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37. Information systems and culture - a systematic hermeneutic literature review

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Abstract

This paper addresses a challenge faced by authors of literature reviews in the information systems (IS) discipline; how can systematic rigor be applied when conducting literature reviews while maintaining flexible hermeneutic engagement with the literature? The paper describes a systematic hermeneutic approach for conducting a literature review that allows the strengths of different literature review methods to be combined in a complementary fashion. The use of this approach is demonstrated through a review of the large extant body of research exploring IS and culture. Culture is widely perceived as an important contributor to issues in IS initiatives. Through this review, an updated and refreshed understanding of IS and culture research is obtained, and ideas for further research are exposed. The hermeneutic approach facilitates the emergence of insight through a cyclical engagement between the authors and the text that in this instance provides a new perspective for future IS and culture research and literature reviews.

Keywords

Systematic literature review, hermeneutic literature review, IS and culture

1. Introduction

Literature reviews are important for the information systems (IS) discipline (Rowe, 2014; Boell & Cecez-Kecmanovic, 2015b; Chiasson, 2015; Schultze, 2015; Watson, 2015). Through the examination, interpretation and critical assessment of prior research, the literature review provides opportunity to problematize existing research and propose future research agendas, contributing in this way to the accumulation and advancement of knowledge (Boell & Cecez-Kecmanovic, 2014; Rowe, 2014). Systematic literature reviews (SLRs) represent a particular form of the literature review and are becoming increasingly popular in the IS discipline (Boell & Cecez-Kecmanovic, 2015a). However, the protocols and formality that characterize SLRs and encapsulate much of their appeal for IS researchers are most suitable for reviewing research conducted within a positivist paradigm (Chiasson, 2015; Oates, 2015; Watson, 2015). Conversely, literature reviews in IS can also benefit from a more hermeneutic approach (Boell & Cecez-Kecmanovic, 2014; Rowe, 2014). While the

hermeneutic approach to the literature review is conceptually different to that followed in SLRs (Boell & Cecez-Kecmanovic, 2014), this paper describes a method for conducting a literature review that embraces the perspective that the process can be both systematic and hermeneutic, and that the strengths of different literature review methods can be combined in a complementary fashion (Schultze, 2015). While this method may create problems for building cumulative methodologies within the IS discipline, it contributes to the argument for diversity and methodological richness in the field (Chiasson, 2015).

We demonstrate a systematic hermeneutic method for conducting a literature review using the large extant body of research exploring IS and culture. Research studies have examined a wide array of cultural factors at national, organizational and group levels and have covered a broad diversity of themes (Leidner & Kayworth, 2006; Kappos & Rivard, 2008; Lawrence, 2013). This interest in culture is an indication of the extent to which it is perceived as an important contributor to issues in IS initiatives (Kappos & Rivard, 2008). Despite this perceived importance, IS and culture research remains fragmented. The multiple dimensions afforded to the concept of culture and the variety of research streams that emerge as a result create difficulties in building a cumulative body of knowledge (Kappos & Rivard, 2008; Walsh *et. al.*, 2010). For instance, reviews of IS and culture research from the early 1980s illustrate that while culture is studied extensively at national and organizational levels, other levels are neglected and the potential impact of individual differences is overlooked (Leidner & Kayworth, 2006; Zhang & Lowry, 2008).

The objective of this paper is to demonstrate how a systematic hermeneutic approach can be used to review the recent literature on IS and culture research. A conceptual framework on IS and culture informed by the findings of Leidner and Kayworth (2006) is applied for the analysis and synthesis of existing research. By refreshing prior IS and culture research this paper seeks to make a cumulative contribution to the broader understanding of how culture is conceptualized and used. Furthermore, this paper seeks to provide direction for future research by suggesting a new perspective for future reviews of IS and culture research.

In the next section, an overview on literature reviews in IS is given, after which the systematic hermeneutic literature review method used in this study is described. The findings are then presented and discussed before the paper is concluded.

2. Literature Reviews in IS

A variety of methods are used for conducting literature reviews in IS. Each method pays varying attention to different aspects of the literature review process. Traditional methods strive to adapt search and selection methods as understanding develops (Boell & Cecez-Kecmanovic, 2015a), SLRs emphasize the role of literature searches (Okoli & Schabram, 2010), reviews using grounded theory methods pay attention to facilitating the emergence of theory from the data (literature) (Matavire & Brown, 2013), and reviews following hermeneutic frameworks emphasize the importance of integrating literature searches with the analysis and interpretation of text (Boell & Cecez-Kecmanovic, 2014). The increasing popularity of SLRs in IS has raised concern regarding the application of the approach, with criticism suggesting that the highly structured nature of SLRs and the focus on rigor in the search process, restricts engagement and interrogation of the literature and compromises scholarly achievement (Boell & Cecez-Kecmanovic, 2015a). Furthermore, the need for a systematic approach varies according to the type of literature review; high levels of

systematicity are very important for theory testing or theory building reviews, but less so for descriptive or critical reviews (Rowe, 2014; Paré *et. al.*, 2015).

A hermeneutic philosophical paradigm offers a methodology for literature reviews that supports the interpretation of literature and the development of understanding through an ongoing and cyclical dialogue between readers and text (Boell & Cecez-Kecmanovic, 2014; Rowe, 2014). The hermeneutic approach (see **Figure 1**) requires the search for literature to be integrated with the analysis and interpretation of the text, and represents a departure from a more formal, protocol based approach (Boell & Cecez-Kecmanovic, 2014).



Figure 1: Hermeneutic framework for literature reviews
Adapted from: (Boell & Cecez-Kecmanovic, 2014)

While the hermeneutic approach is conceptually different to that followed in SLRs (Boell & Cecez-Kecmanovic, 2014), the rigor inherent in an SLR can still be attained in a hermeneutic literature review through a systematic application of guiding principles (Okoli & Schabram, 2010). A systematic approach adds rigor to the review methods and contributes to the justification of knowledge claims (Schryen *et. al.*, 2015). This paper seeks to demonstrate how the strengths of different literature review methods can be combined in a complementary fashion (Schultze, 2015).

3. Conducting a Systematic Hermeneutic Literature Review

The underlying philosophy of this literature review is interpretive, with an orientation in hermeneutics and the fundamental principle of the hermeneutic circle. The hermeneutic circle postulates that shared meaning emerges through a constant movement of contemplation, from scrutiny of the whole (selected literature and, as illustrated in this study, shared meaning on IS and culture) to scrutiny of its parts (pre-understanding of each author and each individual article), and back again (Gadamer, 2004). Understanding is achieved when the understanding of each part is in harmony with the understanding of the whole. The researcher must remain open to the understanding that emerges from the parts; misunderstandings, preconceptions or assumptions are not ignored, but rather must be corrected to ensure they remain situated in the meaning of the whole (Gadamer, 2004). A hermeneutic framework was used to systematically search, analyze and interpret the literature as in **Figure 1**.

In this paper we illustrate the use of a systematic hermeneutic approach to provide a descriptive account of scholarly works published in leading academic journals between 2005 and 2015 that examine the interplay between IS and culture. As such, this review is best positioned as a descriptive literature review (Rowe, 2014; Paré *et. al.*, 2015). It seeks to make a contribution to theory through an analysis and synthesis of the findings that emerge (Gregor, 2006). Specifically, this study refreshes findings from the literature review of

Leidner and Kayworth (2006) by answering the following questions: 1) *What IS and culture research themes are currently receiving attention from IS researchers?* 2) *What levels of analysis are considered for examining culture in the current IS research?*

The steps involved in the literature review process included the following:

- 1) Selection of the basket of journals
- 2) Title and keyword search of journal articles
- 3) Initial analysis of selected articles (review of abstract, introduction and conclusion)
- 4) Detailed analysis of selected articles (full paper review)

In keeping with the hermeneutic cycle employed, these steps were not performed in a rigorous, sequential fashion; rather, the steps were iterated with a cycling back to previous steps as determined by the analysis and interpretation of text. Each of the steps and their outcomes will be discussed next.

3.1 Selection of Basket of Journals

As culture is an interdisciplinary subject, it needs to be reviewed from an interdisciplinary perspective; a wide range of sources need to be considered (Rowe, 2014). However, the available literature on culture is large (Leidner & Kayworth, 2006), and as relevance of the article is more important than sample size in a hermeneutic approach (Boell & Cecez-Kecmanovic, 2014) a set of high quality journals was used as the source for the literature, rather than searches of the academic databases. The risk of missing important work through the exclusion of conference papers, books and dissertations is considered small as conference papers are useful sources for technical topics in IS, books and dissertations are useful for emerging or history-related topics (Rowe, 2014) and the most important contributions will most likely be found in the leading journals (Webster & Watson, 2002). Furthermore, while Leidner and Kayworth (2006) included books, conference papers and dissertations in their search for appropriate literature, 79 of the 82 articles they finally selected for analysis came from journals.

Identifying appropriate journal sources through rankings published by reputable academics or associations is a common approach in IS studies (Karpovsky & Galliers, 2015). However, expert rankings don't consider the actual impact of the journal on science and the newer IS journals have been absent from most expert ranking studies (Lowry *et. al.*, in press). The selection of IS journals included in this review was based on the Tier 1 and Tier 2 mainstream journals ranked by Lowry *et.al.* (in press). The identification of high quality IS journals through bibliometric measures in their study is closely aligned with the AIS Senior Scholars basket of journals (Lowry *et. al.*, in press).

The selection of other journals was done in several stages. Firstly, an initial set of journals was selected from all regions/countries as published on the SCImago Journal & Country Rank website (Scimago Lab, 2015). From the subject areas listed by SCImago, those most likely to contain articles on IS and culture were identified, i.e. '*Business, Management and Accounting*' and the subject categories of '*Management Information Systems*' and '*Management of Technology and Innovation*'. Journals with SCImago Journal Rank (SJR) indicator rankings in the first quartile (Q1) were included in an initial set of journals. The SJR represents a measure of the prestige or impact of journals and is developed from the information contained in the Scopus® database. It is calculated as the average weighted citations the articles published in the journal have received in the three years prior to the year of interest (Scimago Lab, 2015). As citation measures can be problematic when used to assess journal quality across research disciplines (Lowry *et. al.*, in press), this set of journals

was refined through a number of further steps. In each of the steps we used the journals identified by Lowry *et.al.* (in press) as a bench mark of journal quality, on the basis that these journals have featured in previous IS journal ranking studies, which typically rate both IS journals and those non-IS journals that publish IS research (Lowry *et. al.*, in press). The steps in the journal selection process, depicted in **Figure 2**, were as follows:

- 1) Remove journals not on the list of IS and non-IS journals identified by Lowry *et.al.* (in press) as rated in all previous IS journal rankings
- 2) Add journals, including IS journals, if they are included in the list of journals reviewed by Leidner and Kayworth (2006), and also appear on the list of IS and non-IS journals identified by Lowry *et.al.* (in press) as rated in all previous IS journal rankings
- 3) Add journals, including IS journals, if they contain articles citing Leidner and Kayworth (2006) as identified by Web of Science, and are included in the list of journals reviewed by Leidner and Kayworth (2006), or appear on the list of IS and non-IS journals identified by Lowry *et.al.* (in press) as rated in all previous IS journal rankings.

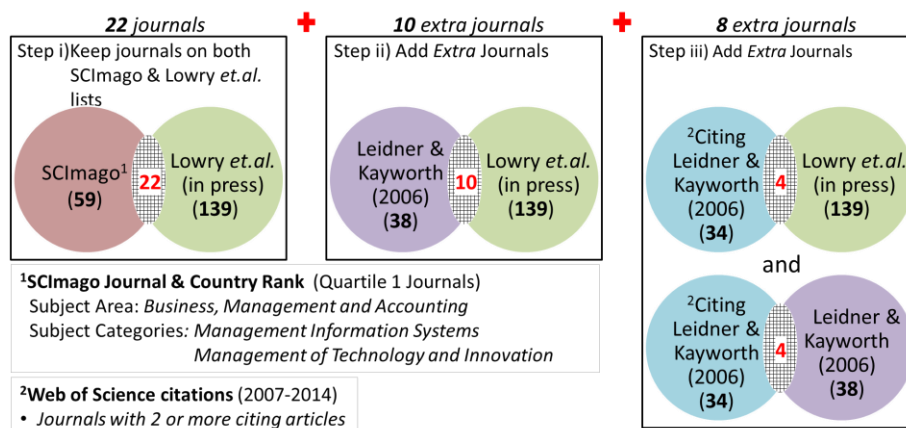


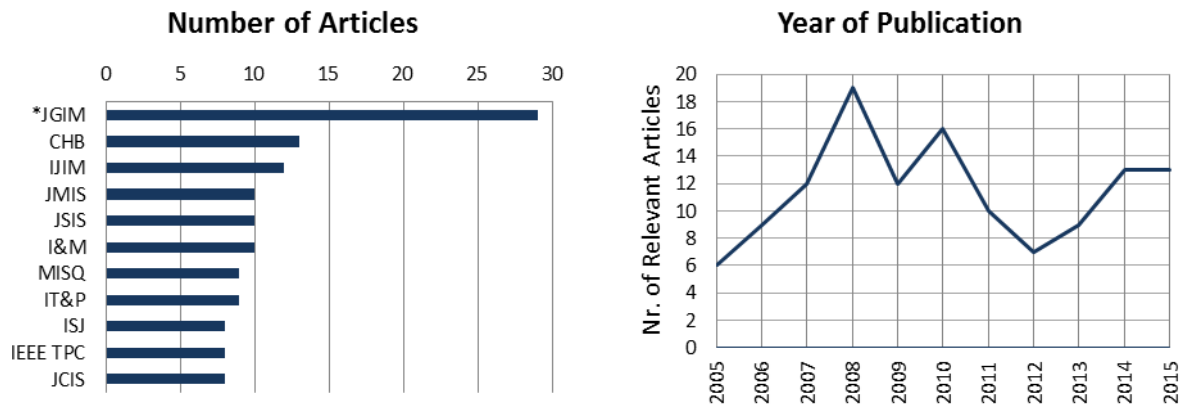
Figure 2: Journal selection decision process

3.2 Title and Keyword Search of Journal Articles

The initial sample of literature was identified through a search of the title and keywords of articles in the key journals. This approach is valid for sourcing primary articles for a literature review (Karpovsky & Galliers, 2015) and is aligned with the hermeneutic approach which preferences the retrieval of a small number of highly relevant articles over a large set of publications (Boell & Cecez-Kecmanovic, 2014). The search criteria for the initial sample of literature were informed by the criteria used by Leidner and Kayworth (2006). The search criteria were changed slightly, from “IT culture”, “information systems culture” and “IT values” as follows:

cultur and ("information system*" or technolog* or "IT value*" or "IS value*") or "IT cultur*" or "IS cultur*"*

The title and keywords of journal articles published in English over a ten year period, following on from the time of the review by Leidner and Kayworth (2006) until the present (2005 – 2015), were searched. The time period is aligned with the tendency for literature reviews to cover a period of ten years (Rowe, 2014). Four of the journals selected did not contain any articles matching the selection criteria; namely *Interfaces*, *Journal of Systems and Software*, *Management Science* and *MIT Sloan Management Review*. A total of 201 articles were identified in the remaining 36 journals. Three of the 40 journals selected published more than 10 articles on IS and culture research over the period 2005 – 2015 (see **Figure 3**).



*JGIM(*Journal of Global Information Management*); CHB(*Computers in Human Behavior*); IJIM(*International Journal of Information Management*); JMIS(*Journal of Management Information Systems*); JSIS(*Journal of Strategic Information Systems*); I&M(*Information and Management*); MISQ(*MIS Quarterly*); IT&P(*Information, Technology, and People*); ISJ(*Information Systems Journal*); IEEE TPC(*IEEE Transactions on Professional Communication*); JCIS(*Journal of Computer Information Systems*)

Figure 3: Descriptive statistics: leading journal outlets (8 or more articles) & publication year

Notably, JGIM published more than double the number of articles of any of the other journals over the same period. While publications of IS and culture research in these journals appear to be on a downward trend since a peak in 2008, this seems to have reversed since 2012 and the current upward trend seems likely to continue. The number of articles published in 2015 already matches the 2014 numbers, while the timing of the selection process for this review precluded any articles that may be published in the last quarter of 2015.

3.3 Initial Analysis

The first step in analyzing the initial set of literature involved an analysis of the abstract, introduction and conclusion of the 201 selected articles using thematic codes. Thematic codes were developed to assist with the consistent identification of manuscripts where ‘information systems’ and ‘culture’ were significant central themes (see **Table 1**). The codes include five elements identified as essential for a good thematic code (Boyatzis, 1998); definition, flag, qualifications/exclusions, positive and negative examples.

This initial analysis step was deemed necessary as keywords attached to articles returned by Web of Science included terms created by Thomson Reuters. The result was inclusion of articles such as those dealing with issues of climate, as per **Table 1** exclusions. All the articles were reviewed by the first author. Articles identified for exclusion from the review were passed to the second and third author for verification, as it was important not to exclude relevant articles at this stage of the process. The hermeneutic nature of the analysis was evident at this stage, where for example, in challenging initial exclusion decisions, the pre-understanding of the authors regarding what constitutes the domain of IS research was reflected upon and further articles were included in the review. A total of 134 articles from the initial set of 201 were selected for further detailed analysis.

Label	Culture
Definition	The concept used to encapsulate the shared norms, symbols, practices, beliefs and values of a group (Hofstede, 1980; Schein, 1985). Different cultures can exist simultaneously at different levels within one unit. Culture includes both observable and non-observable components.
Flag	Non- observable components like ideologies, beliefs, assumptions, values, understandings and collective will are dependent, independent or moderating variables or key themes in the study. Observable components like norms and practices, symbols, language, rituals, myths, and ceremony are dependent, independent or moderating variables or key themes in the study. All components serve as dependent, independent or moderating variables or key themes in relation to information systems.
Qualifications / Exclusions	Not organizational climate i.e. individuals' perception(s) about a particular idea or thing, or the meanings that people attach to interrelated bundles of experiences (Schneider <i>et. al.</i> , 2013).
Example: Positive	Key research themes are national culture or organizational culture as variable or key theme (Schneider <i>et. al.</i> , 2013).
Example: Negative	Customer service climate, safety climate, diversity climate, ethical climate, empowerment climate, justice climate, climate for initiative.
Label	Information Systems (IS)
Definition	The management, development, deployment, implementation, use and impact of information technology to enable the realization of individual, group or organization information needs and requirements (Boell & Cecez-Kecmanovic, 2015c).
Flag	Any issues relating to the key research areas; IT and organizations, IS development, IT and individuals, IT and markets, IT and groups (Sidorova <i>et. al.</i> , 2008). The information system(s) are dependent, independent or moderating variables or key themes in the study in relation to culture.
Qualifications / Exclusions	Excludes a technology view emphasizing the technical aspect as the sole focus.
Example: Positive	Research themes include "decision support systems; organizational impact of IS, ISD, IS adoption and diffusion; IS productivity; outsourcing; IS evaluation (including success and failure); knowledge management; IS alignment; and others." (Hirschheim & Klein, 2012:218).
Example: Negative	New web search optimization technique.

Table 1: Thematic codes

3.4 Detailed Analysis

The next stage of the analysis consisted of a full reading of each of the remaining articles. In contrast to a common approach in SLRs of excluding non-empirical studies, literature reviews and conceptual articles were included; these manuscripts provided valuable context and played an important role in building understanding. For instance, the notion of a global culture as an additional level of cultural analysis emerged during the reading of individual articles. However, the conceptual article of Leidner (2010) provided more contextual information and led to the decision not to add this level of analysis to our conceptual framework.

A conceptual framework based on Leidner & Kayworth (2006) was applied to identify initial thematic codes to search for in the articles (see **Figure 4**).

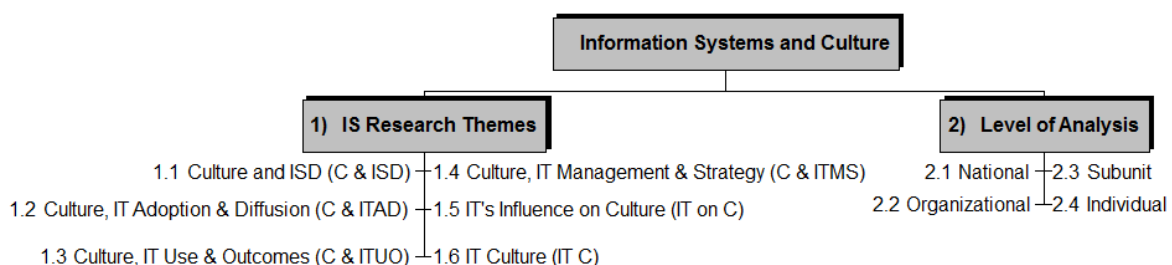


Figure 4: Conceptual framework for analysis and synthesis of the research

Adapted from: (Leidner & Kayworth, 2006)

The framework was made up of two dimensions – IS research themes and level of cultural analysis respectively. The six IS research themes were (1) Culture and IS Development, (2) Culture, IT adoption and Diffusion, (3) Culture, IT Use and Outcomes, (4) Culture, IT Management and Strategy, (5) IT's influence on Culture, and (6) IT Culture. The three levels

of cultural analysis were national, organizational and subunit. Conceptual frameworks such as **Figure 4** are appropriate for synthesizing research within broad categories (Rowe, 2014). Coding definitions similar to those in **Table 1** were created for each code in the conceptual framework to facilitate consistency in the coding of each remaining article. In the process of analysis, an additional level of cultural analysis became apparent, that of the individual level of culture. This level was then incorporated into the framework of **Figure 4**. The researchers decided the emerging individual level of culture needed deeper analysis to properly understand these studies in the broader context. This is in keeping with a hermeneutic approach, where a key task of the researcher is to seek meaning in context (Klein & Myers, 1999). Consequently, an additional 17 manuscripts were identified for consideration from backwards and forwards citation searches of the articles considering culture at an individual level.

4. Findings and Discussion

In this section we discuss the findings that emerged from applying the systematic hermeneutic approach to the literature on IS and culture. It was found that most studies consider culture at a national level (see **Figure 5**). This dominance of national level studies persists despite concern that analysis of culture at this level is too simplistic; culture tends to be treated as monolithic and static (Signorini *et. al.*, 2009), while more contemporary conceptualizations recognize the dynamic nature of culture (Lawrence, 2013). However, studying culture at the national level is well entrenched in IS studies (Leidner & Kayworth, 2006; Zhang & Lowry, 2008). Furthermore, culture is a difficult concept to study and methodologies at a national level are popular and hence well tried. Together, these factors could be supporting this continued focus from IS researchers.

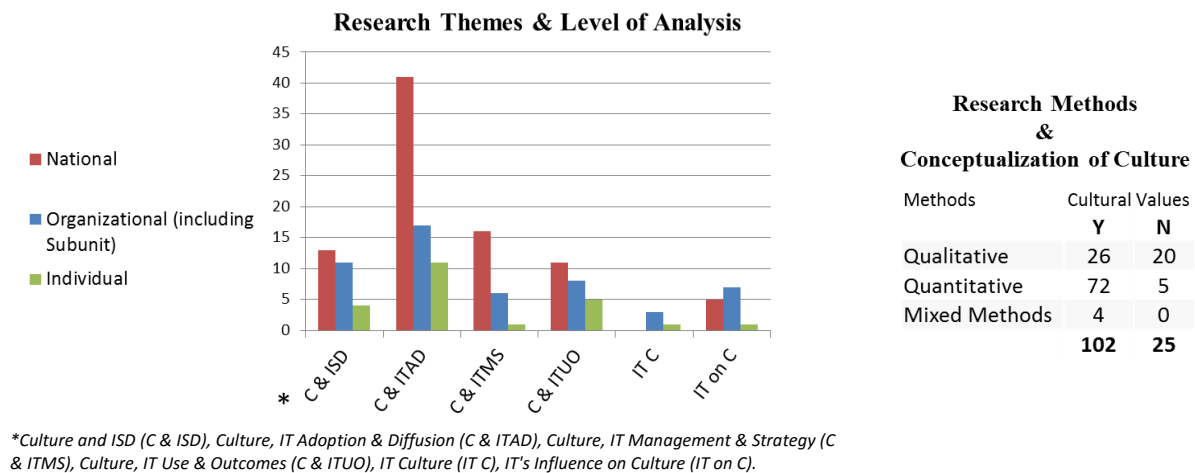


Figure 5: Analysis of current IS and culture research

The conceptualization of culture as a set of values continues to be popular in IS research (see **Figure 5**). Values are relatively easy to recognize and measure in contrast to other cultural manifestations, like assumptions that are difficult to see and artifacts that are difficult to interpret (Schein, 1985). Conceptualizing culture as a set of values is particularly prevalent amongst studies employing quantitative methods (see **Figure 5**) and could be contributing to the predominance of this method of inquiry. Studying the dynamic nature of culture is difficult using quantitative methods; thus this perspective on culture remains neglected in IS research. Researchers use cultural values primarily to explore different aspects of aligning the cultures of organizations, individuals and IS. Hence, researchers tend to seek cultural

extremes among their research participants. For example, many studies compared Eastern and Western cultures, contributing to the popularity of the United States and China for cultural studies (see **Figure 6**). Furthermore, while research efforts focus on the benefits of cultural alignment, efforts to understand the potential offered by cultural diversity are ignored.

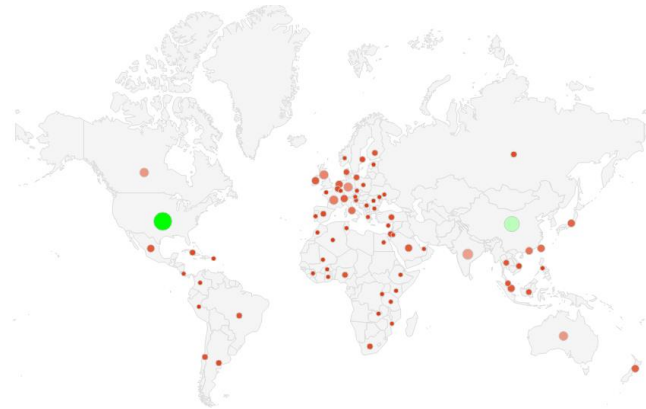


Figure 6: Geographical distribution of IS and culture studies

The last 10 years has seen the emergence of IS studies considering culture at the individual level (see **Figure 5**). The conceptualization of culture at an individual level challenges the perspective of culture as a group phenomenon (Leidner, 2010). Rather than a focus on shared experiences, researchers are beginning to explore characteristics associated with an individual's social identity (Zhang & Lowry, 2008). This finding supports the supposition by Leidner (2010) that new research seeking to identify cultural differences should pay more attention to the individual. Studies of culture at this level also favor the conceptualization of culture as a set of values, and quantitative methods of inquiry account for almost twice the number of studies employing qualitative methods. Research that considers the dynamic nature of culture appears at the individual level too. Concepts like a '*negotiated*' (Suri & Abbott, 2013) or '*hybrid*' (Walsh, 2010; Abbott *et. al.*, 2013) culture or culture as a '*discursive resource*' (Ravishankar, 2015) variously encapsulate the concept of culture as emergent, adaptive and dynamic, and position culture itself as a mechanism for dealing with cultural conflict. Related to these concepts is the emergent concept in IS research of '*cultural intelligence*' (Abbott *et. al.*, 2013), referring to the ability of individuals to adjust to alternate cultural contexts (Earley, 2002). Studies at the individual level also tend to see the individual as simultaneously incorporating different cultures (D'Mello & Eriksen, 2010; Abbott *et. al.*, 2013; Ravishankar, 2015), rather than conceptualizing culture as existing in discrete layers. Other studies, aligned to this thinking, explore the notion of an '*individual IT culture*' layer (Walsh, 2014) that represents a dimension of the individual's identity, related to the values and beliefs ascribed to IS by the individual.

5. Directions for future research

The way in which meaning is attributed to culture has significance for the way in which the phenomenon is studied; some aspects may be illuminated for study while others may remain unattended to (Smircich, 1983). Our findings support the calls for more interpretive studies to address the contextualized, complex and dynamic nature of culture (D'Mello & Eriksen, 2010; Walsh, 2010). Furthermore, IS and culture research would benefit from a critical evaluation of how culture is conceptualized in empirical IS studies in relation to underlying assumptions about the status of social reality. Specifically, future literature reviews should

critically evaluate empirical studies in respect of a conceptualization of culture from two contrary positions, described by Smircich (1983) in relation to organizations; 1) as something an organization ‘has’ or 2) as something an organization ‘is’. In the first instance, culture is treated as a variable (Smircich, 1983; Jackson, 2011). Researchers focus on manifestations of culture, like language, myths, stories and rituals (Smircich, 1983). Studies adopting this perspective make the assumption that culture can be understood through the patterns of relationships that exist. The issue of causality is important and researchers seek to discover culture (Smircich, 1983). In the second instance, the social world is seen to be subjective, consisting of symbolic relationships and meanings sustained through ongoing interactions (Smircich, 1983). Action in this social world is managed through a general understanding of consensually determined meanings that may appear to the outsider as orderly rules (Smircich, 1983). While researchers adopting this perspective might also focus on manifestations of culture like language, myths and stories, these manifestations are not viewed as artifacts, but rather as processes that generate and shape meaning. Researchers seek interpretations of culture (Smircich, 1983).

6. Conclusion

This paper seeks to demonstrate how a systematic hermeneutic approach to literature review can facilitate understanding of IS phenomenon such as IS and culture through the combination of two epistemological contributions (Schryen *et. al.*, 2015) by providing (1) a summary and synthesis of recent empirical IS and culture research, and (2) suggestions for future research directions. The use of a conceptual framework informed by an earlier review of the IS and culture literature allows for a framing of existing research, from which an updated understanding of IS and culture research is attained. The systematic nature of the review adds rigor to literature review methods and contributes to the justification of knowledge claims (Schryen *et. al.*, 2015). The hermeneutic nature supports the development of understanding through an intellectual dialogue between the authors and the text (Boell & Cecez-Kecmanovic, 2014). The ongoing, cyclical engagement between the authors and the literature allows for the emergence of insights that in this case lead to questioning of existing notions of IS, culture and their interplay, and prompts future research agendas.

By adopting a flexible perspective on the use of different literature review practices we combine some of the benefits implicit in SLRs with other benefits implicit within a hermeneutic approach, and allow the two literature review practices to complement each other. This approach is aligned to the view that methodological choices for different literature review types need not be prescriptive, and that authors should exercise flexibility and adopt the literature review practices that allow a research strategy suitable for their research interests (Schultze, 2015).

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