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Abstract

This paper concerns adjective "critical" and its many meanings. For success of communication, a researcher often uses this adjective "critical" to motivate a reader to a case at hand. She can use it in many situations and contexts, for example, in connection with perspective and related to many fundamental aspects of her study, or to impress her will to study a certain novel issue not yet discovered (literature review) or as a motivational stance to persuade (emphasizing) readers that she is really exploring something very important.
Term "critical" is not mostly defined at all. It is therefore necessary to more analyze and define it in some context. We shall here more concentrate on a research process than any research object where term critical exists. We have found three connections for term critical that we here like to tell to a reader, namely: 1) critical perspective, 2) critical literature review and 3) a common motivating use of term critical.

Introduction

Expression of 'critical research of work' contain adjective critical and an expression is natural, because in working life there are both management and workers often with differing views and goals. Based on that both parties have different assumptions that are sometimes expressed either precisely or sometimes indifferently. Firstly, those assumptions form a natural basis for a critical perspective to study, although many studies follow a permanent perspective consciously or without any deeper thinking. Secondly, before performing an empirical study a thorough literature review must be performed. This kind of review plays an important role in stating research questions. Thirdly, after performance of an empirical part of study its output must be reported and this written presentation will hopefully be read. In order to guarantee reading a researcher must motivate a reader and then such a persuading word like 'critical' can be used. In summary, word 'critical' exists in many locations and connections; it may intend either perspective, a type of review or a motivating factor for reading. Because these three contexts of term critical are not precisely known nor defined, we try in this paper do it.

Critical perspective and critical review belong a core of research process and are hence included to this clarification but critical success factors (Rockart 1979), critical mass (Markus 1987) and critical reflective practitioner (Schön 1983) are not, because they mainly refer to a certain object under study and not research process itself.

A critical perspective

In this section we cite Chua (1986) when we like to more explain one aspect of 'critical', namely critical perspective. Chua considers accounting as a multi-paradigm science. He writes on accounting but his message is valid for another science, too. According to him, mainstream accounting is grounded in a common set of philosophical assumptions about knowledge, the empirical world, and the relationship between theory and practice. (I regret that Chua does not define term perspective precisely but indirectly using a set of assumptions above.) This particular world-view, with its emphasis on hypothetico-deductivism and technical control, possesses certain

strengths but has restricted the range of problems studied. By changing this set of assumptions, different and potentially rich research insights are obtained. Two alternative world-views and their underlying assumptions are – the interpretive and the critical.

Chua 1986 (p. 603) decided not to adopt the Burrell and Morgan (1979) framework. Instead, [accounting] perspectives are differentiated with reference to underlying assumptions about knowledge, the empirical phenomena under study, and relationship between theory and the practical world of human affairs.

Chua uses following sub-factors in assumptions (A, B, C) in perspectives; see Table 1 [original]

Table 1. A classification of assumptions (Chua 1986, p. 605)

A. Beliefs about knowledge Epistemological Methodological
B. Beliefs about physical and social reality Ontological Human intention and rationality Societal order / conflict
C. Relationship between theory and practice

In critical perspective Chua defines assumptions as in Table 4 [original].

Table 4. Chua's (p. 622) assumptions for the critical perspective

A. Beliefs about knowledge Criteria for judging theories are temporal and context-bound. Historical, ethnographic research and case studies more commonly used.
B. Beliefs about physical and social reality Human beings have inner potentialities which are alienated (prevented from full emergence) through restrictive mechanisms. Objects can only be understood through a study of their historical development and change within the totality of relations. Empirical reality is characterized by objective, real relations which are transformed and reproduced through subjective interpretation. Human intention, rationality, and agency are accepted, but this is critically analyzed given a belief in false consciousness and ideology. Fundamental conflict is endemic to society. Conflict arises because of injustice and ideology in the social, economic, and political domains which obscure the creative dimension in people.
C. Relationship between theory and practice Theory has a critical imperative: the identification and removal of domination and ideological practices.

We earlier noted that in working life there are both management and workers often with differing views and goals. Hence critical perspective provide an opportunity as a potential perspective in studies of working life.

According to Myers and Klein (2011, p. 19, "critical research takes many different forms, not all of which draw on a single philosophical foundation; but all of them draw on *some* philosophical foundation". They considered three authors (Bourdieu, Foucault, and Habermas) and their critical

theories based on the critical perspective. Myers and Klein (2011) propose a set of principles for the conduct of critical research (in information systems IS). They formulate a set of principles capturing some of the commonalities of those approaches that have so far become most visible in the IS research literature.

Chua's (1986) three perspectives are much used but the set of three perspectives, however, is not covering for Mingers et al. (2013) proposed that critical realism must also considered and studied. Also Carlsson (2009) presented his view on critical realism and Pentti Kolari found similarities between critical realism and critical perspective (see http://en.wikipedia.org/wiki/Roy_Bhaskar#Critical_realism). Later Martela (2015) brought a Pragmatist philosophy to discussion as a new perspective. He compared a Pragmatist philosophy with three other perspectives but not with critical one. A reason may be that a American Pragmatist has some similarities with critical perspective.

A critical literature review

In this section, we try to analyze what does a critical literature review as one aspect of 'critical' mean? First, we give some views on literature review. Levy and Ellis (2006) have given instructions how to perform literature review. For that purpose they little discover it from other sources. They have found that Hart (1998, p. 1)) defined the literature review as "the use of ideas in the literature to justify the particular approach to the topic, the selection of methods, and demonstration that this research contributes something new". Webster and Watson (2002, p. xiii)) defined an effective literature review as one that "creates a firm foundation for advancing knowledge. It facilitates theory development, closes areas where a plethora of research exists, and uncovers areas where research is needed". - Concerning literature review there are two big group of papers both in Journal of Information Technology (Boell and Cecez-Kecmanovic 2015) with many commenting papers and in Communications of the Association for Information Systems (e.g., Schryen G (2015).

Constructing research is mostly based on from existing literature, and research likes to promote the development of interesting and influential theories. The most common way in general is to spot various 'gaps' in the literature and, based on that, to formulate specific research questions. According to Sandberg and Alvesson (2011) the dominance of gap-spotting is surprising, because in addition to gap and theory they also like that a potential new theory is interesting and influential. We evaluate that gap-spotting is critical, because when research full-fills gap, it means adding new knowledge, either a new concept or a new relation or both.

Sandberg and Alvesson (2011, p. 33) instead of that think that "various gaps in existing literature (e.g. confusion, neglect and application spotting) do not actively challenge the assumptions underlying existing theory". They call this challenging as problematization, because it criticizes assumptions which underlie existing theory in some significant ways (ibid). To our mind, by problematization Sandberg and Alvesson (2011) then demand such things that exist at perspective level, not literature review level, and they often mean an application of either critical perspective or critical theory. - Instead of that our view on a critical literature review is a certain gap in existing knowledge and a reason for this gap s presented in Table n.

Table n. Three reasons for gap-spotting (cf. Sandberg and Alvesson 2011)

Confusion spotting - Previous research on the topic exists, but available evidence is contradictory.
Neglect spotting - Topic is overlooked or understudied or lacked empirical support
Application spotting - A shortage of a particular theory or aspect in a specific area of research.

(In this connection, we could note that our approach {Järvinen 2016} has been developed for application spotting.) - Table n as a whole widely describes a domain of reasons for literature review as preceding step of research question formulation.

A critical view

In this section we try describe how adjective "critical" is used in almost normal text and its purpose is to underline or to strengthen the message that its user likes to transmit. Rowe (2014) refers to Schwartz et al. (2006) and cite that they classify one of the four (literature review) goals as follows: to critically examine contributions of past research. Here 'critically examine' means that past research is evaluated and its contributions are compared with those achieved.

We cite Hirschheim (2008) when he describe how a reviewer as a normal reader should do. He as one of editors of Journal of the Association for Information Systems (JAIS) writes that JAIS publishes articles that address critical issues. Part of the reason for his commentary piece is (p. 434) "to show that reviewing (submitted) papers requires a broad critical eye to ensure that the accepted papers do make a significant contribution to knowledge." Hirschheim clarifies (p. 435) "how to undertake a critical review of such papers and offer some guidelines. These guidelines are not meant to be a cookbook, but rather a brief introduction to the art of critical reviewing. [He] uses the word "art" advisedly since critical reviewing is not a mechanistic process, but more of a craft." He continues that (p. 435) "the job of the reviewer is to assess whether the claims made by the authors are: (1.) understandable (intelligible); (2.) substantiated (believable); and (3.) significant (makes a worthy contribution to knowledge). That is what critical reviewing is all about."

Hirschheim (2008, p. 435) likes to still present his view saying "keep in mind, when I speak of 'critical' I do not mean 'negative.' Many reviewers feel that to be 'critical' they have to tear paper apart. When reviewing a paper, you should not only be searching for flaws in the paper, but also how such flaws could/should be overcome. In other words, the reviewer has to be constructive as well. How could the paper be improved? What would its value be if it were improved? Identify both strengths and weaknesses. The ultimate aim is to contribute to quality control: to safeguard the audience interest and also to help the authors make a contribution."

Our long citation of Hirschheim (2008) demonstrates how term critical can be used in many ways. Purpose of use of term critical in text is to attract a reader's attention or emphasize a message.

Concluding remarks

We have in this paper showed Chua's (1986) definition of critical perspective differing slightly from Burrell and Morgan's definition. We have also defined what we mean critical literature review and differ from Sandberg and Alvesson (2011) who recommended to use problematization, but they are then going to an area of perspective level bit we prefer literature review level. We also show how term critical can be used as adjective at a normal connection or level.

Many meanings of term critical is both a researcher's and a reader's problem in research. Hence, we can ask: How should we write our research report with term critical in order to support report understanding? A solution to this problem is: When we are using normal language, we must then try to define every term and express it in such a way that this term will have one meaning only in our

certain report. - We generalize our result to other terms and expressions with many meanings. But we then must identify those terms and expressions and it not always easy.

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