Integrating diverse knowledge through boundary spanning processes – The case of multidisciplinary project teams

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Abstract

It has been previously argued that knowledge heterogeneity compiled with geographic separation of team members hinder effective sharing and use of a team's knowledge. The paper explores how multidisciplinary teams interact to overcome the barriers and take advantage of their 'built in' knowledge diversity. The findings of the research suggest that successful integration of multidisciplinary knowledge can be achieved through team's boundary spanning activities and reaching to multiple professional and social communities. Three project boundaries have been identified, *project action boundary*, *project knowledge boundary and project social boundary*, which facilitate team members in articulating diverse knowledge perspectives. The findings suggest a need to reconceptualise the boundaries of multidisciplinary teams and to consider the processes of sharing diverse knowledge in a wider professional and social context.
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1. Introduction

With the intensification of globalisation and expansion in the use of information technology, particular attention is being focused on the opportunities and difficulties associated with sharing knowledge. The exponential growth of knowledge has made it nearly impossible for any organisation to exist in isolation. Thus, the networked organisation or alliance is becoming an increasingly common structural form [1]. Previous studies refer to such new organisational arrangements as 'virtual organisations', 'spider's webs', 'holonic enterprise' and 'smart organisations'. Although, all describe new ways of organising which enable people and teams to work across conventional boundaries there are apparent variations in key characteristics.

A key component of the virtual organisations, for example, is that they are information computer technology (ICT) enabled [2] and based on computer-mediated communications (CMC) [3]. CMC, therefore, is a powerful tool to overcome time and distance barriers and a key feature of virtual organisations. It has been recently argued, however, that virtual organisational forms emphasise only one element of what is required from organisations in the digital economy [4]. To be able to respond to the challenges of the new global marketplace, the organisations have to be not only technologically enabled, but more importantly 'smart' in their abilities to enter into virtual collaborations with other partner organisations and share diverse occupational and cultural knowledge. The main building blocks of such organisations are the multidisciplinary teams working from different locations and team members belonging to different organisations.

While the potential advantages of multidisciplinary teams, in terms of creative potential and effectiveness, are theoretically attainable, empirical evidences suggest that knowledge diversity constrains effective sharing [5–10]. These constraints have both occupational and contextual origins. Differences in perspectives, priorities, typical

approach to problem solving and professional language can hinder understanding and team cohesion [11]. The difficulties of managing these knowledge exchanges amongst team members can become a major barrier to any successful multidisciplinary operation.

While previous studies on knowledge processes have examined a variety of settings, most have focused on the work practices of individuals [12] or that of focal groups proximate in time and space [13,14]. Little is known about the process of knowledge building within complex organisations, with more limited information on how this knowledge is geographically distributed.

The paper explores how geographically distributed multidisciplinary teams interact to overcome the communication and occupational barriers and take advantage of their 'built in' knowledge diversity. Dealing with such challenges requires more than just balanced team composition of experts in different fields, it also requires developing competences in distributed organising. The focus of the paper, therefore, is on the processes of distributed knowing as emerging from the ongoing and situated actions of team members. The author adopts the view that understanding the intra-teams' dynamics requires considering teams in a wider context and acknowledges relationships with various external stakeholders.

The empirical data for this study was gathered through multi-method field research of five dispersed multidisciplinary teams. The findings indicate that teams often lack common background knowledge at the beginning of the projects and members are accustomed to different working practices. Therefore, in order to resolve differences members rely for support on their external intellectual and social communities. The findings establish a need to reconceptualise the boundaries of multidisciplinary teams and to consider the processes of sharing diverse knowledge in a wider social context. Three project boundaries have been identified, *project action boundary*, *project knowledge boundary* and *project social boundary*, which facilitate team members in articulating diverse knowledge perspectives.

2. Understanding 'multidisciplinary' – implications for team's functioning

Multidisciplinary teams are believed to be useful in developing innovative and optimal solutions to many types of business problems [15]. However, apart from the proclaimed advantages, the term 'multidisciplinary teamwork' has never been defined. At first glance, it might appear obvious that the definition refers to expertise diversity implying differences in the knowledge and skill domains in which members of a group are specialised. And yet it becomes apparent from the literature that this is far from a clear concept. Furthermore, the terms 'multidisciplinary' and 'interdisciplinary' are often used interchangeably. Further, confusion is created by adjectives such as 'disciplinary' and 'professional' which researchers and practitioners use. Leathard refers to this as a "terminological quagmire"

[16, p. 6] and it is this which must be clarified before multidisciplinary team working can be fully understood or implemented successfully.

For the purpose of this research the author suggests that what distinguishes multidisciplinary teams from other types of teams is based upon three dimensions. These are: numerical, territorial and epistemological. Many argue that the difference between 'inter' and 'multi' is largely numerical. For example, how many professions must be present before a team is truly multi-professional? By way of illustration: the working relationship between technology manager and business manager would be interdisciplinary; whereas a research scientist, experimental scientist, process development engineer and production engineer could form a multidisciplinary team. Moreover, although the number of professionals involved may provide a clearer platform for identifying multidisciplinary teams, the difference between 'multi' and 'inter' is more than just a numbers game. Issues of territory and professional boundaries impact on multidisciplinary working or as Pirrie et al. put it "…it's like you are crossing into another space…" [17, p. 14]. Therefore, simply putting people together in groups, representing many disciplines, does not necessarily guarantee the development of a shared understanding. For example, Fleck discovered in a case of collective problem solving that different occupations have different funds of knowledge and different systems of meaning and therefore they act as if in distinct worlds of thought [18]. Similarly, Dougherty found in the domain of organisations, that product development teams including specialists from different organisational functions (marketing, production, engineering, planning), generally struggle to effectively synthesise and leverage their collective expertise precisely because their functional diversity acts as an interpretative barrier [11].

What is therefore, the extra ingredient which turns a group of professionals from different disciplines into an effective working team? It is argued in this paper that this distinction is epistemological, dependant not just on a blur of professional boundaries, but more importantly on the creation of a new way of working. It is also argued that a new way of working can not be simply imported in the team, but it can only emerge and develop through intense interactions.

3. Challenges of integrating knowledge in a multidisciplinary context

In spite of the apparent advantages of designing teams for knowledge diversity, it is by no means clear how team members make effective use of this knowledge. Grant's [19] observation is that knowledge integration, not knowledge itself, is what generates an advantage for organisations and respective teams. Although, the organisational form and structure provides the 'bones', it is the group-level knowledge integration that provides the 'flesh and blood' [21]. As new product features are added, new types