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The Persistence of Omniscience in Knowledge Management: Implications for Future Research

Conor Horan ¹ and John Finch ²

¹School of Marketing, Technological University Dublin, Ireland

²Faculty of Business, University of Glasgow, UK

conor.horan@dit.ie

john.finch@glasgow.ac.uk

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Abstract: This paper demonstrates the persistence of omniscience in Knowledge Management (KM) research. Omniscience as a concept has two dimensions – ubiquity and utility. This idea of ubiquity is more prevalent when the management goal focuses on processing or transferring pre-existing knowledge efficiently to those who can make use of it. Ubiquity assumes that knowledge is freely available within the firm i.e. is omnipresent, waiting for it to be processed or transferred. The idea of utility assumes that knowledge and its relevance is fully understood by the firm. The firms and its managers are assumed to know the value and quality of knowledge, who needs it, how it should be processed and where it should be transferred to. In short, the firm is assumed to be ‘all knowing’ or omniscient. This paper outlines how the persistence of omniscience underpins the hegemony of the information processing paradigm and transfer research agendas in KM research. We argue that it does so at the expense of considering alternative theories and perspectives. We illustrate how omniscience continues to underpin the dominant theory of knowledge creation i.e. the SECI Model. At face value the SECI model assumes that the firm is a site for the creation of new knowledge. However, on closer inspection, by cross-examining the assumptions of convertibility and amplification within the SECI Model, we outline how the assumption of omniscience hampers the application of this theory to meet its goal for the creation of new knowledge. We illustrate how a departure from the assumption of omniscience will allow for additional avenues of research and address calls for broader perspectives in KM. One such avenue, knowledge-as-process, which focuses on open innovation, creativity and the creating of knowledge overtime is proposed. The implications of departing from omniscience for scholars and practitioners in the field of KM are outlined and discussed.

Keywords: omniscience, omnipresence, information processing, knowledge-as-process, knowledge transfer, knowledge creation

1. Introduction

This paper challenges the prevailing and overlooked assumption of omniscience that underpins KM research and practice. The idea of omniscience can be split into two dimensions. First the ubiquity or pre-existence of knowledge within the firm i.e. omnipresence. Second, its utility which suggests that the firm and its managers are ‘all-knowing’ i.e. omniscient, regarding the relevance of such knowledge and how it can be used. By considering the two dimensions of ubiquity and utility within the umbrella concept of omniscience we show its influence within the information processing paradigm and research on knowledge transfer. We review the dominant theory for knowledge creation i.e. the SECI Model (Nonaka 1994, Nonaka and Takeuchi 1995) and illustrate how omniscience persistently influences and undermines the efficacy of our understanding of how new knowledge comes into being. In arguing its persistence, we draw upon previous discussions on the nature of rationality in management research (Cabantous and Gond 2011) and start our discussion from this point. The persistence of omniscience reveals a gap within KM research in relation to pursuing processual accounts for how knowledge come into being overtime. This paper concludes by offering a way forward for scholars and practitioners in relation to knowledge-as-process where we depart from the assumption of omniscience and embrace the serendipity of knowledge creating.

2. Knowledge ubiquity

2.1 Information processing and knowledge ubiquity

The information processing paradigm assumes that the firm is an “information-processing machine” and that humans are “information processors” underpinned by the assumptions of rational cognitive theories (Nonaka and Takeuchi 1995 p.38, Nonaka et al. 2008 p.8). Using general systems thinking (Von Bertalanffy 1972), managerial decision making can be simplified within a subsystem where inputs are processed into desired outputs. By adopting a general systems perspective to rational decision making and processing of explicit knowledge we find the seeds of ubiquity within the assumption of omniscience. By working back from a desired

goal or output, within a given subsystem, the nature of the inputs, which are assumed to be explicit, can be determined. Because managerial attention is focused on processing within the firm's subsystems it assumes, by default, where the output is pre-defined, that inputs are freely available or pre-existing within the firm. Nonaka, Umemoto & Senoo acknowledge this when they state that under the information processing paradigm knowledge *"is essentially given, already exists within the organisation, or can be learned or acquired from outside"* (1996 p.204). If the knowledge required by the firm is pre-existing and ready for processing it implies that the firm and its managers are 'all-knowing' or omniscient and that the managerial task is to perfect information processing.

2.2 Knowledge transfer and knowledge ubiquity

Following on from this if explicit knowledge is ubiquitous the managerial focus is described as a matter of exploiting its ownership by transferring it, a form of processing, to desired recipients (Liyanage et al. 2009, Kumar and Ganesh 2009 p.161). Within knowledge transfer research the idea of ubiquity highlights that the source of knowledge is superseded in importance by the problem of its transfer. Arguably the transfer of pre-existing knowledge reflects, in itself, a mode of processing where little by way of knowledge evolution occurs i.e. explicit knowledge remains unaltered as it is moved from point A to point B but maybe combined or aggregated with data and other explicit forms of information. The assumption that knowledge pre-exists and is successfully processed persists within knowledge transfer research where the management focus turns to a mechanism of movement within the firm.

2.3 Absorptive capacity and knowledge ubiquity

The concept of absorptive capacity (Cockburn and Henderson 1998, Cohen and Levinthal 1989) goes one step beyond the information processing and knowledge transfer perspective. If knowledge cannot be found within the firm (Agrawal 2001, Agrawal and Henderson 2002, Lane et al. 2002) it assumes that ubiquitous knowledge extends beyond the firm's boundary (Huckman and Pisano 2006) to include knowledge spillovers as a public good in the market. Here the managerial goal, becomes a matter of developing subsystems to facilitate absorbing, arguably another form of processing, where external knowledge spillovers freely available in the market are transferred internally across the boundary of the firm. Suggested ways to allow for absorption as transfer include doing research, partnering with academic researchers (Hughes et al. 2011) as well as fostering internal organisational learning (Easterby-Smith and Prieto 2008, Easterby-Smith et al. 2008 pp483-484). This again focuses managerial attention on pre-existing knowledge and on developing a capability of absorption within organisational subsystems. This expanded view offered by absorptive capacity research assumes again that knowledge is ubiquitous as a spillover.

2.4 Knowledge creation and knowledge ubiquity

The dominant theory of knowledge creation or SECI model represented a watershed for KM research as it attempted to shift managerial focus onto how new knowledge is created through events of conversion and amplification (Nonaka 1994). Here it was assumed that the purpose of the firm could also include knowledge creation alongside its processing and transfer. On closer inspection the SECI model, with its assumption that tacit knowledge should and could be converted into explicit knowledge continues to assume knowledge ubiquity. By implication this assumes that tacit knowledge is ubiquitous (often in the mind of managers, staff and teams) and is freely available to be converted knowingly i.e. knowledge utility, into explicit knowledge. Ironically this theoretically is inconsistent with the very definition of tacit knowledge itself – where 'tacitness' is defined as knowing more than we can say. This suggests that theorizing is focused mainly on available tacit knowledge as low hanging fruit (Tsoukas and Mylonopoulos 2004), or tacit knowledge is like a pebble on the shore waiting to be picked up and processed into explicit forms. Philosophically the suggestion that tacit knowledge pre-exists in a thing like explicit form ready for processing i.e. conversion into explicit knowledge and transfer to the wider organisation i.e. amplification, represents a contradiction in terms regarding its very definition. Here we see the persistence of the assumption of omniscience, born out of the information processing paradigm and transfer research agendas, underpinning the SECI model where conversion is a synonym of processing and amplification a synonym for transfer.

2.5 The future of knowledge ubiquity

Due to emerging technologies, i.e. internet of things, AI and machine learning, the availability of ever greater amounts of data and information to be collected, processed and transferred, the trend toward knowledge ubiquity is set to continue converging on a point of true omniscience. As multiple forms of sensors and data analytics tools appear to make the accumulation of data and information more seamless it gives us a false sense that data and information are more important than knowledge and wisdom within the KM Cycle and illustrating the continued importance an information processing worldview. By assuming that knowledge is pre-existing it suggests that firms don't need to innovate for the creating of new knowledge overtime. We turn now to consider the second dimension underpinning the assumption of omniscience – knowledge utility.

3. Knowledge utility

3.1 Information processing and knowledge utility

In the field of computer science and epistemic logic within artificial intelligence the assumption of omniscience is acknowledged as a problem of logical omniscience – ‘all knowing’ – built on a rational foundation. Snowden, in reference to the ideas of knowledge utility notes that *“we only know what we know when we need to know it”* (2002). But the idea of knowledge utility, where we have an omniscient understanding of the use and relevance of knowledge finds its origins in the information processing literature. This present themselves in several ways; the focus on outputs as the starting point to develop subsystems within the firm; the persistence of rationality; and assumption that explicit knowledge is monolithic.

The information processing views the firm as static with a priori predefined goals that aid in designing supporting subsystems. By working back from desired goals, as an output, knowledge as an object is privileged as data and information which can be inputted into designed subsystems for processing. From this, aggregated outputs aid decision making and managerial problem solving. This has been described as an issue of management intentionality (Tsoukas and Chia 2002). This assumes a *“known-in-advance and step-like notion of knowledge accumulation”* where the managerial goal focuses on the organisation of control and the study of the organisation of effort (Chia and King 1998 pp.472 & 476). By designing subsystems in this way, it assumes an a priori understanding of desired outputs within a static environment reflecting omniscience. Similarly, it carries with it an a priori understanding of the utility of identified inputs. Notably this is supported by the need to reduce complexity within an assumed static task and business environment. Reflecting these assumptions Herbert Simon stated that; *“the classical theory of omniscient rationality is strikingly simple and beautiful. Moreover, it allows us to predict (correctly or not) human behaviour without stirring out of our armchairs to observe what such behaviour is like. All of the predictive power comes from characterising the shape of the environment in which the behaviour takes place. The environment, combined with the assumptions of perfect rationality, fully determines the behaviour. Behavioural theory of rational choice – bounded rationality – do not have this kind of simplicity”* (Simon 1979 p.496). As human problem solving is limited and slower in its ability to learn and/or process information on demand over a short period of time Simon argued that managers have a limited or bounded rationality (Nonaka and Takeuchi 1995 p.38, Simon 1978 p.272). Compared to computers humans suffer from limited storage capacity (Newell et al. 1958 pp.163-165) resulting in scarce resources for rational decision making (Simon 1945). By reducing complexity in the task and business environments better decisions could be made within structured subsystems within the organisation (Simon 1979 p.493). It is this line of thinking in relation to rationality that is argued as remaining persistent within management theory and KM research (Cabantous and Gond 2011). This underpins the persistence of a knowledge utility assumption coupled with an omniscient rationality within a simplified stable task environment (Simon 1979 p.496). This idea has been described as a notion of progress where managerial initiatives strive toward *“a place of ultimate perfection”* (Schultze and Stabell 2004 p.556).

3.2 Knowledge transfer and knowledge utility

Across the wider literature within KM the omniscient assumption regarding an all-knowing understanding of the utility of knowledge appears to be assumed. However, it is in knowledge transfer research agenda where the assumption of knowledge utility is most evident. This transfer literature while assuming pre-existing knowledge also assumes that the utility of explicit knowledge to be moved is understood (Kumar and Ganesh 2009). While the literature is simply silent on this point it reflects the persistence of the assumption of omniscience where

mechanisms of transfer assume the pre-existence of explicit knowledge and an awareness of where it should be transferred to for a greater return on investment.

Due to a lack of scholarly reflection on the specific meaning of the substantive terms of transfer, sharing and exchange as well as knowledge flows, has resulted in a “*highly variegated*” body of literature where these are used interchangeably (Kumar and Ganesh 2009 p.162). For example, transfer is interchangeably used with sharing (Ismail Al-Alawi et al. 2007 p.22, Jonsson 2008, Liyanage et al. 2009, Paulin and Suneson 2012), while sharing (Bock et al. 2005) is interchangeably used with exchange (Wang and Noe 2010 p.117). Others equate transfer with knowledge exchange (Kumar and Ganesh 2009) while sharing is also argued as a basis for knowledge creation (Cross et al. 2001). What ties these various research threads together is the assumption that managers have an a priori awareness of the value, source, destination, purpose or relevance of ubiquitous knowledge to be transferred.

Similar assumptions appear in the literature regarding an omniscient understanding of directional transfer, the passivity/activity of agents and the nature of knowledge itself. One reason provided for this was that the disciplinary constraints of KM meant that the field focused on measurable aspects of transfer e.g. as inputs and outputs (Nonaka and Takeuchi 1996), resulting in the dominance of quantitative studies that favour theory testing rather than theory development (Easterby-Smith et al. 2008 p.485) and illustrates a lack of self-reflection in the field if concepts are not critiqued (Lane et al. 2006, Patriotta 2003). This favoured studies about objective knowledge that was omnipresent and transferrable which effectively prohibited alternative perspectives beyond that of transfer (cf. Gourlay 2006). Coupled with the persistence of rationality for firms and managers we can establish the seeds of knowledge utility. Whereas a focus on systems provides a basis for knowledge ubiquity, a focus on rationality within the information processing paradigm provides the basis for knowledge utility.

Interestingly, absorptive capacity defined as the ability of the firm “*to recognise the value of new, external information, assimilate it, and apply it to commercial ends*” (Argote and Fahrenkopf 2016 p.154, Cohen and Levinthal 1990 p.128) also reflects this idea of perfection and omniscient assumption in relation to the utility of pre-existing knowledge. As noted above the managerial problem focuses the absorption i.e. transfer across the organizational boundary, or pre-existing knowledge in the market for use within the firm. This assumes the utility of such knowledge is understood.

3.3 Knowledge creation and knowledge utility

As noted above the need to convert pre-existing tacit knowledge into explicit knowledge reflects the assumption of ubiquity. However, within the SECI model the need for amplification i.e. transfer, of recently converted knowledge to the wider organization again reflects the assumption that the outcome of a process of amplification is fully understood. This assumption of ubiquity of tacit knowledge is compounded by the assumption of utility in that conversion is an omniscient conversion process where conversion itself is a mechanism of transfer.

Knowledge utility as a dimension of omniscience makes sense if knowledge is understood as monolithic – in that its casual ambiguity is clear, its purpose is singular in nature, and if it carries with it a singular purpose, relevance or application. Representation theory discusses how knowledge can have such a singular meaning within its packaged form for singular purpose in which it is monolithic. Data and information have a greater chance of being monolithic in nature compare to knowledge and wisdom. As we move along the knowledge continuum knowledge and wisdom becomes less monolithic as it becomes open to interpretation. Here separation theory breaks down, and the purpose of this less monolithic form becomes more ambiguous. Casual ambiguity increases at the end of the continuum compared to data and information which is less casually ambiguous. Representation theory comes into play at the end of the continuum compared to data that convergences on a single representation in the socially constructed world. All of this occurs when ‘form’ is present. But what happens when knowledge does not have form or can be neatly packaged? Here it can’t be described but it is more associated with the wisdom / phronesis end of the spectrum or continuum. In this context knowledge utility becomes unclear and serendipity increases, novelty improves as does the opportunity for innovation and creativity. Here knowledge has greater opportunities for being used in unforeseen ways that yield unexpected outcomes without a broader process (we are not looking at the outcome per se but the process and its facilitation if we are looking at process over outcome (Chia and King 1998). This suggests that the driving forces of management toward ‘managing’ and ‘controlling’ within that context might well be a failed solution.

Facilitating serendipity innovation and creativity is counterintuitive – backing off and letting it just happen. Having an a priori understanding of utility will come about in multiple recurrent trial and error iterations but each iteration will bring forth differences that will inform the ostensive from the performative (Feldman 2000). As processes have been shown to be continuously changing it calls into question our true ability to understand knowledge utility.

Knowledge utility reflect an understanding not only of the direction of movement of monolithic knowledge, it also include an awareness of its use, relevance and application. Within transfer research it assumes that the knowing of the sender is matched by knowing of the receiver. Similarly, it assumes that the timing of movement (in space and time) of monolithic knowledge will have a singular purpose whether this is within the firm or across its boundary. As terms are used interchangeably within the transfer research agenda it suggests that awareness of the utility of data, information, knowledge as well as wisdom is understood in terms of its value and quality. However, if we move to a world where we accept multiple or plural aspects of knowledge in terms of its symbolism and representation we can argue that its casual ambiguity increases. Here knowledge utility becomes more difficult to assess.

3.4 Relevance and application – knowledge utility in a wider context

The need to predict knowledge utility is present in wider debates on the nature of pure versus applied knowledge or knowledge in application. This is similar to the debates about the hurdles of rigour versus relevance (Pettigrew 1997). This reflects an emphasis on applied research to solve a stated problem at the cost of focusing support on pure or blue skies research. The very nature of pure research is that we don't understand the application of new knowledge. Arguably it is within this broader context that the emphasis has shifted to defining the end point of a research process – not unlike defining the goal within a systems or information processing perspective. The distinctions between pure versus applied knowledge inherently carries with it an assumption of omniscience. The idea of pure knowledge and the policy position of supporting its production has long been established in the natural sciences. However, thoughts about its application or commercialization through such mechanism as patents suggests that applied knowledge is more useful, we can utilize it in context and that we have foresight about its application.

With this information processing world view the goal is already understood – in that we are working toward that goal. Therefore, the utility of the process is clarified upfront and that we are working back to the start of the process where we collect data or manipulate materials to arrive at desired condition to meet the goal of desired application. But more simply put the idea of applied knowledge itself assumes we understand its application a priori. We understand the goal and thus we have an omniscience within defined conditions.

As noted this emphasis on relevant applied knowledge favours explicit knowledge over tacit knowledge. The SECI model's treatment of tacit knowledge is philosophically inconsistent with its very definition as it paradoxically suggests that tacit knowledge has an entitive quality i.e. is an object distinct from the subject (Glisby and Holden 2003 p.35), while treating both tacit and explicit knowledge as a dualism. Similarly expressed is that the modes of conversion is reminiscent of the input-process-output perspective born out the neo-functional language of the information processing and transfer research agendas (Schultze and Stabell 2004 p.562). If conversion of tacit knowledge into something explicit is elevated as the management goal mere attempts to manage tacit knowledge would undermine its inimitability as a source of competitive advantage. They claim that trying to manage tacit knowledge is a contradiction in itself which is unavoidable in a discourse that does not value its unmanageable tacit form (Schultze and Stabell 2004 pp.550-551 & 562). As an outcome explicit knowledge continues to be given greater relevance in practice as tacit knowledge with causal ambiguity is more difficult to transfer. This has received growing criticism as it assumes that tacit knowledge requires both conversion and amplification for it to be utilised (Gourlay 2006, Schultze and Stabell 2004, Tsoukas 2009 p.161). Individually created knowledge as a basis of "*unfettered individual creativity*" (Tsoukas and Mylonopoulos 2004 S4) is only acknowledged as after events of conversion and amplification where amplification is a mechanism of transfer of newly converted explicit knowledge. Here its utility, from a known sender to a known receiver, is understood.

3.5 A future direction – departing from the assumption of omniscience

By departing from omniscience, we can ask broader question about the role of the firm in an ever-changing environment and the nature of new knowledge comes into being overtime. A firm that operates under these

assumptions raises questions about the nature of management, the managerial problem or goal in an ever-changing environment that is dynamic. A knowledge creating perspective provides a novel yet challenging avenue for future research. Rather than focusing on management as a matter of the control of effort we suggest that management focus more on providing conditions for which knowledge creating processes can flourish. If the managerial problem is focus on providing the conditions for the creating of new knowledge it inherently departs from the assumption that knowledge is pre-existing and that serendipitously created new knowledge opaque regarding its utility. When knowledge utility is unclear it opens management to continuously engage in creativity, innovation alongside an acceptance of doubt (Locke et al. 2008) and serendipity. A knowledge creating perspective within KM will address the hegemonic dominance of the assumption of omniscience.

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