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RESPONSE

Interaction between tacit and codified knowledge in socio-spatial context

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Introduction

The Proposition (Rutten, 2014) raises numerous important issues related to the spatial dimension of learning and innovation. In particular, it provides a coherent conceptualisation of the socio-spatial context of learning, suggesting the idea that the social context cannot be analysed separately from the spatial dimension. I consider that the main result from this paper is the clear rejection of the idea that individuals learn in only one social context at the same time. As emphasised by the author, 'individuals are part of multiple social contexts and shift between them to access and transfer knowledge. In fact, learning may benefit from involving multiple social and professional social contexts'. It is a strong proposal that could have multiple impacts on the way we conceptualise learning and innovation. I would advocate that this important statement could have been argued even more forcefully in the paper.

Individuals learning versus collective learning

The Proposition starts by underlying the fact that individuals are the principal agents of learning and that the relations among them build the social context of learning. Such a statement echoes the vast majority of the major scholars in the field; for instance, Simon (1991, p.125), who asserts that 'all learning takes place inside individual human heads', and Argyris and Schön (1978), who write that 'organizations learn only through the experience and actions of individuals'. However, at this point, when trying to understand how knowledge is transmitted from individuals to the collective and *vice versa*, the paper refers to but does not discuss the central concept of the formation of collective knowledge, which is the notion of 'routine'. To a large extent, routines are inherently related to learning in a socio-spatial context.

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Collective learning implies a modification of existing routines, even if these are hard to change. Also, routines are context dependent since the execution of a given routine is possible only in a specific context that provides the locus of attention for collective action. As Nelson and Winter (1982) underline, 'the context of information possessed by an individual is established by the information possessed by all the other members'. In other words, the context is generative because the creation of shared languages and shared meaning stems from the interaction of organisational members. Thus, organisational context activates the individual's cognitive processes, and beyond activates organisational cognitive processes. The remarkable point in the literature about routines is that if most scholars acknowledge that the knowledge stored in routines is a mix of tacit and codified knowledge, assessing or measuring the degree of tacitness is not an issue. What matters is the mutual interaction between tacit and codified forms of knowledge in a given routine in a specific context. This is the reason why, paraphrasing Meric Gertler (2001, p.3) we would propose that 'the nature of interaction between tacit and codified knowledge both defines, and is defined by social context' rather than 'tacit knowledge both defines, and is defined by social context'.

The role of tacit knowledge

Since the pioneering work of Polyani, interest in tacit knowledge has grown rapidly as studies of technological innovation and diffusion have increasingly identified tacit knowledge as an important component of the knowledge used in innovation, in the process of learning and in knowledge accumulation. For those scholars working on the spatial dimension of learning and innovation, the recognition of the role played by tacit knowledge had major consequences for the role of geographical proximity in the formation and transmission of knowledge. Since knowledge that spills over is mostly tacit, highly contextual and difficult to codify, it is therefore more easily transmitted through face-to-face contacts and personal relationships, which require spatial proximity. In particular, tacit knowledge came as a key concept in understanding the formation of economic externalities as a major characteristic of local agglomerations. Economic agents operating near important sources of knowledge can introduce innovations at a faster rate than rivals located elsewhere.

However, if this territorial innovation model, based on the role of tacit knowledge, has had significant impact on the literature of economic geography, it has also been severely questioned by influential scholars. For instance, Cowan *et al.* (2000), in a highly-quoted paper, talk about 'the skeptical economist's guide to "tacit" knowledge'. In the same vein, Breschi and Lissoni (2001) question the importance of face-to-face contact which 'serves only to ease the access to information about who knows what and where'. They suggest that tacit knowledge can be purposefully manipulated to prevent a number of local actors (as well as external ones) from understanding the content of scientific and technical messages. At the same time, they argue that tacit messages can be sent over long distances through written media or phone conversations. It appears that isolating tacit knowledge as a key component to explain the formation and diffusion of innovation poses problems. The knowing how (the tacit knowledge) cannot be dissociated from the knowing about (the codified knowledge). The theoretical value of tacit knowledge is essentially in its association with codified knowledge, and in the modes of conversion between the two forms of knowledge in a given context.

Communities of practice and the spatial dimension of learning and innovation

The Proposition contrasts the territorial innovation model (TIM) with the community of practice (CoP) view, arguing that for CoP 'organizational and relational proximity are more important than geographical proximity in facilitating learning'. The community of practice is indeed a mode of coordination that implies significant organisational and relational proximity. As expressed by Amin and Roberts (2008), 'CoP is indicative of an important shift in thinking that recognises that knowledge and creativity are born out of habituated practice (rather than competences mastered in isolation or bundles of codified knowledge unproblematically transmitted down the chain)'. However, in the perspective of the present paper, some precision is needed. First, the main and pioneering papers on communities of practice (e.g. Lave and Wenger, 1991; Brown and Duguid, 1991) never refer to tacit knowledge as a determinant of the formation of the community. Of course, tacit knowledge is clearly embodied in the mutual trust, social norms and jargon that bind together members of a CoP, but there has never been any effort to isolate the tacit component. Here again what matters is not that the tacit and the codified forms of knowledge coexist within a given CoP, but rather that their mode of interaction and mutual conversion (through narration and the formation of best practices) drive the cognitive work of the community.

Second, the main papers on CoP do not exclude geographical proximity (through face-to-face contacts) in their mode of formation. The classical example of the community of representatives at Xerox illustrated by Brown and Duguid (1991) refers to frequent face-to-face meetings among the members of the community as an opportunity to strengthen the building of best practices within the community, as well as facilitate the relational proximity among members. Situated practice as a source of varied forms of learning and knowledge generation is indeed partially locally distributed. Consequently, at least in an early phase of the building of a CoP, learning is to some extent connected to a spatial dimension.

Third, when dealing with issues such as innovation rather than CoP, different forms of communities more focused on the production of new knowledge can be envisaged, in particular epistemic communities. Epistemic communities are, according to Cowan *et al.* (2000), 'small groups of agents working on a commonly acknowledged subset of knowledge issues and who at the very least accept a commonly understood procedural authority as essential to the success of their knowledge activities'. These communities are, for example, groups of researchers, a task force or a group of designers within a firm, a school in painting or music. The members gradually construct a common structure allowing a shared understanding (tacit knowledge). What binds each one of these communities is the existence of a procedural authority (i.e. a set of rules or codes of conduct defining the objectives of the community and the means of achieving them), and other forms of tacit knowledge. This form of organisation generates knowledge through a series of codified documents, first a manifesto, then a code book in the sense of setting out a dictionary and a grammar so that the cognitive work can take place. In an epistemic community, the creation of knowledge is the result of a continuous conversion and interaction between tacit and codified knowledge.

Learning and innovation from multiple social and spatial contexts

According to the Proposition, the debate on the spatial dimension of learning and innovation falls into two equally unhelpful extremes, the TIM and the CoP views.

From questioning these views, lessons concerning learning and innovation in social and spatial contexts can be learnt. First, identifying and isolating tacit knowledge as a key determinant of the learning and innovating modes, in particular at a geographical level, is useless, and would not allow significant conclusions to be reached. The main reason is that the intrinsic value of tacit knowledge lies in its subtle interaction with codified forms of knowledge, which depends on contexts and which contributes in turn to shape new contexts. This is why the TIM view is limited and questionable. Second, the CoP approach also has limitations. On the one hand, a community of practice may not be the best representative of diverse communities. As explained above, epistemic communities seem to offer stronger characteristics for the related issue of innovation and learning. On the other hand, any type of community faces an important limitation with respect to innovation: a given community has, by definition, only one domain of knowledge binding its members together. A given community cannot build complex objects, products or services that require diverse domains of knowledge to be assembled, or diverse communities to interact. Therefore, it appears essential that individuals be part of multiple social and spatial contexts and be free to shift between them to access and transfer knowledge. In such a perspective, learning and innovation may greatly benefit from involving multiple social and professional contexts. Clearly, this observation from the Proposition opens promising avenues of research.

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