

THE ROLES OF THEORY IN CANONICAL ACTION RESEARCH¹

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Canonical action research (CAR) aims to address real-world problems and improve organizational performance by combining scholarly observations with practical interventions. However, efforts to conduct CAR have revealed challenges that reflect a significant research–practice gap. We examine these challenges by revisiting the process, principles, and criteria of CAR developed earlier. The specific roles of two different types of theory in the cyclical action research process are considered. A project undertaken in two public relations firms illustrates how our methodological revision improves the rigor and quality of CAR. This article contributes both a significantly enhanced action research method, with detailed guidelines and suggestions that emphasize the roles of focal and instrumental theories, and an emerging theory of knowledge sharing that incorporates key elements of Chinese management and culture.

Keywords: Canonical action research, instrumental theory, focal theory, principles and criteria, knowledge management, knowledge sharing, culture, organizational change

Introduction

Action research (AR) has become a popular method for studying Information Systems. Over a dozen forms of AR have been developed to date (Chiasson et al. 2008; Davison et al. 2004). Each form has distinct characteristics, but all AR aims to both ameliorate organizational problems and contribute to scholarly knowledge (Avison et al. 1999; Eden and Huxham 1996). Our interest here is the canonical form of AR (CAR), formalized first by Susman and Evered (1978) and elaborated subsequently by Davison et al. (2004).

The popularity of CAR in the domain of information systems has resulted in the emergence of several methodological challenges. One challenge, which is common to all forms of AR, relates to the tension between the researcher and the organizational client. McKay and Marshall (2001) neatly capture the essence of this tension, referring to the dual imperatives of researchers who must serve two masters: a research imperative to engage in theoretical scholarship with knowledge generation/dissemination and paper publication as an outcome, and a practical imperative to ensure a positive outcome for the organizational client (e.g., to be more competitive and/or profitable).

The methodological guidance developed by Davison et al. and applied in many subsequent CAR projects (e.g., Henfridsson

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and Lindgren 2010; Lindgren et al. 2004) has been valuable. Nevertheless, the difficulties experienced in applying the specific principles and criteria formalized by Davison et al. suggest that the current state of CAR can still be improved significantly. Recognizing these difficulties, we formulated the research question: How can we review, revise, enhance and elaborate the methodological guidance originally developed by Susman and Evered and later elaborated by Davison et al. in order to further enhance the practice of CAR?

Our primary research purpose is to enhance CAR. We demonstrate how theories, instrumentally and focally, help to resolve researcher–client tensions (such as the aforementioned dual imperatives), and thus improve both organizational outcomes and scholarly benefits. Our secondary research purpose is to better understand both a specific organizational phenomenon (knowledge sharing) and the general research context where we applied CAR: professional service firms in (the People’s Republic of) China.

This paper is organized as follows. After outlining a brief history of action research, we critique the CAR process, principles, and criteria developed by Davison et al. We identify four major challenges in applying CAR. A knowledge sharing research project involving two linked cases is used both to illustrate the specific nature of these four challenges and to demonstrate how each challenge may be addressed. We then present a revised CAR model in which we overcome the challenges by formally incorporating two different types of theory. This methodological enhancement helped us to achieve a better understanding of how knowledge is shared, specifically by professional service firms in the Chinese culture. It also enabled us to develop specific research propositions that represent a new conceptualization of knowledge sharing.

Action Research: A Brief History

Action research was conceived in the aftermath of World War Two to address social problems associated with battlefield experiences (Lewin 1945, 1946; Trist and Bamforth 1951). Subsequently, AR has undergone considerable development and refinement. Since 1990, AR has been accepted increasingly as a legitimate research method in IS, with articles appearing frequently in top-tier journals. Moreover, several special issues of IS journals have been devoted to AR (e.g., Baskerville and Myers 2004; Kock and Lau 2001). Chiasson et al. (2008) documented 63 AR articles published between 1982 and 2005 in eight leading IS journals.

The canonical form of AR has become a popular and influential research method in the IS discipline. CAR is iterative

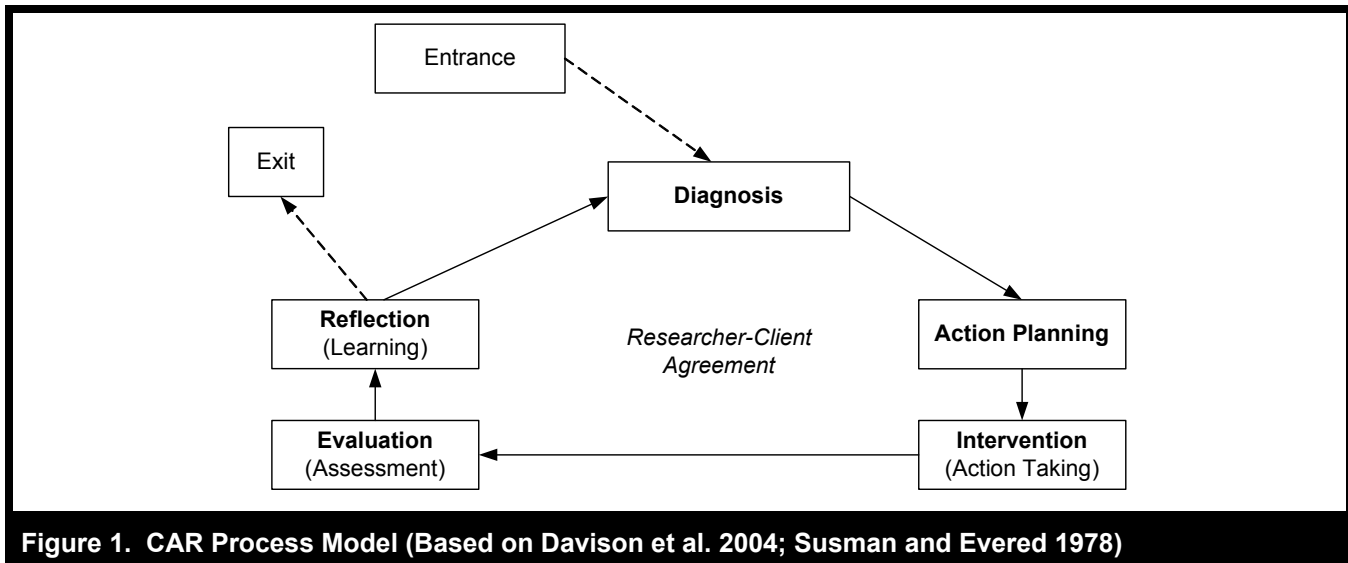
(it involves one or more cycles of activities), rigorous (it requires strict adherence to a cyclical process model; see Figure 1), and collaborative (work should be shared between researchers and organizational clients). Effectively conducted, CAR focuses on change through interventions in an organizational context and enables the generation of both practical and scholarly knowledge. However, we found that there was an opportunity to significantly improve the methodology for undertaking CAR by building upon the principles and criteria developed by Davison et al. (2004). We detail our critique of the current CAR principles and criteria in the next section.

Critique of Canonical Action Research

From 2006 until 2010, we conducted a series of investigations into the knowledge sharing practices of public relations firms in China. Our research was designed deliberately as CAR so as to follow the cyclical process model proposed by Susman and Evered (1978), as shown in Figure 1, and adhere to the five principles and 31 criteria developed by Davison et al. (2004). Our investigations revealed weaknesses in some of these criteria, particularly related to the operationalization of the cyclical process model and the role(s) of theory.

The 31 criteria which reflect the 5 principles of CAR are all written as questions, asking: Has something been done? For instance, criterion 2b reads, “Did the researcher conduct an independent diagnosis of the organizational situation?” (Davison et al. 2004, p. 72). However, we suggest that it is insufficient to know merely *if* an independent diagnosis has been conducted. We also need to know *how* it was conducted, which tools the researcher used, and the role of theory in that diagnosis. Similarly, we need to know how theory contributed to intervention planning (2c) and change evaluation (2d). For criterion 2e, the researcher should reflect not only on the practical outcomes of the intervention, but also on the theory that guided the action plan. As explained below, theory can be addressed usefully by several criteria. These concerns are also linked to the literature discussed in the next two sections about the role of theory and the challenges encountered in CAR.

In applying the principles and criteria developed by Davison et al. and seeking to improve upon them, we identified four significant challenges associated with the methodological perspective of how CAR should be undertaken; our research perspective of what was desirable and feasible in the research context (including the nature and role of theory); and the client’s perspective of what would work best in and for their



organization. Even after improving the CAR criteria (see Appendix A for the original, revised, and supplementary sets of principles and criteria), the challenges described below constituted a significant methodological issue as we sought to address organizational problems while simultaneously contributing to scholarly knowledge.

The challenges were most pronounced at four discrete points in the CAR process: (1) diagnosis, (2) action planning, (3) action taking, and (4) reflection. First, we found it difficult to develop a precise and holistic understanding of the organization's situation and its processes after our diagnosis. Second, although our planned interventions were based on theory, we lacked a strong practical justification to guide these interventions or to implement the strategic changes needed by the organization. Third, it was not easy to assess rigorously the effectiveness of our interventions. Fourth, notwithstanding the importance of theory for CAR, it was difficult to ensure that theory permeated all of the activities in the cyclical process model.

In order to frame our experience of these challenges in the wider CAR literature, we reviewed a large body of empirical CAR papers published over the past 20 years in IS journals. Our aim was to review those papers that employed CAR as a guiding framework, and to examine specific situations where the researchers had themselves both encountered similar challenges and documented them. The vast majority of these papers neither documented in detail how CAR was undertaken nor reflected on methodological problems. This lack of detail and reflection may be related to the methodological immaturity of CAR.

The principles and criteria developed by Davison et al. encourage researchers to document and reflect on their investigations more thoroughly. Nevertheless, published CAR reports typically neglect key issues. For example, the fifth stage in the CAR cycle (reflection and specifying learning) was usually devoted to reflections on the topic investigated but not on CAR as a method. Papers published after Davison et al. often referred to their 5 principles and 31 criteria, but we identified only one paper—Lindgren et al. (2004)—that engaged intellectually with these key components of the method.

Lindgren et al. included both a substantial exposition of how CAR was conducted and a trenchant evaluation of the authors' experience with CAR. The authors explained how they evaluated each of the 31 criteria. Notably, this included explicit consideration of criterion 5g, which asks whether the research outcomes were considered in terms of the general applicability of CAR as a method (Davison et al. 2004). Lindgren et al. acknowledged that their own learning shifted between the first cycle (where the outcomes were disappointing) and the second cycle (which was more successful).

The Role of Theory in CAR

In order to overcome the aforementioned four challenges and thus enhance CAR, we found a critical need to specify the role of theory more precisely. We have identified two different types of theory that are relevant: focal and instrumental. A focal theory provides the intellectual basis for action-oriented change in a CAR project. Examples of focal

theories include the theory of planned behavior (Ajzen 1991), adaptive structuration theory (DeSanctis and Poole 1994), and punctuated equilibrium theory (Gersick 1991).

In contrast, an instrumental theory is used to explain phenomena (Angeles 1992), including those processes and tools that are used to establish and verify focal theories. Action researchers and their clients use instrumental theories to facilitate specific activities, especially diagnosis, planning and evaluation. Although other terms such as *micro-theory* (Markus et al. 2002), *theory for analyzing* (Gregor 2006), and even *analytical tool* have been used previously to denote this kind of theory, our use of the term *instrumental theory* reflects a belief that the theory is instrumental in facilitating a rigorous CAR process.

Instrumental theories are particularly significant in CAR because they play a mediating role between researchers and clients. Instrumental theories, which focus on analyzing the organizational activities central to the problem that is being addressed (see Gregor 2006), have the potential to soothe tensions and eliminate misunderstandings between stakeholders. Instrumental theories include any tools, models, or processes that theorize how work is done or how outcomes are achieved. Our use of the term instrumental theory follows Hambrick's (2007, p. 1346) comment that instrumental theories help us to "organize our thoughts, generate coherent explanations...[and so] achieve understanding." Such theories will be practical (Lewin 1945) and closely match reality (see Weick 1995).

Instrumental theories typically complement a focal theory. A focal theory alone is unlikely to remedy an organizational problem completely. In order to complement a focal theory effectively, an instrumental theory must be selected for its support of the focal theory. In practice, one or more instrumental theories will facilitate the diagnosis of research problems, planning of interventions, and/or subsequent assessment of the organizational impact of the intervention.

Diagnosis, planning, and assessment are critical activities in the action-change process, which is itself linked to the focal theory. This application of instrumental theories supplements criteria 2b, 2c, and 2d (Davison et al. 2004). These three criteria require the researcher to diagnose the organizational situation independently, to plan for actions that aim to improve organizational performance, and to evaluate the outcomes of interventions. These instrumental theories, as well as focal theories, are included in our enhanced CAR process model (see Figure 2).

The application of appropriate instrumental theories is critical to both ensure the rigor of CAR and address the research—

practice gap. Notwithstanding our own beliefs and experiences in the critical value of applying instrumental theories, we comprehensively reviewed CAR papers published in eight prominent IS journals² between 1982 and 2010 in order to ascertain prior engagement with theory in a similar way. Our review suggested that the use of such instrumental theories was very limited. Only three papers (Den Hengst and De Vreede 2004; Grant and Ngwenyama 2003; Lindgren et al. 2004) explicitly mentioned the application of models, tools, or techniques that we could characterize as instrumental theories (see Table 1).

Challenges in CAR

As explained above, our review of the CAR literature and reflection upon our own experiences as action researchers on multiple projects over the past 15 years led to the identification of four challenges to CAR as a method. We also identified an opportunity to systematically review and significantly enhance the cyclical process model (Susman and Evered 1978) together with the 5 principles and 31 criteria (Davison et al. 2004) that constitute the CAR methodology.

In this section, we analyze each of these four challenges to CAR in some detail. This analysis includes an explicit consideration of the role of theory. We then explain how we have significantly improved the CAR method in our own practice before introducing a revised CAR process model (presented in Figure 2) that emphasizes the key roles of both instrumental and focal theories. Our development and application of the enhanced CAR method is illustrated with an action research project involving two professional service firms in China.

The planned changes in this particular project were underpinned by two specific instrumental theories—the value shop and the balanced scorecard—and three different focal theories—transaction cost economics (TCE) (Williamson 1975), transactive memory theory (TMT) (Wegner 1987), and an emerging theory of knowledge sharing. We make use of cross-case analysis to contrast the benefits achieved from a linked pair of CAR cycles across two specific knowledge sharing case studies in our project with the usual practice of embedding multiple CAR cycles within a single organizational case study. We also highlight how the enhanced CAR method contributed to better CAR outcomes, documenting the

²The eight journals are *Communications of the ACM*, *European Journal of Information Systems*, *Information & Organization*, *Information Systems Journal*, *Information Systems Research*, *IT & People*, *Journal of Management Information Systems*, and *MIS Quarterly*.

Table 1. Instrumental Theories Documented in Published Accounts of CAR Projects

Reference	Research Context	Instrumental Theories Used	CAR Stage
Grant and Ngwenyama (2003)	Developing a strategy to evaluate the effectiveness of an information systems development methodology at a manufacturing technology company	Context model Business model Responsibility model Concept model Data model Database model	Intervention Evaluation
Den Hengst and De Vreede (2004)	Critical analysis of nine BPR projects for potential failure points	Dynamic modeling tools for collaborative diagramming and simulation	Diagnosis Planning
Lindgren et al. (2004)	Design principles for competence management systems	Grounded theory analysis (selective coding)	Diagnosis Evaluation

scholarly knowledge that we developed during the course of these cases. Following detailed theorization, we specify formal theoretical propositions for the research domain—knowledge sharing—that emerge from the application of CAR in these two Chinese organizations.

Challenge I: Diagnosing the Current Situation

Organizational situations can be very complex, involving many actors, (sub)problems, and (sub)processes (Mumford 2001). These complex situations may be encountered when applying many different methods, including case studies, ethnographies, and field experiments. Nevertheless, they constitute a particularly acute problem for CAR because of the need not only to describe the organizational situation, but also to work with different organizational stakeholders in order to ameliorate the situation.

Existing CAR prescriptions (e.g., Davison et al. 2004) provide little guidance on how to deal with these organizational complexities. Consequently, researchers face two temptations: either to address these complexities thoroughly, but run the risk of losing sight of the research objectives; or instead to focus on the research objectives, but fail to deal adequately with the practical complexities Chiasson et al. 2008).

We do not suggest that the natural complexity of an organizational problem be artificially reduced in order to simplify the diagnosis and change processes of CAR. However, we do think that more prescriptive advice would help action researchers to strengthen their diagnosis. In particular, researchers need to identify and apply appropriate metrics of organizational processes and performance. The existence of

these metrics and corresponding measures will be critical to evaluate objectively the outcomes of change interventions.

Challenge II: Planning Interventions and Organizational Changes

After the organizational diagnosis has been completed, an intervention plan that aims to address the diagnosed problem(s) needs to be formulated. This plan should be integrated with current organizational practices and accepted by the organizational client (Martinsons 1993). It should also be informed by a theoretical perspective that indicates prescriptively how the planned changes will address the diagnosed problem(s) and thus improve the organizational situation.

In formulating an intervention plan, it is useful to remember both Eden and Huxham's (1996) acknowledgment that experienced researchers know more than they are aware of and Keynes' (1953) assertion that our theories "are more powerful than is commonly understood" (p. 351). The experienced researcher may be tempted to ignore legitimate organizational concerns, instead asserting his/her experience-driven authority. Ghoshal (2005) reiterates the point, observing that inappropriate theories have the potential to damage effective organizational practices. Such an outcome, with an intervention causing a deterioration in the organizational situation, would be disastrous for a CAR project. Thus, it is critical to ensure that the intervention plan is the appropriate one—for both the researcher *and* the client.

Unfortunately, current prescriptions for CAR provide limited guidance on how researchers should balance theory and practice while planning interventions and enacting organi-

zational changes (see Eden and Huxham 1996). Furthermore, the emergent nature of CAR projects, combined with shifting organizational circumstances, limits the usefulness of a very detailed intervention plan, particularly if it covers an extended period of time (see Descola 1996). Nevertheless, intervention plans do need to be theoretically based, rigorously developed, and carefully applied. They must also incorporate quantitative measures of the organizational processes and performance where change is proposed. Otherwise, it will not be possible to predict or measure the improvements in performance resulting from the intervention.

Challenge III: Evaluating the Impact of an Intervention

When an intervention has been completed, its impact on the organizational problem situation needs to be evaluated. This evaluation should consider the pre-intervention state and thus enable the researcher and client to determine the success of the intervention. Theory will play a key role since it will be necessary to assess whether the changes predicted by the theory have occurred.

If the actual changes differ from those predicted, then a rigorous analysis is needed to explain the variance. For instance, if the selected theory turns out to be inappropriate, then a fresh round of diagnosis and theory identification may be required. As with the previous two challenges, current CAR formulations provide little prescriptive guidance in this evaluation of either the impact of theory or the resolution of the organizational problem situation.

Challenge IV: The Nature and Role of Theory in CAR

The reliance on a theoretical perspective when planning organizational change is a critical component of CAR (see Lindgren et al. 2004; Olesen and Myers 1999). In early-stage diagnosis, an instrumental theory tends to play an important role in helping the researchers to develop a thorough understanding of the organizational problem(s). However, focal theory may be less helpful at this stage as it may restrict the diagnostic process (see Cunningham 1993). Nevertheless, once the diagnosis is complete, one or more focal theories should be identified (criterion 3a) in tandem with and grounded in the diagnostic process in order to justify or support specific action plans (criteria 3c and 3d). The same focal theories will later be used to interpret and evaluate the outcomes of the intervention (criterion 3e).

Theory generally interests the academic researcher more than the organizational practitioner. This disparity commonly creates a research–practice gap. There are at least three dimensions to this gap that are associated with theory. First, during the initial selection of appropriate focal and instrumental theories, the client must acknowledge that the theories are both necessary and add value to the CAR process (criterion 3b). Second, the planning of the intervention must rely rigorously on the selected theories. The client should be involved actively in formulating the theory-based intervention plan. Third, theories should be used as an interpretive lens when the outcomes of the intervention are unclear, with the client and researcher working together to interpret the outcomes.

Confirmation of a relevant focal theory may only be possible after a CAR cycle has been completed. Even then, the theory may need to be changed in a subsequent cycle if it is found to be inappropriate (e.g., Kohli and Kettinger 2004; Lindgren et al. 2004). By involving the client in the process of identifying and confirming theories, it is more likely that the theories will be organizationally appropriate. As indicated in our discussion of the other three challenges, instrumental and focal theories play a key role in informing the whole CAR process and add rigor to the methodology. Managing theory appropriately is thus critical to the success of a CAR project.

Overcoming the Challenges

Theorizing the Relationship Between Focal and Instrumental Theories

A critical component of effective CAR is meaningful interaction between the researcher (or research team) and the relevant members of the client organization. This interaction is often problematic, primarily because researchers tend to focus on scholarly interests, while clients are more practically oriented. The four challenges that we have described above are symptomatic of these interaction difficulties. Each can contribute to a research–practice gap. Bridging this gap is critical to the maintenance of effective interactions between researchers and clients and thus merits further consideration.

We first focus on the relationship between instrumental and focal theories. We suggest that instrumental theories play a critical role in CAR because they help to ensure that the focal theory is relevant to practice and that practice is connected to the focal theory. In the following sections, we examine the four challenges in turn and explain how each one may be overcome, resulting in an enhanced CAR process.

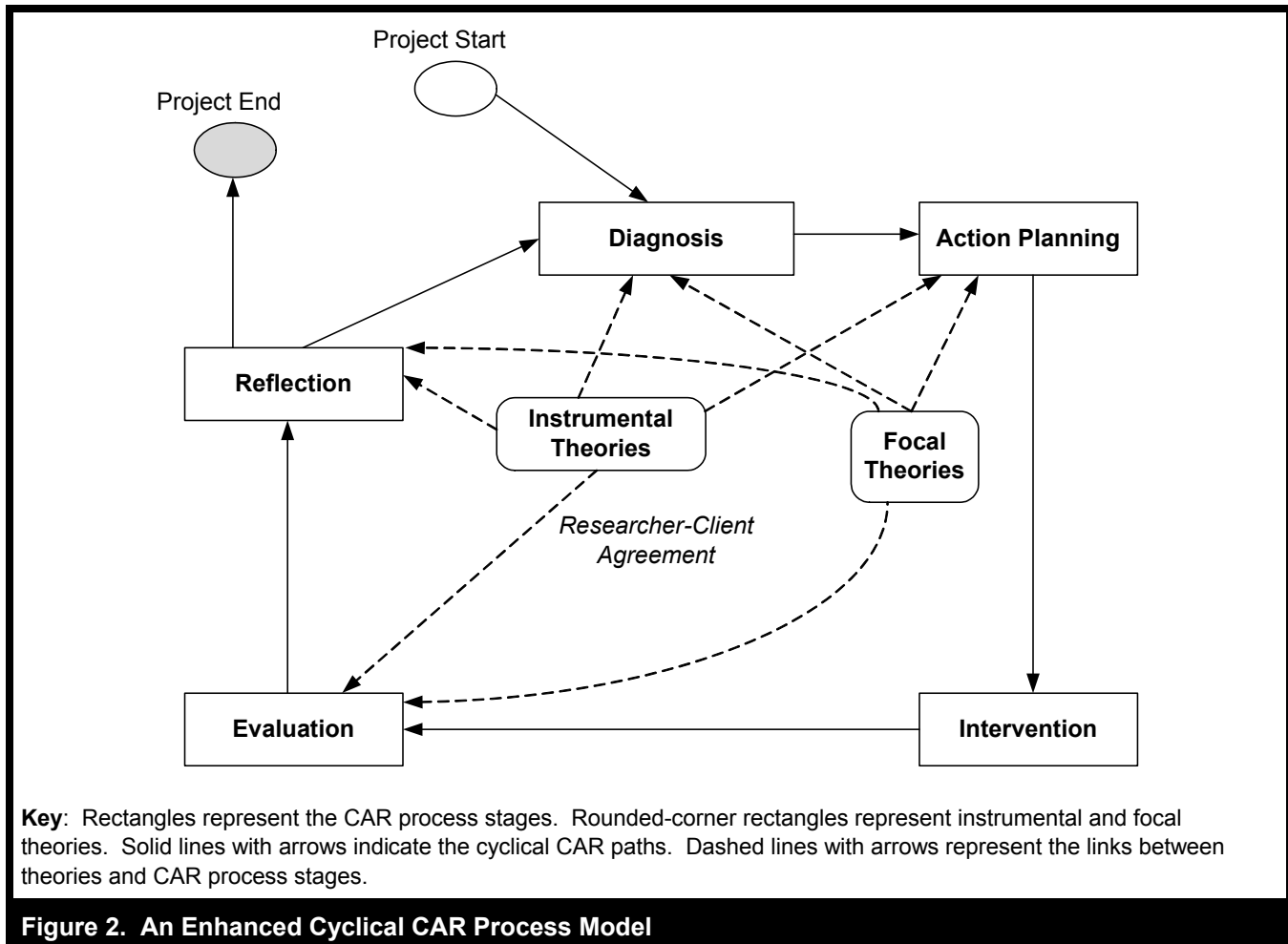


Figure 2. An Enhanced Cyclical CAR Process Model

Instrumental theories are particularly valuable because they may directly support the process of identifying and applying a focal theory which can subsequently inform the action planning, and change process. In Figure 2, we illustrate how instrumental and focal theories may support the diagnostic, action planning and evaluation phases in the CAR process model. By facilitating a more thorough organizational problem diagnosis that involves both researchers and clients, an instrumental theory contributes to the theoretical rigor of a CAR study. This in turn helps to ensure that an appropriate focal theory is selected. Instrumental and focal theories thus complement each other and help to alleviate the first of the four CAR challenges that we have identified and discussed.

The focal theory will later on guide the action-oriented change and ideally result in successful practical and scholarly outcomes. An instrumental theory may also help researchers to communicate with their clients and support the design of a feasible action plan and the specification of measures to

evaluate the resulting change. This helps to ensure that a thorough diagnosis is undertaken and that reliable plans for change are developed.

Each research context is unique and each organizational problem situation will demand a different solution. Nevertheless, drawing on the experience of the few CAR papers that did identify instrumental theories (see Table 1), we note that a variety of models are used to organize data, with tools supporting collaborative diagramming and simulation activities. We believe that instrumental theories are used considerably more widely in CAR than Table 1 would suggest. However, since earlier guidelines for CAR (see Davison et al. 2004) did not specify the need to include details of these theories and their application in CAR project write-ups, evidence of their application is generally lacking.

We suggest that the diagnostic phase of CAR can usefully be enhanced with an instrumental theory that maps the organiza-

tional processes (i.e., how work is done). A number of such theories exist, among them Porter's (1985) value chain, Stabell and Fjelstad's (1998) value shop, and Alter's (2008) work systems. However, the choice of a specific instrumental theory will depend on the context and aims of the diagnosis.

In the action planning and evaluating phases of CAR, assorted instrumental theories may again be applied. These include performance management applications such as the balanced scorecard (Kaplan and Norton 1992, 1996), SWOT analysis, and even semiautomated applications such as project management software. As noted above, quantitative measures of organizational processes and performance are helpful to compare pre- and post-intervention states. Further, the theoretical predictions of the consequences of action-oriented change (the desired end-state) should be formally included in the action planning phase.

After intervening, the researcher and client must jointly evaluate whether the actions have produced the intended changes. Reference can be made here to both the focal theory (are the outcomes as theorized?) and the action plan (specifically, the quantitative measures).

Overcoming Challenge I: Diagnosing the Current Situation

Criterion 2b from Davison et al.'s (2004, p. 72) set of principles and criteria for CAR asks "Did the researcher conduct an independent diagnosis of the organizational situation?" In order to undertake this diagnosis, a researcher must first identify the scope of the investigation and the specific processes where later interventions may take place. The researcher must interact with members of the client organization to obtain an intimate view of how work is undertaken, including formal and informal activities, as well as relationships and communication channels.

Instrumental theories can help to reveal how work is undertaken and improve the analytical rigor of the description. Some evidence may be obtained from organizational documents and interviews with key informants. More detailed evidence may only be uncovered if the researcher intensifies the investigation, relying on participant-observation techniques in order to observe and document the work of individual employees. Meanwhile, content analysis of employee-generated texts (e-mails, instant messenger transcripts, conversations with coworkers or clients) will likely reveal processes that the detached, external observer cannot see (see Lee and Dennis 2012; Markus 1994).

The diagnostic stage of CAR must produce a clear understanding of the overall organizational situation and the specific problems. The researcher and client can then jointly decide how to address the problems. By the end of the diagnostic stage, the researcher should be in a position to identify a focal theory for the action plan that will follow.

Overcoming Challenge II: Planning Interventions and Organizational Changes

When a thorough situation and problem diagnosis has been completed and a focal theory identified, it is appropriate to move to the second phase of the CAR model. Here Criterion 2c asks, "Were the planned actions based explicitly on the results of the diagnosis?" (Davison et al. 2004, p. 72). The planned actions should be designed to resolve the diagnosed problems. They may include both shorter and longer term actions at both operational and strategic levels. Focal theory also plays a critical role in the action plans, since any plan must be underpinned by theoretical cause-and-effect relationships.

An instrumental theory may be helpful to frame the action plan since it can identify the specific content and process of change that will be undertaken with the aim of achieving intended outcomes or objectives (Hempel and Martinsons 2009). These objectives or targets for specific dimensions of performance should be derived from the already completed diagnosis of the organizational situation. Quantitative measures can be used to determine if the objectives or targets have been met. Project management time lines can also be established and tracked. Instrumental theories thus add rigor to the process of creating and obtaining commitment to the action plan. They help to ensure that the planned actions are theoretically based, feasible given the available resources, and appropriate for the organizational context (Ghoshal 1996; Lewin 1945). They also provide a structure for communications between the researcher and the client.

Overcoming Challenge III: Evaluating the Impact of an Intervention

After intervening, the impact of the actions needs to be evaluated. Criterion 42 asks, "Were the planned actions implemented and evaluated?" (Davison et al. 2004, p. 72). It is relatively straightforward to implement a carefully designed plan that has already been endorsed by key stakeholders, including both senior management and the people who will experience the changes encapsulated in the plan. However,

evaluation of the intervention is more complex as it requires a comparison of pre- and post-intervention states. A CAR project may involve a number of cycles. Thus, evaluation should be formative in all but the last cycle, providing feedback that informs the next set of diagnostic and planning activities. Evaluation applies not only to the outcomes of the intervention, but also the instrumental and focal theories that guided it.

The quantitative data collected for key performance indicators and processes before and after the intervention can be compared to ascertain whether improvements have occurred. For instance, if those plans had relied on the theory of planned behavior (Ajzen 1991), specific measurable and comparable attributes would relate to the attitudes, social norms, and perceived behavioral control of individuals as they adopt new behaviors.

The evaluation may reveal that some of the planned actions were actually not implemented. This can occur when key stakeholder endorsement is not achieved in the planning stage. Meanwhile, other actions may have been implemented, yet subsequently found to be inappropriate. In this case, a fresh cycle of CAR activities may be needed, starting with additional diagnosis. Conversely, if the comparisons are conclusively positive and there is strong evidence to indicate that the problem has been solved and no new problems created, the CAR project may be considered to be complete.

Overcoming Challenge IV: The Nature and Role of Focal Theory in CAR

The critical role of instrumental theories has been demonstrated in our description of how we overcame the three previous challenges. However, focal theory also plays an integral role throughout the CAR process model (see Figure 2). A focal theory must be identified no later than the diagnosis stage. While a focal theory may also guide and inform the action plan, it also plays a critical role in both the evaluation of the consequences of the intervention and the reflection that takes place at the end of each CAR cycle.

Consequently, we propose an extension to the principle of theory that Davison et al. (2004) developed. It is insufficient to ask, "Were the project activities guided by a theory or set of theories?" (Criterion 3a, p. 74) and "Was a theoretically based model used to derive the causes of the observed problem?" (Criterion 3c, p. 74). We should also ask: Did a focal theory emerge from the situation or during the problem diagnosis? Was this focal theory acceptable to both client and researcher? Was this focal theory evaluated for its appli-

cability to the organizational context, considering current organizational practices? Were theoretical explanations for the current organizational problem situation evaluated and reflected upon? These theory-related activities must take place during the diagnostic and action planning phases of the CAR cycle; they should not be left to post-intervention. Further, while asking "Did the planned intervention follow from this theoretically based model?" (Criterion 3d, p. 74) is legitimate, "Was the guiding theory, or any other theory, used to evaluate the outcomes of the intervention?" (Criterion 3e, p. 74) is insufficient. The focal theory as well as the outcomes should be evaluated. If the focal theory is found to be inappropriate, then a new focal theory to explain the organizational situation and inform the problem diagnosis must be selected.

Foregrounding theory in this way and applying Gregor's (2006) valuable guidance on the classification and application of different types of theory should help the action researcher and the client to identify an appropriate focal theory. Such a theory should tackle the organizational problem situation rigorously and also enable valuable scholarly knowledge to emerge from the research. Among all of the challenges of CAR, theory is perhaps the most contentious for it is here that the research-practice gap yawns widest. It is common for the researcher to have far more knowledge of and experience with both focal and instrumental theories than the client. Thus, the researcher has a special obligation to address the theoretical issues that may apply to both the scholarly and practical aspects of CAR. Failure to do so can lead to project failure.

Illustrating Enhanced CAR: Two Knowledge Sharing Cases

Introduction to the Cases

Our enhancement of CAR has emerged from an extended knowledge sharing project that we undertook with two public relations (PR) firms in China: Eastwei (www.eastwei.com) and RuderFinn (www.ruderfinnasia.com). Both firms have their China operations focused on Beijing and Shanghai, with branch offices in Chengdu, Guangzhou, and Hong Kong. Both firms also provide a similar range of media-related services to their clients, primarily large multinational corporations that need to develop and maintain PR initiatives in China.

Each PR firm employs between 100 and 150 consultants who engage with the mass media. These consultants write up product-oriented stories for press releases, assess public perceptions of product and press releases, and organize

product launch events. PR consultants must also develop and sustain strong interpersonal connections with a variety of internal and external stakeholders. These stakeholders include journalists, event organizers, colleagues within the firm as well as at competing organizations, and client employees, such as PR managers or technically proficient staff who can provide details on products, services, and industry trends in response to media questions.

Much of this work conducted by the PR consultants requires careful coordination among people who are located at geographically dispersed sites across China. The aim is to produce a message that is consistent and reliable across the country. All of these PR consultants inhabit an information space (see Boisot 2005) that is highly dependent on interpersonal relationships. As Eastwei's chairman remarked, "If a consultant doesn't have good relationships with local editors and journalists, what is he or she doing in PR anyway?" (Björkstén 2007, personal communication).

Consultants must be able to access the knowledge and expertise of their colleagues, no matter where they are located. Such knowledge includes a mixture of the explicit and the tacit, covering journalist contact information, reports and documents of previously completed projects, business process templates, and a variety of formal and informal knowledge objects. The communications environment is thus designed to enable consultants to maintain contact with external counterparts such as journalists, media event organizers, and client staff, and to coordinate distributed project work, as well as share knowledge within the geographically distributed team. This environment is predominantly informal (see Earl 2001), with consultants relying heavily on instant messages and, to a lesser extent, e-mail. The corporate intranet is typically the only formal IS application for group work.

In the following section, we illustrate how we applied CAR in each of the two PR firms. The two cases represent a single action research project and were conducted sequentially. Each organizational case constitutes a single, extended CAR cycle. For each case, we present a time-line of activities. These activities are based on the revised CAR process model (see Figure 2), which we later elaborate in a new model (Figure 6) that includes the instrumental and focal theories that are specific to the two cases in this CAR project. As will become clear, we applied two specific instrumental theories in this project: the value shop (Stabell and Fjelstad 1998) and the balanced scorecard (BSC) (Kaplan and Norton 1996). We next briefly present and motivate the use of the value shop and BSC before we turn to the two action research cases.

We selected the value shop as an instrumental theory because it effectively maps onto the natural business processes of pro-

fessional service firms (von Nordenflycht 2010), including those engaged in PR. Likewise, the BSC was found to usefully represent the way a PR firm seeks to develop strategic plans that leverage its ability to create value based on its current and future knowledge assets. Our application of the value shop and the BSC illustrates our specific instantiation of the revised CAR process model (Figure 2).

Value shops are organizations (or more usually organizational units, teams, or processes within organizations/units) that generate all of their value internally, mobilizing resources so as to solve customer problems, but not relying on external networks or chains of up- and down-stream processes or stakeholders. In order to collect information for a value shop representation of work, we selectively mapped key business processes (see Hall and Johnson 2009) and conducted simple participant observations of employees' behavior at work (see Anderson 2009; Myers 1999).

The value shop (see Figure 3) consists of five generic primary activities, conventionally represented cyclically, vis-à-vis: problem finding and analysis; problem solving; choice; execution; and control and evaluation. These primary activities are designed to represent how work is undertaken, and so how value is created, within the organization or unit. The value shop is a useful instrumental theory for our purposes because it enabled us to undertake a detailed, descriptive diagnosis of how work is performed in a PR firm. The value shop's fifth stage, where the organization should evaluate routinely the value of its processes, proved to be critical, because this is where process strengths and weaknesses are most likely to be identified.

By analyzing each PR firm's business processes with the value shop during the diagnostic stages of our CAR project, we were able to identify both strengths and weaknesses in the primary activities. Our interventions were designed primarily to address the identified weaknesses, even as they were also based on the focal theory. Our subsequent evaluations confirmed that our interventions had indeed addressed many of the business process weaknesses. The role of the value shop, used as an instrumental theory, is modeled explicitly in our instantiation of the enhanced CAR model (see Figure 6).

We employed a balanced scorecard (BSC) to plan for (and later assess the impact of) interventions that would be linked to an organization's strategic direction. The BSC is designed to measure whether smaller-scale operational activities are aligned with larger-scale objectives, in terms of vision and strategy (Kaplan and Norton 1992). The BSC is notable for its focus on four perspectives, conventionally: financial, internal process, customer, and learning and growth. These four perspectives are linked diagrammatically and logically

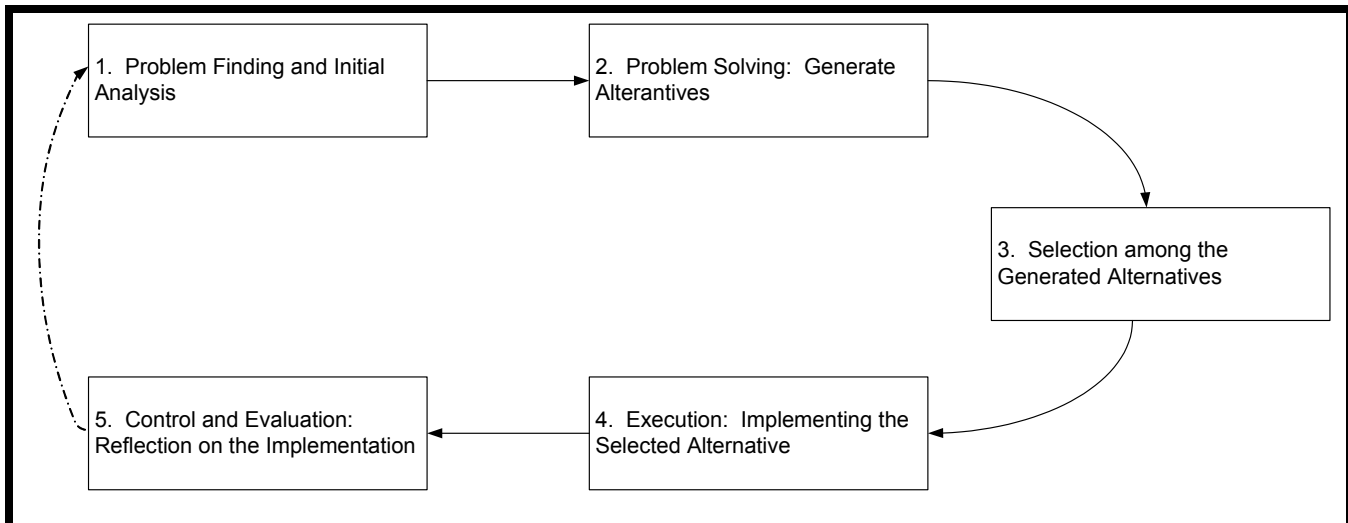


Figure 3. The Value Shop (Based on Stabell and Fjelstad 1998)

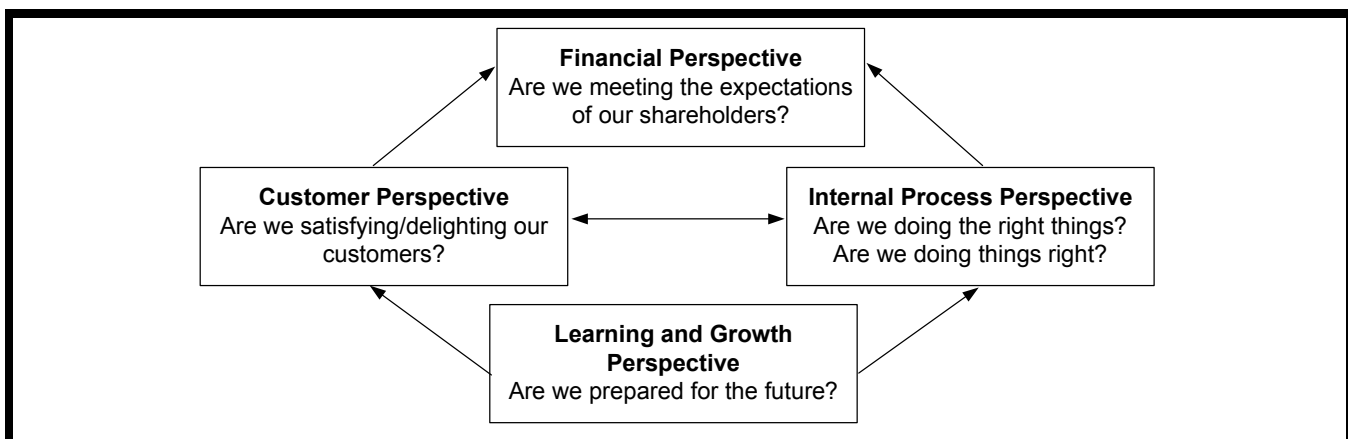


Figure 4. The Balanced Scorecard (Based on Kaplan and Norton 1992; Martinsons et al. 1999)

(see Figure 4). For each perspective, managers need to identify causally linked objectives, targets, measures, and initiatives (see Figure 6).

The BSC maps neatly onto a PR firm's business processes, with internal processes and customer satisfaction driving financial success. The BSC also incorporates a significant, future-oriented change mechanism, as represented by the "learning and growth" perspective. Informed by theoretically driven measures (which we describe below), the BSC enabled us to impose a significant degree of rigor on the planning and evaluation process.

Although the BSC is commonly employed in organizations, we found it amenable to theoretical design and application.

Since action plans are expected to be informed theoretically in a CAR project, it is reasonable to assume that theoretical constructs should inform and/or be explicitly reflected in the BSC. Furthermore, since the BSC plays a role in planning and evaluation, focal theory should also be informed by CAR outcomes during the evaluation stage of CAR.

The descriptions and analyses of the two CAR cycles that follow illustrate how these two instrumental theories helped us to enhance the rigor and relevance of CAR as a method and to overcome the four challenges. They enabled us to (1) undertake a more effective diagnosis of an organizational problem situation; (2) formulate and measure the accomplishment of an appropriate set of theoretically informed operational and strategic plans; and (3) engage in an evalua-

tion process that had both practical and scholarly value. To be specific, we drew on contributions to research through focal theory and to practical needs through instrumental theory in order to generate both scholarly and practical knowledge.

CAR in Eastwei

Our work with Eastwei lasted from November 2006 to December 2008 and is summarized in Table 2. We selected CAR as a method initially because Eastwei's CEO identified the need for both a longitudinal investigation of its knowledge sharing practices and the implementation of significant changes to internal operating procedures. Further, the CEO insisted that he would work with us in a researcher-client team arrangement. Our guiding research question at this stage was, "How do Chinese employees make use of technology to manage knowledge?" We first undertook a very lengthy diagnosis of the information and knowledge management processes at Eastwei. This was necessary due to both our relative unfamiliarity with the organization and PR work, and the Eastwei CEO's insistence that we should talk to as many people as possible in the organization before planning any changes.

The diagnostic process included conversations with the vast majority of employees, at all levels; follow-up interviews with selected employees on key topics; mapping of business processes with team leaders using the value shop; a survey of employees on perceptions and attitudes with respect to knowledge sharing; and, eventually, a detailed participant observation of selected employees at work in Beijing and Shanghai. Our interview protocols were informed by the knowledge management literature and related theories, as well as our previous CAR experiences and emerging diagnosis of the situation. We found that a key facilitating agent for knowledge sharing was *guanxi*. *Guanxi* is a Chinese socio-cultural concept roughly equivalent to dyadic relationships that incorporate reciprocal obligations between partners (Xin and Pearce 1996).

As a result of our year-long diagnosis at Eastwei, we developed a value shop model (see Figure 5) that specifically represented selected work processes in a succinct and clear format.

Careful analysis of the value shop model uncovered several problems in the way that knowledge was shared (and not shared) and managed at Eastwei. For instance, while we recognized the existence of a widespread knowledge sharing culture, most knowledge sharing was restricted to members of

work teams, rarely occurring across internal boundaries. Thus, employees in different work teams would seldom communicate with one another, even though their offices or desks might be adjacent. On the other hand, employees in the same work team, but located at a distance, would communicate with each other regularly.

These findings, which were based on our analysis of the value shop model of work practices at Eastwei, illustrate how the instrumental theory contributed to our diagnosis of the organizational problem situation and so helped to overcome the first challenge.

A second problem concerned the handling of knowledge. Employees would typically ask for help on a particular topic. Whatever they received and deemed to be helpful was first used, but then discarded. No deliberate effort was made to archive the knowledge for later use. The IM tools used by all employees for communication did automatically archive message content that could, in principle, be retrieved later. However, systematic searching of the auto-archived data did not occur. Employees found it easier simply to ask for the knowledge again whenever they needed it. This created a knowledge-on-demand system that appeared superficially to be quite inefficient.

Given the above problems relating to knowledge, we moved to develop action plans, referring to the value shop representation of work practices already undertaken. These plans were framed in the context of a BSC designed to enhance specific knowledge sharing activities at both strategic and operational levels. Our selection of the BSC, and in particular the detailed multi-perspective matrix (see Table 3), facilitated the action planning process and so enabled us to overcome the second challenge, not least with respect to the involvement of the client. True to the premises of CAR, we involved organizational stakeholders throughout the diagnostic and planning stages.

Theoretically, the action plans were premised on transaction cost economics (TCE) (Williamson 1975). A TCE perspective was applied as a result of extensive discussions with the organizational clients, especially Eastwei's CEO. An economic motivation for the proposed changes to the way knowledge was shared and managed at Eastwei was attractive to the CEO, who also had to sell the CAR project to his senior colleagues. The selection of an economic theory followed from our identification of the process inefficiencies associated with knowledge sharing and seeking behavior. The economic motivation was also valid for the researchers, since TCE suggests that the costs and difficulties associated with market transactions (in this case, an internal knowledge market)

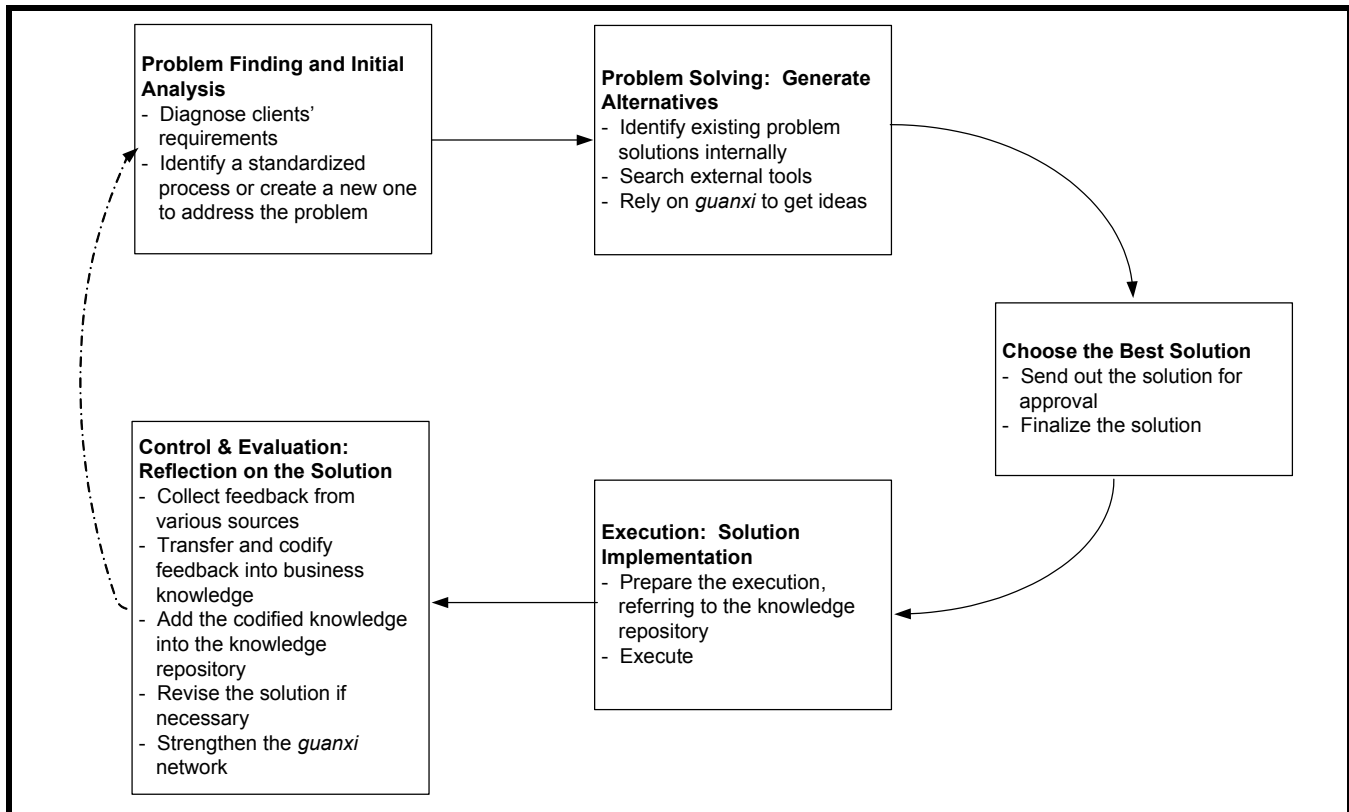


Figure 5. Our Model of Eastwei's Client Focused Value Shop

sometimes favor formal hierarchies or other in-house systems as a governance structure. By foregrounding focal theory in this way, conceiving its position in the cyclical process model and relating it to the diagnosis, we aimed to overcome the fourth challenge by ensuring that focal theory would play a primary role in the action planning process.

We envisioned a more formal, organized, and efficient in-house system for knowledge sharing rendering knowledge available in a harvestable form (see Halverson 2004). This system was expected to be an employee-focused but centrally managed system built around the instant messenger (IM) that most employees favored for communication and knowledge work. We made several changes to administrative procedures (e.g., file naming conventions), but were unable to implement most of our action plans due to a number of emerging barriers. Most importantly, the global financial crisis (of 2008) radically changed the operating environment and reduced the availability of organizational slack for noncritical projects. Although we were unable to implement more substantive change, our decision to apply the value shop as an instrumental theory within our diagnosis was valuable: it enabled us to describe business processes precisely and concisely.

The resulting value shop model also revealed both problems and opportunities for the action plans that followed. The BSC, meanwhile, required us not only to focus our attention on specific activities, as per the value shop diagnosis, but also to consider the actions that needed to be taken, the ways in which improvements should be engendered and measured, and targets to be achieved. These targets, and their associated measures, incorporated principles of TCE.

Before withdrawing from Eastwei, we engaged in a final set of reflective evaluations with the client. During these evaluations, we revisited both our pre-implementation discussions with management and employees, and the theoretical basis for the BSC-focused change initiatives. Our reflections on the appropriateness of the IM-centered KM system led us to reconsider the appropriateness of TCE as a guiding theory.

The knowledge sharing mechanisms at Eastwei were informal and rather disorganized, but they were nevertheless effective in enabling employees to locate and use each other's knowledge. Instead of retrieving knowledge from a formal or hierarchical repository, employees drew knowledge from each other as they needed it. Indeed, several employees expressed

Table 2. CAR Activities at Eastwei

CAR Stage	Dates	Activities
1. Diagnosis 11/2006 – 12/2007	11/2006 – 03/2007	1.1 Semi-structured, face-to-face interviews with approximately 80% of employees. Interview questions focused on Eastwei's business nature and environment, competitive pressures, communication issues, and knowledge sharing activities from all valid internal perspectives.
	03/2007	1.2 Outcomes of the interviews discussed with the CEO. Two structured reports produced on business processes and technology. Preliminary value shop representation of business processes developed.
	05–09/ 2007	1.3 Design and delivery of a survey of all employees, reflecting a research model measuring the antecedents of knowledge sharing behavior, as well as the impact of knowledge sharing on work; 78% response rate achieved.
	09/2007	1.4 Survey results summarized and discussed with the CEO. Many ideas used in the planning stage.
	10–11/ 2007	1.5 Brief but intense participant observation of selected employees in the Beijing and Shanghai offices. Critical importance of IM tool for all employees recognized.
	11/2007	1.6 Report for CEO with six key recommendations for later actions. CEO accepts recommendations.
Hiatus	01–09/ 2008	Global financial crisis intervened. No significant work undertaken
2. Planning	10/2008	2.1 Project was briefly restarted. Strategic brainstorming session with CEO and research team to propose action plans based on previous ideas and recommendations, theoretically underpinned by TCE and the BSC. 2.2 Broad agreement was reached on these plans. Eastwei's financial position then became too tenuous and the project was stopped again.
3. Implemen- tation	11/2008	3.1 Selected recommendations from 1.2 and 1.4 were implemented piecemeal. These were primarily administrative (e.g., new file naming conventions to ease knowledge access in the corporate intranet, but no significant change to daily work processes involving knowledge sharing behavior). 3.2 In addition to IM, the knowledge workers at Eastwei started to intensively use other social media such as blogs. Business-related knowledge is actively documented and distributed in blogs.
4. Evaluation	11/2008	4.1 While the small-scale implementations (as per 3.1) were valuable and successful, they only represented a very small part of the recommended changes. From a transaction costs perspective, these initiatives did result in time-savings, ensuring that documents could be located more easily and knowledge could be externalized with the aid of social media. However, a full evaluation of the project is inappropriate since most of the planned and formal actions were not implemented, nor could they be with the changed operating environment in which Eastwei found itself.
5. Reflection	11–12/ 2008	5.1 The research team reflected on the project as a whole and engaged in a detailed analysis of TCE and its suitability for the context. While the economic perspective had been helpful in focusing attention on measures of efficiency, no good theoretical explanation for the way in which knowledge was being shared had been identified. 5.2 At this juncture, transactive memory theory (TMT) was identified as offering a better explanation for current employee knowledge sharing behavior and also for the changes to current practice that would improve Eastwei's situation. The identification of TMT was also driven by the successful employment of the IM and blogging in the later stage of this project. Although this new theoretical perspective was not acted upon in this project, it could apply to future projects. Thus, while the practical aspects of the Eastwei project were generally not successful, valuable theoretical knowledge was gleaned.

Table 3. BSC Matrix of Perspectives, Objectives, Targets, Measures and Initiatives for Eastwei

Perspectives/ Events	Objectives (Informed by Value Shop Analysis)	Targets	Measures	Initiatives
Competitiveness	Eastwei to be the preferred supplier of PR services in its chosen sector	Eastwei to be the #1 SME PR firm in China by the end of 2009	Industry benchmarks Recognition by competitors	No specific initiative. Other perspectives naturally contribute to this perspective.
Internal Process	Improved internal process efficiency so as to provide value to clients	30% improvement by mid 2009	Revenue per consultant	Implement Web 2.0-based KM tools and evaluate efficiency. Coaching/mentoring. Weekly monitoring of follow-up efficiency with project group leaders and team leaders.
	Develop a knowledge creation culture to facilitate the creation of value for clients	Progressive starting in early 2009	Number of employees engaged in a new model of work Volume and quality of knowledge created, accessed, shared, reused	Two teams (centers of excellence) to pilot the concept. Reduce process inefficiencies. Identify opportunities for sharing routine and <i>ad hoc</i> knowledge. Identify IT levers/enablers.
	Eastwei to be the preferred employer for PR consultants who delight in knowledge sharing and reuse	All employees to be appraised on knowledge activities by next appraisal cycle	Number of knowledge contributions, accesses, downloads	Embed knowledge-related activities and technologies into work processes and templates. Formally reward knowledge related activities.
		All consultants satisfied by mid 2009	Consultant happiness index	Empowerment of consultants regarding activities and revenue generation.
Client Satisfaction	Delighted clients are a direct indicator of value	0 complaints and 100% satisfaction by mid 2009	Number of complaints received	Process improvements; task completion quality.
			Client satisfaction index	
Learning and Growth	Eastwei and its consultants are prepared for the future: McKinsey style of organizational structure	Consultants to be self-managing, starting from early 2009	50% by Q2/2009 75% by Q3/2009 100% by Q4/2009 Turnover of those who cannot self-manage	Flatten the job titles. Disrupt the current calm. Matrix recognition of skill level. Eliminate systemic under delegation. Selective outsourcing.

distaste for the notion of a formal KM system, as they believed it would excessively constrain the knowledge sharing process and potentially reduce the amount of knowledge shared.

The employee-centered approach to knowledge sharing and retrieval at Eastwei was consistent not only with the profile of knowledge management in China reported by Burrows et al. (2005), but also with the principles of transactive memory theory (Wegner 1987). Each employee relied on a network of other employees for knowledge. As will become clear, this reflection on theory was critical in our diagnosis and planning of actions in the follow-up case. By ensuring that our evaluations were informed by both the instrumental theories and the

focal theory (TCE), we were able to overcome the third challenge. We not only engaged the client in a joint evaluation of the intervention, but also identified important lessons that we applied in the subsequent CAR cycle, albeit in a different firm.

CAR in RuderFinn

Our work with RuderFinn lasted from January 2009 to October, 2010. Table 4 summarizes our activities in RuderFinn until the second CAR cycle was completed. Given our prior experience with Eastwei (first CAR cycle), the diagnostic process undertaken with RuderFinn was both shorter

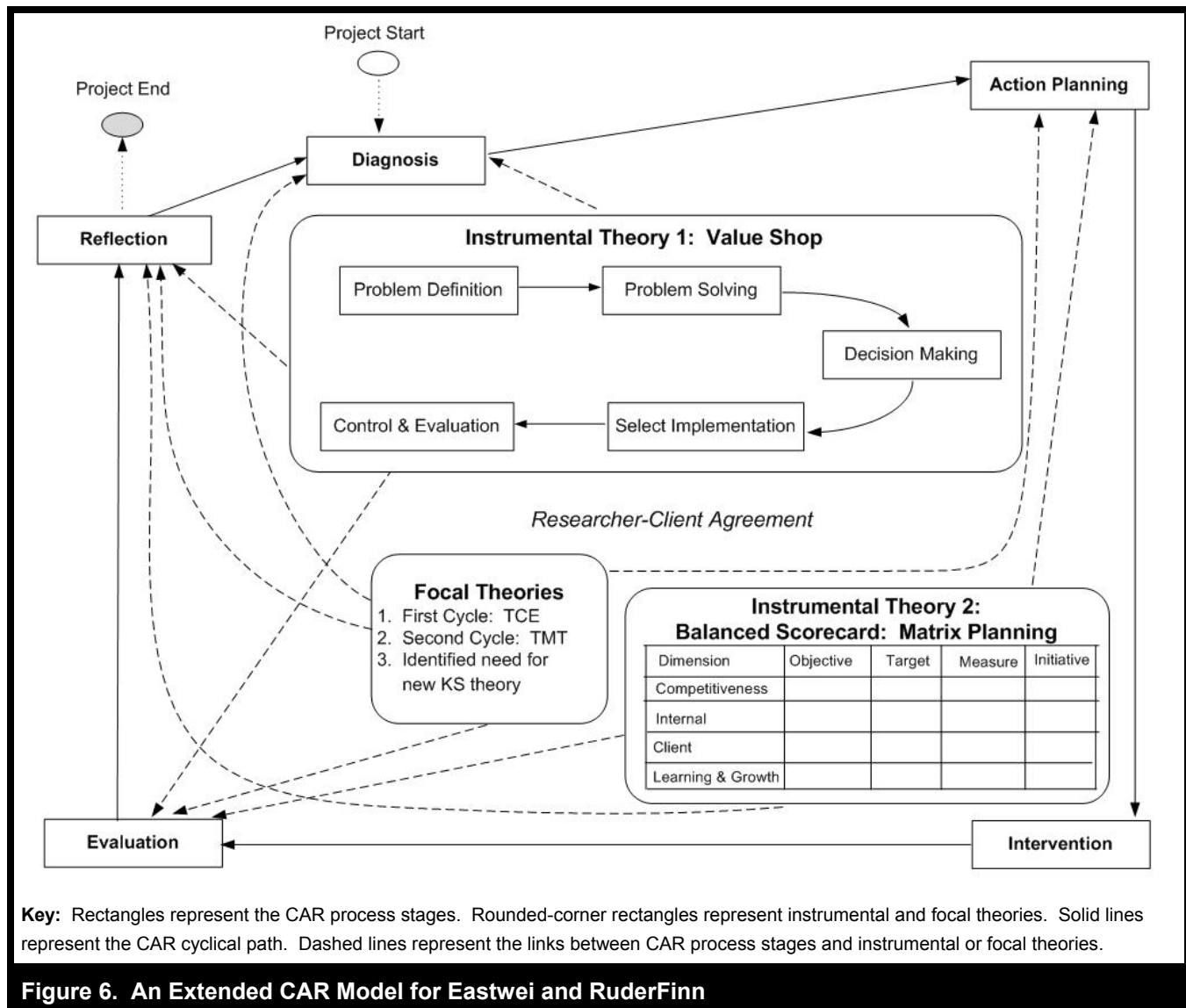


Figure 6. An Extended CAR Model for Eastwei and RuderFinn

and more focused. Relying now on both our prior work with Eastwei, as well as the KM literature and emerging diagnosis, we interviewed approximately 30 percent of the employees, and a further 50 percent of employees completed a survey on attitudes toward knowledge sharing. We quickly developed value shop representations of business processes that were remarkably similar to those shown for Eastwei in Figure 5. The similarity is not surprising since the two firms are in the same business, have similar client bases and employee structures, and operate under a similar style of management. As a result of RuderFinn's more favorable operating environment, we reached consensus with RuderFinn's CEO and general managers on the need for IT-supported change to KM practices within four months. The value shop supported our diag-

nosis of the organizational problem situation, where we experienced the first challenge. Focal theory played a more prominent role in the diagnosis, given that we had already identified transactive memory theory (TMT) as a candidate focal theory at the end of the previous case and cycle, overcoming the fourth challenge.

Transactive memory refers to the knowledge of "who knows what" (Wegner 1987). Bradbury's (1953) fictitious description of entire books being committed to memory is an extreme example of transactive memory, but a useful one nevertheless, since transactive memory works well when each individual is known to possess unique knowledge, into which others can tap. This meta-knowledge is a basic requirement of a distri-

Table 4. CAR Activities in RuderFinn

CAR Stage	Dates	Activities
1. Diagnosis	01–03/2009 03/2009 05/2009	1.1 Semi-structured, face-to-face interviews with approximately 30% of employees (see Eastwei 1.1). Completed a value shop representation of business processes, as per Eastwei. Strong espoused interest from employees in a more centralized knowledge sharing arrangement. Noted that knowledge sharing was premised on knowledge givers and receivers being bound by <i>guanxi</i>. 1.2 Survey of approximately 50% of employees (see Eastwei 1.2). 1.3 Consensus reached with RuderFinn on completion of diagnosis and need for IT-based change to KM practices.
2. Planning	06–07/2009	2.1 Transactive memory theory (TMT) drawn upon for action plans intended to preserve existing good practices with respect to IM-based knowledge sharing. Plans focus in particular on the internal process aspect of the BSC, with new initiatives designed to enhance the effectiveness and efficiency of one pilot, cross-location team by developing a team-wide transactive memory network (see Table 5 for details), to be compatible with Chinese cultural norms. 2.2 A number of technology platforms were identified including Google Sites and Microsoft's SharePoint. Google Sites was not accessible due to Chinese Internet restrictions. MS SharePoint was accessible, via a leased line to the Hong Kong office of the firm, and was selected accordingly.
3. Intervention	09/2009 – 03/2010	3.1 An intensive pilot project using MS SharePoint was started with one team of 13 people located across three cities. This project focused on individual level, informal knowledge sharing.
4. Evaluation	4/2010 6/2010	4.1 The software provided an adequate technical basis for knowledge sharing in the pilot project. It was found to reinforce existing organizational cultural norms associated with transactive memory sharing. Some members of the pilot team reported that they were able to work more effectively and efficiently. However, the pilot project's leader reported that the software was not user friendly enough to warrant use. She refused to encourage her team members to use the software. 4.2 Shortly after the intervention, one of the firm's general managers unexpectedly resigned, taking both a major client (and source of income) and a large number of employees with him. This threw the whole company into some disarray and effectively stymied our further involvement.
5. Reflection	10/2010	5.1 A few months after the events described in 4.2, the situation at the firm had stabilized enough for us to resume contact with the firm's CEO and engage him in a reflection of what we had achieved. Together, we judged the CAR project to be successful in some respects, with significant improvements to work processes (in terms of efficiency and effectiveness). 5.2 While we recognized that TMT provided a partial explanation for knowledge sharing behavior at RuderFinn, the explanation was incomplete. Other aspects of Chinese culture critical to knowledge sharing have also become apparent, notably <i>guanxi</i> and in-groups. These attributes are, unsurprisingly, not represented in TMT. In order to accommodate these Chinese cultural attributes, a new theory integrating these cultural constructs is needed to explain and predict knowledge sharing in the Chinese context. 5.3 Details of the theoretical propositions of this new theory are indicated in the paper. These should be tested in future research in China as well as globally, in contexts where knowledge and information are routinely sought and shared.

Table 5. The Internal Process Perspective of a Knowledge-Focused BSC for RuderFinn's Tourism Team

Objectives	Targets	Measures	Initiatives
Enhance the efficiency and effectiveness of the Tourism Team by - Enhancing the team's use of advanced knowledge sharing tools. - Fostering the development of a team-wide transactive memory network.	All team members to access the ePlatform daily for knowledge sharing purposes.	Frequency of ePlatform use by each team member. Number of knowledge contributions, accesses, downloads. Quality of knowledge shared.	Resource the team to undertake this pilot project (including training). Ensure that Internet bandwidth and speed are sufficient to access the ePlatform. Ensure that all necessary knowledge sharing tools are available.

uted knowledge system (Borgatti and Cross 2003). Team members begin to form a transactive memory when they disclose information indicating their specialized knowledge. Coordination can be facilitated because team members can anticipate each other's behavior. In a transactive memory network, the sharing of specialized knowledge, including mental models and suggested solutions to problems, is instrumental in the achievement of stronger team performance.

Jarvenpaa and Majchrzak (2008) found evidence for transactive memory networks outside traditional firm boundaries, given a latent "need for rapid and ad hoc collaboration" (p. 260). The work context at RuderFinn lies both within and beyond the firm boundary. The same "rapid and ad hoc collaboration" was observed to take place between members of the firm and those employees who need to share knowledge with contacts beyond the firm's boundaries. When we interviewed RuderFinn employees, they agreed that shared memories could be relied upon as a source of knowledge, confirming the suitability of TMT as the basis for both describing knowledge sharing practices, and predicting how these practices could be enhanced.

We believed that the development of informal knowledge sharing networks would lead to greater awareness of, and consequently more requests for, others' knowledge. We expected that the increased knowledge sharing would benefit the organization, but recognized that measuring the effect would be challenging. The action plans that we devised for RuderFinn involved the deployment of Microsoft SharePoint with facilities for brainstorming, content management, and informal knowledge sharing.

The BSC that we developed for RuderFinn was more functionally focused than that developed for Eastwei. While the financial, customer satisfaction, and learning/growth perspec-

tives are similar to those we developed for Eastwei (see Table 3), there are significant differences in the internal process perspective (see Table 5).

This internal process perspective is particularly revealing as to our intentions for the Microsoft SharePoint platform, which saw use in a single pilot project. Our application of the BSC to actions based on TMT show how we overcame the second and fourth challenges, with both the BSC and TMT tightly coupled in our action planning process. The pilot implementation was with the Tourism team: a cross-location (Beijing, Shanghai, Guangzhou), multi-client team with 13 members that handles all matters associated with RuderFinn's national and regional level Tourism Board clients.³ Historically, this team has been fragmented across multiple physical locations. Guided by TMT, we identified the opportunity to reap process efficiencies by developing a transactive memory network where all Tourism team members could share all their non-confidential knowledge. The specific purpose of the knowledge sharing platform is spelled out in the action plan, as are the initiatives that we planned to deploy to engender use, the targets, and the measures of that use (see Table 5).

The planned intervention was implemented from September 2009 to March 2010. The intervention was partially successful, since the Microsoft SharePoint software saw some use (uploading and downloading) for knowledge assets that were relatively stable. The basic premises of TMT were upheld, but we found that it ignored certain elements of the Chinese culture (notably *guanxi* and in-groups), as discussed below. These Chinese elements significantly influenced informal knowledge sharing practices at RuderFinn.

³For reasons of confidentiality, we cannot identify the country concerned. However, both national and regional level tourism clients for the same country are involved.

Quantitative measurements of processes (such as time to locate knowledge from the system) were positive, indicating that the planned changes had achieved some degree of success. This demonstrated the value of the BSC as an instrumental theory that could support the evaluation of the project, overcoming the third challenge. Nevertheless, the intervention was also resisted by the Tourism team leader. She commented that the new knowledge sharing procedures were insufficiently superior compared to existing practice to warrant her personal endorsement of them to her colleagues. Consequently, post-implementation use of the system soon tailed off. A further blow to the project occurred in mid-2010 when one of the firm's general managers suddenly resigned, taking many consultants and a major client with him.

We reflected on our experiences at RuderFinn and evaluated the suitability of TMT as a theory to explain and predict how Chinese firms share knowledge. We concluded that TMT had some deficiencies and recognized that a new theory was needed to describe more effectively how and why knowledge is shared in the Chinese context. By reflecting on the appropriateness of theory, we overcame the fourth challenge. We also underlined the importance of supplementing the criteria of Davison et al. (2004) in order to mandate the need to reflect on theory at the end of each cycle (see Appendix A for the original, revised, and supplementary criteria). Although we were unable to engage in a full development and test of the new theory in the current project, the key theoretical propositions are introduced here.

First, we recognized the importance of seeking and sharing knowledge from and with members of in-groups—the fundamental unit of knowledge sharing. In-group members may or may not be colocated and/or colleagues in the same company. This means that knowledge seeking and sharing behavior among employees of different (even competing) companies is normal and typically not a matter for second thought. The potential loss of knowledge power or assets as a result of sharing is not a concern.

Second, we noted that knowledge seeking and sharing is mediated by *guanxi*. *Guanxi* is a Chinese concept loosely equivalent to relationships that is pervasive in Chinese social and organizational cultures (Xin and Pearce, 1996). *Guanxi* incorporates a spirit of obligation (between knowledge seeker and sharer) and reciprocity. *Guanxi* is critical because normally only those people with whom one has *guanxi* would respond to a request for knowledge.

Third, knowledge seekers and sharers typically belong to transactive memory networks. Each network member knows roughly what the other members know. The transactive

memory network was updated continually by engaging in a series of seeking–sharing activities. This affirmed the long-term value of the network for its members.

Finally, knowledge seeking and sharing tends to rely on informal communication channels. This is due to the mediating role of *guanxi*. Informal communication tools allow interactive communications among employees, thus enhancing their *guanxi* and subsequently lubricating the knowledge sharing process. Therefore, these informal communication tools or channels are usually manifested through web 2.0 applications such as wikis and IMs that enable the retention and organization of transactive memory network members.

Discussion

CAR has been frequently applied in recent decades to organizational change initiatives with a strong IS focus. However, the CAR method remains hampered by a lack of detailed operational guidance grounded in CAR practice. This shortcoming makes it more difficult to balance the action and the research to serve two masters (academic and practitioner) and thus to successfully implement the method. It also limits the extent to which practical and theoretical lessons can be gleaned from even a completed CAR project. Susman and Evered (1978) proposed a cyclical process for CAR. Subsequently, Davison et al. (2004) provided much needed guidance in the form of 5 principles and 31 associated criteria. However, both the cyclical process model and the principles/criteria have been demonstrated to be incomplete. We have suggested how the process, principles, and criteria for CAR can be enhanced.

We have also identified four significant challenges that involve the scholarly perspective of how CAR should be undertaken, our research perspective of what is desirable and feasible in the research context (including the precise nature and role of theory), and the client's perspective of what is best for their organization. Taken together, these challenges contribute to a research–practice gap that separates researchers from practitioners and so weakens CAR as a method. The challenges relate to the diagnostic, planning, and evaluation stages of the cyclical process, as well as the role of theory in CAR projects. We have analyzed these challenges and illustrated how we overcame them while completing two linked cases (cycles) in a single extended CAR project.

Instrumental theories played a critical role as we overcame the challenges. We employed the value shop and the BSC sequentially, but other instrumental theories are likely to be

appropriate in other contexts. These two instrumental theories helped us to diagnose organizational situations rigorously, identify and introduce procedural theory, develop detailed plans for change through intervention, and communicate and collaborate effectively with our organizational clients.

Instrumental and focal theories play complementary roles in CAR. Instrumental theories play a prominent role in the selection and evaluation of the focal theory that guides interventions. Meanwhile, focal theory is operationalized through instrumental theory. Since instrumental theories are used by both researchers and clients, they also help to ensure that theory is always relevant to practice, and practice is connected to theory.

In order to assist future researchers, we recognize that it would be helpful to establish a general set of principles for instrumental theories that can be applied in IS research—whether conducted as CAR or using other methods. A detailed classification of instrumental theories could be created, with detailed and prescriptive advice as to which theories might be more suited to specific types of problem. For instance, Gregor (2006) points out how theories can be used for different purposes, such as describing and analyzing. Developing such a set of principles and using them to identify a complete set of instrumental theories lies beyond the scope of this paper. Nevertheless, both Gregor's work and the short list of instrumental theories applied in previous CAR projects (see Table 1) hints at how this could be achieved in future work.

The revised CAR process model (depicted in Figure 2) embeds both focal and instrumental theories. Meanwhile, the specific theories that we applied in this project are depicted in Figure 6. Taken together, we suggest that these revisions, along with our supplementary criteria, substantially strengthen CAR as a method. In consequence, we expect stronger practical and scholarly outcomes to be achieved. Our conduct of the two CAR cycles at Eastwei and RuderFinn was more rigorous than if we had relied exclusively on the Davison et al. (2004) set of principles and criteria.

Our research design was innovative, with two different organizational cases embedded in a single CAR project. The advantage of this design is that lessons learned in the first case can be applied to the second case. These lessons include reflections on both the CAR process and the focal theory. Although we did not anticipate engaging in grounded theory development when we initiated our project, our reflections on the evidence pointed very directly toward such an outcome. As a direct result of reflecting on project activities, especially in the last cycle, we were able to address both the larger practical problem and make a strong theoretical contribution

to the scholarly knowledge about knowledge management. The theoretical contribution included a greater awareness of both the strengths and limitations of theory itself, and of the need to reflect in detail on the CAR method and its processes, principles, and criteria. By highlighting the shortcomings of existing theories (TCE and TMT), our reflections lead to a broad outline of a new theory that more accurately reflects reality in the chosen research context, a theory that should be further enhanced and tested in future research.

Our embedded case design contrasts clearly with other CAR projects where a single organization is studied, and where lessons learned in earlier cycles are acted upon in later cycles. Examples of these single-organization, multiple-cycle embedded designs include Kohli and Kettinger's (2004) two-cycle investigation into the monitoring and benchmarking of the clinical practices of hospital-based physicians; Davison's (2001) five-cycle description of professional training in the Hong Kong Police; and Lindgren et al.'s (2004) two-cycle description of the development of principles for competence management systems.

Theory has a unique role to play in CAR. It typically emerges from the diagnosis and guides the action plans. It must also form the basis for evaluating the outcomes of the intervention. However, theory is not sacrosanct, as we indicate above. It too is open to question and reflection. If a theory is found to be inappropriate, then it should be replaced with one that better explains the situation and predicts the outcomes of change. Ultimately, the development of a new theory may be needed if all existing ones prove inadequate. CAR projects, which involve the collection and analysis of a wealth of detail, provide a suitable environment for theory development and for testing.

TMT provided a better fit in our organizational contexts than did TCE. Nevertheless, several fundamental elements of the Chinese culture that were critical to knowledge sharing in both Eastwei and RuderFinn were not represented. This led us to realize that a new theory was needed, one that builds upon the cross-cultural insights provided by Burrows et al. (2005) to augment the principles of TMT with key components of the Chinese culture. This responds to the calls made by Martinsons and Davison (2003) and Davison et al. (2008) for a more culturally reflexive approach to IS research, especially in China, with more emic, intensive, and action-oriented studies. The potential to develop new theories by studying the Chinese cultural context has been demonstrated by Martinsons and Westwood (1997) for management information systems and Martinsons (2008) for relationship-based e-commerce. Our progress toward a new and improved theory of knowledge sharing is an example of the scholarly contribution that may be expected from CAR projects.

Conclusions

Our extended CAR-based investigations into knowledge sharing practices in Chinese PR firms make three distinct contributions. First, building on the cyclical process model of Susman and Evered (1978), and the principles and criteria developed by Davison et al. (2004), we have enhanced CAR as a method. We have overcome four challenges that contribute to a significant research–practice gap by augmenting the criteria and developing a clearer understanding of the role of theory. Two IT-based knowledge sharing cases illustrate the enhanced CAR method.

Second, by reflecting on issues surfaced during the first part of the project, our theoretical understanding of the organizational context was enhanced. This led us to a fresh design for the second part of the project and resulted in an amelioration of some organizational processes. This form of cross-case analysis, where two different organizations are compared, is seldom reported in the IS research literature.

Third, our reflections led to an appreciation of the need for a knowledge sharing theory that incorporates specific elements of Chinese culture. Initial propositions for such a theory of knowledge sharing have been presented here. The ultimate theory may resemble that developed for management practices and information systems in the Chinese business culture by Martinsons and Westwood (1997). However, we anticipate that this emerging theory will be similar in scope to the theory of relationship-based e-commerce developed by Martinsons (2008). It should apply across cultures because relationships are universal, even if *guanxi* is specific to the Chinese culture. Thus, our theoretical propositions should not be restricted to Chinese organizations and employees. Our propositions should be relevant in many different societal and organizational cultures, even if the effects are more subtle and difficult to detect. Future research can usefully develop and test the applicability of our theory in different cultural contexts.

Throughout this project, we have consciously sought to balance action and research, ensuring that while our instrumental theories facilitated practical diagnosis, planning, and evaluation, we also actively reflected on the focal theoretical lens applied at different stages of the research. As CAR sees more frequent application in IS research, we foresee further development of the method along with the publication of more empirical accounts.

We encourage action researchers both to apply instrumental theories, such as those described here, and to report explicitly their experiences with these theories. Indeed, we hope that a new classification of these theories will be attempted in order

to integrate the substantial volume of knowledge pertaining to the application of different types of instrumental theories in organizational research. Overall, we envision the generation of knowledge that has significant benefits for both organizations and the IS research community. In this spirit, we encourage authors to go beyond the cyclical process model of Susman and Evered and the principles and criteria of Davison et al., ensuring that both the action and the research are reported thoroughly in CAR papers.

Canonical action research must include both action and research, but this can be accomplished in many different ways relying on different theories. We applied the value shop and the balanced scorecard as the primary instrumental theories in the lengthy CAR project reported here, but other theories will be appropriate in different circumstances. When these instrumental theories are combined with carefully selected focal theories, the rigor and overall quality of both CAR practice and scholarship will be enhanced.

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Appendix A

Original and Supplementary Principles and Criteria for CAR

The original set of 5 principles and 31 criteria were published as part of the article by Davison et al. in *Information Systems Journal* in 2004. They are now revised and supplemented with additional criteria which are clearly indicated. The numbering of the principles and criteria follows the pattern used in Davison et al.

P1: The principle of a researcher-client agreement

Original Criteria

- C1a Did both the researcher and the client agree that CAR was the appropriate approach for the organizational situation?
- C1b Was the focus of the research project specified clearly and explicitly?
- C1c Did the client make an explicit commitment to the project?
- C1d Were the roles and responsibilities of the researcher and client organization members specified explicitly?
- C1e Were project objectives and evaluation measures specified explicitly?
- C1f Were the data collection and analysis methods specified explicitly?

P2: The principle of the cyclical process model

Original Criteria

- C2a Did the project follow the cyclical process model or justify any deviation from it?
- C2b Did the researcher conduct an independent diagnosis of the organizational situation?
- C2c Were the planned actions based explicitly on the results of the diagnosis?
- C2d Were the planned actions implemented and evaluated?
- C2e Did the researcher reflect on the outcomes of the intervention?
- C2f Was this reflection followed by an explicit decision on whether or not to proceed through an additional process cycle?
- C2g Were both the exit of the researcher and the conclusion of the project due to either the project objectives being met or some other clearly articulated justification?

Supplementary Criteria

- C2h How was the independent diagnosis of the organizational situation conducted?
- C2i Which instrumental theories did the researcher use?
- C2j How were these theories selected?
- C2k How did these theories support the identification of the focal theory used to guide the changes?
- C2l Post-intervention, did the researcher reflect on the instrumental theories used and their suitability?

P3: The principle of theory

Original Criteria

- C3a Were the project activities guided by a theory or set of theories?
- C3b Was the domain of investigation, and the specific problem setting, relevant and significant to the interests of the researcher's community of peers as well as the client?
- C3c Was a theoretically based model used to derive the causes of the observed problem?
- C3d Did the planned intervention follow from this theoretically based model?
- C3e Was the guiding theory, or any other theory, used to evaluate the outcomes of the intervention?

Revised Criteria

- C3c Was an instrumental theory used to derive the causes of the observed problem?
- C3d Did the planned intervention follow from this instrumental theory?
- C3e Was the focal theory used to evaluate the outcomes of the intervention?

Supplementary Criteria

- C3f Did a focal theory emerge from the situation or during the problem diagnosis?
- C3g Was this focal theory acceptable to both client and researcher?
- C3h What role did instrumental and focal theories play with respect to the diagnosis and the action planning?
- C3i Were these theories evaluated for their applicability to the organizational context, considering current organizational practices?
- C3j Did both the researcher and the client undertake this evaluation?
- C3k Were theoretical explanations for the current organizational problem situation evaluated and reflected upon?
- C3l Did the researcher reflect on the focal theory used and its ability to predict the change outcomes?

P4: The principle of change through action;

Original Criteria

- C4a Were both the researcher and client motivated to improve the situation?
- C4b Were the problem and its hypothesized cause(s) specified as a result of the diagnosis?
- C4c Were the planned actions designed to address the hypothesized cause(s)?
- C4d Did the client approve the planned actions before they were implemented?
- C4e Was the organization situation assessed comprehensively both before *and* after the intervention?
- C4f Were the timing and nature of the actions taken clearly and completely documented?

P5: The principle of learning through reflection

Original Criteria

- C5a Did the researcher provide progress reports to the client and organizational members?
- C5b Did both the researcher and the client reflect upon the outcomes of the project?
- C5c Were the research activities and outcomes reported clearly and completely?
- C5d Were the results considered in terms of implications for further action in this situation?
- C5e Were the results considered in terms of implications for action to be taken in related research domains?
- C5f Were the results considered in terms of implications for the research community (general knowledge, informing/re-informing theory)?
- C5g Were the results considered in terms of the general applicability of CAR?

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