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Why Define? The Case for Definitions of Knowledge

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ABSTRACT

Exactly what is meant by "knowledge" in Information Systems research is a topic of considerable debate. This paper does not propose to end the debate, but it does propose to place the debate within a practical context by examining the relevance of the debate itself. The paper proposes that the use of a given definition of knowledge has a direct impact on the design specifications and evaluation criteria of a knowledge management system. To demonstrate this, the paper selects two definitions of knowledge, and applies each of them to a) the process of designing a knowledge management system, and b) the evaluation of an existing knowledge management system.

Keywords

Knowledge Management, definitions of knowledge, philosophy, epistemology

INTRODUCTION

Information Systems (IS) in general, and Knowledge Management (KM) in particular, cannot be said to be lacking in definitions of knowledge. Even a cursory examination of the literature will reveal dozens of different definitions, some of which are radically different from the others (Table 1 lists a small selection of the definitions which have been employed within the literature). Perhaps because of the number of possible definitions, there has been considerable debate over which, if any, should be accepted as the core definition for the discipline. This is not a debate that is likely to end any time soon. It should also come as no surprise that this occasionally heated debate has also branched into a number of separate issues – one of which is based around the question "why do we require a definition of knowledge in the first place?" This, at least, is a question that can be readily tackled.

The short answer is yes, there is value in defining knowledge. Not just some theoretical, philosophical, academic value, but real, practical value that can be seen in real, practical systems. Significantly, it doesn't even matter what the definition is – the simple act of applying a definition means that a decision about the direction of the knowledge management system has been made, and thus design specifications and evaluation criteria are further developed. This paper proposes to take different definitions of knowledge and apply them to a range of knowledge management situations in order to examine the degree of benefit gained through the defining of knowledge for both IS practitioners and researchers.

This is not the first time such an approach has been developed. Alavi and Leidner (2001) examined a number of different perspectives of the nature of knowledge (knowledge as an object, knowledge as a process, etc), and examined the implications that these perspectives would have on both knowledge management in general and knowledge management systems in particular. This paper intends to build upon their work by moving the focus to the definitions themselves, rather than the perspectives which those definitions involve, and to specifically examine the manner by which those perspectives impact the development of specifications and evaluation criteria for knowledge management systems. Similarly, Cook and Brown (1999) examined the impact that different types of knowledge (explicit/tacit, individual/group) have on IS design. Although, once again, the focus was not on the definitions themselves, as it is in this work.

TWO TYPES OF KNOWLEDGE

Given that there are a multitude of definitions available in the literature, an examination of the application of all the definitions would be difficult at best. Given this, it would seem wise to begin with just two definitions and to explore them in terms of knowledge management. This is practical, as the issue at hand is not whether or not all possible (or even currently applied) definitions make a direct impact on the design and evaluation of information systems, but simply that some definitions *can* have an impact, and therefore the choice of definition is significant even if only because it precludes the other options available.

Definition	References
That which is known.	Grant 1996; Wasko 1999
A justified true belief	Nonika 1994; Pan, Newell, Huang and Cheung 2001; Edgington, Raghu, and Vinze 2003; Tanriverdi and Iacono 1998
A fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information.	Davenport, Th. D and Prusak, L. 1998; Rosemann, M. and Chan, R. 2000.
A warranted true belief	Plantinga 1993a and 1993b; Vance, D. and Eynon, J. 1998; Vance, 1997
Organized combination of ideas, rules, procedures and information.	Bhatt, G. 2000
A personal, inner abstraction of something that has been experienced.	Setzer, V. 2001
Provides the cognitive ability, or the cognitive potential, to act when confronted with information.	Hall, D. and Paradice, D 2000
Information interpreted and/or assimilated by a person using his/her prior knowledge.	Mahapatra, R and Sarkar, S. 2000
Applied information that actively guides task execution, problem solving and decision making.	Liebowitz, J. and Beckman, T. 1998
Justified true belief that increases an individual's capacity to take effective action.	Alavi, M. and Leidner, D.E. 1999
Information whose validity has been established through tests of proof.	Liebeskind, J. 1996
Information applied in a particular context	Baker and Barker 1997

Table 1: Sample of definitions of knowledge employed in the IS literature.

Thus the question remains: which two definitions should be applied? As suggested by Table 1, arguably one of the most common definitions of knowledge employed in the IS literature is that of "justified true belief" and its variants (for example, Plantinga's (1993a; 1993b) "warranted true belief"). Therefore justified true belief would make a good first definition. For the second it would be wise to pick a definition that takes a radically different approach to the understanding of knowledge. Four of the above definitions, specifically: "Provides the cognitive ability, or the cognitive potential, to act when confronted with information" (Hall, D. and Paradice, D 2000); "Applied information that actively guides task execution, problem solving and decision making" (Liebowitz, J. and Beckman, T. 1998); "Justified true belief that increases an individual's capacity to take effective action" (Alavi, M. and Leidner, D.E. 1999); and "Information applied in a particular context" (Baker and Barker 1997) refer to the *application* of the information, rather than relying solely on properties of the information. This is a very different approach to that instantiated in the justified true belief definition, and would make an interesting contrast. Of the four, the simplicity of Baker and Barker's "Information applied in a particular context" makes it an especially appealing candidate.

JUSTIFIED TRUE BELIEF

The "justified true belief" definition, also known as the "Tripartite Definition of Knowledge" or simply the "Standard Analysis", is one of the best known and most widely accepted definitions of knowledge. This by no means entails that it should be seen to be the ideal definition, of course, and in particular it should not be seen as the ideal definition for knowledge management. Nevertheless, it arguably has the longest pedigree, having been first offered by Plato in about 400 BC, and it has been heavily debated by philosophers of epistemology (the branch of philosophy that concerns definitions of knowledge) for the past 2000+ years. The definition proposes that there are at least three necessary components to knowledge – it should be justified, it should be true and the individual concerned should hold it as a belief.

Justification

For the purposes of this paper, justification is taken to be, in essence, the "reason" why a given person believes that X is true. To explain by example: if an Information Systems developer was asked which database system was better for a particular application, he or she could potentially reply with "Oracle" (or maybe MySQL, or Access, or some other database package). The standard response would be to assume that the IS developer *knows* that Oracle would be better for the given application. In such a situation, it may well be the case that Oracle is the ideal choice (thus the claim meets the truth condition), and it may well be the case that the IS practitioner even believes that Oracle is the ideal choice (and thus the claim meets the belief condition). However, if the practitioner has no *reason* for believing that Oracle is the best choice, and instead just guesses and plucks it randomly out of the air, it may reasonably be said that the developer was right, and maybe that the developer believed that it was the right choice, but it can't be reasonably said that the developer *knew* the answer. In short, guessing isn't sufficient for knowledge.

For the purposes of this paper, justification will be defined as being based on one of three principles: justification by trust, justification by evidence, and justification by deduction. This is not intended to be a philosophically perfect list, (indeed it could well be argued that it is a philosophically imperfect list), nor a complete list, but it will hopefully prove to be sufficient to highlight the potential impact that the justification criterion will have on the design of an information system where this definition has been applied.

Justification by Trust

Markus (2001) argued that knowing who said something assists in understanding the value of what was being said. This was particularly the case with shared work practitioners, who tended to use the author of a document as a guide to its value (Marcus, 2001, page 68-69). Justifying the validity of a claim via reference to the author is referred to here as justification by trust – because the author is trusted, the individual is willing to accept what the author says.

Alternatively, rather than trusting the author, the enquirer could choose to trust the system. A common example is that of an encyclopedia. The reader isn't necessarily told who the authors are of many of the entries, and even if they are aware of the author's name it is unlikely that the reader would recognize the individual concerned. So they can't trust the authors per se. Instead, the reader trusts the system – they trust that the editors and publishers would have endeavored to seek out experts in their fields, and that anything false would have been removed from the publication before it was printed. Thus any information gained from the encyclopedia is justified by dint of the system that provided the information, rather than the particular individual who recorded it.

Justification by Evidence

Evidence is assumed here to cover such things as personal experiences, survey data, the witnessing of tests, or any such procedure whereby the validity of a claim can be tested based on collected data. This differs from the philosophical definition of evidence, which is somewhat broader and would also encompass justification by trust and justification by deduction, but the narrower focus will prove useful when it comes to application.

As an example of justification by evidence: if someone is asked if he or she knows whether or not Open Source software is growing in popularity, they may not be able to answer based on knowledge justified by trust – as they may not have been told whether or not it is growing in popularity. However, they may answer based on evidence they have gained. For example, if they have witnessed an increase in the number of Open Source products running on desktops within their organization, or if they have witnessed evidence of the growth of Open Source software development through a rapidly increasing number of Open Source products on Sourceforge.net, or if they have read the results of surveys of businesses, then they may then feel that they are justified in their reply.

Justification by Deduction

Justification by deduction is the process by which a given piece of information is derived logically from other pieces of information. Logically speaking, if X entails Y, and X is true, then it can be reasonable deduced that Y must also be true. Justification through deductive reasoning is a commonly accepted method of justifying information. For example, a person might know that he or she will get wet when they step outside. They don't know this because anyone told them (justification by trust), nor do they know this because they have just stepped outside (justification by evidence). Instead, they know this because they believe that a) it is raining outside and b) things that go out in the rain get wet, and thus they deduce c) if I go outside now, I will get wet.

Truth

If a person was to believe X, and if that person had reasons for believing X, but X just happened to be false, it would be foolish to assume that the person knew X. For example, an individual may be absolutely certain that the moon is made of cheese, and they may be justified in this belief, but if the moon were, in fact, not made of cheese then it would be difficult to argue that the person concerned *knew* what the moon was made of. They may have thought that they knew, or they may have possessed a false belief, but they didn't actually *know*.

Thus the truth condition is the least controversial aspect of the tripartite definition. Debate in philosophy has not tended to revolve around whether or not truth is necessary for knowledge, but rather on what constitutes truth – a debate which occurs within the IS discipline in terms of subjective vs. objective truth. The justified true belief definition is normally viewed as being firmly seated within the "objective" side of the argument, and thus those who take the idealist line would tend to shy away from this definition. For the purposes of the current discussion an objective view of truth will be taken when examining the impact of the justified true belief definition, as the aim of this paper is simply to show that two different definitions of knowledge will have different impacts on the design of a system, and it is reasonable that one takes an objective approach while the other ignores the issue of truth altogether. Nevertheless, the possibility of further research into the impact that a subjective view would have is an appealing possibility, as the current approach still leaves open considerable debate on whether or not justified true belief is necessarily objective, how a researcher's or a developer's view of truth may influence their choice of definition, and the impact that a subjective view of truth may have on system design.

Belief

The final part of the tripartite definition is that of belief. If a person does not believe that X is true, irrespective of whether or not X is actually true, and irrespective of whether or not X is justified, that person cannot be said to know that X is true. Believing in X may often be simply a matter of accepting a justified (and presumably true) statement, although the situation is not necessarily this simple. For example, in some instances new information may contradict previously held beliefs, and thus will be difficult to accept. A programmer who strongly believes in the Open Source movement may find it difficult, or even impossible, to believe that a given proprietary solution would be better for a project, even if the claim is supported by sufficient justification and even if it is true.

KNOWLEDGE AS PRACTICAL INFORMATION

Baker and Barker (1997) state: "Knowledge is information applied in a particular context". This definition is based on the role of the information, rather than necessarily on the justification or objective truth of the information. As such it may have a very direct impact on the design of knowledge management systems. If a given person requests information from a database, the information provided by the database should be able to be applied to the particular context for which it was intended in order for it to constitute knowledge. Thus word like "appropriateness" and "usefulness" come into play.

Significantly, a key issue with this approach to defining knowledge is that it is very much context specific. Justified true belief, as a definition, focuses on properties which will be largely consistent over time. If a person can be said to know something at point n, that person can be assumed to still possess that knowledge at point n+1, certis parabis. However, the "information applied in a particular context" definition is quite different. For example, person P possesses the information (X) that a competent builder can be reached by dialing 8320-0934. According to this definition, X is only information, and can only be information, until point n is reached, at which point the person discovers that he or she is in need of a competent builder, and at that point X suddenly constitutes knowledge. At point n+1, when a competent builder is no longer required, X becomes mere information once more. Thus this definition means that knowledge is context specific and, potentially, person specific.

As a result, the key to applying this type definition is based around two core concerns: the relevance of the information and the practicality of the information. Relevant information is information that is, to put it simply, "on topic". But being relevant is not enough – the information should also be potentially useful in order to permit it to be applied. That usefulness may be inherent, given a particular context, in the information itself; or it may depend on the relationship between that piece of information and other pieces of information. It is all well and good to be aware that you need to install PHP to get some software to work, but this information may only be valuable when it is coupled with information about what PHP is, how to get it, and how to go about getting it installed. It is also important to note that, due to the context-specific nature of this definition, what is required for information to be practical will differ greatly based on an individual's frame of reference – why they want the information, what additional information they require, and what they want to do with it are all questions which will have a direct impact on the design of the system, but the answers to them will vary greatly depending upon both the user and the context.

APPLICATION OF KNOWLEDGE DEFINITIONS

It has been proposed here that definitions of knowledge will have an impact on both the design and evaluation of knowledge management systems. In order to demonstrate this, two simple case studies will be offered. The first is that of a knowledge base for conference organizers – the system doesn't exist, but it should serve as an interesting example of the impact different definitions have on design, by examining the effect they have on the development of specifications. The second is an existing online database which is used to assist people developing in a number of different programming languages, and should demonstrate the impact of different definitions in the evaluation of a system.

DESIGNING A SYSTEM: CONFERENCE KMS

After a recent IS conference the organizers expressed concern that there was nowhere they could have gone to find out how to run a conference, and thus they suggested that it would be worthwhile to develop an IS Conference Knowledge Management System. Like many good ideas, this didn't progress any further than the formation of the basic concept. Nevertheless, it may serve as a good example of the use of definitions of knowledge in the design of knowledge management systems.

The plan is to propose some basic specifications for the design of two different systems which are intended to serve the above role. Although the purpose of the system will remain consistent across the two designs, the definitions of knowledge being applied will differ. Both systems are going to collect information. But how they present that information, what additional information they require, how they relate different pieces of information, and what systems are in place to ensure the quality of the information are all aspects of the system that will differ depending on which of the two definitions is applied. It should also be noted at this point that what follows are simply suggestions as to how such systems may be designed, based in a large part on the view of knowledge being applied, and not are intended to represent either exhaustive nor ideal models.

Justified True Belief

When applying the justified true belief criteria, one approach would be to examine each of the three aspects in turn, and look at how those three aspects are to be supported by the final system. To examine justification first: it is proposed that justification within this system can be met in one of three ways:

1. First, all answers to questions can have the author's identity attached to them. Thus if the enquirer recognizes the name of the author, the enquirer will be in a good position to decide whether or not to trust the source. However, situations may arise where the enquirer does not recognize the name of the author. To counter this, the author's identity may be linked to additional data about the author – such as a biography, and a description of their expertise. Thus if an enquirer is provided with an answer to a question, he or she is able to then check to see who the author was, how many conferences they have been involved in and what role they held in those conferences.
2. Justification by evidence can be met through the collection of data. For example, surveys could be held after the completion of conferences, and the data entered into the system. Thus if a user wanted to know how many computers to provide for onsite email access, they would be told by the system how many were provided at other conferences, and this would then be related to feedback by the conference attendees in regard to computer access. If the conference with 200 attendees and 20 computers in the pool gained positive feedback, and the conference with 200 attendees and 5 computers gained mostly negative reports, then there would be justification to support the installation of 1 computer per 10 conference attendees.
3. Finally, justification by deduction could be handled by providing the reasoning behind a claim. Returning to the previous question, rather than just stating "You need 1 computer per 10 delegates", an argument could be presented based on the amount of time each attendee will need, on average, to spend on the computer compared to how much time is available for computer access. By providing the reasoning behind an answer the enquirer has the opportunity to see if the information has been properly deduced, and, if so, if it he or she can be justified in accepting the information.

Surprisingly, (objective) truth is an easier aspect to handle. Accepting the basic premise of Hume's problem of induction means that it is impossible to guarantee that only true data will enter the system. However, as Popper (1972) makes clear, it is possible to falsify a claim. Thus the system may be designed to ensure that mechanisms are in place to make sure that it is possible to detect and remove false data, should any be found, and that procedures are in place to check the validity of data entering into the system, in so far as such is possible.

Finally, belief. What encourages a person to accept a claim, given adequate justification and assuming that the claim is true, is something that is difficult to quantify, and very difficult to control. However, it may be suggested that most people are more inclined to accept information if it is presented in a comfortable, non-threatening, and professional manner that does not create conflicts with their existing beliefs. Thus the system should be designed with this in mind.

Practical Information

For information to be practical it needs to either be able to be applied or it must assist in the application of other pieces of information. So it may not be sufficient for the system to simply output justified, and true, facts – it may be necessary that the system provides additional information to assist in the application of the requested information. Returning to the earlier question, rather than simply responding "12 computers", the system could, perhaps, link that information to additional information, including information about where to get the computers, what sort of network to provide, what software to install, and what times of the day to make the computers available to delegates. Thus the simple claim "12 computers" is more likely to be applied in a particular context because the user has the additional information required to make use of the claim. Using this definition, the relationships between pieces of information are more important than the source of the information or the justification for the information.

A difficulty emerges when different contexts are examined. Someone developing a budget for a conference will apply the information in a very different context than someone providing technical support for the same conference. One person will require information about the costs of the computers and methods that can be employed to reduce those costs (such as sponsorship from computer manufacturers), while the other will be more concerned about what software will be required and how much support each computer will require. Similarly, someone with considerable prior experience will be asking different questions – and require different answers – than someone who has never run a conference.

As a result of this a second major difference between the two systems (the one designed using justified true belief and the one designed using information applied in a particular context) is that this second definition presupposes that more work will need to being done on requirements analysis, in order to better understand both the range of different contexts in which the information contained will be applied and the different prior knowledge which each user will bring to their enquires. A summary of some of the key differences between the systems is provided in Table 2.

Property	Justified True Belief	Practical Information
Source of the information	Essential	Not Essential
Reasoning behind claims.	Essential	Not Essential
Tools to ensure validity of claims	Essential	Desirable
Professional presentation	Essential	Desirable
Requirements analysis	Not Essential	Essential
Cross-referencing of information	Not Essential	Essential

Table 2: Major differences between the applications of the two definitions.

EVALUATING A SYSTEM: PROGRAMMER'S KNOWLEDGE BASE

The Programmer's Knowledge Base being examined is a collection of different databases, each covering a range of specific areas of interest. These mostly involve computer programming issues, but branch out into a number of different topics. Any registered user can access the system and either a) ask questions, or b) answer questions. Both the question and any answers provided are stored in a searchable database. Registered users are asked to provide their name, email address, and a link to their homepage, should they possess one.

Evaluation of this system follows a similar line to the process used in design – the system is compared against a set of criteria which are taken directly from the definition of knowledge being applied. The criteria are not intended to be an exhaustive set, but the significance is in the way each definition provides a different set of criteria, thus resulting in two very different approaches.

Justified True Belief

To evaluate the system using justified true belief, a similar model will be applied to that used in designing a system: each of the three criteria will be examining in turn, and any properties that the system possesses which will assist in meeting these criteria will be examined.

Justification with the Programmer's Knowledge Base can be handled by one of three methods.

1. Justification by trust: each answer in the database is connected to all of the users involved in formulating the reply. When the answer is viewed, the name of the author is provided, along with a link to additional information about the author concerned. This information includes a list of other replies that the user has provided, along with an (optional) link to the user's homepage. This is, to some degree, successful – if the user has submitted a number of answers, it may be presumed that the user probably has some expertise in the area. However, this is arguably insufficient for justification in most cases, as a) there is no real information provided about the user within the system, b) users with considerable expertise may have only posted one or two answers, and c) reliance on homepages is questionable, as many homepages may have been created by the user themselves, and therefore may lack objectivity and/or sufficient information about the user (presuming that they even exist to begin with).
2. Justification by evidence is handled through the inclusion of "Did this help?" buttons and some statistics. If the answer was useful, people reading the answer are encouraged to click on the "Yes" button, otherwise, naturally, they click on the "No" button. Clicking on the button updates the statistics that are displayed with the answer, revealing to the enquirer what percentage of previous users had also found the reply to be useful. Of course, "usefulness to others" may not equate to "usefulness to you".
3. Justification by deduction is barely handled at all. It is possible that an author, in writing a reply, could provide details about the reasoning which underlies the answer, but this doesn't appear to occur in practice.

What is stronger is the method used to ensure that false data is removed from the system. Just as anyone can add an answer, anyone can also edit a reply. Thus if something is incorrect or incomplete, registered users have the opportunity to make changes on the spot. When they do so, not only are their names added to the list of authors (assisting in the meeting of the Justification by Trust criterion), but also their answer immediately appears in the system. Furthermore, the old (unedited) answer is hidden, but not lost, and is available should it be required later. However, no procedures are in place to "vet" answers before they are provided to users, so it is possible that false data may be entered into the system and provided to users.

On the other hand, meeting the belief criteria is not particularly difficult with this system. The questions and answers in the system do not tend to challenge existing beliefs, and although the justification is arguably light, limiting the willingness of some individuals to accept the answers, the questions don't warrant a great deal of justification in the first place – if the answers don't work, the user simply looks somewhere else.

Area of Concern	Implementation
Justification by Trust	Present, but not sufficiently enforced.
Justification by Evidence	Minimal, but present.
Justification by Deduction	Possible, but not enforced.
Validation/Editing	Excellent editing tools, no initial validation.
Presentation	No major concerns.

Table 3: Evaluation using justified true belief.

Overall the system meets the justified true belief criteria to some degree, but this wouldn't appear to be the type of knowledge for which the system was designed, and thus it is only marginally successful. The major problem lies in meeting the issues surrounding justification – the tools are in place so that justification by trust and justification by deduction can be covered, but in practice there is no method of enforcing the inclusion of sufficient information to provide such justification. This may not be a practical problem for the system given the use for which it was intended, but this same system would be inappropriate in situations where a higher degree of justification would be required.

Practical Information

It is when applying the definition of "practical information" where the real strength of this system lies. Because the questions are posed by individuals who are having problems, they are invariably very practical in tone. And thus the answers also tend to be extremely practical. This makes it highly likely that information culled from the database will be applied within the intended context, and certainly this would appear to be the intention. When applying the information, the standard user is unlikely to require information about the author, as issues surrounding who made the claim are largely irrelevant – the only condition that really matters is whether or not the information can be applied successfully in the given context, so it doesn't matter whether the person who wrote the information is an expert, a novice, or a really good guesser. This, of course, is radically different from the situation which arose when justified true belief was applied. Similarly, explanations as to why the suggested solution works are not necessarily required, depending upon the context which the user will apply the information to. Truth is still, to some degree, an issue, as false data which does not solve the problem should be culled, and the systems in place to do so are solid, if imperfect.

However, with the system as it currently exists, little effort has been made to cross-reference information. Often being told what to do is not sufficient – you also need to be told how, and that may require the provision of considerable additional information. It isn't enough, for example, to say "use the GD library" if the user isn't aware of what a GD library is, where to find one, and what to do with it when they do. In many cases the lack of this additional information will prevent the user from applying the (admittedly relevant) information that is being outputted by the system.

Area of Concern	Implementation
Relevance	Information provided is invariably relevant to the question being asked.
Cross-Referencing	Possible, but not enforced, and difficult to do.
Validation/Editing	Excellent editing tools, no initial validation.

Table 4: Evaluation using knowledge as information applied to a particular context.

CONCLUSION AND FURTHER RESEARCH

It is not being proposed in this paper that definitions of knowledge are essential to the design of a knowledge management system. Nor is it being proposed that either of the two definitions presented here are in any way ideal for Information Systems. What is being proposed is that choosing a definition can make a considerable difference in the type of knowledge management system that is created, and similarly that the definition of knowledge applied when evaluating knowledge management systems can make a considerable difference in the criteria employed in that evaluation. Thus it is proposed that definitions of knowledge do matter – for if they can make real, practical differences to knowledge management systems then they are of real, practical significance.

It became clear when looking for applications to apply these definitions to, and it was particularly clear with the chosen applications, that it may very well be the case that different definitions of knowledge will be more valuable in different situations. Knowledge as information to a particular context seems to have a great deal of strength when applied to technical support systems, while knowledge as justified true belief may be an invaluable definition when examining medical knowledge management systems. This was unexpected, but in retrospect not surprising. This suggests that there is valuable research to be conducted on which definition to apply to a given situation, rather than focusing on trying to find a single, "true" definition of knowledge that is applicable to all aspects of the IS discipline.

In conclusion, it is hoped that IS researchers and practitioners, especially those in the knowledge management field, will look upon definitions in a slightly different light. Rather than seeing the process of forming definitions as an interesting academic exercise, of no bearing to the real world and solely a game played in philosophical foundation tracks or debated on panels at conferences, it is hoped that more researchers will see that definitions do matter, and that the exploration of possible definitions may prove to impact on a number of areas of direct relevance to them.

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