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Organisational virtuality: a conceptual framework for communication in shared virtual environments

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Abstract

This paper shows how popular 'structure-driven' approaches fail those who use and design virtual teams, and presents 'organisational virtuality' a conceptual framework which is may be used to understand the ways in which advanced ICTs and face-to-face meetings are used to support communication between users of shared virtual environments. It is argued that if knowledge exchange requires the sharing of contexts, then virtual teams may only be innovative if the contexts (space, time, community) which are not shared between them are re-personalised, through a mediated sense of telepresence, temporal telepresence and telecommunityⁱ.

1.0 Introduction

The use of advanced information and communication technologies has opened up new possibilities for the ways in which work may be organised. In the management literature and the popular press, this extension has been presented as the arrival of one new organisational form , 'the virtual organisation'. Hence to date, the many ways in which the new technologies may be used to extend the boundaries that limit the way we work has been defined in terms of a single management structure. Discussions of virtuality in organisations have therefore centred around the possession of information and communication technologies, and have focused on the arguments which aim to determine the 'correct' management structure that is truly virtual.

Organising work virtually, across the barriers of space, time and organisations can potentially allow for more flexibility, access to specialist knowledge and

cost savings. But whilst the advantages of 'the virtual organisation' have been sung from the rooftops, the limits of virtuality in organisations have been brushed under the carpet. The reasons for this are threefold. Firstly, 'the virtual organisation' is said to be 'enabled' by the power of information and communication technologies. The extent to which these technologies can, or cannot support virtual activities may not be enquired into, not whilst the literature fails to acknowledge that the mere possession of such tools does not guarantee their efficient or effective use for a particular purpose.

Secondly, for as long as authors continue to search for the one true definition of the virtual organisation, academics and practitioners will have no way of conceptualising the relationships between different organisational forms, or identifying or comparing the different processes which sustain them.

Thirdly, the literature's obsession with the magical 'enabling' powers of ICTs fails to acknowledge the need for an aesthetic to guide the design of products and services that support the communication processes which are so vital to collaborative work.

2.0 Organisational Virtuality

But if the way in which the use of advanced ICTs are opening up new possibilities for the way in which work is organised does not amount to one new organisational form, 'the virtual organisation', then how can these extended possibilities be described?

A clue to this puzzle lies in the multitude of definitions that exist for 'the virtual organisation'. If the word virtual is 'a huge vessel of semantic vacuity waiting to have meaning poured into it' [Wooley 1992], then the virtual organisation is a bottomless vessel: for of all the attempts that have been made, none have been sufficient to fill it with meaning.

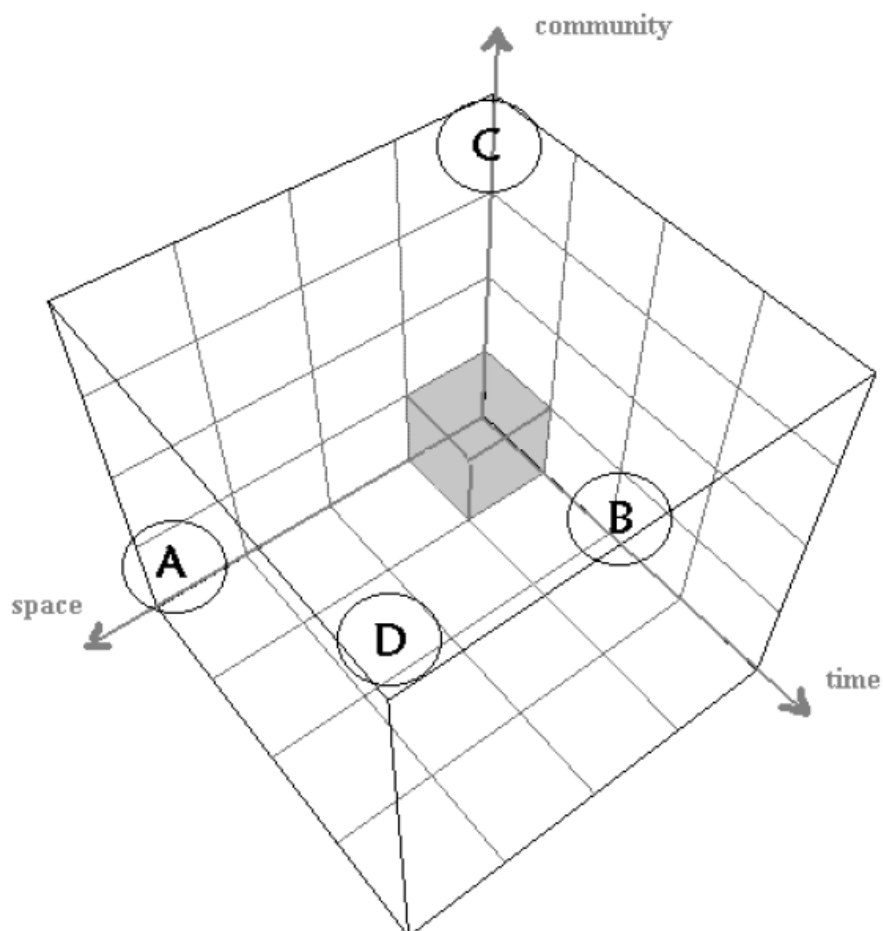
The literature agrees that all virtual organisations use advanced ICTs, indeed, virtual organisations are said to be 'enabled' by the use of these technologies. But in different parts of the literature the virtual organisation is defined in terms

of one management structure which organises activities over [any number and combination of] (i) space, (ii) time and (iii) organisational boundaries.

It is argued that given the three failings of 'the virtual organisation' discussed in section 1.0, it makes sense to abandon the search for the one true definition of 'the virtual organisation' and instead focus on the ways in which the communication barriers which separate those who share virtual environments (space, time, organisational community) are surmounted.

This is the focus of organisational virtuality. From this perspective, the use of advanced ICTs has extended the possibilities for the ways in which activities may be organised across the barriers of geographical space, time and organisational boundaries.

This is illustrated in the following diagram.



The letters A, B, C and D indicate where in the organisation-space, the following hypothetical examples of virtual organisations might be found:

- **(A)** A team of collaborating high-energy physicists, accessing equipment and communicating on-line on a long-term project. Relatively permanent, capabilities common to all, high degree of virtual presence.
- **(B)** A team of collaborating industrial scientists, accessing equipment and communicating on-line, high turnover of personnel within firm; duty rotation.
- **(C)** A team of collaborating scientists, based at an in-house laboratory, bringing in a significant proportion of 'outside' knowledge (from suppliers, users etc.) to work on a long term project.
- **(D)** A continually evolving network of scientists (suppliers, customers etc.) accessing equipment at many sites and communicating on-line, i.e. members based at many sites.

In Fig 1., work that is organised non-virtually, when people are co-located, share the same set period of time and belong to the same organisational community, will be located in the grey box near the origin. Teams that are made up of (any number and combination of) geographically disparate temporally disparate workers and those belong to different organisational communities are described as virtual.

The use of such a framework, as opposed to the selection of a particular 'true' management structure for the virtual organisation better illustrates the idea that the use of advanced information and communication technologies have extended the possibilities for the ways in which work may be organised over space, time and organisational boundaries. In this framework, this extension is represented by the extension of the 'organisation space', from the shaded region, to that enclosed by the 3- dimensional 'box' in the diagram. This extension is called organisational virtuality.

3.0 Innovation and Virtuality

Invention springs from a 'novel thought or experience which, under certain circumstances, will be subject to diffusion' (Boisot 1995). Innovation, then, is the result of invention that is taken up by others and put to work. But especially so in virtual organisations, novel ideas and experiences that have great potential for innovation are simply not taken up. Because if an experience or idea is to be diffused to other people, and hence make the transition from invention to innovation, it has to be communicated and perceived as meaningful.

Such pragmatic communication problems are especially common in virtual work due to the lack of a 'mutual sharing of contexts'. If people do not share the same physical space, the same timeframe, the same culture, the same capabilities, innovative ideas often have difficulty in passing themselves off as meaningful.

It is therefore hypothesised that organisational virtuality requires that contexts which are not shared (space, time, community) must be 're-personalised' by mediated telepresence, temporal telepresence and telecommunity between those in shared virtual environments, if knowledge is to be efficiently and effectively exchanged.

Hypothesis 1:

Organisational virtuality requires that knowledge exchange is supported by the development of a sense of telepresence, temporal telepresence and telecommunity between members of virtual teams, at least for as long as the duration of the exchange.

Here telepresence is defined as 'a sense of sharing the same physical environment, at a distance', temporal telepresence is defined as 'a sense of sharing the same timeframe, at a distance in time' and telecommunity is defined as 'a sense of community to which one does not 'belong'".

In effect, those who wish to exploit organisational virtuality are seeking to escape from the confines of the physical environment, the moment, and the community to which they belong. One could express this as a wish to

overcome the limitations that separation by the real barriers of distance, time and community impose on the senses. This is a somewhat extended (multi-dimensional) version of Biocca, Kim and Levy's (1995;10) view of telepresence in VR (virtual reality).

A definition of organisational virtuality:

Organisational virtuality is displayed by organisations whose members are separated by [any number and combination of] space, time and organisational boundaries, and which must create their own combination of telepresence, temporal telepresence and telecommunity to support efficient and effective knowledge exchange.

4.0 Conclusions

Virtual teams suffer from the lack of shared contexts- time, space and community- which pose barriers to communication; innovative ideas and experiences are not perceived to be meaningful.

Innovation within virtual teams requires that some aspects of these contexts (space, time, community) which are not shared are 'recreated'. Virtual environments, such as extranets, video-conference links, etc., when used in certain ways, and in combination with face to face meetings and traditional media (see **Gristock** 1997) can 're-personalise' these contexts which are not shared, by creating a feeling of 'being there' and 'belonging'. This helps innovative ideas to be perceived to be meaningful across virtual barriers.

5.0 References

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ⁱ Later versions of this framework used the terms 'presence', 'temporal presence' and 'virtual community'