

STYLE COMPOSITION IN ACTION RESEARCH PUBLICATION¹

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Examining action research publications in leading Information Systems journals as a particular genre of research communication, we develop the notion of style composition to understand how authors structure their arguments for a research contribution. We define style composition as the activity through which authors select, emphasize, and present elements of their research to establish premises, develop inferences, and present contributions in publications. Drawing on this general notion, we identify a set of styles that is characteristic of how IS action researchers compose their argument. Premise styles relate to the dual goals of action research through practical or theoretical positioning of the argument; inference styles combine insights from the problem-solving and the research cycles through inductive or deductive reasoning; and contribution styles focus on different types of contributions—experience report, field study, theoretical development, problem-solving method, and research method. Based on the considered sample, we analyze the styles adopted in selected publications and show that authors have favored certain styles while leaving others underexplored; further, we reveal important strengths and weaknesses in the composition of styles within the IS discipline. Based on these insights, we discuss how action research practices and writing can be improved, as well as how to further develop style compositions to support the publication of engaged scholarship research.

Keywords: Action research, research methodology, style composition, journal publication

Introduction

The central mission of scholars in professional schools such as business, engineering, medicine, and law is to conduct

research that advances academic knowledge while at the same time enlightening professional practice (Van de Ven 2007). Much published research is, however, “not contributing in intended ways to either science or practice” (ibid., p. 2). Scholars therefore need to develop engaged forms of inquiry in which they obtain “different perspectives of key stakeholders (researchers, users, clients, sponsors, and practitioners) in studying complex problems” (ibid., p. 9). Business scholars have, as a consequence, adopted action research as one particular form of engaged scholarship within disciplines

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like marketing (Perry and Gummesson 2004), management (Eden and Huxham 1996), operations (Coghlan and Coghlan 2002), and information systems (Chiasson et al. 2009).

Action research “aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science” (Rapoport 1970, p. 499). Action researchers are hence confronted with the dual goal of developing a solution to a practical problem which is of value to the people with whom they are working, while at the same time developing theoretical knowledge of value to a research community (Gustavsen 1993; Levin 1993; McKay and Marshall 2001, 2007; Susman and Evered 1978). The required linking of theory and practice is pursued through different forms of cyclical and iterative processes (e.g., Baburoglu and Ravn 1992; Baskerville and Wood-Harper 1998; Checkland 1981; Chisholm and Elden 1993; Coghlan 2001). Susman and Evered’s (1978) model has been promoted as canonical action research (Davison et al. 2004) and includes one or more cycles of (1) diagnosing (identifying or defining a problem), (2) action planning (considering alternative courses of action for problem solving), (3) action taking (selecting and executing a course of action), (4) evaluating (studying the consequences of the action), and (5) specifying learning (identifying general learning).

Action research provides rich opportunities to bridge the gap between theory and practice, often in combination with other research methods (Kock 2007; Mathiassen 2002; Mingers 2001). It is, therefore, not surprising that over the past three decades, IS researchers have increasingly engaged in action research studies (Baskerville and Wood-Harper 1998; Chiasson et al. 2009; Lau 1997; Narayanaswamy and Grover 2007). Several of the early action research studies within IS were rather influential and primarily reported in academic books. In fact, the first and arguably most important contribution from the studies listed in Table 1 is a book. The related journal articles, sometimes published with considerable delay, served to relate the book and the underlying experiences to the broader academic discourse. However, there has been a movement away from book publications of action research studies because universities typically favor journal publications for tenure and promotion purposes. In this situation, IS researchers have often found it challenging to report on the complex and diverse findings from action research studies consistent with the editorial requirements of leading academic journals. As a result, researchers may be more reluctant to include action research in their portfolio of active research methods.

Against this backdrop, the goals of this research are (1) to understand how action researchers select and present theoretical, methodological, and contributory elements of their

research to communicate persuasive arguments in leading journals, and (2) to provide a critical review of action research publications in leading IS journals. Drawing on an analysis of action research studies in leading IS journals from 1982 to 2009, we develop the notion of style composition. We identify a set of styles that is characteristic of how authors compose their arguments and we show that IS researchers have favored certain styles while leaving others underexplored. Moreover, while some action research publications illustrate exemplary style composition, others suffer from significant weaknesses. Based on these insights, we discuss how to improve action research practices and writing and how to further develop style composition to support publication of engaged scholarship research.

Style Composition

We begin from the idea of analyzing research communication as genre repertoires which structure and are structured during research practice (Orlikowski and Yates 1994; Yates and Orlikowski 1992). From that perspective, we consider journal publications as a particular genre in which researchers communicate their practices within the academic literature. Our approach is hence consistent with genre analyses of texts and the mutability of genre components across time and space within rhetoric, literary theory, media theory, and linguistics (Fowler 1982). Similar to the use and development of genres to distinguish different ways in which critics characterize movies (e.g., comedy, thriller, adventure, and drama), we distinguish different styles through which communities of researchers compose arguments for the quality of their work, and the contributions they provide in their publications (Locke and Golden-Biddle 1997).

Style composition in research publication is characteristic of genre development in several ways. Style composition is an activity conducted by researchers in which they argue for contributions to readers based on certain elements of their research practice (Dubrow 1982). The resulting styles are historically bound to current practices within a research community (Reichert 1978) and they are mutable yet definable in order to be actionable (Fowler 1982). However, while traditional genre analyses focus on plot, character, setting, and relationships, we adopt a classical focus on how research publications present arguments by combining elements of research practices into premises (or warrants), inferences (or support), and contributions (or claims) (Rottenberg and Winchell 2005). For that reason and in line with Golden-Biddle and Locke’s (2007, Chapter 1) discourse on “styles and practice in academic writing,” we adopt *style* rather than *genre* as the core analytical concept.

Table 1. Early Action Research Studies Within the IS Discipline

Academic Book	Related Journal Publication
Mumford, E., and Weir, M.: <i>Computer Systems in Work Design: The Ethics Method: Effective Technical and Human Implementation of Computer Systems</i> . Associated Business Press, London, 1979.	Mumford, E.: "Advice for an Action Researcher," <i>Information Technology & People</i> (14:1), 2001, pp. 12-27.
Checkland, P.: <i>Systems Thinking, Systems Practice</i> . John Wiley, Chichester, 1981.	Checkland, P.: "Soft Systems Methodology: A Thirty Year Retrospective," <i>Systems Research and behavioral Science</i> (17:1), 2000, pp. 11-58.
Andersen, N. E., Kensing, F., Lassen, M., Lundin, J., Mathiassen, L., Munk-Madsen, A., and Sørgaard, P.: <i>Professional Systems Development—Experiences, Ideas, and Action</i> . Teknisk Forlag, Copenhagen, 1986.	Mathiassen, L.: "Reflective Systems Development," <i>Scandinavian Journal of Information Systems</i> (10:1), 1998, pp. 67-134.
Ehn, P.: <i>Work-Oriented Design of Computer Artifacts</i> . Arbetslivscentrum, Stockholm, 1988.	Ehn, P.: "The Art and Science of Designing Computer Artifacts," <i>Scandinavian Journal of Information Systems</i> (1:1), 1989, pp. 21-42.
Avison, D. E., and Wood-Harper, A. T.: <i>Multiview: An Exploration in Information Systems Development</i> . Blackwell Scientific Publications, Oxford, 1990.	Avison, D. E., and Wood-Harper, A. T.: "Information Systems Development Research: An Exploration of Ideas in Practice," <i>The Computer Journal</i> (34:2), 1991, pp. 98-112.

Elements of Action Research Practice

Our analysis of action research publications in leading journals focuses on how arguments are structured based on the following elements of action research practice (Checkland 1991; McKay and Marshall 2001, 2007):

- Problem-solving (PS) cycle and research (R) cycle.
- Area of concern under investigation (A), real-world problem setting (P), conceptual framing of the investigation (F), method of investigation (M), and contributions to practice and theory (C).

As summarized in Table 2, the problem-solving (PS) cycle focuses on producing practical outcomes and the research (R) cycle focuses on producing research outcomes (McKay and Marshall 2001, 2007). Attention to the two cycles and their interaction helps researchers produce knowledge by applying theoretical knowledge in response to the practical problems at hand and by using practical insights from the problem setting and the various actions taken to discover new theoretical knowledge to inform future research (Chiasson et al. 2009). We analyzed how each publication combines insights from the two cycles to establish arguments for contribution.

The area of concern (A) is primarily associated with the research cycle and reflects the researchers' interest in some body of knowledge within the literature. To analyze how A

is represented in each action research publication, we adopted Avgerou's (2000) categorization of major research areas within IS research: organizational application of IT, the process of systems development, IS management, the organizational value of IS, and the societal impact of IS.

The real-world problem setting (P) is primarily attached to the problem-solving cycle and represents the "practical concerns of people in an immediate problematic situation" (Rapoport 1970). The real-world problem setting is representative of A and constitutes the specific context in which researchers engage in "unstructured field experiments" and act as change agents (Baskerville and Wood-Harper 1998). We analyzed each publication to determine if P is clearly specified.

The conceptual framing (F) is introduced through the research cycle and can play different roles: it can be applied to guide actions during problem solving, it can be used to interpret data from the intervention into P, and it can emerge as a result of insights gained during the action research (Checkland 1991; McKay and Marshall 2001, 2007). There are two different forms of framing: one related to concepts found in the literature about A, which we call F_A , and another related to general concepts that are used to inform the study independent of A, which we call F_I , for example, structuration theory (Giddens 1984) or actor-network theory (Latour 1987). As with P, we analyzed each publication to determine if F_A and F_I are clearly specified.

Table 2. Elements of Action Research Practice

Element	Definition
PS	The problem-solving cycle focuses on producing practical outcomes
R	The research cycle focuses on producing research outcomes
A	The area of concern represents some body of knowledge within the literature
P	The problem setting represents people's concerns in a problematic situation
F	The conceptual framing helps structure actions and analyses
F _A	The specific concepts found in the literature about A
F _I	The general concepts used to inform studies independent of A
M	The adopted methods of investigation
M _{PS}	The methods guiding the problem-solving cycle
M _R	The methods guiding the research cycle
C	The contributions to P, A, F and M

The adopted methods of investigation (M) are related to both the problem-solving and research cycles (McKay and Marshall 2001, 2007). We used M_{PS} to represent the methods guiding the problem-solving cycle, and M_R to represent the methods guiding the research cycle. Keeping with our emphasis on style composition, we analyzed each publication to determine if these are clearly specified.

Finally, contributions (C) include those to P and to the different bodies of knowledge in the academic literature: to areas of concern (A and F_A), to theoretical frameworks (F_I), to problem-solving methods (M_{PS}), and to research methods (M_R). We analyzed each publication to determine if these types of contributions are explicated.

Styles in Action Research Publication

While each action research publication is unique and leverages the underlying research practices in different ways, we identified styles that are characteristic of how authors have composed their arguments. The identified styles are summarized in Table 3 and they represent archetypes of authors' main arguments in a publication. Secondary styles were, in some cases, also evident as a reflection of complexities in the underlying project, the provided data, or the publication's purpose.

A *premise* is a statement or proposition serving as basis for an argument (Webster 1994). As action researchers motivate and position their research to argue for specific contributions (C), they draw on one or more of the other elements of their research practices. Adopting a *practical* style, authors pri-

marily base the argument in challenges to IS practice, specifically within P or more generally by referring to challenges within the considered A. Adopting a *theoretical* style, authors primarily base the argument in challenges to theory within the focal A, F, or M.

An *inference* provides reasoning from one statement or proposition considered as true to another whose truth is believed to follow from the former (Webster 1994). Rooted in the premise, action researchers develop inferences to arrive at contributions by combining insights from the problem-solving (PS) and research (R) cycles. Adopting an *inductive* style, the inference is primarily grounded in evidence from PS that is subsequently embedded into concepts from R. Adopting a *deductive* style, the inference is primarily grounded in concepts from R that are subsequently validated or illustrated through evidence from PS.²

Based on premises and supported by inferences, action research publications provide contributions "to the goals of social science" (Rapoport 1970, p. 499). Depending on the main argument for C, action researchers adopt five distinct contribution styles as they compose their arguments. The *experience report* style addresses a problem setting (P) within a particular area of concern (A) and emphasizes practical findings over and above contributions to specific bodies of theory or concepts found in the academic literature. The *field*

²Abduction is another possible inference style that speaks to how action researchers orient themselves within the problem-solving and research domains. We did not include abduction as an inference style because it is more related to the research process than to the line of argumentation in a publication. As a result, it was difficult to identify abduction as an explicit inference style within the observed action research publications.

Table 3. Style Composition in Action Research Publications

Premise Style	Inference Style	Contribution Style
Practical: Argument primarily based in challenges in IS practice Theoretical: Argument primarily based in challenges in IS theory	Inductive: Argument primarily grounded in evidence from the problem-solving cycle that is subsequently embedded into concepts from the research cycle Deductive: Argument primarily grounded in concepts from the research cycle that are subsequently validated or illustrated through evidence from the problem-solving cycle	Experience report: Argument for insights from IS practice that could potentially lead to research contributions Field study: Argument for primary contribution to A or F_A Theoretical development: Argument for primary contribution to F_I Problem-solving method: Argument for primary contribution to M_{PS} Research method: Argument for primary contribution to M_R

study style contributes to the area of concern (A) by providing new empirical insights or a critique or development of frameworks within that area of concern (F_A). The *theoretical development* style differs from the field study style by drawing on and primarily contributing to theoretical ideas beyond A. This style includes a critique or development of frameworks independent of A (F_I). The *problem-solving method* style contributes to organizational problem solving within the IS discipline (M_{PS}), whereas the *research method* style contributes to M_R through new knowledge on the action research methodology. Both of these styles include critique or development of new or revised methods.

Analyses of Style Composition in Action Research Publication

The following examples show how premise, inference, and contribution styles are combined as IS action researchers argue for contributions to the academic literature (Table 4). These premise, inference, and contribution styles represent the primary ones reported in each paper.

Bragge and Merisalo-Rantanen (2009). Entitled “Engineering E-Collaboration Processes to Obtain Innovative End-User Feedback on Advanced Web-Based Information Systems,” this paper addresses the problem of obtaining feedback from the users of a web-based information system as part of its ongoing design and evolution within a Finnish university (P). The *premise* style is practical and rooted in the problem setting. The study draws on literature on group support sys-

tems (GSS) and web engineering (A) to develop and implement two processes to support user feedback (M_{PS}). The processes are based on free brainstorming and the nominal group technique, and supported feedback to web designers from 26 and 24 groups of users respectively over a two-year period. The paper adopts an inductive *inference* style by leveraging systematic participant evaluations to offer suggestions for how to apply the two feedback processes in other contexts. While the publication presents new insights on how to leverage GSS to provide user feedback in web engineering (C_A), it offers little discussion of how the findings relate to the academic literature and no explicit argument for theoretical contribution. Hence, the *contribution* style is an experience report with the main emphasis on interesting insights from IS practice.

Straub and Welke (1998). The paper, entitled “Coping with Systems Risk: Security Planning Models for Management Decision Making,” addresses the general problem with systems risk (P): managers are unaware of the range of actions they can take to reduce the risk. The *premise* style is practical and rooted in the literature on systems risks (A). Drawing on deterrence theory (Straub 1990) and decision theory (Simon 1960) (F_I), the authors propose a model for management action summarized into specific propositions (F_A). To empirically investigate this model, the authors present a comparative qualitative study of two similar cases, one without knowledge of the proposed model and one in which the proposed model guided action (M_R and M_{PS}). The paper describes how data were collected in the first case based on interviews, and it offers a detailed account of the problem-solving cycle in the

Table 4. Example Style Compositions

Study	Premise Style	Inference Style	Contribution Style
Bragge and Merisalo-Rantanen 2009	Practical	Inductive	Experience report
Straub and Welke 1998	Practical	Deductive	Field study
Chiasson 2002	Theoretical	Inductive	Theoretical development
Davison and Martinsons 2002	Practical	Inductive	Problem-solving method
Baskerville and Pries-Heje 1999	Theoretical	Deductive	Research method

second case. The adopted *inference* style is deductive, driven by the propositions and proposed model from the research cycle and validated through a detailed qualitative case comparison. The paper's main contribution involves model-based guidelines for managing systems risks complemented with practical results (C_P). Hence, the *contribution* style is a field study offering a deterrence feedback model with guidelines as a framework for reducing system risk (F_A). This contribution (C_A) provides companies with actionable knowledge on risk management and researchers with a generalizable and theory-derived framework in the area of system risk.

Chiasson (2002). This paper is entitled "The Tail and the Dog: Agency and Structure Influence on the Development of an E-Commerce System in a New Venture Startup." Although it reports from a systems development project, the core argument is focused on how IT is applied in organizations (A). Informed by structuration theory (F_I) and a review of the relevant IS literature, the author suggests our knowledge about interactions between agency and structure is limited. Based on this theoretical *premise*, the paper continues with a detailed account of the adopted research method (M_R). The author was directly involved as leader of one of the groups developing an e-commerce system within a new start-up firm. Drawing on data from this action research effort, the paper presents the problem setting (P) and a detailed account of key events and interactions during the major phases of the problem-solving cycle. Adopting inductive *inference*, the subsequent discussion interprets this account through the lens of agency–structure interactions as developed in the research cycle. As a result, the paper critically considers the goals and consequences of adopting structuration theory (Giddens 1984) (F_I) in relation to the use of IT in organizations (A). Hence, the *contribution* style is theoretical development (C_{FI}), suggesting researchers should place considerable emphasis on the roles actors play in agency–structure relationships.

Davison and Martinsons (2002). The paper, entitled "Empowerment or Enslavement? A Case of Process-Based Organizational Change in Hong Kong," investigates systems

development through a business process reengineering project (A) in the context of a Hong Kong business (P). The authors provide an extensive review of concepts and guidelines related to empowerment in systems development (F_A) and organizational culture (F_I). The argument starts out from the practical *premise* that it may be difficult to practice empowerment in the context of business process reengineering because these projects tend to encapsulate the values on which they are based. The investigation is based on canonical action research (M_R) (Susman and Evered 1978) in a project in which GSS processes were invoked to allow the manager in charge to interact with employees during the implementation of new business processes (M_{PS}). These interactions provided rich data from discussions and idea generation to inform the research cycle. Adopting an inductive *inference* style, the paper reveals how the GSS process unexpectedly led to enslavement of workers instead of empowerment (C_P). These insights are subsequently used to reflect on the general issue of empowerment in business process reengineering as developed in the research cycle. The study's *contribution* style is problem-solving method (C_{MPS}), arguing the GSS processes targeted at empowerment can be circumvented or thwarted in particular cultural contexts.

Baskerville and Pries-Heje (1999). Entitled "Grounded Action Research: A Method for Understanding IT in Practice," this paper begins with the theoretical *premise* that grounded theory techniques (Glaser and Strauss 1967; Strauss and Corbin 1990) can be embedded into and can help improve action research methodology. The paper offers a comprehensive review of the action research and grounded theory literature and discusses how to integrate grounded theory techniques into action research (M_R). Drawing on these insights from the research cycle, the paper presents an action research study that examines how tools can improve systems development outcomes (P) during systems prototyping (A). The study adopts McKay and Marshall's (2001, 2007) action research model combined with specific coding and analysis techniques from grounded theory to develop new insights into systems development theory (F_I). The *inference* style is hence deductive, using the research cycle to argue how grounded theory techniques can be integrated into action research (M_R),

and subsequently analyzing data from the problem-solving cycle of an action research study to illustrate the approach and to validate the claim. The adopted *contribution* style is research method (C_{MR}) with a focus on how action research can be informed and further developed through the adoption of grounded theory techniques.

Table 4 summarizes how styles were composed differently in these publications, including all four combinations of premise styles and inference styles as well as all five contribution styles. While these compositions represent general patterns of arguments in action research publications, each author had to develop the specifics of the argument. For example, Straub and Welke (1998) and Davison and Martinsons (2002) both adopt a practical premise style, but Straub and Welke present the premise rather briefly with reference to the literature on systems risk (A), while Davison and Martinsons develop their premise based on a comprehensive review of the literature on empowerment in systems development (A) and organizational culture (F_I). Similarly, Straub and Welke (1998) and Baskerville and Pries-Heje (1999) both adopt a deductive inference style. However, Straub and Welke's is based on a specific model of action with detailed propositions (F_A) combined with a comparative analysis of two cases (M_R), while Baskerville and Pries-Heje's inference is based on a general discussion of how to integrate grounded theory techniques into action research combined with detailed analyses of one case (M_R). Hence, translating an action research effort into one or more publications in leading journals remains a highly discursive, creative, and complex challenge.

Literature Analysis

The proposed notion of style composition is grounded in a critical analysis of action research publications in leading IS journals between 1982 and 2009. Following Webster and Watson (2002), we describe how the considered publications were selected and analyzed. Subsequently, we provide an overview of major findings. A summary of the results is included as Appendices A, B, and C.

Selecting Action Research Publications

Initially, we conducted searches in the EuclidPLUS library catalog and research databases, including CiteSeer and ABI/Inform. We focused on leading journals identified from IS World's journal list (Saunders 2008) and included highly ranked journals that focused on traditional IS research topics and were likely to publish action research studies. The selected publications had the phrase "action research" in the

title, abstract, keyword, or body of the publication. From the large number of publications that met this criterion, we read the research methods sections to identify publications with action research as an important method of study. In all, we identified 83 publications in 10 leading IS journals, see Table 5.

Most studies are published in only a handful of leading IS journals; 69 (83 percent) are published in ITP, ISJ, EJIS, MISQ, or I&O, and for ITP and MISQ, some (3 and 6 respectively) were published in a special issue on action research. Five other leading IS journals account for a smaller proportion (17 percent) of the studies. We also examined the frequency of action research publications in these journals over time. Table 6 shows an increase over the period 1982–2009 with consistent percentages beyond the mid-1990s. The percentage of early action research publications is consistent with Orlikowski and Baroudi (1991) who reported action research accounting for 0.6 percent of studies between 1983 and 1988.

The first 19 years (1982–2000) account for 32 of the considered publications (39 percent), while the last 9 years account for 51 publications (61 percent) (Appendix A). In the following analysis, we compare these two samples which correspond to one-third and two-thirds of the observed time period respectively, and also represent a division in time when action research was gaining momentum in IS research.

Analyzing Action Research Publications

Our analysis followed specific steps. First, we systematically coded how A , P , F_A , F_I , M_{PS} , M_R , and their respective C elements (Checkland 1991) were represented. Two authors coded the articles independently based on a full read of each publication. Where inconsistency was evident, the third author mediated until 100 percent agreement was achieved. In all, less than 15 percent of the publications involved some element of disagreement (i.e., there was approximately 85 percent consistency between the two coders). The final coding of the sample is included in Appendix A.

As a second step, we identified and developed styles through a dialectical and iterative process (Mason 2004) to understand the compositional strategy of each publication. Initially, we used brainstorming and critical debate to identify six styles based on our reading of the studies and our own experiences with action research. These initial six styles were from-the-trenches, problem-solving, new-solution, theory-assessment, theory-development, and methodology-innovation. We maintained these styles as exemplars for what we were trying to develop throughout the coding. However, as our analyses

Table 5. Action Research Publications in Leading IS Journals

Journal	Total
ITP: Information Technology & People	21
ISJ: Information Systems Journal	15
EJIS: European Journal of Information Systems	14
MISQ: Management Information Systems Quarterly	10
I&O: Information & Organization	9
DataBase: The DataBase for the Advances in Information Systems	6
I&M: Information & Management	4
JMIS: Journal of Management Information Systems	3
JAIS: Journal of the Association for Information Systems	1
ISR: Information Systems Research	0
Total	83

Table 6. IS Action Research Publications Across Years

Year	Action Research Publications	Total Number of Publications*	% of Action Research Publications
82-85	1	250	0.4%
86-89	0	500	0.0%
90-93	3	650	0.5%
94-97	9	775	1.2%
98-01	23	850	2.7%
02-05	28	1000	2.8%
06-09	19	1300	1.5%
Total	83	5325	1.6%

*The journals from Table 5 were used. Approximate counts were used to illustrate general trends of action research publications in relation to overall volume of publications.

progressed, we realized the important role played by the contribution (C) in shaping the content and structure of each publication, and how the A, P, F_A, F_I, M_{PS}, and M_R were represented in support of C. This led to the insight that styles were more complex and related to different parts of the argument articulated in a publication.

As a third step, we therefore distinguished between premise, inference, and contribution styles (Rottenberg and Winchell 2005) to reexamine each publication. For premise styles, we related our observations to the dual goals of action research and arrived at the distinction between practical and theoretical premises. For inference styles, we drew on our earlier analysis of the IS action research literature (Chiasson et al. 2009) and related our observation to McKay and Marshall's (2001, 2007) notions of problem solving and research cycle.

This led us to the distinction between inductive and deductive reasoning. Finally, considering contribution styles, we identified patterns that characterized how authors presented different Cs to P, A, F_I, M_{PS}, or M_R. We then applied the resulting styles (Table 3) to characterize style composition in each publication as summarized in Appendix B. In this coding we experienced less than 15 percent initial inconsistency between the two coders with a final consistency of 100 percent.

Cohen's Kappa was not calculated because of its underlying assumption of stability in which data is coded by separate people during a discrete time period and then compared. In our research, two people coded and recoded articles up to three times as changes to the process occurred. These changes included definitions and interpretations of the codes.

The process led to several versions of the coding that represented small and subtle changes over a four-year period of developing and revising this paper. Given the full-text coding of a large number of articles, we expected and even encouraged differences to emerge arising from very large texts and the complexity of extracting a dominant code from an article. Hence, the percentage differences were not used to produce a final Cohen's Kappa, but rather to help combine our collective efforts to reach an agreed upon code between the authors.

As a final step, we conducted detailed analysis of select publications (Table 4 and associated discussion). This step was inspired by Locke and Golden-Biddle's (1997) analysis of how organization researchers textually construct contributions in journal publications. Our goal was to demonstrate how styles can help analyze the composition of arguments for contribution across action research publications.

Review of IS Action Research

In the following paragraphs, we offer a review of key findings. Table 7 summarizes variations and trends in areas of concern. Half of the studies focus on the process of systems development (41 or 49 percent), with a smaller number focused on organizational application of IT (16 or 19 percent), IS management (11 or 13 percent), and the organizational value of IS (12 or 15 percent). There are only 3 examples of the societal impact of IS (4 percent). There are some changes from early studies (1982-2000) to more recent studies (2001-2009) with an increase in the process of systems development (from 38 percent to 57 percent) and decreases in the organizational application of IT (from 22 percent to 18 percent) and the organizational value of IS (from 22 percent to 10 percent).

Keeping in mind that we coded all contributions in each publication, Table 8 summarizes variations and trends in the reported contributions. With minor variation across the two time periods, 68 (82 percent) explicate a contribution to the problem under investigation (C_p) and 77 (93 percent) explicate a contribution to the area of concern under investigation (C_A). Twenty-three (28 percent) explicate a contribution to frameworks independent of A (C_{FI}) with only a slight increase between the two periods (from 25 percent to 29 percent). In terms of methods, 50 (60 percent) explicate a contribution to problem-solving methods (C_{MPS}) with an increase between the two periods (from 53 percent to 65 percent); and 28 (34 percent) explicate a contribution to research methodology (C_{MR}) with an increase between the two periods (from 25 percent to 39 percent).

Table 9 summarizes variations and trends in style composition. The premise style was practical in 49 (59 percent) and

theoretical in 34 (41 percent) of all publications with little change between the two time periods. The inference style was inductive in 46 (55 percent) and deductive in 37 (45 percent) of all publications with an increase in inductive inferences between time periods (from 50 percent to 59 percent) and a corresponding decrease in deductive inferences (from 50 percent to 41 percent).

With respect to contribution style, the experience report style accounts for 9 (11 percent) of the publications with a drop between the two time periods (from 22 percent to 4 percent). The field study style accounts for 25 (30 percent) of the publications with an increase between time periods (from 25 percent to 33 percent). The theoretical development style accounts for 4 (5 percent) of the publications with a slight increase between the two time periods (from 3 percent to 6 percent). The problem-solving method style accounts for 28 (34 percent) of the publications with an increase between time periods (from 28 percent to 37 percent). Finally, the research method style accounts for 17 (20 percent) of the publications with a decrease between time periods (from 22 percent to 20 percent).

Discussion

While there is a considerable diversity of approaches to action research (e.g., Baburoglu and Ravn 1992; Baskerville and Wood-Harper 1998; Checkland 1981; Chisholm and Elden 1993; Coghlan 2001; Kock 2007; Mathiassen 2002; Susman and Evered 1978), many IS researchers may choose not to engage in action research because they fear it prevents them from developing the type of journal publications required for promotion and tenure (Davison and Martinsons 2010). Moreover, those researchers that do engage in action research often find it challenging to report the complex and diverse insights that emerge consistent with the requirements of leading academic journals. Motivated by these issues, the goals of this study were (1) to understand how action researchers leverage elements of their research practices to communicate persuasive arguments in leading journals, and (2) to provide a critical review of action research publications in leading IS journals.

Contrary to conventional wisdom, there is a considerable number of action research publications in leading IS journals with a total of 83 publications from 1982 to 2009. The majority of these publications (83 percent) are published in only a handful of journals (ITP, ISJ, MISQ, EJIS, or I&O). Thirty-two studies (39 percent) were published during the first 18 years, while the last 10 years account for 51 (61 percent) of

Table 7. Area of Concern (A)

Variable	1982–2000	2001–2009	Total
Organizational application of IT	7 (22%)	9 (18%)	16 (19%)
The process of systems development	12 (38%)	29 (57%)	41 (49%)
IS management	6 (19%)	5 (10%)	11 (13%)
The organizational value of IS	7 (22%)	5 (10%)	12 (15%)
The societal impact of IS	0 (0%)	3 (6%)	3 (4%)
Total	32	51	83

Table 8. Contributions (C)

Variable	1982–2000	2001–2009	Total
Contribution to P	26 (82%)	42 (82%)	68 (82%)
Contribution to A	30 (94%)	47 (92%)	77 (93%)
Contribution to F_i	8 (25%)	15 (29%)	23 (28%)
Contribution to M_{PS}	17 (53%)	33 (65%)	50 (60%)
Contribution to M_R	8 (25%)	20 (39%)	28 (34%)

Table 9. Style Composition

Style		1982–2000	2001–2009	Total
Premise	Practical	20 (63%)	29 (57%)	49 (59%)
	Theoretical	12 (37%)	22 (43%)	34 (41%)
Inference	Inductive	16 (50%)	30 (59%)	46 (55%)
	Deductive	16 (50%)	21 (41%)	37 (45%)
Contribution	Experience report	7 (22%)	2 (4%)	9 (11%)
	Field study	8 (25%)	17 (33%)	25 (30%)
	Theoretical development	1 (3%)	3 (6%)	4 (5%)
	Problem-solving method	9 (28%)	19 (37%)	28 (34%)
	Research methodology	7 (22%)	10 (20%)	17 (20%)

the publications. Half of the studies (49 percent) focus on the process of systems development with a major increase between the two time periods 1982–2000 and 2001–2009 (from 38 percent to 57 percent). This strong focus on one particular area of concern (A) can be explained partly by the practical orientation of IS development research and partly by the fact that IS development is project-based, allowing action researchers to directly relate problem-solving practice to theory. Still, other areas of concern are also well represented—organizational application of IT (19 percent), IS management (13 percent), and organizational value of IS (15 percent)—demonstrating how action research applies broadly

to the investigation of most areas within IS. Only one of Avgerou's (2000) areas, societal impact of IS (4 percent), is weakly represented. This may be explained by the difficulties related to organizing action research studies beyond the individual and organizational levels of analysis.

In addition to these descriptive results on how IS researchers have published action research studies, our analyses of style composition reveal important opportunities and requirements for future action research studies within the IS discipline. In the following paragraphs, we draw on the concept of style composition, the particular set of identified styles (Table 3),

and our empirical analyses of the literature to discuss how IS researchers can further develop action research practices and writing as an important approach to engaged scholarship.

Considering Contribution Style Options

Our analyses (Table 9) reveal that problem-solving method studies are the dominant contribution style (34 percent), suggesting IS researchers find it useful to adopt action research to develop new procedural knowledge in response to challenges in IS practice. While there is also considerable emphasis on field studies (30 percent) and on research method studies (20 percent), theoretical development studies (5 percent) are less explored. Experience reports account for 11 percent of contribution styles, but there is a major drop in these publications across the two time periods (from 22 percent to 4 percent). This drop is consistent with the increased focus on theory-driven and theory-relevant work in leading IS journals.

Focusing on the number of contributions in each publication, Table 8 shows that the 83 publications explicate 246 contributions, 178 of which are beyond the problem setting (P). These numbers suggest IS action researchers on average communicate 2.1 contributions to the academic literature per publication in addition to their contributions to P with a slight increase between the two time periods (from 2.0 to 2.3). Emphasis on several Cs is warranted when the presented Cs are interrelated. However, focusing on fewer Cs could leave additional space to effectively communicate the underlying research and problem-solving pathways and, hence, allow authors to provide additional rigor and clearer logic to argue for their primary contribution.

These results suggest IS researchers, as both authors and reviewers, *carefully consider the contribution style options that apply to each action research project*. Action research lends itself strongly to pluralist studies which facilitate the production of both theoretical and practical knowledge (Chiasson et al. 2009; Mathiassen 2002; Mingers 2001). As a result, researchers can often develop more than one publication from a project (Chiasson et al. 2009; Mathiassen 2002). Systematic consideration of relevant contribution style options (Table 3 and Appendix B) can therefore help researchers separate concerns and identify possible publications:

- Experience report publications report practical insights and lessons from the field based on the problem-solving cycle and related to P and A. Such publications can be effective for targeting academic practitioner journals. They are, however, not generally well-suited for leading journals because of the weak emphasis on communi-

cating contributions to the academic literature, except perhaps when reporting in detail about new technological, organizational, or societal phenomena.

- Field study publications are suitable when the research cycle establishes opportunities for contribution to some A (including F_A) in the literature and the problem-solving cycle provides appropriate, new insights into that A. Sufficient data can in some situations be generated through the diagnostic stage (Susman and Evered 1978) alone, offering opportunities to publish traditional case studies at an early stage of an action research project (Chiasson et al. 2009; Mathiassen 2002). In other situations, comprehensive data can be generated throughout the problem-solving cycle as a foundation for developing a contribution to A.
- Theoretical development publications are suitable when the research cycle establishes opportunities for contribution to some F_I in the literature, and F_I provides relevant support for making sense of the problem-solving cycle. F_I can either directly support a diagnosis of P and an evaluation of results during the problem-solving cycle, or it can support post-action analysis of data generated from the problem-solving cycle. The application of F_I to analyze data from the problem-solving cycle creates the foundation for critiquing or developing the framework as a basis for studying IS practices.
- Problem-solving method publications are suitable when the research cycle establishes opportunities for contribution to some M_{PS} in the literature and M_{PS} is appropriate for supporting the problem-solving cycle. One option is to collect sufficient data during the problem-solving cycle to critique an existing M_{PS} . Another option is to develop a new or revised M_{PS} that is then applied to P and evaluated based on data from the problem-solving cycle.
- Research method publications are suitable when the research cycle establishes opportunities for contribution to some M_R in the literature and M_R is appropriate for organizing the research cycle and its interactions with the problem-solving cycle. One option is to critique an existing M_R based on data from the intervention into P. Another option is to develop a new or revised M_R to guide the intervention and analyses and to subsequently evaluate it based on experiences and impacts from the action research.

As researchers consider which primary academic contributions (to A, F_A , F_I , M_{PS} , or M_R) they plan to make from a pro-

ject, they should keep in mind that contributions to different elements are often intertwined. If researchers intend to develop more than one contribution, they may split these into separate publications or explicitly articulate the relationships between contributions in order to reduce the complexity and lack of attention to any one contribution. Also, while it is important to consider contribution style options early in an action research project, it is equally important to reconsider and revise the adopted publication strategy as the project unfolds and new options emerge (Chiasson et al. 2009).

Specifically, the very small percentage of theoretical (F_I) development studies suggests IS action researchers should *engage in critiquing and developing theoretical frameworks independent of the area of concern*. Being a practically oriented field, IS researchers have hitherto focused on contributions to F_A . This focus has led to fewer contributions to theory independent of the area of concern within our IS journals, which could inform other fields. Exploring the theoretical development style requires researchers to carefully consider the distinction between F_I and F_A and the options this offers for making theoretical contributions independent of A. When the distinction remains blurred, it is typically because a firm decision needs to be made on what constitutes the A for a considered publication.

Communicating Key Elements of Research Practice

Our detailed analyses of the A, P, F_A , F_I , M_{PS} , M_R , and C elements (Checkland 1991; McKay and Marshall 2001, 2007) in action research publications revealed important insights into how IS researchers communicate key elements of their action research practices in publications. The problem setting (P) is clearly specified in 87 percent of the publications. Even though these studies represent the vast majority, it is surprising that P is not clearly specified in all publications. For example, Mårtensson and Lee (2004) did not clearly specify the context of the studied organization, although such a specification is required to allow the reader to make judgments about the foundation for the study. A clear specification of the problem setting is alluded to as “part of the scientific requirements for a doctoral degree and published in a doctoral dissertation” (ibid., p. 520), but it is not present in the current publication. Emphasis on research methods, cross-case analysis, and, increasingly, the emphasis of theory may make it more difficult to present detailed problem setting characteristics within the page limits of journal publication. However, action research studies are embedded in specific settings (Rapoport 1970; Susman and Evered 1978), and a clear specification of P is required to present the context (Pettigrew

1987) and to discuss transferability of findings to other contexts (Checkland and Holwell 1998, 2007).

Only 83 percent of the publications include a clear specification of a conceptual framing (F_A or F_I). For example, Mathiassen (2002) adopted software process improvement (F_A) and a pluralist methodology (F_I) to present a case in the development of collaborative practice research. However, the F_A and F_I were broadly described through the paper without providing the reader sufficient detail to understand how F_A or F_I are precisely addressed in developing collaborative practice research. Clear specification of F is generally important because it grounds a study in previous research (F_A) and supports analysis of data and generation of theoretical contributions (F_A and F_I) (Checkland 1991; Mason 2004; McKay and Marshall 2001, 2007). Hence, publications with vaguely specified framing are often driven by a desire to investigate a new problem domain or to develop grounded theory. However, to effectively communicate new insights on topics of theoretical interest to future research, authors need to critique or develop their theoretical assumptions.

The problem-solving method (M_{PS}) is only clearly specified in 58 percent and the research method (M_R) in 67 percent of the publications. For example, Kautz and Nielsen (2004) have specified the M_R and the M_{PS} vaguely. They offer only a brief account of the adopted case study method (ibid., pp. 7-8), making it difficult for the reader to follow how data were collected and analyzed to arrive at the findings. Additionally, there is vague specification of how the practical problem of software process improvement was diagnosed and addressed, leaving the reader with a limited basis for understanding how the presented practical results were achieved. There is an increase in publications with a clearly specified M_{PS} (from 53 percent to 61 percent) and M_R (from 59 percent to 73 percent), but the results are still surprising as publications in leading journals require methodological clarity and M_{PS} and M_R constitute key characteristics of any action research design (Checkland 1991; Davison et al. 2004; McKay and Marshall 2001, 2007). A possible explanation is the challenges authors face in representing the complex cyclical processes of action research within the constraints of journal publication. In fact, the special issue of action research studies in *MIS Quarterly* emphasized rigorous specification and evaluation of M_R (Baskerville and Meyers 2004). As a result, the six publications published in this special issue cover 26, 32, 40, 38, 34, and 29 pages (average of 33.2 pages). In comparison, the average number of pages in all other research publications published in *MIS Quarterly* that year was 27.5.

These analyses demonstrate how the A, P, F, M, and C concepts can help IS action researchers and reviewers *drive*

publication quality, legitimacy, and acceptance by paying careful attention to how the different elements of research practice are prioritized and represented in the text. Three issues stand out as particularly important.

- (1) Clear specification of the problem setting (P) as a key element distinctly different from the research question (RQ) is required to present the contextual aspects of a study (Pettigrew 1987) and to discuss transferability of findings about the RQ to other contexts (Checkland and Holwell 1998, 2007).
- (2) It is important to discuss theoretical assumptions and implications and this requires explication of the theoretical framing (F) including F_A as well as F_I .
- (3) Publication in leading journals inevitably requires clarity on the adopted method of investigation (M) including the problem-solving method (M_{PS}) as well as the research method (M_R).

To address these challenges, *emphasis on one primary academic contribution (C) in each publication will typically allow authors to articulate the contribution convincingly and specify other action research elements with rigor and detail.*

Composing Persuasive Arguments

Similar to genres representing distinctive types of text (Fowler 1982), style compositions represent different ways in which authors communicate persuasive arguments about their contribution. Considering the classical structure of arguments (Rottenberg and Winchell 2005) and drawing on Locke and Golden-Biddle's (1997) study of how organizational researchers construct contributions, we identified distinct premise styles, inference styles, and contribution styles across the considered publications (Table 3). In addition, we described how authors combine these styles in different ways to communicate contributions to the academic literature (Table 4, Table 9, and Appendix B). While Locke and Golden-Biddle's focus is on how authors construct a contribution by problematizing the existing literature and presenting a coherent response to the identified gap, our proposed set of styles focuses on how action researchers select, emphasize, and present different elements of action research practice to establish premises, develop inferences, and present contributions.

We found considerable variation across the sample in how styles were composed to present a persuasive argument. While the majority of studies is based on practical premises

(59 percent) and adopts inductive inference (55 percent), there is also considerable representation of theoretical premise styles (41 percent) and deductive inference styles (45 percent). Similarly, the combination of practical premises and inductive inference is the dominant form of argument (35 percent), but the other combinations were also widely used: practical premise-deductive inference (24 percent), theoretical premise-inductive inference (21 percent), and theoretical premise-deductive inference (20 percent). These analyses demonstrate the usefulness of the general concept of style composition and of the particular set of identified styles as conceptual tools for analyzing action research publications and for understanding how publication practices reflect the research community's expectations of rigor and novelty. The results of our analyses suggest that *publication of action research studies in leading journals is equally well supported by the different combinations of premise and inference styles.*

Structuring Action Research Publications

Our detailed analyses of how styles were composed and communicated in example publications demonstrate how the notion of style composition relates to the detailed structuring of action research publications. Although the considered compositions represent general patterns of arguments (Table 4), each author had to develop the specific structure through which arguments were communicated. The notion of style composition relates, in this way, to the general challenges in scientific writing (e.g., Day 1971, 1991; Gopen and Swan 1990). However, the emphasis in this literature is on the hard sciences and on how scientists can best structure publications into distinct sections with different communicative purposes, whereas the emphasis of style composition is on how researchers communicate theoretical contributions based on elements of their research practice.

Our detailed analyses of style composition in specific publications (Table 4) also have parallels to the recent literature on principles for canonical action research (Davison et al. 2004) in that both explicate insights to help action researchers develop rigorous and relevant publications. However, the principles for canonical action research are conceptualized based on one particular approach to action research proposed by Susman and Evered (1978), whereas style composition is conceptualized based on the elements of action research practice found in any action research study (Checkland 1991; McKay and Marshall 2001, 2007). In addition, the principles for canonical action research are grounded in general action research methodology, whereas the presented approaches to style composition are grounded in the texts of action research studies published in leading IS journals.

Introduction. Introduce area of concern (A) and motivate the objective of study. Introduce problem setting (P), conceptual framing (F), and method of investigation (M) as appropriate for addressing research objective. State principal results by making clear how a contribution (C) is made to one or more of A, P, F, or M (Checkland 1991; McKay and Marshall 2001).

Background. Provide a review of the pertinent literature within those areas to which C is a contribution; consider the principle of theory (Davison et al. 2004). Substantiate the motivation for the study by evaluating what we know and don't know. State the research question (RQ).

Framing. Introduce and argue for F, from A (F_A) or independent of A (F_I), for structuring and supporting data collection and analysis based on action research; consider the principle of theory (Davison et al. 2004).

Methods. Describe and argue for research method (M_R) and problem-solving method (M_{PS}); consider the principle of the cyclical process model (Davison et al. 2004). Introduce P to provide context for analysis (Pettigrew 1987) and to allow for subsequent discussion of transferability of results (Checkland and Holwell 1998); consider the principle of the researcher-client agreement (Davison et al. 2004).

Results. Present results of the problem-solving cycle based on M_{PS} ; consider the principle of change through action (Davison et al. 2004). Present results of the research cycle based on M_R . Focus on representative data, use tables and graphs (Day 1971); consider the principle of learning through reflection (Davison et al. 2004).

Discussion. Discuss Cs as response to RQ based on *Results* and related to *Background* literature; consider the principle of learning through reflection (Davison et al. 2004). Don't repeat results, discuss relationships to literature, provide possible explanations, explicate conclusions with evidence for each conclusion, and state theoretical and practical implications (Day 1971).

Figure 1. Generic Structure of an Action Research Journal Publication

These insights suggest IS action researchers *structure publications by combining the adopted compositional style with recommendations for structuring scientific writing and principles of canonical action research*. Accordingly, Figure 1 summarizes a generic template for structuring action research journal publications.

The template adapts Day's (1971, 1991) general structure to the context of action research; it distributes the basic elements of style composition across the structure; and it applies Davison et al.'s (2004) principles for canonical action research to the different parts of a publication. This template can help authors translate their style composition into an appropriate publication structure as they also consider target journal traditions, personal preferences, and literature base. For additional inspiration on how to structure action research publications for leading journals, IS researchers can identify publications in Appendix B with similar premise, inference, and contribution styles.

Conclusion

Drawing on genre theory, action research theory, and an empirical investigation of publications in leading journals,

this study has established style composition to help understand action research publication in academic journals. Focusing on the IS discipline, we have analyzed the styles adopted in select publications, shown that action researchers have favored certain styles while leaving others under-explored, and revealed important strengths and weaknesses in action research style compositions. While these findings have been developed based on a rigorous literature study (Webster and Watson 2002), the presented study has specific limitations. We have focused on journal publications as texts without knowledge of actual research practices, and we have not included academic books published for action research studies as part of our analyses, see Table 1. We have drawn on specific conceptions of action research (Checkland 1991; McKay and Marshall 2001, 2007) without, for example, considering control perspectives (Avison et al. 2001) or positivist perspectives (DeLuca et al. 2008). Finally, we have grounded our analysis in publication practices within the IS discipline.

Still, the study offers important contributions to the literature. Our critical review of IS action research studies in leading journals and the notion of style composition provide practical and theoretical support for improving action research practices and writing within the IS discipline. Moreover, current literature offers no conceptualizations of how researchers

translate their practices into journal publications through genre repertoires (Orlikowski and Yates 1994; Yates and Orlikowski 1992). Against this backdrop, we have developed the notion of style composition as a new contribution to the research methodology literature. Although justified for action research in this study, the notion of style composition (see Tables 2 and 3) and related guidelines (see the "Discussion" section) might very well be adaptable to other approaches to engaged scholarship research. Engaged scholarship covers process studies as well as variance studies and applies quantitative as well as qualitative inquiry (Van de Ven 2007), but it shares with action research a fundamental commitment to practice by involving "different perspectives of key stakeholders (researchers, users, clients, sponsors, and practitioners) in studying complex problems" (ibid., p. 9). Hence, future research might be invoked to apply and further develop compositional styles for different forms of engaged scholarship both within and outside the IS discipline.

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STYLE COMPOSITION IN ACTION RESEARCH PUBLICATION

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Appendix A

Elements of AR Publications

Table A1. Elements of AR Publications, 1982–2000														
Journal	CODES		Org application [1] Sys dev [2] Management [3] Org value[4] Societal impact [5]	Action Research Elements Clearly Specified [C] or Vaguely Specified [V]					Research Contributions Explicated [X] or Not Explicated []					Primary Contribution
	Authors	Year	A	P	F _A	F _I	M _{PS}	M _R	C _P	C _A	C _{FI}	C _{MPS}	C _{MR}	
MISQ	Kaiser and Bostrom	1982	2	C	C	C	V	V	X	X		X		A
I&O	Jonsson	1992	2	C	C	C	V	V	X	X		X		A
ISJ	Baskerville	1993	2	C	C	C	C	C	X	X		X		M _{PS}
I&M	Ngwenyama	1993	2	C	C	C	C	C	X	X	X	X		M _{PS}
ITP	Heiskanen	1995	2	C	C	C	C	C		X	X	X	X	M _R
ITP	Kock and McQueen	1995	4	C	C	C	V	V	X	X	X	X		M _{PS}
ITP	Parker and Swatman	1995	1	C	V	V	V	C	X	X				P
I&M	Stein	1995	3	C	V	V	V	V	X	X				P
ITP	Nosek and Mandviwalla	1995	2	C	C	C	V	C	X	X				P
MISQ	Baskerville and Stage	1996	2	V	C	C	C	V	X	X	X	X		M _{PS}
EJIS	Hitchman	1997	2	V	V	V	V	V		X				A
I&O	Reeves-Ellington and Anderson	1997	1	C	C	C	C	V	X	X			X	M _R
ITP	Songkhla	1997	1	C	C	C	C	C	X	X		X		M _{PS}
JMIS	de Vreede	1998	4	C	C	V	C	C	X	X		X		M _{PS}
I&M	Kock	1998	1	C	C	C	C	C	X	X	X			F _I
MISQ	Straub and Welke	1998	3	C	C	C	C	C	X	X		X		A
I&O	Baskerville and Pries-Heje	1999	2	C	V	C	C	C	X		X	X	X	M _R
I&O	Braa and Vidgen	1999	2	C	V	V	V	C	X				X	M _R
JMIS	Briggs et al.	1999	1	C	C	C	C	V	X	X		X		P
DB	de Vreede and de Bruijn	1999	1	C	C	V	C	C	X	X		X	X	M _{PS}
ITP	Farbey et al.	1999	4	C	V	V	C	C	X	X				P
ITP	Gregor and Jones	1999	1	C	C	C	V	C	X	X			X	M _R
DB	Iversen et al.	1999	2	C	C	V	C	V	X	X		X		M _{PS}
EJIS	Kanellis et al.	1999	4	C	V	V	V	C		X		X		M _{PS}
EJIS	Ledington and Ledington	1999	2	V	C	C	C	V		X	X	X		M _{PS}
ITP	Olesen and Myers	1999	4	C	C	C	V	C	X	X				A
ISJ	Allen et al.	2000	3	C	C	V	C	C	X	X				A
ISJ	Davison and Vogel	2000	4	C	C	V	V	V		X			X	M _R
DB	Hasan et al.	2000	4	C	V	V	V	V	X	X		X		A
ISJ	Peppard et al.	2000	3	V	C	C	C	C	X	X	X			A
EJIS	Salmela et al.	2000	3	C	C	C	V	V		X				A
EJIS	Simon	2000	3	C	V	V	V	C	X	X			X	M _R

Table A2. Elements of AR Publications, 2001–2009

Journal	CODES Authors Year		Org application [1] Sys dev [2] Management [3] Org value[4] Societal impact [5]	Action Research Elements Clearly Specified [C] or Vaguely Specified [V]					Research Contributions Explicated [X] or Not Explicated []					Primary Contribution
			A	P	F _A	F _I	M _{PS}	M _R	C _P	C _A	C _{FI}	C _{MPS}	C _{MR}	
ITP	Chiasson and Dexter	2001	2	C	C	V	C	C	X	X		X	X	M _R
ITP	Davison	2001	4	C	C	V	C	V	X	X		X	X	M _R
ISJ	Kock	2001	4	C	C	V	V	C	X	X				A
ITP	Mumford	2001	2	V	V	C	C	V	X	X	X		X	M _R
EJIS	Akkermans and van Helden	2002	1	C	C	V	C	C	X	X		X	X	M _{PS}
DB	Chiasson	2002	1	C	C	C	V	C	X	X	X		X	F _I
ITP	Davison and Martinsons	2002	2	C	C	C	C	C	X	X		X		M _{PS}
DB	Kawalek and Wood-Harper	2002	1	C	C	V	C	C		X		X		M _{PS}
I&M	Lee	2002	3	C	V	V	C	V	X	X				P
MISQ	Markus et al.	2002	2	C	C	C	C	V	X	X	X	X		M _{PS}
ITP	Mathiassen	2002	2	V	V	V	C	C		X		X	X	M _R
ITP	Rose	2002	2	C	C	C	C	C	X	X	X	X	X	M _{PS}
I&O	Thompson	2002	3	C	C	C	C	C	X	X	X	X	X	M _R
ISJ	Vidgen	2002	2	C	C	V	C	V	X	X				P
ITP	Burstein and Linger	2003	3	V	C	C	V	V	X	X				A
ITP	Finnegan et al.	2003	2	C	C	C	C	C		X	X	X	X	M _{PS}
ISJ	Grant and Ngwenyama	2003	2	V	C	V	V	V	X	X		X		M _{PS}
EJIS	Lindgren et al.	2003	2	C	V	V	C	C	X	X		X		M _{PS}
ISJ	Vrechopolous et al.	2003	2	C	V	V	C	V	X	X		X		M _{PS}
MISQ	Braa et al.	2004	5	C	C	C	V	C	X	X	X		X	M _R
ISJ	Davison et al.	2004	3	V	C	V	C	V			X	X	X	M _R
JMIS	den Hengst and de Vreede	2004	2	C	C	C	C	C	X	X		X		M _{PS}
ISJ	Ibbott and O'Keefe	2004	4	C	C	C	V	C		X		X		A
MISQ	Iversen et al.	2004	2	C	C	C	C	C	X	X	X	X	X	M _{PS}
ISJ	Kautz and Nielsen	2004	2	C	C	C	V	V	X	X				A
MISQ	Kohli and Kettinger	2004	4	C	C	C	V	C	X	X	X	X	X	F _I
MISQ	Lindgren et al.	2004	2	C	C	C	C	C	X	X	X	X	X	M _{PS}
MISQ	Mårtensson and Lee	2004	3	V	C	C	C	C	X		X	X	X	M _R
MISQ	Street and Meister	2004	2	C	C	C	C	C	X	X	X	X	X	F _I
ISJ	Tang et al.	2004	1	C	C	V	C	C	X	X		X		M _{PS}
I&O	Wastell et al.	2004	2	C	V	V	C	C	X	X			X	M _R
I&O	Henfridsson and Lindgren	2005	2	C	C	C	C	C	X	X	X	X		M _{PS}
ITP	DeLuca and Valacich	2006	4	C	C	V	V	C	X	X				A
ISJ	Bulter and Murphy	2007	2	C	V	C	V	V	X	X				A
EJIS	Hatzakis et al.	2007	1	C	C	V	C	V	X	X		X	X	M _{PS}
ITP	Hedström	2007	5	C	V	C	V	C	X	X				A
ITP	Nolan et al.	2007	2	C	C	C	V	C	X	X				A

Table A2. Elements of AR Publications, 2001–2009 (Continued)

Journal	CODES Authors Year		Org application [1] Sys dev [2] Management [3] Org value[4] Societal impact [5]	Action Research Elements Clearly Specified [C] or Vaguely Specified [V]					Research Contributions Explicated [X] or Not Explicated []					Primary Contribution
			A	P	F _A	F _I	M _{PS}	M _R	C _P	C _A	C _{FI}	C _{MPS}	C _{MR}	
ISJ	Oates and Fitzgerald	2007	2	C	C	C	C	C	X	X		X		M _{PS}
EJIS	Shah et al. (a)	2007	2	V	V	V	V	C				X		M _{PS}
EJIS	Shah et al. (b)	2007	2	C	V	C	C	C	X			X	X	M _R
I&O	Wiredu	2007	1	C	C	C	V	C	X	X				A
ISJ	Clegg and Shaw	2008	2	C	C	V	C	V		X		X		M _{PS}
EJIS	Kietzmann	2008	2	C	C	C	C	C	X	X		X		A
ITP	Klecun	2008	5	C	V	C	V	V		X				A
EJIS	Lesca and Caron-Fasan	2008	2	C	C	V	V	C	X	X		X		A
EJIS	Mekonnen and Sahay	2008	2	C	C	C	V	C	X	X	X			A
DB	Plummer et al.	2008	1	C	C	V	C	C	X	X				A
ITP	Tjomehoj and Mathiassen	2008	1	C	C	C	V	C	X	X		X		M _{PS}
EJIS	Bjørn et al.	2009	1	C	C	C	C	C	X	X		X		A
JAIS	Bragge and Merisalo-Rantanen	2009	2	C	C	V	V	C		X				A
I&O	Puri et al.	2009	2	C	C	V	V	C	X	X		X	X	M _{PS}

Appendix B

Style Composition in AR Publications

Table B1. Style Composition in AR Publications, 1982–2000					
	CODES		Premise	Inference	Contribution
			Practical [P] or Theoretical [T]	Inductive [I] or Deductive [D]	Experience Report Field Study Theoretical Development Problem-Solving Method Research Method
Journal	Authors	Year			
MISQ	Kaiser and Bostrom	1982	P	D	Field Study
I&O	Jonsson	1992	T	D	Field Study
ISJ	Baskerville	1993	P	D	Problem-Solving Method
I&M	Ngwenyama	1993	P	I	Problem-Solving Method
ITP	Heiskanen	1995	T	D	Research Method
ITP	Kock and McQueen	1995	P	D	Problem-Solving Method
ITP	Parker and Swatman	1995	P	I	Experience Report
I&M	Stein	1995	P	I	Experience Report
MISQ	Baskerville and Stage	1996	P	D	Problem-Solving Method
ITP	Nosek and Mandviwalla	1995	P	D	Field Study
EJIS	Hitchman	1997	T	I	Experience Report
I&O	Reeves-Ellington and Anderson	1997	T	I	Research Method
ITP	Songkhla	1997	P	D	Problem-Solving Method
JMIS	de Vreede	1998	P	D	Problem-Solving Method
I&M	Kock	1998	T	I	Theoretical development
MISQ	Straub and Welke	1998	P	D	Field Study
I&O	Baskerville and Pries-Heje	1999	T	D	Research Method
I&O	Braa and Vidgen	1999	T	D	Research Method
JMIS	Briggs et al.	1999	T	I	Field Study
DataBase	de Vreede and de Bruijn	1999	T	I	Problem-Solving Method
ITP	Farbey et al.	1999	P	I	Experience Report
ITP	Gregor and Jones	1999	P	I	Research Method
DataBase	Iversen et al.	1999	T	D	Problem-Solving Method
EJIS	Kanellis et al.	1999	T	I	Experience Report
EJIS	Ledington and Ledington	1999	T	D	Problem-Solving Method
ITP	Olesen and Myers	1999	P	I	Field Study
ISJ	Allen et al.	2000	P	I	Field Study
ISJ	Davison and Vogel	2000	P	I	Research Method
DataBase	Hasan et al.	2000	P	D	Experience Report
ISJ	Peppard et al.	2000	P	D	Field Study
EJIS	Salmela et al.	2000	P	I	Experience Report
EJIS	Simon	2000	P	I	Research Method

Table B2. Style Composition in AR Publications, 2001–2009

	CODES		Premise	Inference	Contribution
					Experience Report Field Study Theoretical Development Problem-Solving Method Research Method
Journal	Authors	Year	Practical [P] or Theoretical [T]	Inductive [I] or Deductive [D]	
ITP	Chiasson and Dexter	2001	T	I	Research Method
ITP	Davison	2001	P	D	Research Method
ISJ	Kock	2001	P	D	Field Study
ITP	Mumford	2001	T	I	Research Method
EJIS	Akkermans and van Helden	2002	P	D	Problem-Solving Method
DataBase	Chiasson	2002	T	I	Theoretical development
ITP	Davison and Martinsons	2002	T	I	Problem-Solving Method
DataBase	Kawalek and Wood-Harper	2002	T	I	Problem-Solving Method
I&M	Lee	2002	P	I	Field Study
MISQ	Markus et al.	2002	T	I	Problem-Solving Method
ITP	Mathiassen	2002	T	D	Research Method
ITP	Rose	2002	T	D	Problem-Solving Method
I&O	Thompson	2002	T	I	Research Method
ISJ	Vidgen	2002	T	D	Field Study
ITP	Burstein and Linger	2003	P	I	Field Study
ITP	Finnegan et al.	2003	T	D	Problem-Solving Method
ISJ	Grant and Ngwenyama	2003	T	D	Problem-Solving Method
EJIS	Lindgren et al.	2003	P	I	Problem-Solving Method
ISJ	Vrechopoulos et al.	2003	P	I	Experience Report
MISQ	Braa et al.	2004	P	I	Research Method
ISJ	Davison et al.	2004	T	D	Research Method
JMIS	den Hengst and de Vreede	2004	P	D	Problem-Solving Method
ISJ	Ibbott and O'Keefe	2004	P	I	Field Study
MISQ	Iversen et al.	2004	P	D	Problem-Solving Method
ISJ	Kautz and Nielsen	2004	P	D	Field Study
MISQ	Kohli and Kettinger	2004	T	I	Theoretical development
MISQ	Lindgren et al.	2004	T	D	Problem-Solving Method
MISQ	Mårtensson and Lee	2004	T	D	Research Method
MISQ	Street and Meister	2004	P	I	Theoretical development
ISJ	Tang et al.	2004	P	D	Problem-Solving Method
I&O	Wastell et al.	2004	P	I	Research Method
I&O	Henfridsson and Lindgren	2005	T	I	Problem-Solving Method
ITP	DeLuca and Valacich	2006	P	D	Field Study
ISJ	Bulter and Murphy	2007	P	D	Field Study
EJIS	Hatzakis et al.	2007	P	D	Problem-Solving Method
ITP	Hedström	2007	P	I	Field Study
ITP	Nolan et al.	2007	P	I	Field Study
ISJ	Oates and Fitzgerald	2007	T	D	Problem-Solving Method
EJIS	Shah et al. (a)	2007	P	I	Problem-Solving method
EJIS	Shah et al. (b)	2007	T	D	Research Method
I&O	Wiredu	2007	T	I	Field Study
ISJ	Clegg and Shaw	2008	T	D	Problem-Solving Method
EJIS	Kietzmann	2008	P	I	Field Study
ITP	Klecun	2008	P	I	Field Study
EJIS	Lesca and Caron-Fasan	2008	P	I	Field Study
EJIS	Mekonnen and Sahay	2008	P	I	Field Study
DataBase	Plummer et al.	2008	P	I	Field Study
ITP	Tjornehoj and Mathiassen	2008	T	I	Problem-Solving Method
EJIS	Bjørn et al.	2009	P	I	Field Study
JAIS	Bragge and Merisalo-Rantanen	2009	P	I	Experience Report
I&O	Puri et al.	2009	P	I	Problem-Solving method

Appendix C

Calculations of AR Publications

		Sum Totals			Percentages		
Area of Concern (A)		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Org application of IT [1]	7	9	16	22%	18%	19%
	The process of sys dev [2]	12	29	41	38%	57%	49%
	IS management [3]	6	5	11	19%	10%	13%
	The org value of IS [4]	7	5	12	22%	10%	15%
	The societal impact of IS [5]	0	3	3	0%	6%	4%
Real World Problem Setting (P)		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Clearly Specified	28	44	72	88%	86%	87%
	Vaguely Specified	4	7	11	12%	14%	13%
F in Support of A (F_A)		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Clearly Specified	23	40	63	72%	78%	76%
	Vaguely Specified	9	11	20	28%	22%	24%
F Independent of A (F_I)		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Clearly Specified	19	29	48	59%	57%	58%
	Vaguely Specified	13	22	35	41%	43%	42%
Problem-Solving Method (M_{PS})		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Clearly Specified	17	31	48	53%	61%	58%
	Vaguely Specified	15	20	35	47%	39%	42%
Research Method (M_R)		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Clearly Specified	19	37	56	59%	73%	67%
	Vaguely Specified	13	14	27	41%	27%	33%
Research Contributions (C)		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Real World Problem Setting (P)	26	42	68	81%	82%	82%
	Area of Concern (A)	30	47	77	94%	92%	93%
	F Independent of A (F_I)	8	15	23	25%	29%	28%
	Problem-Solving Method (M_{PS})	17	33	50	53%	65%	60%
	Research Method (M_R)	8	20	28	25%	39%	34%
Primary Contribution (C)		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Real World Problem Setting (P)	5	2	7	16%	4%	8%
	Area of Concern (A)	9	16	25	28%	31%	30%
	F Independent of A (F_I)	1	3	4	3%	6%	5%
	Problem-Solving Method (M_{PS})	10	20	30	31%	39%	36%
	Research Method (M_R)	7	10	17	22%	20%	21%
Premise		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Practical	20	29	49	63%	57%	59%
	Theoretical	12	22	34	37%	43%	41%
Inference		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Inductive	16	30	46	50%	59%	55%
	Deductive	16	21	37	50%	41%	45%

		Sum Totals			Percentages		
Contribution Style		1982–2000	2001–2009	Total	1982–2000	2001–2009	Total %
	Experience Report	7	2	9	22%	4%	11%
	Field Study	8	17	25	25%	33%	30%
	Theoretical Development	1	3	4	3%	6%	5%
	Problem-Solving Method	9	19	28	28%	37%	34%
	Research Method	7	10	17	22%	20%	20%

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