. Lave and Wenger (1991) clearly state that the notion of peripheral participation does not necessarily imply the existence of a centre. The opposite of peripheral here is fully immersed and responsible for the ongoing accomplishment of a practice and its outcomes. The specific ways of interacting among those involved in the practice and the existing power relations (which in turn define the terms and conditions of participation) interact with characteristics of the individual learners to generate

similar (but never identical) learning curricula and trajectories (Lave and Wenger, 1991; Gherardi, Nicolini & Odella, 1998).

The term *Community of Practice* (CoP) was coined initially to describe the totality of the social learning systems that originates around any particular activity (Lave & Wenger, 1991). Defined broadly as “groups of people who share a passion for something that they know how to do, and who interact regularly in order to learn how to do it better” (Wenger, 2004, p.2), CoPs represent social learning spaces in which commitment derives from identification with a shared domain of interest, a shared repertoire of tools and words and specific modes of communication which emerge as a result of continuous collaboration (Wenger, 1998, p. 15). The shared domain or joint enterprise is the area of common interest that serves as the source of identity construction. Learning about and contributing to the shared domain of interest (from collecting stamps to midwifery) constitute the major source of cohesion. By virtue of working together, sharing knowledge and socialising newcomers, participants develop an internal social organization with different levels of influence and prestige. CoP is thus a descriptor for the set of interconnected people who stay in touch and kept together by the shared interest in the common task. Finally, by virtue of working together members of a CoP develop a common repertoire of artefacts, narrative practices, knowledge and shared methods which itself becomes a further source of cohesion among members and differentiation from non-members.

In sum, the idea of community of practice shifts the attention from the learning process -- which was the main object of situated learning theory - to the relationships and exchanges of those who are brought together by the desire or need to improve their practice. It emphasises that people who have been socialised and carry out the same practice are often joined by a “complex [set of] relationships, self-organization, dynamic boundaries, ongoing negotiation

of identity and cultural meaning” (Wenger, 1998, p. 1). Practitioners involved in a shared domain of knowing thus develop a number of commonalities, and in the right conditions they can constitute and recognise themselves as a community. In this sense CoPs are different from teams, which are artificially assembled to achieve a specified goal. They are also different from other forms of networks as the latter are usually kept together by mutual exchanges rather than a common identity, history and joint enterprise.

Crucially, CoPs are first and foremost knowledge communities, in the sense that they exist because and for the sole purpose of perpetuating, sharing and refining some form of expertise and mastery. Mutual bonds derive, in fact, from their passion about a topic and above all the desire “to deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger, McDermott, & Snyder, 2002, p. 4). As such, CoPs are powerful mechanisms of knowledge sharing, knowledge production and mutual learning. COPs are particularly effective in transferring best practices through social relations; they are also a powerful mechanism for solving problems and generating new solutions (members in a community know who and how to ask for help); and a mechanism to refine and update professional skills (Wenger and Snyder, 2000).

In sum, situated learning theory and COP constitute two different faces of the same coin: one offers a new appreciation of the process of learning and socialisation; the other foregrounds the community that is generated around this process and its capacity to operate as a mechanism of knowledge sharing and mutual learning. The two concepts are especially suitable to be applied in healthcare and, in fact, both were originally derived from the study of, amongst others, a group of traditional midwives (Lave and Wenger, 1991).

SITUATED LEARNING AND COMMUNITIES OF PRACTICE IN HEALTHCARE

Situated learning theory and CoPs have been enthusiastically embraced by the healthcare sector (Cope, et al., 2000; Li et al., 2009a; 2009b; le May, 2009; Ranmuthugala et al., 2011) as they offer the potential of new learning partnerships that are not hostage to professional silos and may facilitate the engagement with a variety of stakeholders including input from patient-led communities (le May, 2009). Such partnerships may take a variety of forms, ranging from more informal networks with loosely-defined goals and agendas to more formalized support groups with clearer objectives and a pronounced focus on fostering workplace social interaction (Li et al, 2009a; 2009b).

As with other concepts that have emerged from industry, the adoption of situated learning, and especially CoPs, in healthcare followed a process of ‘translation’ and ‘editing’ rather than a mechanical transfer (Czarniawska-Joerges and Sevón 1996). As healthcare organizations in certain countries have been pressured to become more business-like in their governance and operations, the innovations developed by private sector industry have become correspondingly more attractive (at least to managers and policy-makers) (see also chapters??). Even if only in a totemic sense, such innovations are seen to promise greater efficiency and more streamlined processes within the healthcare setting.

This is no less the case with the CoP concept. This was initially adopted by a number of leading organizations in the private sector (notably BP), very often as a way of labelling and making sense of operational changes which had been introduced to share good practice across the functional and geographical boundaries of large multinational organizations (Collison and Parcell, 2005). The concept, and the associated ideas around ‘Knowledge Management’ were then highlighted by the work of health service researchers. In part, the concept was drawn upon to better understand aspects of healthcare practice, which did not conform to the

dominant, objectified view of knowledge associated with professional expertise. Thus, Gabbay and le May used the term to help explain the socially situated character of the use of evidence by GPs. ‘Mindlines’, not guidelines, as they put it, were seen as being negotiated through ‘a range of informal interactions in fluid communities of practice’ (Gabbay and le May, 2004). In part, however, the CoP idea was also introduced as a response to the limitations of existing attempts to introduce multidisciplinary collaborative arrangements into healthcare practice. Bate and Robert, for example, argued that the limited effectiveness of new Cancer Services Collaboratives in the UK was attributable to their being constituted as ‘time-limited project teams’, and not ‘linked and active communities of practice’ (Bate and Robert, 2002).

Thus, both in conception and implementation, CoPs were not being slavishly imitated but were being *translated* to meet the particular needs of the healthcare setting. As we will discuss in more detail below, this meant that their application in practice encountered a different set of barriers to those found elsewhere. In the private sector particularly, CoPs sat rather uneasily within hierarchical organizations. Studies here found a contradiction between managerial attempts to direct them in a ‘top-down’ fashion, and their organic, ‘bottom-up’ engagement of community members (Agterberg, Van den Hooff et al., 2010). In contrast, in healthcare CoPs have been seen as most relevant to overcoming barriers to multidisciplinary collaboration (Bate and Robert 2002, Oborn and Dawson, 2010). Indeed, a number of healthcare providers and researchers seem to have readily adopted CoP thinking for these reasons. Ranmuthugala et al. (2011), for example, noted a rapid increase in articles discussing CoPs in the period 2003-2009. One consequence of this process of translating and editing, rather than simple diffusion, was that the actual implementation of CoPs and situated learning in healthcare practice varied greatly between contexts. In that sense, the notion of using CoPs is more an umbrella term covering a variety of initiatives than a marker of a specific method

or technique. Thus, previous analysis of CoP initiatives in healthcare found that initiatives differed greatly in their aims, design, mode of operation and utilization of technology (Li et al., 2009). While some units were dependent on virtual forms of communication, others invested heavily into traditional face-to-face interaction (Ranmuthugala et al., 2011). Likewise, the composition and geographical localization of COPS was found to vary substantially: while some groups consist primarily of local members with identical professional backgrounds, others may be multidisciplinary in nature and bring together practitioners from diverse geographical regions (Jiwa et al., 2009).

In a systematic review, Li et al. (2009) identify a marked division in the literature on CoPs in healthcare. They distinguish between reports of initiatives concerned with the socialisation of young professionals into healthcare, and accounts of how CoPs can be used to facilitate knowledge sharing, knowledge creation, skill development and continuing professional education. The former group of studies, which often refer to situated learning theory and are inspired by the classical apprenticeship models, predominantly deal with issues concerning the development of professional identity and gradual skills acquisition. The latter tend to pay attention to knowledge creation and sharing among established professionals in the context of CoPs (Li et al. 2009. p. 5). In the next two sections we examine these two strands of the literature more closely.

Supporting socialisation and fostering learning through communities of practice

Many of the initiatives that build on the insights of situated learning theory are aimed at addressing some of the shortcomings of the traditional methods used to train and support the continuous professional development of healthcare professionals. For example, studies often find that traditional medical education is preoccupied with familiarizing students with significant amounts of theoretical knowledge and frameworks. It is therefore often incapable

of preparing practitioners for clinical work (McKenna et al., 2004). Saturation with formulaic knowledge, however, does not lead directly to the development of skills directly applicable to practice, as medicine is not an exact science. Rather, the practice of medicine is a skill, a craft, constantly requiring personal judgment and heavily based on experience (Knight and Mattick, 2006). Comparing the art of medicine to a jazz improvisation, Haidet (2007) notes that being a successful physician requires

“[taking] recognition that all voices in the medical encounter have things to say that are as important as one’s own statements. It takes listening aligned toward *understanding*, not just the collection of factual data. And it takes raising one’s awareness to clues—nonverbal signals, fleeting glimpses of emotion, and key words (such as worried, concerned, and afraid)—and following up on these clues when they present themselves. The essence of ensemble, whether in jazz or in medicine, lies in looking beyond one’s own perspective to see, understand, and respond to the perspectives of others” (Haidet 2007, p. 167).

Trying to bridge the gap between theoretical base and applied medical knowledge, educational programs for healthcare professionals usually include a clinical practice component that complements the standardized academic curriculum and is employed to prepare students for hands-on practice work. Egan and Jaye (2009) point out that these two types of educational settings, the latter being directly modelled according to the tenets of situated learning theory, differ significantly in their goals, requirements and the structure of learning processes. While formal academic education stresses the traditional individual mastery of theoretical “textbook” knowledge, the latter shifts the emphasis to the importance of social forces, collaboration, contextual factors and professional socialization at workplace (Egan and Jaye, 2009; Cope et al., 2000). Clinical placements, thus become the situated

training grounds in which students for the first time come into contact with various communities of medical practice. By following the routines of newly joined communities of clinical practice, novices develop their sense of professional identity and obtain valuable hands-on experience which can “support, augment, contradict, or even resist the teaching and learning objectives of the formal curriculum” (Egan and Jaye, 2009, p. 120). Jenkins and Brotherton (1995) observed, for example, that occupational therapists developed their skills more effectively when practicing in a clinical rather than a classroom setting. Similar conclusions were obtained by Lindsay (2000), Cope et al. (2000) and Meagher-Stewart et al (2012). These authors observed that regardless of the clinical setting, the acquisition and assimilation of skills such as clinical reasoning and evidence-utilisation were significantly facilitated when novices were allowed to work in real situations under the mentorship of more experienced colleagues.

The transition from classroom to practice can be a very stressful experience. For example, Brown et al. (2005, p. 87) described nursing students’ attitude to their first encounter with clinical practice as feeling abandoned and being left “in the dark” due to a very limited understanding of expected behaviours and a sudden lack of guidance in comparison with their previous educational experience. In this darkness, the support of colleagues and the development of a sense of belonging in relation to the team are crucially important factors affecting the well-being of students and their learning outcomes (Levitt-Jones et al., 2008). Being properly inducted to the practice, feeling welcomed, accepted as “a valid and legitimate learner” and having an access to a wide variety of experiences, allows students to build the sense of connectedness to the placement area and, thus, proceed smoothly with their learning process (Myall et al., 2007, p. 1838; Nolan, 1998).

As social communities consolidating members around a common purpose and giving

participants a sense of common identity, CoPs serve as supportive and integrative tools for novices allowing students to join practice as legitimate participants while they gradually develop relevant skills and “move through the zone of proximal development towards independent competence” (Cope et al. 2000, p. 855). As the gradual acquisition of skills takes place, learners internalize values and cultural practices embedded in the discourse, as well as developing a tacit understanding of individuals and the community (Spouse, 1998). This process triggers the development of students’ self-understanding in the context of their new profession. Socialized via practice, young professionals reach graduation not as *tabula rasa*, but as individuals with a well-defined sense of self and “carry with them tacit knowledge and shared social identities that only those who have experienced similar training can understand” (Bartunek, 2010).

While the literature is usually very optimistic about the value and benefits of utilising a situated learning approach with regard to the socialisation of healthcare professionals, other authors suggest that some caution is in order. Egan and Jaye (2009), for instance, point out that while the general trajectory of a medical professionals in training is directed toward becoming a full participant of the professional community, the trajectories of students admitted to clinical practice may remain peripheral as they slide through their placements and develop temporary attachments to small teams or their particular members (p. 112). Also, it should not also be presumed that students are automatically embraced by professional communities. Short placements (Cope et al., 2000; Warne et al., 2010; Papastavrou et al., 2010), lack of meaningful supportive relationships at workplace (Konrad and Browning 2012; Nolan, 1998), general deficit of busy personnel’s attention and direction (Myall et al., 2008; Löfmark and Wikblad, 2001) and the absence of effective introduction and guidance by a mentor or tutor (Spouse 1998; Warne and McAndrew, 2008; Papstavrou et al., 2010; Dimitriadis and Evgeniou, 2014) may make it difficult for students to participate effectively

in the activities of the practical community.

Deliberating about the ways to improve the learning experience of students in clinical placements, it may be offered to include patient educators into the learning process in order to provide medical students with the access to a wider range of experiences, some of which challenge traditional formulaic wisdom of medical schools (e.g. Spencer et al., 2000). Yet, as pointed out by Bleahey and Blight (2008), despite the vivid rhetoric praising the benefits of a patient-centred approach to medical education, contemporary undergraduate curricula for medical students still lack a meaningful early access to patients and “incorporating deliberate practice” (p. 95) that would allow learners to establish relationships with those they treat and, by doing so, engage in the process of joint knowledge construction via dialogue.. From this point of view, case-specific experiential knowledge of patients and their families makes them valuable and valid contributors to the educational process who can not only communicate their first-hand experience, but also can raise awareness about their needs and initiate a sharing activity (Towle and Godolphin, 2011).

COMMUNITIES OF PRACTICE AS MECHANISMS FOR SHARING KNOWLEDGE AND FOSTERING INNOVATION AND CHANGE

As distinct from accounts of novice experiences in healthcare, another strand of the literature on CoPs discusses their role in continuing professional development, knowledge sharing, innovation and knowledge translation. While clinical practice programs generally have the formation of a certain professional identity as their final goal (Li et al., 2009), working groups consisting of professionals seeking further education, development and innovation may emerge around a variety of goals. These include, for example; the promotion of a new measurement tool in child and youth mental care (Barwick et al., 2009); improvement of the

quality of referral letters to specialty clinics (Jiwa et al., 2009); the improvement of dermatology outpatient services (Lathlean and Myall, 2009); the development and dissemination of national guidelines on breast cancer (Fung-Kee -Fung et al., 2009); and the promotion of provincial guidelines on laparoscopic surgery for colon cancer (Fung-Kee - Fung et al., 2008). Sometimes such groups, which are created for the solution of a particular problem, evolve over time and change their objectives. (e.g. le May, 2009). Due to the flexibility and adaptability of CoPs, this model is generally considered to be well-suited to meet the learning requirements of a wide and diverse group of healthcare professionals (Barwick et al., 2009).

The proliferation of clinical knowledge and the rapid pace of scientific advancement make it difficult even for seasoned practitioners to keep track of new discoveries. The process of transferring research findings to clinical practice often becomes slow and unpredictable (Eccles et al. 2009). The gravity of this problem is so substantial that the whole new field of implementation research has developed in recent decades to study scientific methods which seek “to promote the systematic uptake of clinical research findings and other evidence-based practices into routine practice, and hence to improve the quality (effectiveness, reliability, safety, appropriateness, equity, efficiency) of health care” (p. 10). However, implementation and knowledge translation guidelines are typically based on an objective view of knowledge, and may therefore overlook the importance of such subjective dimensions as interactive knowledge construction, the role of context and unique interpretations rooted in personal practical experience (Oborn et al., 2012).

In clinical settings, however, personal experience, relationships and unique contextual factors are inseparable from learning processes. A good example is provided by Edmondson et al. (2001), who studied the experience of several cardiac surgical teams with regard to the

implementation of a new technology. Despite general similarities between participating top-tier cardiac surgery departments, their experience with the adoption of innovative surgical technique were significantly different and depended heavily on contextual factors and intragroup social processes. Successful implementers learned in situ as a team, invested heavily in ensuring the psychological safety of individual members and their involvement in communicative processes as well as the creation of shared meaning. In the organizations studied, the introduction of new technologies challenged existing power relations in teams as role boundaries blurred and the interdependency of group members increased. The teams that managed to adapt to the new organizational reality, became successful implementers of the new technology, while those clinging to status quo routines eventually abandoned the effort to implement the new practice. Crucially important for the successful sites was the role played by the project leader in promoting meaningful communication and reflective discussions revolving around practice-related issues (Edmondson et al., 2001).

Reflective cardiac surgical teams analysing their practical experience and encouraging in situ learning provide great examples of CoPs dealing with the disruption of existing routines. In such groups, new routines are mutually constructed via interaction and as “experience with the joint activity accumulates, each participant abstracts and generalizes, not simply from personal understandings and actions but from understandings and actions that have been jointly, intersubjectively established” (Dyonisiou and Tsoukas, 2013, p. 191).

The process of collective learning preceding the successful implementation of innovation, thus must involve individuals “jointly analysing information, openly discussing concerns, sharing decision-making, and coordinating experimentation... [while also being] willing to challenge others’ views, acknowledge their own errors, and openly discuss failed experiments” without fear of seeming incompetent (Nembhard et al., 2009, p. 30). CoPs,

thus, become the ideal environment and medium for facilitating the translation of knowledge into practice (Thomson et al., 2013). As Gabbay and le May (2009) note, the assumption by advocates of evidence-based medicine that medical practitioners behave as purely rational and calculative decision makers is actually unwarranted. During their ethnographic study of a primary care practice in semi-rural England, the authors observed that clinicians rarely, if at all, follow the rational sequence of actions prescribed by official evidence-based guidelines. Despite the ability to access a wide variety of sources, including those available via sophisticated computer repositories, researchers rarely observed experienced health practitioners consult these databases in order to solve a problem related to clinical practice. Rather, clinicians participating in the study tended to “glean” what is thought to be the best practice from, e.g., the way local consultants treat their patients, from snippets of reading, and from each other, especially “by means of partners with specific areas of expertise helping to keep each other up to date” (p. 53). Participating physicians were, thus, disciplined to take evidence-based information with a pinch of salt as it often did not take into account essential aspects of the particular practice and, thus, did not easily match the particular discourse. It was through discussions and exchange of opinions with trusted colleagues that the new information was absorbed into physicians’ “mindlines” and became a part of their practical knowledge. These discussions and reflective practices associated with them constituted the essence of CoPs at the primary care practice in the study and served as potent mechanisms for learning and the diffusion of practicable knowledge into the organizational reality. This in-depth study provides an example of the supportive environment in which the opinions of trusted colleagues help to validate individual absorption of information, and learning opportunities emerge as a natural extension of daily interactions with peers (see also Parboosingh, 2002; Thomson et al., 2013).

COPS AS IMPROVEMENT INITIATIVES AND MANAGERIAL TOOLS

From emergent to mandated

When they were first theorised, CoPs were considered mainly as emergent and self-organised phenomena in the sense that they emerged spontaneously in the interstices of organizations and under the radar of the formal organization (Brown and Duguid, 1991; Wenger, 1998). In this sense, managers were advised not to interfere or meddle with them lest the CoP could dissolve or go underground. In succeeding years, however, prompted by the adoption of the term by some leading companies (Collison and Parcell, 2005), there were increasing efforts to intentionally promote what can be termed 'mandated' CoPs within formal organizations so as to enhance learning and foster collaboration (Li et al., 2009a; Berwick et al., 2009).

Advocates argued that well designed and carefully cultivated CoPs could in fact provide a favourable social context for the development and utilization of organizational knowledge (Wenger et al., 2002). These CoPs were attractive to organizations because they were able to tap into individuals' intrinsic motivations to share knowledge and learning (Swan et al., 2002).

However, the establishment of such mandated CoPs raises a number of new organizational and managerial challenges, including; designing, setting up and legitimating CoPs; managing and making the CoPs sustainable; and making CoPs effective. The first challenge to be addressed is how to establish CoPs. Because of their dependence on shared knowledge and identity, CoPs cannot be artificially created or designed but need to build instead on existing commonalities and practice-driven relationships that need to be identified, foregrounded and legitimated. In healthcare, this is facilitated by occupational specialisms that often cut across organizational boundaries and even hierarchical levels. Fung-Kee-Fung et al. (2009) for example, report the emergence and establishment of a CoP to improve

surgical oncology that spanned different organizations and professions. The boundaries of the communities were designed to follow the natural contours of different healthcare professionals already working in surgical oncology. A critical role is played in this sense by recognised experts in the field that can act both as champions of the initiative and catalysts of interest, so that the CoPs can actually start operating. The literature in other sectors (Wenger, et al., 2002; McDermott and Archibald, 2010) suggests that in this phase it is critical that management provides support to the emerging CoP in terms of recognition (the activity must be legitimated); institutional support (a sponsor needs to be identified within the organization); governance (specific roles are allocated and leadership is clearly identified); resources (facilitators are appointed and leaders are given sufficient time) and infrastructure (access is provided to the necessary communication technologies).

A second main challenge in utilising CoPs as a managerial intervention is finding ways to make such initiatives sustainable. Many of the initiatives reported in the healthcare literature (Gabbay and le May, 2009; Ranmuthugala et al., 2011) tend in fact to have a very limited time span. This contrasts with the view that CoPs evolve over time, display a typical life cycle (Wenger, 1998) and progress through stages of development (Wenger et al., 2002) and that CoPs need time to produce benefits for the organization. It seems that a critical factor in making CoPs initiatives sustainable is the provision of adequate leadership and governance (McDermott and Archibald, 2010). In many industries, CoP leaders and facilitators are trained and supported in their professional development. They then ensure that participation is sustained, that contributions continue to flow and that newcomers are not put off by the current group of core members. CoPs at the same time are helped to develop a sense of place and rhythm through periodic rituals (e.g., an annual COP convention) and alignment with the natural cycle of the hosting organization (the successes of the COP are included in the annual report). Healthcare organizations have been good at adopting some of these practices,

although examples of the systematic and strategic use of COPS in healthcare are still few and far between (Li et al., 2009a). For example, while the use of facilitation in healthcare CoPS seems to be widely accepted (ibid p. 5) -- probably because working in facilitated groups is commonplace in many healthcare systems - other aspects mentioned above (e.g., institutional support, resources, and governance) are omitted in spite of being critical to help COPs to move toward full maturity and produce value for the organization.

A third challenge in developing successful mandated CoPs is to prevent them from becoming inward looking. McDermott and Archibald (2010), for example, note that a critical role of CoP leaders is to establish clear goals and deliverables, and ensure that these are aligned with the goals of the organization. Goals and deliverables have been found, in fact, to energize communities. They provide a reason for members to meet and participate. More importantly, they establish the contribution of communities to the organization, thus making the value of the CoP visible. Important strides, in this sense, have been recently made especially in the UK, where COPs have been successfully employed in a programmatic and strategic way to facilitate knowledge translation and the adoption of clinical innovations (Thomson et al., 2013). Rowley et al., (2012), for example, report how emergent communities of practice were enhanced and new ones created and fostered around specific themes that aligned with the strategic healthcare objectives of the hosting organizations.

Aligning the work of the CoP with the strategic intent of the organization also serves another critical purpose; that is, demonstrating value. This remains, in fact, an open question as the benefits of COPs are notoriously difficult to pinpoint and measure. In their reviews of the literature, for example, both Lin et al, (2009) and Ranmuthugala et al (2011) failed to find any study that tried to measure the effectiveness of COPs or at least that met the traditional “eligibility criteria for quantitative analysis” (Lin et al., 2011, p. 7). While the issue of

whether initiatives such as COPS can be evaluated using traditional metrics goes beyond the scope of this chapter, it can be noted that demonstrating the value added to the organization, and thus justifying the resource investments required to establish and sustain a COP programme, remains a pressing concern for all CoP practitioners (McDermott and Archibald, 2010). Wenger et al, (2011) for example, suggest that COPs add value in five distinct ways: *immediate value* (interactions have value in and for themselves, e.g., the capacity to find information one needs through a community); *potential value* (e.g., the results of interactions yield new ideas or resources that still need to be applied); *applied value* (e.g., the knowledge obtained through the COP as resulted in some demonstrable changes); *realized value* (the changes obtained thanks to the input by the COP result in measurable improved performance); and *reframing value* (the interactions of the community leads to reframing the strategies, goals, values and way of doing business). Aligning the activity of the CoP with the strategic goals of the organization may facilitate the demonstration of its value by generating applied and realized value in addition to the immediate value usually described by participants (Lathlean and le May, 2002; Chandler and Fry, 2009; Swift, 2014).

Beyond face to face: virtual and online CoPs

As per our discussion above of emergent versus mandated CoPs, the distinction between conventional CoPs based on face to face interaction and virtual or online CoPs based on electronically-mediated interaction is often blurred. The latter type of CoP (henceforth we will simply use the term ‘virtual’ since this also encompasses ‘online’ forms) may often be linked to conventional face to face meetings (Chandler and Fry, 2009). Similarly, virtual CoPs may sometimes be difficult to distinguish from looser networks of individuals, being based as much, if not more, on mutual exchanges than on a shared history and identity.

Accepting these caveats, however, it is possible to recognize that virtual CoPs can have just as diverse a range of objectives and benefits as conventional CoPs. In particular, virtual CoPs have been used to address the two major themes of CoP development outlined earlier; namely socialization of (often new) healthcare staff, and knowledge-sharing amongst existing staff. In the first category, a review of the literature relating to the role of CoPs in GP training in Australia found that such CoPs can help to generate social ties amongst participants (Barnett et al., 2012). Meanwhile, work in the UK context suggests that virtual CoPs can also help to create so-called 'weak ties' across groups who are otherwise disconnected. (Russell, Greenhalgh et al., 2004).

Compared to face-to-face communities, however, virtual CoPs may struggle to create social interaction and a genuine sense of participation amongst their members. This can apply even when sophisticated web tools are being employed. When a CoP was set up to promote improvements in discharge planning in Wales, for example, it was found that the on-line forum and web-site were the least successful elements (Chandler and Fry, 2009). This was attributed to limited computer access for social care staff, and that nurses and social workers were more comfortable with face to face or phone-based interaction.

On the other hand, studies suggest that, through the use of ICT and web tools, virtual communities can also help to create social ties amongst groups and individuals who are otherwise geographically or professionally isolated. Groups supported in this way include GPs in rural areas of Australia (Barnett, Jones et al., 2012) and nurses practicing mental health care in rural areas (Cassidy, 2011). This function of virtual CoPs may be as important as overcoming the disciplinary and professional boundaries which we discussed earlier in relation to conventional CoPs. One example of this in practice is the virtual community which emerged through use of an email tool (Listserv) for clinicians in intensive care units in

Australia. This was seen as helping to decrease the professional isolation of specialists in rural areas (Rolls, Kowal et al., 2008). The virtual community also supported networking amongst members with valued expertise, such that the CoP acted as an effective knowledge broker for a network of otherwise disconnected intensive care units.

In some cases, the apparent disadvantages of relying on ICT-mediated interactions may actually be beneficial to developing communities around specific domains. One example is the virtual community which developed in the North West of England around the sharing of adverse lessons from incidents in anaesthetic departments (Sharma et al., 2006). Here, anonymity of the users allowed participating clinicians to share experiences while avoiding personal embarrassment and the stigmatization of particular departments. Similarly, studies suggest that the greater social distance provided by virtual CoPs may overcome individuals' inhibitions about participating due to a lack of confidence in the value of their expertise, or a fear of losing face by admitting ignorance (Rolls et al., 2008; Ardichvili et al., 2003).

In addition to overcoming professional and geographical boundaries, virtual CoPs can also help to overcome the institutional boundary between researchers in universities and practitioners in the healthcare system. One example of a virtual CoP being developed to span this research-practice boundary is provided by Friberger and Falkman (2013) who investigated the workings of a geographically dispersed "oral care" CoP that included both practitioners and academics. The CoP was established to give practitioners access to cases of low prevalence by combining data from various facilities and providing learning opportunities beyond the scope of one clinic's operation. Participating physicians presented cases via a virtual submission system in order to receive opinions regarding diagnosis, pose a general question, or educate other CoP members. In this situation, participants often became immediate beneficiaries of sharing by obtaining feedback on their cases, and the community

as a whole benefitted by gaining access to authentic data and aligning their models of treatment with others present in the discipline (Friberger and Falkman, 2013).

Given their diverse forms and outcomes, it is clearly difficult to generalize about what makes for an effective virtual CoP. Some studies have outlined critical success factors (e.g. Ho et al., 2010), but these tend to differ according to the community under review (cf. Barnett et al., 2012). Certain themes which emerge from the literature, however, include; the importance of voluntary and motivated participation on the part of members (Ho et al., 2010); the role played by leaders and facilitators (Nurani et al., 2012); and the provision of appropriate ICT infrastructure.

The virtual nature of these CoPs makes each of these issues especially challenging. First, discussion of participation in conventional CoPs differentiates between core and ‘peripheral’ participants. Virtual communities tend to heighten the distinction between various forms of participation. It is important, for example, to differentiate between ‘nominal’ and actual participation in virtual CoPs. This can be illustrated by a virtual CoP set up to promote innovation in primary care in the Basque Public Health Service in Spain (Mendizabal et al., 2013). Of the 1627 registered ‘users’ of this CoP, a survey found that only 4% had contributed ideas, and only 6% had commented on ideas. While these figures suggest that there may be a major disparity between the official membership of a virtual CoP, and the numbers actively participating, it also highlights the scope for large numbers of members to participate in a passive way – so-called ‘lurking’ - by following the information exchanges supported by the CoP’s IT infrastructure. This passive participation has been viewed as equivalent to the ‘legitimate peripheral participation’ seen in more conventional CoPs, through which members can learn about a particular domain and be enculturated into its discourse and forms of practice (Russell et al., 2004).

Second, facilitation and leadership take on particular forms in virtual CoPs where social interaction needs to be carefully ‘cultivated’ on-line (Wenger et al., 2002). This may involve facilitators engaging in a range of activities. In the case of the CHAIN network in the NHS, for example, such activities included; ‘ensuring that the database of members is up to date; targeting messages to appropriate subgroups based on members’ interests; reminding members of the opportunities for networking; and affirming the principle of reciprocity.’ (Russell, Greenhalgh et al., 2004) Because virtual CoPs are less likely to arise spontaneously due to informal interaction, they may also require dedicated resources to develop and sustain them. A study of a virtual, inter-professional CoP in Canada concluded that a dedicated facilitator and associated funding for development of electronic tools and resources were key to sustaining virtual CoPs (Nurani et al., 2012).

Third, a critical element in any dedicated support given to virtual CoPs is likely to be its ICT infrastructure (Dube and Jacob, 2005). Choice of appropriate ICT is critical. This needs to be simple enough to allow widespread and easy access and use, but also to support content and dialogue rich enough to meet the community’s needs. The technical aspect of infrastructure, however, should be viewed as secondary to the importance of ‘socializing’ it within the community – i.e. ensuring it is accepted as a legitimate and effective way of mediating social interaction (McDermott, 1999).

MAKING COPS WORK IN HEALTHCARE SETTINGS: FACILITATORS AND BARRIERS

Not every CoP initiative is successful. Initiating collaboration among healthcare practitioners is not an easy task. Strong occupational boundaries commonly exist between different groups of medical personnel (i.e. nurses, doctors, medical administrators,

paramedics), which hinders the development of collaborative relationships and undermines trust (Bartunek, 2010; Al-Karaghoueli et al 2013; O’Leary 2008; Sirota 2007; Nicolini et al 2007). The ability to establish interpersonal relationships, however, is crucially important at the initial stages of a CoP’s existence (Chandler and Fry, 2009).

Speaking about the failures to establish a dynamic and healthy collaborative initiative, le May (2009, p. 14) points out that problems usually arise in CoPs at either structural or individual level. The structural subset of problems stems from the inability of CoPs to secure a steady following or their lack of necessary connections, while the source of individual problems resides in personal behaviours, such as tendency to monopolize knowledge or distrust peers (pp. 14-15).

Similarly, in a systematic review of CoP-based initiatives in the area of surgical oncology, Fung – Kee – Fung et al. (2009, p. 565) establish the following general factors influencing the implementation of collaborative projects: “*a*) the formation of trust among health professionals and health institutions; *b*) the availability of accurate, complete, relevant data; *c*) clinical leadership; *d*) institutional commitment; and *e*) the infrastructure and methodological support for quality management”. While infrastructural and organizational support factors can be conceptualized as structural in nature, the relational dimension belongs to the individual realm. Power relations deserve separate consideration.

Structural factors

The structure of CoP meetings themselves seems to have a substantial impact on the willingness of practitioners to participate in discussion, as well as on their perceptions of value added by this activity. For example, Frieberger and Falkman (2013) found that regular communication provides a necessary rhythm for distributed CoPs, and structured case-based

meetings present a way to manage busy professionals' time more effectively. Similarly, in a dermatological CoP, members viewed pre-set agendas and structured meetings as a means to maintain focus and fight the frustration associated with a loss of purpose (Lathlean and Myall, 2009), and in a successful Canadian CoP for nurse practitioners, participants believed that regular agenda-driven face-to-face and email interactions created a sense of direction for future discussions, and ensured group cohesiveness (Sawchenko, 2009).

Structural factors affecting the activities of CoPs are not limited to the composition of the group and its modes of operation. Rather, often the ability of CoPs to introduce regular meetings and establish a following is constrained by the conditions of the larger healthcare system. For example, Chandler and Fry note that the NHS reality does not generally allow “time and head space to be creative and innovative” and, thus, having such a forum in this system may be considered an “unaffordable luxury” (Chandler and Fry, 2009, p. 45). Also, the establishment and promotion of CoPs among practicing clinicians may require the introduction of various incentives and feedback mechanisms, possibly tied to payment modalities that are currently not in place (Soubhi et al. 2010). In addition to the lack of systemic ability to accommodate motivating practices, common resistance to cross-institutional data sharing, often reflected in pre-existing policies, further hinders the ability of physicians to access and share data (Fung – Kee- Fung 2009, p. 570).

Individual factors

Trust is a fundamental element of CoPs. In relation to healthcare, the issue of trust has to be broken down to two dimensions: the formation of trusting relationships between members of CoPs and the establishment of trust between members and participating institutions (Fung - Kee-Fung et al., 2009).

Importantly, multidisciplinary teams are inherently more susceptible to the perils of distrust and impaired communication. Fragmented and compartmentalized, contemporary medicine provides a fertile ground for the creation of narrow professional identities and, while all of them relate to the general field of healthcare, they often come into conflict with each other. Bartunek (2011) points out that because social identity boundaries within healthcare CoPs often inhibit the spread of knowledge, in order to be successful these groups need to stimulate cross-occupational sharing and encourage the formation of second, superordinate, identities as members of the larger healthcare community (p. i64).

Further, Tagliaventi and Mattarelli (2006) suggest that the specificity of the practices of a given community and the strong collective identity of members constitute a critical factor which creates barriers to knowledge sharing. Ferlie et al. (2005) corroborate this view suggesting that CoPs in health can be very insular, they tend to seal themselves off from contiguous communities and can become highly institutionalised. This in turn creates stickiness of knowledge across boundaries, so that while learning circulates effectively among local members, circulation between and across communities and locales becomes difficult. To avoid these shortcomings, several authors suggest the need to identify and mobilise a series of boundary objects, boundary spanners and knowledge brokers and to actively promote boundary crossing interactions which can bridge between and across neighbouring CoPs (Lomas, 2007; Mitton et al., 2007; Currie and White, 2012; Chew, Armstrong and Martin, 2013; Waring et al., 2013).

The role of institution is similarly important here. As collective bodies bringing together complete strangers, CoPs and benefitting institutions have to establish the norms of institution-based trust and sharing in order to initiate an open dialog (Ardichvili et al., 2003). The formation of trust between various CoP members and sponsoring institutions often

involves political matters leading to the uneasy task of negotiating terms and the creation of shared vision between members of different clinical teams and disciplines (Fung -Kee-Fung et al., 2009).

Dealing with power relations

Cliques within CoPs may become another factor endangering the successful flow of knowledge among members. In some non-apprenticeship based CoPs, learners may never become core participants and, thus, “learning and the negotiation of meaning may continue to be only a reflection of the dominant source of power” (Li et al. 2009 a). To a large degree, the problems of full engagement stem from the highly hierarchical nature of medicine. Thus, Nembhardt et al. (2009) remind us that medical professionals are conditioned into a hierarchy in which certain professional groups rank higher than others, thus “the lower the professional rank, the less consideration is typically given to that individual in clinical decision making” (p.30). Yet, collaborative initiatives, such as CoPs, require a multitude of voices and opinions in order to be successful and sustainable.

Sustaining the membership in CoPs when participants become disillusioned or feel psychological discomfort is a very challenging task (Jiwa et al., 2009). It is, thus, critically important not to alienate newcomers by authoritarian control or using excessively high standards benchmarking. Specialists coming from different professional communities in diverse geographical localities will always vary in their skills sets and knowledge, but it is beneficial for an open dialog not to attach labels of inferiority.

CONCLUSIONS

The notions of situated learning and communities of practice provide valuable insights into some of the challenges faced by healthcare organizations. Under increasing pressure to

innovate, reduce costs, and improve services, these organizations need to find effective means of socializing highly training professional staff and encouraging them to share knowledge across professional, institutional and geographical boundaries. The notion of situated learning, in effect, underscores the challenges of achieving these broad objectives by showing that the acquisition of knowledge is not reducible to information exchanges, but is bound up with social practices, relationships and identities. The notion of ‘community of practice’ has foregrounded this social dimension by showing the role that such CoPs can play in socializing new staff, and in encouraging the sharing of knowledge through reciprocity and motivated participation. This not only helps us to better understand the limitations of formal organization structures, and even ‘mandated networks’ in supporting organization learning and knowledge mobilization (Bate and Robert, 2002, Ferlie, Crilly et al., 2012), it also provides a template for the development of new CoP-based interventions better equipped to meet these challenges.

Healthcare organizations globally have been in the forefront of developing CoPs. However, this notion has often been translated in a piecemeal rather than systematic way, and has been expanded to encompass a wide range of initiatives including CoPs which are mandated, rather than emergent, and which apply ICT tools to engage looser networks made up of disparate groups and individuals rather than focal communities with a defined history and identity. This pattern of translation makes it difficult to generalize about the potential contribution of CoPs and situated learning theory to the problems facing healthcare management, as outlined in the Introduction to this chapter. However, the range of initiatives do throw up some new questions which may help us better understand that contribution. As highlighted by our analysis, the forms taken by mandated CoPs in healthcare settings are diverse and therefore demand much greater attention to the possibilities, and constraints, of more fluid, technologically-mediated forms. For example, CoPs were originally viewed as an

expression of situated learning. Is it possible that mandated CoPs may become a vehicle for overcoming the limitations of such learning by overcoming organizational boundaries, and supporting more collaborative approaches to learning and knowledge mobilization?

Finally, in relation to our introductory question of how far CoPs can help to produce a shift towards a 'learning culture' within healthcare organizations, it is clear from our analysis that CoPs may present themselves as both a barrier and an enabler to such a shift. As tacit social networks through which identity is formed and knowledge is shared, CoPs may actually reinforce the boundaries between groups, and thus undermine attempts to produce knowledge and learning as an organizational or systemic resource (Swan, Scarbrough et al., 2002). Conversely, the mixed outcomes achieved by mandated CoPs to date suggest that further research is needed on adapting their form to specific contexts if they are to properly fulfil their potential and support moves towards a learning culture

REFERENCES CITED IN THE TEXT

- Addicott, R., McGivern, G., & Ferlie, E. (2006). Networks, organizational learning and knowledge management: NHS cancer networks. *Public Money & Management*, 26(2), 87-94.
- Agterberg, M., Van den Hooff, B., Huysman, M., & Soekijad, M. (2010). Keeping the Wheels Turning: The Dynamics of Managing Networks of Practice. *Journal of Management Studies*, 47(1), 85-108.
- Ardichvili, A., Page, V., & Wentling, T. (2003). Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of knowledge management*, 7(1), 64-77.
- Barnett, S., S. C. Jones, S. Bennett, D. Iverson and A. Bonney (2012). "General practice training and virtual communities of practice-a review of the literature." *BMC family practice* 13 (1): 87.
- Bartunek, J. (2010). Intergroup relationships and quality improvement in healthcare. *BMJ Qual Saf*, 20(Suppl 1), i62- i66.
- Barwick, M.A., Peters, J., and Boydell, K., (2009). Getting to uptake: do communities of practice support the implementation of evidence-based practice. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 18(1), 16–29.
- Bate, S. P., & Robert, G. (2002). Knowledge management and communities of practice in the private sector: lessons for modernizing the National Health Service in England and Wales. *Public Administration*, 80(4), 643-663.
- Battilana, J. (2011). The enabling role of social position in diverging from the institutional status quo: Evidence from the UK National Health Service. *Organization Science*, 22(4), 817-834.
- Bentley, C., Browman, G. P., & Poole, B. (2010). Conceptual and practical challenges for implementing the communities of practice model on a national scale-a Canadian cancer control initiative. *BMC health services research*, 10(1), 3.
- Berwick, D. (2013). An independent report to the Department of Health. A promise to learn – a commitment to act. Improving the safety of patients in England. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226703/Berwick_Report.pdf Accessed on 29 January 2015.
- Brown, J. S., & Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. *Organization science*, 2(1), 40-57.
- Brown, L., Herd, K., Humphries, G. & Paton, M. (2005). The role of the lecturer in practice placements: what do students think? *Nurse Education in Practice*, 5, 84-90.
- Cassidy, L. (2011). Online communities of practice to support collaborative mental health practice in rural areas. *Issues in mental health nursing*, 32(2), 98-107.
- Chandler, L., Fry, A. (2009). Can Communities of practice make a meaningful contribution to sustainable improvement in healthcare and social care? *Journal of integrated care*, 17 (2), 41-48.

- Chew, S., Armstrong, N., & Martin, G. (2013). Institutionalising knowledge brokering as a sustainable knowledge translation solution in healthcare: how can it work in practice?. *Evidence & Policy: A Journal of Research, Debate and Practice*, 9(3), 335-351.
- Collison, C. and G. Parcell (2005). 'Learning to fly: Practical knowledge management from leading and learning organizations'.
- Cope, P., Cuthbertson, P., Stoddart, B. (2000). Situated learning in the practice placement. *Journal of Advanced Nursing*, 31(4), 850-856.
- Currie, G., & White, L. (2012). Inter-professional barriers and knowledge brokering in an organizational context: the case of healthcare. *Organization Studies*, 33(10), 1333-1361.
- Currie, G., Finn, R., & Martin, G. (2007). Spanning boundaries in pursuit of effective knowledge sharing within networks in the NHS. *Journal of health organization and management*, 21(4/5), 406-417.
- Czarniawska-Joerges, B. and G. Sevón (1996). *Translating Organizational Change*, Walter de Gruyter.
- Dimitriadis, P. A., Iyer, S., & Evgeniou, E. (2014). Learning in the Surgical Community of Practice. *Medical Science Educator*, 1-4.
- Dionysiou, D. D., Tsoukas, H. (2013) Understanding the (re)creation of routines from within: a symbolic interactionist perspective. *Academy of Management Review*, 38 (2). pp. 181-205.
- Dube, A. & Jacob, R. 2005. The impact of structuring characteristics on the launching of virtual communities of practice. *Journal of Organizational Change Management*, 18(2): 145-166.
- Eccles, M., Armstrong, D., Baker, R., Cleary, K., Davies, H., Davies, S., Glasziou, P., Ilott, I., Kinmonth, L., Leng, G., Logan, S., Marteau, T., Michie, S., Rogers, H., Rycroft-Malone, J. and Sibbald, B. (2009), "An implementation research agenda", *Implementation Science*, Vol. 4 No. 18, pp. 1-7.
- Edmondson, A. C., Bohmer, R. M., & Pisano, G. P. (2001). Disrupted routines: Team learning and new technology implementation in hospitals. *Administrative Science Quarterly*, 46(4), 685-716.
- Egan, T., & Jaye, C. (2009). Communities of clinical practice: the social organization of clinical learning. *Health*, 13(1), 107-125.
- Elkjaer, B (1999). In search of a social learning theory, In Easterby-Smith, M, Burgoyne, J & Araujo, L Eds *Organizational Learning and the Learning Organisation*. Sage, London.75-91.
- Ferlie, E., Crilly, T., Jashapara, A., & Peckham, A. (2012). Knowledge mobilisation in healthcare: a critical review of health sector and generic management literature. *Social Science & Medicine*, 74(8), 1297-1304.
- Ferlie, E., Fitzgerald, L., Wood, M., & Hawkins, C. (2005). The Nonspread of Innovations: The Mediating Role of Professionals. *Academy of Management Journal*, 48(1), 117-134.
- Francis, R. (2013). *Report of the Mid Staffordshire NHS Foundation Trust public inquiry: executive summary* (Vol. 947): The Stationery Office.

- Friberger, M., Falkman, G. (2013). Collaboration processes, outcomes, challenges and enablers of distributed clinical communities of practice. *Behaviour & Information Technology*, 32 (6), 519–531.
- Fung- Kee – Fung, M., Watters, J., Crossley, C., Goubanova, E., Abdulla, A., Stern, H., Oliver, T. (2009). Regional collaborations as a tool for quality improvements in surgery: a systematic review of the literature. *Annals of Surgery*, Apr; 249(4), 565-572
- Fung-Kee-Fung, M., Boushey, R. P., Watters, J., Morash, R., Smylie, J., Morash, C., ... & Sundaresan, S. (2014). Piloting a regional collaborative in cancer surgery using a “community of practice” model. *Current Oncology*, 21(1), 27-33.
- Fung-Kee-Fung, M., Goubanova, E., Sequeira, K., Abdulla, A., Cook, R., Crossley, C., ... & Stern, H. (2008). Development of communities of practice to facilitate quality improvement initiatives in surgical oncology. *Quality Management in Healthcare*, 17(2), 174-185.
- Gabbay , J., le May, A. (2009). Practice made perfect: discovering the roles of a community of general practice. In A Le May (ed) *Communities of practice in health and social care*. . Blackwell Publishing: Oxford.
- Gabbay, J., & le May, A. (2004). Evidence based guidelines or collectively constructed “mindlines?” Ethnographic study of knowledge management in primary care. *BMJ*, 329(7473), 1013.
- Haidet, P. (2007). Jazz and the ‘Art’ of Medicine: Improvisation in the Medical Encounter. *Annals of family medicine*, 5 (2)
- Henriksen, A., Ringsted, C. (2014). Medical students’ learning from patient-led teaching: experiential versus biomedical knowledge. *Adv in Health Sci* , 19:7–17
- Ho, K., Jarvis-Selinger, S., Norman, C. D., Li, L. C., Olatunbosun, T., Cressman, C., & Nguyen, A. (2010). Electronic communities of practice: guidelines from a project. *Journal of Continuing Education in the Health Professions*, 30(2), 139-143.
- Jenkins, M., & Brotherton, C. (1995) In search of a theoretical framework for practice, part 2. *British Journal of Occupational Therapy* 58 (8): 332-336.
- Jevack, J. M., Tusaie, K. R., Jones, J. S., Purcell, P. J., & Huff, M. S. (2014). Integrating a Virtual Community of Practice (VCoP) into graduate psychiatric nursing curriculum. *Journal of Nursing Education and Practice*, 4(9), 100-110.
- Jiwa, M., Deas, K., Ross, J., Shaw, T., Wilcox, H., Spilsbury, K. (2009). An inclusive approach to raising standards in general practice: working with a 'community of practice' in Western Australia. *BMC Medical Research Methodology* , 9-13
- Kislov, R., Harvey, G., & Walshe, K. (2011). Collaborations for Leadership in Applied Health Research and Care: lessons from the theory of communities of practice. *Implementation Science*, 6(1), 64-74.
- Knight, L. V., & Mattick, K. (2006). ‘When I first came here, I thought medicine was black and white’: Making sense of medical students’ ways of knowing. *Social science & medicine*, 63(4), 1084-1096.
- Kohn, L. T., Corrigan, J. M., & Donaldson, M. S. (2000). *To Err Is Human:: Building a Safer Health System*. National Academies Press.

- Konrad, S. C., & Browning, D. M. (2012). Relational learning and interprofessional practice: Transforming health education for the 21st century. *Work: A Journal of Prevention, Assessment and Rehabilitation*, 41(3), 247-251.
- Lathlean, J., Myall, M. (2009). Developing dermatology outpatient services through a community of practice. In A Le May (ed) *Communities of practice in health and social care*. . Blackwell Publishing: Oxford.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- le May, A. (2009). Introducing Communities of Practice. In A Le May (ed) *Communities of practice in health and social care*. . Blackwell Publishing: Oxford
- Levitt-Jones T, Lathlean J, Higgins I, McMillan M (2008) Staff-student relationships and their impact on nursing students' belongingness and learning. *Journal of Advanced Nursing* 65, 316-324.
- Li, L. C., Grimshaw, J. M., Nielsen, C., Judd, M., Coyte, P. C., & Graham, I. D. (2009b). Evolution of Wenger's concept of community of practice. *Implementation Science*, 4(1), 11.
- Li, L. C., Grimshaw, J. M., Nielsen, C., Judd, M., Coyte, P. C., & Graham, I. D. (2009a). Use of communities of practice in business and health care sectors: A systematic review. *Implementation Science* 4(27), 16.
- Lindsay, L. N. (2000). *Transformation of learners in a community of practice occupational therapy fieldwork environment*. Doctoral dissertation, University of Georgia.
- Lomas, J. (2007). The in-between world of knowledge brokering. *British Medical Journal*, 334(7585), 129-132.
- Mayrhofer, A., Goodman, C., & Holman, C. (2014). Establishing a community of practice for dementia champions (innovative practice). *Dementia*, published early
- McDermott, R. (1999). Why information technology inspired but cannot deliver knowledge management. *California management review*, 41, 103-115.
- McKenna, L.G., Green, C., (2004). Experiences and learning during a graduate nurse program: an examination using a focus group approach. *Nurse Education in Practice* 4 (4), 258–263.
- Meagher-Stewart, D., Solberg, S. M., Warner, G., MacDonald, J. A., McPherson, C., & Seaman, P. (2012). Understanding the role of communities of practice in evidence-informed decision making in public health. *Qualitative health research*, 22(6), 723-739.
- Mendizabal, G. A., Nuño-Solinís, R., & González, I. Z. (2013). HOBE+, a case study: a virtual community of practice to support innovation in primary care in Basque Public Health Service. *BMC family practice*, 14(1), 168.
- Mitton, C., Adair, C. E., McKenzie, E., Patten, S. B., & Perry, B. W. (2007). Knowledge transfer and exchange: review and synthesis of the literature. *Milbank Quarterly*, 85(4), 729-768.
- Nicolini, D., Powell, J., Conville, P. and Martinez-Solano, L. (2008), “Managing knowledge in the healthcare sector: a review”, *International Journal of Management Reviews*, 10 (3), 245-263.

- Nolan, C.A., 1998. Learning on clinical placement: the experience of six Australian student nurses. *Nurse Educ. Today* 18 (8), 622–629.
- Nurani, Z., Suter, E., Bainbridge, L., Harrison, L., Grymonpre, R., & Achilles, S. (2012). Engaging People and Strengthening Partnerships Through an eCoP: The Western Canadian Interprofessional Health Collaborative Experience. In *Technology Enabled Knowledge Translation for eHealth* (pp. 133-152). Springer New York.
- Oborn, E., & Dawson, S. (2010). Knowledge and practice in multidisciplinary teams: Struggle, accommodation and privilege. *Human Relations*, 63(12), 1835-1857.
- Oborn, E., Barrett, M., Racko, G.. (2012). Knowledge translation in healthcare: Incorporating theories of learning and knowledge from the management literature. *Journal of Health Organization and Management*, 27 (4), 412-431
- Øvretveit, J., Bate, P., Cleary, P., Cretin, S., Gustafson, D., McInnes, K., & Wilson, T. (2002). Quality collaboratives: lessons from research. *Quality and safety in health care*, 11(4), 345-351.
- Papastavrou, E. Lambrinou, E. Tsangari , H, Saarikoski, M., Leino-Kilpi, H. (2010). Student nurses experience of learning in the clinical environment. *Nurse Education in Practice* 10, pp. 176–182.
- Parboosingh, J.T., 2002. Physician communities of practice: where learning and practice are inseparable. *Journal of Continuing Education in the Health Professions*, 22 (4), 230–236.
- Ranmuthugala, G., Plumb, J. J., Cunningham, F. C., Georgiou, A., Westbrook, J. I., & Braithwaite, J. (2011). How and why are communities of practice established in the healthcare sector? A systematic review of the literature. *BMC health services research*, 11(1), 273.
- Rolls, K., D. Kowal, D. Elliott and A. R. Burrell (2008). "Building a statewide knowledge network for clinicians in intensive care units: knowledge brokering and the NSW Intensive Care Coordination and Monitoring Unit (ICCMU)." *Australian Critical Care* 21(1): 29-37.
- Rowley, E., Morris, R., Currie, G., & Schneider, J. (2012). Research into practice: collaboration for leadership in applied health research and care (CLAHRC). *Implementation Science*, 7(1), 40.
- Russell, J., T. Greenhalgh, P. Boynton and M. Rigby (2004). "Soft networks for bridging the gap between research and practice: illuminative evaluation of CHAIN." *BMJ* 328(7449): 1174.
- Seibert, S. (2014, February). The Meaning of a Healthcare Community of Practice. In *Nursing forum*. In press
- Sharma, S., Smith, A., Rooksby, J., Gerry, B. (2006). Involving users in the design of a system for sharing lessons from adverse incidents in anaesthesia. *Anaesthesia*, 61, 350–354
- Swan, J., Scarbrough, H., & Robertson, M. (2002). The construction of 'communities of practice' in the management of innovation. *Management Learning*, 33(4), 477-496.
- Swift, L. (2014). Online communities of practice and their role in educational development: a systematic appraisal. *Community Practitioner*, 87(4), 28-31.

- Tagliaventi, M. R., & Mattarelli, E. (2006). The role of networks of practice, value sharing, and operational proximity in knowledge flows between professional groups. *Human Relations*, 59(3), 291-319.
- Thomson, L., Schneider, J., & Wright, N. (2013). Developing communities of practice to support the implementation of research into clinical practice. *Leadership in Health Services*, 26(1), 20-33.
- Towle, A., Godolphin, W. (2011). A meeting of experts: the emerging roles of non-professionals in the education of health professionals. *Teaching in Higher Education*, 16(5), 495-504.
- Waring, J., Currie, G., Crompton, A., & Bishop, S. (2013). An exploratory study of knowledge brokering in hospital settings: Facilitating knowledge sharing and learning for patient safety? *Social Science & Medicine*, 98, 79-86.
- Warne, T., Johansson, U-B., Papastavrou, E., Tichelaar, E., Tomietto, M., Van den Bossche, K., Moreno, M., Saarikoski, M. (2010). An exploration of the clinical learning experience of nursing students in nine European countries. *Nurse Education Today* 30, 809–815
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge: University press.
- Wenger, E. (2004). Knowledge management as a doughnut: Shaping your knowledge strategy through communities of practice. *Ivey Business Journal*, 68, 1-8.
- Wenger, E. C., & Snyder, W. M. (2000). Communities of practice: The organizational frontier. *Harvard business review*, 78(1), 139-146.
- Wenger, E., McDermott, R. A., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Cambridge, Mass: Harvard Business Press.
- Wenger, E., Trayner, B., and de Laat, M. (2011) Promoting and assessing value creation in communities and networks: a conceptual framework. *Rapport 18*, Open University of the Netherlands.

About the authors

Daide Nicolini is Professor of Organization Studies at Warwick Business School where he co-directs the IKON Research Centre. In the past he has held positions at The Tavistock Institute in London, ESADE in Barcelona and the University of Trento and Bergamo in Italy. He has conducted a number of studies in the Italian and UK healthcare sectors on such topics as knowledge translation, learning from incidents in patient safety, new technology adoption, managerial information behavior and service improvement. His work has appeared in a number of major North American and European journals and books. His current research focuses on the development of the practice-based approach and its application to phenomena such as knowing, collaboration, innovation and change in organizations.

Harry Scarbrough is a Professor in Information Systems and Management at Cass Business School, City University London. He has carried out a number of studies on learning, innovation and technology funded by the major UK Research Councils and the National Institute of Health Research. His current interests span the fields of information systems and organization studies, and include work on ‘knowledge translation’ in healthcare, and the development and diffusion of innovations in computer games. His most recent work has been published in journals such as *Social Science and Medicine*, *Organization Studies* and *Information Systems Research*.

Julia Gracheva earned her BA at John Jay College of Criminal Justice in New York and a Master's Degree from the Warwick Business School in the UK. She has collaborated with the IKON research unit and the KIN network. Her research interests cover knowledge and innovation management, communities of practice and organizational networking.