Association for Information Systems
AIS Electronic Library (AISeL)

AMCIS 2003 Proceedings

Americas Conference on Information Systems (AMCIS)

December 2003

What Mary Didn't Know About Tacit Knowledge

Adam Jenkins
University of South Australia

Follow this and additional works at: http://aisel.aisnet.org/amcis2003

Recommended Citation

Jenkins, Adam, "What Mary Didn't Know About Tacit Knowledge" (2003). *AMCIS 2003 Proceedings*. 351.
http://aisel.aisnet.org/amcis2003/351

WHAT MARY DIDN'T KNOW ABOUT TACIT KNOWLEDGE

Adam Jenkins
University of South Australia
adam.jenkins@unisa.edu.au

Abstract

This paper explores the notion that tacit knowledge can be converted to explicit knowledge, by examining the philosophical concept of qualia. Qualia is suggested to be a type of tacit knowledge that cannot be made explicit, whether or not one subscribes to the belief that qualia also represents a non-physical mental property. Given that qualia shows that there exists at least one type of knowledge that resists codification, the existence of qualia disproves the assumption that all tacit knowledge is potentially capable of being converted into explicit knowledge - an assumption which it is suggested is common in the Information Systems literature. As a result, it is recommended that IS researchers resist blindly accepting this assumption as one of the foundations of their argument, and that they continue to examine their understanding of what is meant by the term "knowledge".

Keywords: Qualia, knowledge, epistemology, tacit knowledge, explicit knowledge, knowledge management

Introduction

The various issues inherent in a full understanding of the concept of knowledge are highly significant to Information Systems researchers, particularly, but by no means exclusively, those involved in the area of knowledge management (KM). For the purposes of this paper the focus will be firmly placed on Knowledge Management, but the issues raised here may well have a wider significance. The aim of KM as a discipline is, as the name suggests, to manage knowledge - specifically to assist in the retention, development, retrieval and dissemination of knowledge (Gupta, et al 1999, page 462), often within an organisational setting. This is comparatively straightforward when the knowledge being managed is codified, such as is the case with recorded statements, but is much harder when the information has not been expressed.

In order to better understand how knowledge may be managed, many, although clearly not all (for example see Stenmark, 2002), IS researchers distinguish between two distinct types of knowledge - explicit and tacit knowledge. Explicit knowledge, according to Nonaka (1994), drawing on the work of Polyani (1966), is knowledge that is transmittable via language. Tacit knowledge, on the other hand, is what Polyani is referring to when he states: "we know more than we can tell" (1966, page 4). Tacit knowledge concerns both the way in which we see the world, and "know how", such as skills and talents (Nonaka, 1994 page 16). The most significant aspect about this distinction, especially in terms of Nonaka's approach, is that tacit knowledge is defined as knowledge which is not in a state which can be expressed via formal language.

The relationships between these two types of knowledge are often regarded as topics of considerable interest to the IS discipline. This paper will focus on one of these relationships - the ability of one form of knowledge, tacit knowledge, to be transformed into explicit knowledge and then "managed" by an information system. The suggestion here is that this process is not as automatic as many researchers appear to believe it to be – indeed, that the codifying of tacit knowledge, may, in many cases, be impossible – and thus one of the core assumptions of many arguments based around tacit knowledge transformation must be called into question.

Tacit Knowledge in IS

Many researchers have had a particular interest in tacit knowledge and information systems. For example, Edgington & Chen (2002) have looked at whether or not information technology can contribute to the process of transforming tacit knowledge into

explicit knowledge. It is interesting to note that in order to examine this primary issue, they list nine questions that need to be asked before an answer can be formulated. These nine questions include what tacit knowledge is, whether or not it is useful, how we transform it, and how we identify it. Curiously, what is missing is perhaps one of the most basic questions - whether or not tacit knowledge can be transformed at all. This is, as it is in most examinations of tacit knowledge management, taken to be a given.

Other examples of this assumption abound. Bloodgood & Salisbury (1998) define tacit knowledge as "knowledge that is difficult to articulate and express to others." Inherent in this definition is the assumption that tacit knowledge *can* be articulated and expressed - it may be difficult, but it is not impossible. Gupta et al (1999) offers a similar definition: "Tacit knowledge, in contrast [to explicit knowledge] is diffused, without any tangible form and therefore, difficult to codify." (pp 462-463). As with Bloodgood & Salisbury, Gupta et al presume that it *can* be codified. Even Nonaka and Takeuchi (1995) state that tacit knowledge is "hard to articulate with formal language" - they too seem to assume that it can be articulated.

Given the regular occurrence of this assumption within the IS literature, the question of whether or not this assumption is justified should be considered as a serious concern. There are two logically possible methods of discovering the truth of this assumption. The first, and the most challenging, is to show that all tacit knowledge must, for some reason or other, logically be able to be codified. To do so researchers might be expected to turn to fields such as neuroscience, cognitive science and the philosophy of mind, and even then it would be difficult (if not impossible) to prove. Alternatively, if a single instance of tacit knowledge can be found which cannot be codified, then researchers can claim that the assumption is invalid. Using this path, it does not matter whether or not some (or indeed most) tacit knowledge can be codified, for the simple existence of tacit knowledge which is incapable of being codified tells IS researchers that they can no-longer safely take this core assumption as a given. Of course, the failure to find an example of such knowledge cannot be seen to prove the assumption true, either - this path logically leads to a disproof or nothing at all.

Qualia

One possible candidate for tacit knowledge that cannot be made explicit is that of qualia. Qualia is a concept that was best expressed by the philosophers Frank Jackson and Thomas Nagel, and has been used in what has become known as the "Knowledge Argument". The short definition of qualia states that qualia is the subjective experience of a thing - what it is like to do or be something. Both Jackson and Nagel presented different arguments and examples regarding the existence of qualia. Nagel's arguments focused on what it would be like to have abilities beyond those that we naturally possess - his most famous example being what it would be like to be a bat. It is not possible, he argued, for us to know what it would be like to be a bat (in particular, to "see" by sonar) unless we were one - because that type of knowledge cannot be shared, even if we knew everything that there was to know about how the brains of bats work (Nagel, 1984). However, although Nagel's argument is certainly good, it is Jackson's approach that will be the most useful here. Jackson's argument, presented in "What Mary Didn't Know" (1986), goes something like this:

> Imagine if you will a person called Mary. Mary has spent her entire life, since birth, in a room where she has been prevented from ever seeing a colour. The room is painted in black and white, the food is black and white, her clothes are black and white, and her education has been conducted via a black and white television. Significantly, although Mary has never seen a colour, she is also the world's leading expert on colours and how the brain reacts to them. She knows so much that she can be said to know everything that there is to know about the physical nature of the brain and the environment. However, one day Mary breaks out of the room, steps outside, looks up at the sky and sees, for the first time, the colour blue.

The question is: did Mary learn something new when she first looked up at the sky? Intuitively most people answer yes - she learnt what it is like to see the colour blue. Given that Mary knew everything physical that there was to know about the way the mind works, and thus she had a complete knowledge of all the physical aspects of how her brain would react to the colour blue, it must be concluded, or so Jackson argues (1986), that she learnt something non-physical. And thus physicalism - the belief that everything in the world can be explained in purely physical terms - must be wrong.

Clearly, both Jackson and Nagel were not trying to argue that tacit knowledge cannot be codified. Instead they were trying to show that the "physicalist" view of the mind is false. One could even argue that qualia represents one of the last modern arguments to save dualism from the onslaught of physicalism. Nevertheless there is something of value here for IS researchers. Ignoring the question of whether or not the conclusions presented by Jackson and Nagel survive criticism, it would appear that if we both

accept the existence as qualia (as most people intuitively do), and if we accept that qualia represent a type of knowledge - knowledge of what it is like to experience something - then that knowledge cannot be made explicit. If it could have been, Mary would have known what it would be like to see the colour blue before she did so, and the rest of us would have a shot at knowing what it is like to be bats.

However, what if Jackson's and Nagel's conclusions were wrong, and qualia were shown to be purely physical properties of the mind? Would it then mean that qualia could, in fact, be codified, and thus made explicit? One well regarded argument against qualia was provided initially by Nemirow (1979), and later supported and developed by Lewis (1990), amongst others (Levin, 1986 and Churchland, 1989). Known as the "ability" hypothesis, it draws a distinction between "facts" and "know how". Mary, they argue, learnt no new facts when she saw the colour blue - she instead gained a new ability. There are a number of reasons as to why this reply to qualia is flawed, but they are outside the scope of this paper. Nevertheless, if the argument is accepted, it still does not solve the tacit knowledge problem - for all that it is saying is that explicit knowledge ("facts") can be learnt, but tacit knowledge ("know how") cannot. Thus rather than saving tacit knowledge from qualia, it lends support to the claim that tacit knowledge may not always be able to be made explicit.

One of the best arguments against qualia comes from Dennett (1993). Dennett uses a number of "intuition pumps" to show that there are alternative physical explanations of qualia. One of these is the case of the coffee tasters, Chase and Sanborn. Chase and Sanborn both work for a coffee manufacturer. Their jobs are to make sure that the coffee remains constant, by tasting each batch and confirming that it tastes exactly the same as it did the day before. After being in the job for six years, Chase and Sanborn both reveal that they no longer enjoy the taste of the coffee, in spite of the fact that it tastes the same as the first time they drank it. Chase suggests that this is because his standards have changed, as he has become a more sophisticated coffee drinker, while Sanborn believes that it is because something physical has changed in him (Dennett, 1993, pp 389-390). Dennett suggests that there are a number of options available to explain what has happened to each person. In the case of Chase, it could be argued that: a) the "qualia" - what it is like to drink the coffee - have stayed the same, but his attitudes towards the qualia has changed, b) the qualia has changed over time, but his attitudes have not, or c) that there exists some combination of the two. In the case of Sanborn, he might a) be right, and the qualia have changed due to some alteration in his "perceptual machinery", b) be wrong, and the qualia have remained consistent, but his attitudes have shifted, or c) a combination of the two. In essence, and in combination of a number of other intuition pumps, what Dennett is suggesting is that qualia can potentially be explained in purely physical terms, as "what it is like" to experience an event can be a learned response. It is possible to argue that qualia can be explained in terms of comparisons of experiences - as Chase and Sandorn have only been drinking one type of coffee for many years, their ability to compare the taste with other coffees has changed, and thus their subjective experience has been altered. But be that as it may, even if Dennett's arguments are accepted as true, they still don't make qualia open to codification - for we can no more extract the sum of a person's experiences and place them in a database that we could tell Mary what it was like to see blue.

Conclusion and Implications

The intention has not been to state that all tacit knowledge cannot be codified, nor that the codification of tacit knowledge is not useful. Rather it has been to add to the existing work looking at the possible limits of tacit knowledge for IS, and the tacit/explicit distinction. It would certainly seem that the assumption inherent in the claims of many IS researchers that all tacit knowledge can potentially be codified is false, as at least one example of tacit knowledge exists that is not able to be explicitly expressed. The fact that few would be foolish enough to even consider capturing the "what it is like" dimension of an experience is beside the point - the simple existence of uncapturable knowledge raises concerns about the ability to capture any particular type of knowledge, concerns that must be addressed by IS researchers. Thus researchers are left with three options:

a) Accept that there are limits to what kinds of tacit knowledge can be made explicit. This option is currently quite popular within the KM literature.

b) Keep the assumption that all tacit knowledge can be made explicit, but deny that qualia is tacit knowledge. To do so would probably require the proposition of a third category of knowledge in order to encompass types of knowledge that resist codification.

c) Deny the tacit/explicit distinction. (eg Stenmark, 2002)

All these options are potentially effective, but all have different implications. For example, should a researcher go with the first option, they will need to show either that the tacit knowledge that they wish to capture can be codified, accept that at best they may lose some aspects of the knowledge which they wish to capture, or look for a method of transferring knowledge that doesn't rely on transforming it into explicit knowledge. This third choice is arguably the most common of the three, as things currently stand. If researchers go with the second option things will change little - but the current distinction that is commonly drawn between tacit & explicit knowledge will need to be expanded, and researchers will need to show why the knowledge they seek to capture falls under the tacit or explicit headings, rather than the third dimension. While the third option will, of course, require a radical rethink about the distinctions between knowledge and information - a rethink that is already underway through the work of people such as Stenmark (2002) and Spender (1998), among many others.

However, perhaps what this best displays is that IS as a discipline needs to try to build a clearer understanding of just what is meant by the term 'knowledge', and how different types or categories of knowledge can be understood and managed within an IS framework. This paper is presented, not as the end of this research, but rather as a beginning - just one of a growing body of work that suggests that IS needs to undertake (or continue to undertake) a more detailed examination of the discipline's understanding of knowledge.

References

Bloodgood, J.M. & Salisbury, W. D. "What You Don't Know You Know Can Hurt You: Considerations in Using IT to Transmit Tacit Knowledge in Organizations." *Proceedings of the Americas Conference of Information Systems*, 1998.

Dennett, D. "Quining Qualia." In Alvin I. Goldman, ed., *Readings in Philosophy and Cognitive Science*, pp. 381-414. Cambridge, Mass.: MIT Press, 1993.

Gupta, B., L.S. Iyer, and J.E. Aronson. "An Exploration of Knowledge Management Techniques," *Americas Conference on Information Systems*, August 1999.

Jackson, F. "What Mary didn't know", *Journal of Philosophy* (83:5), 291-295, May, 1986.

Lewis, D. "What Experience Teaches." In Lycan, W. (ed.), *Mind and Cognition* Oxford: Basil Blackwell, 1990.

Nagel, T. "What Is It Like to Be a Bat?" *Philosophical Review* 84, 1984, pp. 435-50.

Nemirow, L. "Functionalism and the Subjective Quality of Experience" Dissertation, Stanford University, University Microfilms International, 1979.

Nonaka, I. "A Dynamic Theory of Organizational Knowledge Creation", *Organizational Science*, (5:1) 1994.

Polanyi, M. *The Tacit Dimension*, Doubleday, Garden City, NY, 1996.

Stenmark, D. "Information vs. Knowledge: The Role of intranets in Knowledge Management," *Proceedings of the 35th Hawaii International Conference on Information Systems*, 2002.

Spender, J. "Pluralist Epistemology and the Knowledge-Based Theory of the Firm", *Organization*, (5:2), 1998.