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A "Novel" Approach to the Design of an IS Management Course

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Abstract:

We report on the design and implementation of an unusual course in Information Systems (IS) management built around an extended case series: a fictitious but reality-based story about the trials and tribulations of a newly appointed but not-technically-trained Chief Information Officer (CIO) in his first year on the job. Together the cases constitute a true-to-life "novel" about IS management (published, in fact, as a novel, as well as individual cases). Four principles guided development of the series and its associated pedagogy: 1) Emphasis on integrative, soft-skill, and business-oriented aspects of IS, independent of underlying technologies; 2) Student derivation and ongoing refinement of cumulative theoretical frameworks arrived at via in-class discussion; 3) Identification of a set of core issues vital to practice that collectively approximate IS management as a business discipline; and 4) Design for student engagement, in particular by basing the case "story" on the monomyth, a literary pattern common to important narratives around the world. A supporting website facilitates sharing of teaching materials and experiences by faculty using the case series. We report results from using this curriculum with undergraduate and graduate students in two universities in different countries, and with executives at a multinational corporation and in an executive program at Harvard Business School. Our results suggest that a "novel-based" approach holds considerable promise for use at undergraduate, graduate, and executive levels, and that it might have advantages in addressing the so-called "enrollment crisis" in IS education, especially with the generation of "digital natives" who have come of age in an environment crowded with engaging approaches to communication and entertainment that compete for their attention.

Keywords: information systems curriculum; IS management education, IS education, IS curriculum development, case-based learning

I. INTRODUCTION

Information systems (IS) management presents special challenges for educators [Foggin 1992; Maier and Gambill 1997; AACSB 2002; Dhar and Sundararajan 2007; McAfee 2007]. Rapid adoption by businesses of new technologies creates a need to impart technical skills in a proliferating set of sub-specialties [Sutcliffe, Chan, and Nakayama 2005; Kung, et al. 2006]. Frequent advances in new and existing technologies and in how they are applied in business make it difficult to keep materials and faculty up to date [Maier and Gambill 1997; Ehie 2002; McAfee 2007]. At the same time, companies and countries continue to forecast strong demand for IS workers, both short- and long-term, at levels that would pose challenges for educators even absent other difficulties [Prabhakar, Litecky, and Arnett 1995; Brandel 2007; McGillicuddy 2007].

Perplexingly, however, strong demand for IS workers does not translate into high enrollments in information systems related academic programs and courses; in fact, enrollments have declined sharply since the late 1990s [George, Valaicich, and Valor 2005; McGettrick et al. 2006; Tucci 2007]. Granger et al. [2007] examined causes of enrollment decline and found evidence of pervasive "myths" and other mistaken student perceptions, for example, that the job situation is not as strong as it actually is, that all IS jobs will move offshore to India and China, or that salaries in the field are depressed because of competition from offshore labor. Promotional efforts by IS departments have aimed to counter these misperceptions [e.g., Akbulut and Looney 2007; Koch and Kayworth 2007] and to broaden the appeal of IS curricula to underrepresented groups: women, for example [Chabrow 2007; Cone 2007]. Some efforts have targeted the introductory IS course [George, Valaicich, and Valor 2005; Akbulut and Looney 2007; Firth, Lawrence, and Looney 2008] as a way of convincing students to major in IS-related subjects. Other measures recommended to attract students include playing up the excitement associated with specific new technologies [George, Valaichch, and Valor 2005] and assigning effective teachers to IS courses [Akbulut and Looney 2007]. Such efforts have helped enrollments at some institutions but have not stemmed the overall decline. At our own institutions, students overwhelmingly indicate that they want IS management content in their programs of study, but these same students do not take elective courses on this or related topics in large numbers. In this generally adverse environment, required courses in IS management have come under student criticism and administrative scrutiny, reaching a point in some schools at which they are, as one dean recently put it to us in conversation, "retained mostly to occupy a group of IS-tenured faculty."

Some writers have suggested that a mismatch between the design of IS management curricula and the needs expressed by the business community might influence student perceptions and choices [Maier and Gambill 1997]. Many IS management programs remain technically focused [see Sutcliffe, Chan, and Nakayama,2005; Kung, et al. 2006]; emphasis within faculty promotion processes on theoretical and specialized IS research likely reinforces technical orientation, as faculty choose to teach the specialized material they know most about. But Overby [2006] summarizes the needs of the business community this way: "While technical proficiency is still important, CIOs are desperately seeking employees with project management expertise, enterprise and industry knowledge, and the business skills necessary for customer-facing roles" [p. 41]. Ehie [2002], using a more scientific methodology, surveyed IS practitioners and found a need for graduates who "understand inter-functional perspectives," have "good communication and people skills," "in-depth knowledge of different facets of the business," and "an ability to see the big picture" [p. 154-155]; like Overby, he reports that "although technical-oriented skills were considered important, business-oriented skills were considered more important in hiring MIS graduates."[1] There is evidence that students perceive such a mismatch and that awareness of it depresses enrollments. Akbulut and Looney [2007] show that students' assessments of the relevance to businesses of curricula at their institutions influence their decisions about whether to pursue an IS degree, and Lomerson and Pollacia [2006], investigating reasons that students did not choose IS as a major, found that 26 percent described the programs in their schools as "too technical."

Another, more subtle, problem has to do with IS management's interdisciplinary nature. IS management resides at the intersection of several technical and management subjects, many of which have been established longer and have better-defined disciplinary bases. The tenuous position of IS management as an independent field of research

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[1] The mismatch problem is not new; in the late 1960s, a task force of academics recommended an Information Systems (IS) curriculum model (later updated in 1997 and 2002) that was greatly influenced by the state of the IS art during that time, thus included programming and data management training, but was light on management, as Nolan and McFarlan noted in a 1973 paper in *Communications of the ACM*.

has been well documented [Agarwal and Lucas 2005; Orlikowski and Iacono 2001]; difficulties of disciplinary identity spill over into training of IS managers. Business schools and professors have struggled to identify an independent core or "theoretical/conceptual base" for IS management and therefore often rely on heterogeneous reference disciplines [Dhar and Sundararajan 2007; McAfee 2007] and materials from non-IS authors [Firth, Lawrence, and Looney 2008]. Today, across the educational landscape, it remains possible to find courses under the heading of IS management that range from nearly pure business orientation, such as process re-engineering, to nearly pure computer science orientation, such as programming in Java, or even to mere technical literacy, such as how to use Microsoft Excel.

A closer look at modern student sensibilities reveals what may be yet another new and evolving, though not unique to IS management, difficulty: Students are simply not *engaged* by traditional pedagogical approaches. Prensky [2005], in a general critique of education, argues that problems of engagement have become worse as the technological features of the student environment have changed dramatically:

> [Today's students] are used to having anyone who asks for their attention—their musicians, their movie makers, their TV stars, their game designers—work really hard to earn it. When what is being offered isn't engaging, these students truly resent their time being wasted…kids [before the Internet era] didn't expect to be engaged by everything they did. There were no video games, no CDs, no MP3s—none of today's special effects. Those kids' lives were a lot less rich—and not just in money: less rich in media, less rich in communication, much less rich in creative opportunities for students outside of school. …[p. 60]

Moreover, the opportunities for student engagement are not just a matter of spectacle, special effects, and "pretty graphics." Prensky continues:

> The three most popular (i.e., bestselling) computer and video games in the marketplace…as of June 2004 [were] *City of Heroes*…*Harry Potter and the Prisoner of Askaban*…and *Rise of Nations*…On their boxes and Web sites, these games promise the kids who buy and play them some very interesting experiences: "There's a place where we can all be heroes." "The Dementors are coming and this time Harry needs his friends." "The entire span of human history is in your hands." Not exactly what we promise our kids in school. [p. 62]

Recognition of the advantages of engagement in effective education is nothing new; Confucius, circa 450 B.C., is said to have written: "Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand." But new features of the student environment stoke up the competition for student attention. Granger et al. [2007] report that students often find IS courses "boring." This is ironic: Students drawn to the IS field by interest in the technology may have a particular appetite for the kind of engagement that Prensky describes.

The project that is the subject of this paper was conceived to confront the difficulties of IS management education in a fresh way. We report on an approach to design and implementation of an Information Systems (IS) management course built around the "IVK case series," a fictitious, though reality-based story about the trials and tribulations of a newly appointed, not-technically-trained CIO in his first year on the job. The series in its entirety constitutes, in effect, a true-to-life novel about IS management (published, in fact, as a novel,[2] as well as a series of individual cases), intended to involve students in an engaging story that explores the nuances of major IS management issues. It is based on a philosophy and set of design principles developed from lessons suggested in the IS education research literature, and from experiences designing curriculum on the subject for executives and MBA students at major business schools and elsewhere. Four principles guided development of these materials: 1) Emphasis on the *integrative*, *soft-skills*, and *business-oriented* aspects of IS, independent of underlying technologies; 2) Student derivation and ongoing refinement of *cumulative* management frameworks arrived at via in-class discussion; 3) Identification of a set of *core* issues most vital to practice, which approximate the substance of IS management as a business discipline, and 4) Design for *student engagement*, in particular by constructing the case "story" based on the *monomyth*, a literary pattern used in screenwriting and common to many important narratives around the world [Campbell 1949]. Use of the case series has been facilitated by a web-based community for sharing teaching notes, materials, and experiences hosted by the Foster School of Business at the University of Washington (http://powell.bschool.washington.edu/pages/page.php?page=1823); this website provides a flexible platform that has evolved to support uses of the materials beyond their original conception, by instructors other than the developers of the case series.[3] We report experiences using this approach with undergraduate students (at University of Washington), graduate students (at Copenhagen Business School), and with participants in executive

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[2] *The Adventures of an IT Leader*. (2009). Robert D. Austin, Richard L. Nolan, and Shannon O'Donnell. Boston: Harvard Business Press.
[3] Others elsewhere have also begun using the materials (e.g., Professor Nigel Melville, at the Ross School of Business, University of Michigan) using manuscript PDF files available, by arrangement with the publisher, on the University of Washington hosted website until April 2009.

education programs (at Harvard Business School and a major multinational company). We have employed the same case materials, though in different ways, at all three levels; level-appropriate approaches to student engagement are described in Teaching Notes that accompany each case. Our results suggest that the approach has promise at all three levels, and that it might have particular advantages with a generation of "digital natives," who do not remember when information technology was not a normal part of everyday life, and who have come of age in an environment crowded with engaging approaches to communication and entertainment competing for their attention.

II. THE IVK CASE SERIES

The series of 18 "cases" developed for this project consists of approximately 85,000 words and 300 double-spaced manuscript pages. The story invites students to "walk in the shoes" of a newly appointed Chief Information Officer (CIO) during his first year on the job at the fictional IVK corporation.

A roughly ten-year old financial services firm involved in specialized lending (the specific sector, products, and services are never defined), IVK has grown from $40 million in revenues to more than $200 million in less than three years. It operates somewhere in the northeastern United States (where exactly is never specified); it has one much larger competitor (a generalist financial service player that also participates in IVK's specialized market), another rival about the same size as IVK, and several other smaller business adversaries. The IT department[4] consists of four groups, two that face-off to the two largest business units, Loan Operations and Customer Support, and two that function in broader support roles, Infrastructure/Operations and Technical Services. Historically a Microsoft shop with mostly homegrown applications that target specific business needs, the IVK IT department employs probably 100 to 200 employees (the exact number is never revealed) who struggle increasingly with the strains rapid growth places on information systems. As in many firms, legacy systems need to be better interfaced and consolidated, perhaps even replaced; existing systems are better suited to a much smaller company—which IVK was not very long ago. Efforts to support a growing range of products, services, and customers has created an untenable situation of increasing complexity, filled with workarounds, retrofits, and "band-aids" that make the best of a difficult situation, but that also impede efficiency and heighten risk.

The main character, Jim Barton, has led one of the company's business units and has been an outspoken critic of the IT department. When the company's growth trajectory levels off, the CEO is replaced and the senior management team reshuffled. Barton (to his dismay) is appointed to lead IT, in which position he will need to act on his own past advice. He has no technical background, thus confronts IS as an arena in which to apply *management* principles. Barton's CIO predecessor, fired in the company's reshuffle, offers Barton a parting prediction: "You won't last a year." The series describes events of that year, during which time Barton faces decisions and difficulties. Students critique Barton's actions, make recommendations, and construct a framework for IS management as the story unfolds. Table 1 summarizes the story and the topic coverage of the series.

Table 1. IVK Plot and Topics Summary		
Chapter	**Topic**	**Summary of Action**
1	Analysis of Business Context	Barton offered CIO job; looks into the history/ role of IT in business; IVK business context revealed (history, financials)
2	The CIO Role and Challenges	Barton consults personal advisors (consultant love interest, mysterious "kid" in local bar); Barton's predecessor predicts: "You won't last a year!"
3	IT Leadership and Strategy	Barton begins job as CIO, learns IT department org chart; struggles with direct reports and strategy; begins to develop his IT management framework.
4	The Cost of IT	Barton tries to answer CEO's question: How much does IVK spend on IT?
5	The Value of IT	Work on another CEO question: How much value does IVK get from IT?
6	Project Management	IVK IT debates approaches to managing projects; Barton is perplexed.
7	Large Projects	Barton deals with a stalled mega-project and a non-performing vendor
8	Project Portfolios	Investment priorities; a security project that should have been funded was not, and Barton discovers he (in his former business role) caused the problem.

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[4] The IVK case series employs the descriptor "information technology" (IT) instead of "Information Systems" (IS).

9	Governance	Barton presents to the board on control, risk, governance and strategic partnership; he deals with an overzealous board member and CEO insecurities
10	Crisis Management	IVK attacked by hackers as Barton heads into a Wall Street analyst meeting
11	Business Continuity	What to do and say in the aftermath of attack; the CEO rejects Barton's advice; a firestorm ensues, but Barton survives.
12	Communications	How to rebuild IT department's credibility in the aftermath of a security incident; Barton in the senior management wilderness
13	Emerging Technology	IVK blindsided by unsettling employee involvement in Web 2.0 activities
14	Vendor Management	IVK chooses a vendor, service model, and contract design for a major project
15	Managing Talent	Difficulties with a key IVK technical employee prompt review of talent
16	Infrastructure Mgmt.	IVK struggles to set infrastructure standards, reduce complexity, cost, and risk
17	Managing Risk	Barton engages CEO in decisions about cost and risk tradeoffs.
18	Career Decisions	Barton's one-year anniversary: He receives two surprising job offers and must decide whether to continue as a CIO or go back to being a business manager.

Design Principles

We designed materials in accord with four principles, each of them chosen to address known weaknesses in IS management curriculum offerings, and, more broadly, weaknesses in traditional approaches to management pedagogy:

Principle 1: Emphasis on the integrative, soft-skills, and business-oriented aspects of IS

We adopted this principle to address evidence of the mismatch problem discussed earlier, between businesses' need for integrative, soft, business skills, and IS curricula that tend to be more technically focused. In short, we intended to design an approach notable for its relentless focus on business, not technical, issues. In adopting this principle, we did not intend to imply that technical skills are unnecessary, or less important than business skills; rather, we aimed to fill a gap apparent in evidence of the mismatch we described earlier.

Principle 2: Student derivation of cumulative management frameworks

By providing a consistent setting and cast of characters, and a continuously unfolding story, we aimed to facilitate student development of well-organized, cumulative frameworks. We based construction of the IVK series on the assumption that concentrated student attention on a consistent situation as it changed over time might provide opportunities to discuss evolving frameworks, their organization and interrelationships, in greater depth than would be possible with other approaches.

Principle 3: Identification of a set of core issues most vital in IS management practice

We adopted this principle as a tentative move toward addressing the apparent absence of a freestanding "theoretical/conceptual base" [McAfee 2007] that defines the subject of IS management. An excerpt from "IVK-1: The New CIO" expresses the essence and motivation behind this design principle:

Surfing just a bit more, thinking about wrapping things up and taking his decision home for the weekend, Barton stumbled across a sentiment that he appreciated. It proposed that IS managers try a thought experiment:

Imagine your day-to-day work. How much would be left to do in a day if a moratorium were declared on discussions about specific technologies? In how you think about IS management, how much would there be—principles, philosophies, practices—that could be said to be independent of the underlying technologies?

Because the world was still reeling from the aftershocks of the Internet crash, this article said, it was essential that IT managers understand and demonstrate to others that the need for shrewd IT management does not vanish when over-hyped technologies do. If the field of IT management was to mature, to take its

rightful place in the pantheon of management ideas, it must have substance beyond the specific objects of its actions. The article finished with a flourish:

The core of IT management—the management content—is not transitory. Just as the fundamentals of, say, finance or marketing, remain relatively stable at their core, so are the fundamentals of IS management.

The specific core topics we settled on for this case series, as listed in Table 1, constitute a proposal, a starting point; we hope other educators, over time, will join us in a conversation aimed at refining the proposal.

Principle 4: Design for student engagement

We adopted this principle to address the problem described by Prensky [2005]. While we did not employ the forms recommended implicitly in Prensky's critique—that is, the construction of a video game or automated simulation—we did attempt to address issues of student engagement via construction of the "story" itself, most notably by adopting the monomyth [Campbell 1949] as a guide. Though not the video game *City of Heroes*, this narrative form engages students in a "hero's journey," simultaneously creating an imaginative context in which the dialogical and dramatic forms of case-based classroom discussion and role-play can unfold. This approach does call on students to simulate events from business environments and has some advantages over an automated simulation; for example, in this format, students must argue and defend in debate their choices, just as they might have to do in a business meeting.

Design Features

In implementation, our design principles translated into specific features of the case series as follows (the principles associated with each feature are indicated parenthetically):

Prominent Business Context (P1) – Beginning with the first case in the series, we included pedagogical opportunities to examine IS issues within a wider business context. IVK is a company in turnaround mode. Before the current difficulties, it was growing rapidly and the IT department was struggling to keep up. Now that company growth has slowed, spending on IT already in motion has become a conspicuously larger percentage of revenue. Analysis of the company's market position reveals no external reason why growth has slowed, which suggests that problems with growth are at least somewhat internal in origin—some of them in the IT department. Students analyze the company's situation partly by examining financial reports and information about competitors included as exhibits in the first chapter.

Realistic Treatment of Situations, Relationships, and Political Factors (P1) – Although the IVK story is fictional, everything that happens in it has a basis in actual events. The authors collectively possess decades of experience working as IS managers, consulting to companies on IS issues, serving on advisory boards and boards of directors, and writing books and cases on IS issues. All these sources served as inspiration for IVK story events. We made special efforts to portray difficulties of communication, relationships, and corporate politics, and we gathered feedback from practicing IS leaders about the realism achieved in our portrayals. After reading an early draft of the case series, one CIO said: "This is my life. This is what I deal with every day." One participant in an executive program repeatedly asserted: "This is about me."

Online Tutorial for Technology Level Setting (P1) – In view of the fact that the IVK series does not emphasize technical content, we sometimes used an online tutorial (offered by the Harvard Business School, "IT Concepts") for level-setting of student understanding of technologies, basic technology vocabulary, and key concepts, such as Moore's Law. Students worked on the tutorial early in the course, outside the classroom. The point of the tutorial (which needed to be explained to set student expectations appropriately): To keep technical explanations in the background of the IVK case series discussions, and business issues in the foreground.

Cumulative Framework Development Using Whiteboards and Reflection Boxes (P2) – We designed in a number of elements to direct and establish continuity of evolving theoretical frameworks. Foremost was the fact that the story follows a single company and set of characters from case to case, with topics ordered to meet pedagogical objectives; as students accumulate deeper familiarity with the IVK staff and circumstances, frameworks can be revisited and revised. We also, however, inserted a "whiteboard" device to encourage accumulation and integration of evolving student frameworks; as Barton learns the job, he fills his whiteboard with signposts that form the outlines of his own framework for IS management. His whiteboard is not detailed enough to present theoretical material prescriptively, but it prompts students to engage in a parallel (and more detailed) exercise in framework creation. The book version of the series includes "Reflection Boxes" that contain questions to direct students as they think theoretically.

Design for Integration with other Cases and Content Sources (P2) – The series is designed for use with other materials, such as lectures, other cases, textbooks, and academic journal articles. Teaching materials provided with the series and footnotes throughout the text suggest supplementary reading and ideas for tailoring these materials to engage three levels of students: undergraduates, graduates and executives. Instructors can add to the course as much explicit guidance as they wish, while maintaining a discussion-based classroom model that keeps students active and engaged. By integrating and emphasizing supplementary materials, the instructor can exert greater control over student development of cumulative frameworks.

Coverage of Key Core Topics (P3) – We developed the IVK plot around a list of topics that in our best estimate represented a reasonable set of core sub-topics within IS management. This list does not exhaust the topics relevant to IS management, but provides a starting point that can be elaborated upon by adding other materials to a course.

Design for Use as a Whole or in Subsets (P3) – We also tried to develop materials in a way that allows instructors to pick and choose among cases. Cases can be distributed individually, or all together. Teaching materials available with the case series offer maps and advice for instructors who wish to use only subsets. Short case summaries are also available, to "fill in the blanks" when instructors want students to know of events in the background of an assigned case, but do not wish to assign entire cases to convey those background events. In our pilot implementations of this course, we have always used subsets of the materials, only once coming close to using all of the material in its entirety.

Ongoing "Open Source" Collaborative Approach (P3) – We conceived this project to involve a community of collaborators. As instructors use the case series and develop their own supporting materials (e.g., slides, course outlines, teaching notes), we ask them to upload these to the previously mentioned website[5] around which we are developing a community of interest. We hope others might eventually even develop new cases in the series, on topics we have missed. Teaching notes, lists of supplemental readings, and other materials are available and undergo evolution and refinement on this site. Although the original 18 cases are now under contract with Harvard Business Press, and appear in a book and as individual cases, we have obtained specific contractual concessions that stipulate that the publisher will support this community. Specifically, the publisher will not exert intellectual property claims over supporting materials; new materials will be freely available, unless the publisher arranges for publication of these supplemental materials (possibly with authors other than the developers of the original series). As a condition of publication, we have also obtained assurances from the publisher that materials will remain reasonably priced for student budgets, at a level more in line with trade books than with IS textbooks. The cost to students of the published book or cases remains approximately in line with the cost of printing or reproducing manuscript PDF files of the same material (the distribution method prior to publication).

Discussion Based Classroom Approach (P4) – We constructed each chapter around decisions facing Jim Barton in order to promote classroom discussion. This structure is meant to set the stage for active participation by students as they develop a living theoretical framework for wider use.

Exercises, Presentations, and Framework Assembly Guidance (P4) – This overall approach supports mixing in exercises, student presentations, and other activities to assist students as they derive theoretical frameworks. In pilot uses of the case series, students have prepared presentations on emerging technologies, designed guidelines for Barton to use in the analyst meeting described in IVK-10, and developed "checklists" to go along with their evolving frameworks. Role-playing—asking students to take on assigned character roles from the case and carry out a live debate—gains particular traction as students become more deeply familiar with the setting and characters in the story.

Online "Course Platform" (P4) – The series benefits from use of an online platform to distribute materials, capture notes from classroom discussion, and facilitate student interaction outside class. Ideal would be a platform designed to include advanced and engaging technology features, such as RSS and video related to class discussions.

Engaging Story and Presentation (P4) – In an effort to engage "digital natives," we used Campbell's (1949) idea of the monomyth (also known as "the hero's journey"), a basic pattern found in many stories and often used by screenwriters [Vogler 1998]. One early reviewer described how the "plot" of the story caused him to "stay up late reading, one night, to see what would happen." With the help of the publisher, we employed a graphic novel motif for

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[5] http://powell.bschool.washington.edu/pages/page.php?page=1823

artwork for the book version of the series (see Figure 1 for an example). We have also begun experimenting with audio Podcasts of individual chapters.

Figure 1. Cover Art for Book Version of Case Series

III. USING THE "MONOMYTH" TO MAXIMIZE STUDENT ENGAGEMENT

One co-author of the IVK series has a background as a director in a professional theatre. Shortly before she joined our project, she had directed a production based on Jason and the Golden Fleece, a story from Greek mythology. The actors and director analyzed that story according to the monomyth, as Campbell outlined in his book *The Hero with a Thousand Faces* [1949]. Understanding the archetypal characters and plot progressions of the monomyth enabled the actors and director to make more dynamic choices about what each character wanted from the journey and how the events of the play impacted the hero's transformation. In short, it helped them tell a better story.

Previous drafts of the IVK series had been primarily based on a wide range of real-world consulting and professional experiences, ordered solely for pedagogical effect. To help make the series as a whole more engaging, we applied the monomyth to analysis of the IVK story. In some places, the story already aligned with the monomyth archetypes and structure; in others, there were opportunities to make new choices for better alignment. Table 2 shows the results of this process, based on the completed manuscript.

Table 2. The CIO's Journey Mapped to Campbell's Monomyth	
The Hero's Journey	**The CIO's Journey**
The Ordinary World: The story often begins in the hero's ordinary world from which he will suffer separation. The ordinary world has become unstable; change is needed.	Jim Barton is a successful business leader in Loan Ops on track to becoming COO and CEO, but IVK experiences a turbulent turnaround.
The Call to Action: Something happens that compels the hero to act.	The CEO stuns Barton into silence with the news that he's the new CIO!
Refusal of the Call: The hero initially protests the adventure as too risky.	Barton doubts and deliberates in his office and over the weekend.

Supernatural Aid: Refusing the call buys the hero time to gather courage and advice from his mentor(s).	Barton meets the Kid, who gives him the advice "Know what you don't know"; Maggie, his consultant and love interest, provides support.
The Hero Accepts the Call: With encouragement from his mentors and a final impetus, the hero accepts the adventure.	Barton is compelled to act by a chance meeting with his predecessor Davies, who challenges: "You won't last a year!"
Crossing the First Threshold: The hero encounters the obstacle of threshold guardians as he crosses into the new world.	Barton begins his first day as CIO, and meets instant, unnerving resistance from his IS leadership team.
The Road of Trials: In the new world, a series of tests and trials begin to prepare the hero for the Ordeal; he must learn new rules, who his allies and enemies are.	Barton must learn fast how to lead such things as: the IS staff, the cost and value of IS, project management, large projects, prioritization, and IS budget control.
Approach to the Inmost Cave: The hero has sharpened his self-awareness and bonded with his team; tests and preparations grow more complex, and the stakes are higher, but the hero feels good.	Barton and his IS management team come together successfully for their board presentation; Barton navigates complex board and CEO relationships; he's riding high on success.
The Ordeal: The hero faces potentially fatal danger, fear, and crisis; he battles with the Shadow and witnesses or causes the death of others. The ordeal signifies "death of the ego."	A security crisis. Barton risks himself for the team; together they act fast, but he tastes (career) death in the boardroom when he faces off with a furious CEO. Barton miraculously survives but sees colleagues fall.
Reward: The Ordeal changed the game; the hero gains new insight, which helps him see his "enemy" more clearly; he may have cause to celebrate, or he may get caught up in the mind of his opponent.	Barton's relationships with his peers and the CEO are in shambles, and he must restore trust; at the same time he's seen a new side of the CEO he doesn't like, which compromises his ethics.
The Road Back: The hero has to re-dedicate himself to the adventure and overcome a series of setbacks along his road to recovery and return.	Barton reevaluates his position as CIO, under more difficult circumstances; he faces off with his inner fear of becoming just like his predecessor.
The Resurrection: The hero must pass one final test, which demonstrates that he has incorporated learning from his journey; he faces a final encounter with the Shadow.	Barton gains new understanding of the CEO, and the two learn how to communicate effectively; the CEO even suggests Barton may be his successor.
Master of Two Worlds: The hero returns to his starting place, to decide which path now to take in his new life; he receives his final reward(s).	Barton, in his office as at the beginning, deliberates between two job paths. In a surprise revelation, he is offered an even bigger reward for his journey.
Archetypal Characters[6]	**IVK's Characters**
The Herald: calls the hero to action by announcing the coming change.	The CEO jolts our hero into action by assigning Barton the job of CIO. The security crisis also acts as a Herald, announcing the need for change.
The Supernatural Aid or Mentor: typically a wise older person who has been through the journey before; mentors teach, protect and give special gifts or advice to the hero.	Three characters provide Barton with crucial mentorship: (1) The Kid—a young person with the wisdom of a "digital native" and a surprising true identity; (2) Maggie—Barton's consultant/girlfriend; (3) Bernie Ruben—veteran IS manager.

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[6] Campbell based his archetypal characters on Carl Jung's psychological archetypes (see Jung, 1971, edited by Campbell).

Threshold Guardians: present obstacles at the gateway to new worlds; while menacing at first, they can be overcome, understood, even made an ally, most effectively when the hero "gets into the skin" of the TG.	Former CIO Davies tests Barton with the threat: "You won't last one year!" Barton launches a mission to understand what got Davies fired. The IS management team presents initial resistance, until Barton wins them as allies.
Shapeshifters: constantly change from the hero's point of view; he must continually re-evaluate whom he can trust.	Barton's relationship with the senior management team is constantly in flux during the story.
The Shadow: represents the dark side, often those things the hero has suppressed within himself. The Shadow creates conflict that brings out the best in the hero, while being the hero of his own journey.	The CEO, while also a shapeshifter, is the primary antagonist to Barton, representing a model of leadership with which he disagrees. Barton's own ego sometimes acts as his Shadow as well.

Following are three examples of character and plot developments that this process of mapping and analysis yielded:

1. We developed the character of CEO Carl Williams as The Shadow—CIO Jim Barton's primary antagonist and a dark, father-like authority figure (akin to Darth Vader in the *Star Wars* trilogy). Their dramatic mid-story conflict sets up expectations in the readers for a final showdown, during which Barton must either defeat or reconcile himself with the CEO; Campbell refers to this encounter as "Atonement with the Father." To answer this expectation, we developed IVK-17 as a one-on-one encounter, during which Barton and Williams gain new understanding of each other.
2. The Kid's role as an accidental advisor in early chapters made him the perfect candidate for a "Supernatural Aid" or mentor. We developed this sub-plot by sending Barton to the Kid whenever he was in need of advice on managing his IS team, and chose to culminate their encounters with a surprising revelation in the final chapter: The Kid has a secret identity; Barton has passed his mentor's tests and earns his largest reward from this least expected source.
3. As the hero, Barton needs to change and develop over the course of his journey. It is important that he does not make all the right decisions from the beginning, but exhibits flaws and makes mistakes that serve as the starting point for needed growth. We revised some of his early actions to incorporate a rash decision to fire a Vendor, and an ego-driven decision to take charge of the IS budget, despite heavy warning from another of his mentors, Maggie, and the disapproval of his peers. We looked for ways to bring the consequences of these early actions to bear in later chapters, when Barton is prepared to handle them differently, to show Barton's growth and development as an IS leader.

IV. EXPERIENCES USING THE IVK SERIES

We have used the IVK series in four different settings:

1. With undergraduates in a required IS course (in years three and four of their four-year educational programs) at University of Washington;
2. With professional masters level students in an elective course at Copenhagen Business School;
3. With experienced general management executives in a senior management development program at one of the world's largest industrial corporations; and
4. With IS executives in an open enrollment executive education course, "Delivering Information Services,[7]" offered by Harvard Business School.

Each of these experiences has helped us to refine this approach to IS management education.

Experiences with Undergraduates

Undergraduates, as might be expected, need more emphasis on the business fundamentals that underlie the IVK story. In teaching undergraduates, we needed to slow down the pace. Undergraduates were less prepared to assess the meaning of financial statements and competitive information provided in IVK-1, and they were less sensitive to political nuances in relationships in company settings. Many such students did not understand the legal responsibilities of a board of directors, or the implications for the CEO of a rapid decline in a company's stock price.

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[7] "Delivering Information Services" is the longest running short program among Harvard Business School executive educations offerings and has been offered continuously since 1971; its longevity is ironic given the relative youth of the IS field. Two of the program's founders, F. Warren McFarlan and Richard L. Nolan, remain involved in its delivery.

To address these difficulties, we supplemented discussion with mini-lectures and supplementary readings on business basics (e.g., understanding financial statements).[8] Although our pedagogy changed to account for the level of these students, we used exactly the same IVK materials for undergraduates that we used with graduate students and executives (i.e., there are not separate versions of the materials for each level of student, nor did we see evidence of a need for this).

Feedback from the approximately 40 students who took the course led us to believe that many objectives we set out for the course were met, especially those that concerned student's ability to apply concepts (P1), development of cumulative theoretical frameworks (P2), active student participation (P4), and general degree of student engagement (P4). Broadly considered, the course was a success; students were enthusiastic and the instructor received a best teacher award for the course. Table 3 summarizes selected student feedback in key objective areas.

Table 3. Representative Undergraduate Student Reactions to an IVK-Based Course	
Area of Feedback	**Student Comments**
Cumulative Framework	IVK case series was helpful in building on each other.
	The materials were presented simply and built in a way that felt easy.
Active Student Role in Theory Development	I really liked the case based learning. It pushes your thinking rather than memorizing facts.
	Actually had to think about real life examples; not just given theories to memorize.
	Case discussion forced me to introspectively think about real life IS management situations.
	By far the most effective class I have taken…It didn't focus on learning some equation or memorizing, but rather applied real world situations and simulated situations to help develop a thought process.
Ability to Apply Concepts	Very accessible and applicable to situations in the future.
	Made us see [the IS world] from a very different, yet more applicable angle.
	I knew *nothing* about IS before this class, but now I feel like I have a grasp of it.
Degree of Engagement	IVK cases made a potentially boring subject interesting.
	I would have never taken an interest in IS before, but the course made me realize how truly important IS is to business.
	Great discussions in class forced you to care about IS.
	This was the most intellectually stimulating class I have taken…I found it very effective to be able to step into the shoes of an IS manager.
	Probably the best course I have ever taken.
	Much more pleasant read than a textbook because it was interesting and educational.
	I really enjoyed how you integrated the IVK cases in to the class. I liked reading them.

Experiences with Graduate Students (in a Professional Masters Degree Program)

This course went well, but its context presented additional challenges. Discussion was more difficult in a course offered in English, which in Copenhagen, Denmark, was not most students' first language. Rules concerning student grading in force at this institution made it impossible to provide strong incentives for thorough preparation (instructors were not permitted to penalize students for failing to prepare for class, or for failure to attend class), so we relied primarily on student interest in the material to motivate preparation. It took time, also, to overcome students' expectations of a more lecture-based experience common in northern Europe, which does not call upon students to prepare as extensively for class involvement; to address this difficulty, it proved helpful to allow students time at the beginning of each class to talk about assignment questions in small groups, to "warm up" for discussion in the larger class.

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[8] While the undergraduates had all completed several accounting courses, the orientation of these earlier courses were mostly focused on the accounting model and theory (i.e., Generally Accepted Accounting Principles—GAAP). Accordingly, we focused the mini-lecture on the use of accounting information by managers. This focus is sometimes referred to as "accounting for managers" and contrasted with "accounting on managers," i.e., an external auditing orientation.

Despite these difficulties, feedback from this group of about 50 students indicates that the course was successful. Table 4 summarizes students' formal reactions to the course. Overall, students rated the case series itself a 4.64 average on a 5-point scale ("5" being a favorable rating). Informal feedback was favorable too; one student called the course "very exciting and relevant" in an unsolicited email; several students told us that they were unable to resist reading ahead, to "find out what would happen." It is interesting to observe, however, that some students missed the more lecture-based approach to which they were accustomed; while most who commented expressed a preference for our approach, at least one requested "more theory," and another implied a critique of the course's framework development by labeling it "hot air." These comments might suggest a need for refinement in the mix of lecture, readings, and discussion.

Table 4. Representative Graduate Student Comments on the IVK Case Series	
Area of Feedback	**Student Comments**
Cumulative Framework	I like the more practical approach instead of memorizing theories.
	Great with a case, but more theory would be good.
	We're used to a very theoretical approach, so the case as a fundament for learning takes some getting used to! But as a case it's very good.
	Good flow and great to develop of a framework on behalf of those.
	IS gives a better understanding when following the same case and the development.
	Little too much 'hot air.'
Active Student Role in Theory Development	Very nice way of bringing the 'theory' guy along.
	Good way to interact.
	Good starting point for a discussion.
	Good discussions.
Ability to Apply Concepts	With so little real life experience, it can be hard to relate theories to anything. The IVK helps to counter this a lot.
	Very realistic and got some important issues.
	It was very valuable to have case of practical decision-making.
	Great, to get a practical approach to IS-management.
	Thanks for a very practical oriented course. A complete 'breath of fresh air.'
	Thank you for a very good course. I feel that I am better prepared to the real world :-)
Degree of Engagement	Well written. Fun to read.
	Written in a very novel-like style, which makes it enjoyable to read through.
	Yes, very motivating. Looked forward to reading the articles every Sunday night.
	The best course ever at CBS. And I mean it!!!

Experiences with Executives

Our initial use of the series with senior managers was at one of the world's largest industrial corporations, a company involved in business transformation in order to retain industry leadership. Effective IS management has been an integral part of the company's business transformation strategy; throughout its history, the company has often been held up as an example of how to effectively apply information technology to create business value. Despite this, the company's IS management challenges, when pared down to remove obfuscating complexity that arose from the sheer scale of the organization, seemed similar to those at IVK, according to executive participants. These fast-track general managers readily seized on IVK issues and related them to their own situations. The simpler IVK context allowed them to cut through the complexity in their own situations and address the essence of important issues in discussion. It appeared easier for these managers to talk about sensitive issues relevant to their own company in the context of a different company (IVK). With perspectives thus clarified and sensitivities diffused, they were better able to discuss alternative actions to address their own IS issues. Confidentiality concerns of the company in question prevent us from providing excerpts from participant feedback, but the course was well received overall.

Our second experience using the IVK case series with executives was in an open-enrollment course designed specifically for CIOs, their bosses, and their direct reports, at the Harvard Business School. The IVK series served as the backbone for an intensive week long course; we used all but five of the cases (8-9, 13-14, 16), and we used

only an excerpt from one other (IVK-17). The first 10 cases were assigned as advanced reading (for cases 8 and 9 we provided a short summary, not the entire case). IVK-11 was handed out during a class focused on the "ordeal" events of IVK-10, and the rest of the cases were distributed after that. We held cases 11-18 in reserve until after the discussion of IVK-10, to avoid "spoiling the surprise" in how the ordeal in that case was resolved in IVK-11.

In formal feedback, 65 program participants rated the "Value of Topic and Materials" (which participants are asked to rate separately from "Effectiveness of the Presenter in Delivery") for the five IVK sessions between 4.44 and 4.61 on a 5-point scale, with 4.53 the average. For comparison: Overall there were 23 sessions in the program, encompassing an exercise, lectures, case discussions, and guest lectures by visiting dignitaries, and the ratings for "Value of Topic and Materials" across all sessions ranged from 4.79 to 3.42, with a 4.39 average. Thus, the IVK sessions compared favorably with overall program ratings.

Comments on the IVK case series from this group included:

- "IVK was a riveting story. Kept us all engaged. Became a 'treat' to read after more difficult cases."
- "Loved the whole IVK approach."
- "I really like the IVK case series; my only comments is that I think we spent a little too much time on each case."
- "IVK, very interesting approach."

Participants did have some complaints: three believed the session on the IVK-15 case "needed work," or "was a little too long" (although its rating by the group was 4.55, second highest of the IVK session ratings); another participant objected to the "fairy tale" quality of the ending of the IVK story. In an email after the course, one CIO added to formal feedback:

> Thank you for giving me an outstanding learning experience last week. Definitively, this will be a 'before and after' in my career. Actually, not only how Jim Barton was appointed as CIO is very similar to mine, but also the situations that he faced in the cases with projects and people management were similar to mine (as we saw, this was true with others in the course too).

Use of the Approach at Different Levels (Undergraduate, Graduate, Executive)

We have found that this approach to teaching IS management works at multiple student levels, using the same IVK materials, although the depth and emphasis of discussion tends to be different at each level. Undergraduates, regardless of their degree of technical experience, see how people operate within a true-to-life company and invest in character conflicts, betrayals, and discoveries. Along the way, they receive mini-lectures on business basics to prepare them for class discussion. Their discussions tend to focus on the large features of the situations described.

Graduates, most of whom were quite technically experienced, focused on management and organizational issues, and learned about the decisions that IT managers and C-level executives face. In this particular program, the opportunity to concentrate on business and management issues, rather than more technical issues, was a change from other aspects of their curriculum, a change that they ultimately enjoyed. They were able to jump over many of the introductory discussions undergraduates required, and direct their in-class discussion to those elements in the IVK story that resided at the boundary of their knowledge. Their discussions grew increasingly nuanced and sophisticated as the course continued.

Executives brought comparatively vast experiences to bear in rich debates about CIO Jim Barton's controversial, high-level decisions. They were able to compare and contrast their own experiences with those of others in the class, and to relate the events of the case series to challenges and lessons learned within their own companies. Although executives tended to focus on some of the same pivotal events discussed by undergraduate and graduate students, the emphasis and level of nuance and sophistication was generally much higher in discussion with executives. In one session, for example, executives held a lengthy discussion about how the market might interpret (and ought to interpret) a company's firing of its own internal legal counsel (as happens in IVK-11); this topic never came up in classes with less-experienced students. On the other hand, younger students, being digital natives themselves, sometimes had more informed (or, at any rate, more open minded) discussions of the appropriate business uses of some emerging technologies, such as blogs and social networking applications (so-called "Web 2.0" technologies).

While there were important differences in the design of pedagogy and the discussions that resulted in each of these examples, the case series supported productive discussions at all these levels: undergraduate, graduate, and executive. This can probably be attributed in part to the fact that the series is based on real events in real companies. Because they contain the complexity of real life situations, the cases offered instructors opportunities to

orchestrate a diversity of discussion, and to combine lecture- and discussion-based methods of instruction as relevant to their teaching objectives. Students responded to this complexity by participating in the orchestration of their own learning; engaging with the IVK story at their own level of interest, students could direct classroom discussion by raising those questions and addressing those issues which were relevant to, and which pushed the boundary of, their knowledge and experience.

Alternative Ways to Use the Case Series

Thus far, this approach has been used to mount semester long courses, and also short executive programs of one to three weeks. Other ways of using the materials can be easily imagined, however. None of the courses yet taught have been long enough to deal with all of the material in the series. With supplemental readings and materials, such a course could easily span a year.

Our approach has been to use the course as something more like a capstone course than an introductory course. The topics treated in the course range widely across territory students are likely to have covered in more detail in other classes (e.g., project management, computer security); the wide-ranging and case-based nature of the material invites students to integrate and apply their learning, and to draw on experience and learning from other courses. However, the same material could also conceivably be employed as an introductory survey of the range of issues having to do with IS management, which could then be pursued in greater detail in more advanced courses. One instructor in a group to which we presented this approach explained his inclination to use the course materials in an introductory way by saying, "Debating a case decision pours glue onto the brains of the students, which you can then use to attach deeper and more refined frameworks." We find this logic compelling, even though it is not the way we approached use of these materials. Because of the business orientation of the materials—the focus on nontechnical management issues—we could also imagine developing an IVK-based course for non-IS students to familiarize them with the nature of IS management challenges.

The possibility of using this material with non-technical students raises another pair of questions important even with technical students: How do students learn the technical content they need to make the business issues that are the focus of this case series accessible? And how do we assure that everyone, regardless of perceptions of their own relative technical proficiency, feels comfortable contributing to a discussion that contains technical elements? Depending on the objectives on an educational program, a course like the ones we describe could, of course, be offered in conjunction with more technically oriented courses. Or, some sort of outside class tutorial might be employed to assure that students had at least some minimum degree of technical knowledge; as we have noted, we used an online tutorial from Harvard Business School for this purpose.

Special Challenges of this Approach

Our experiences with this approach have revealed some challenges not as apparent in other pedagogical approaches. One issue is where and how to integrate supplementary readings; we have achieved this integration in different ways in each course, partly because of different norms in when and how long classes meet in the different schools. In the undergraduate class, students met twice a week for two hours, over a 14-week period. In the graduate class, the class met once each week in 15 sessions of one-and-a-half to three-and-a-half hours over an 18-week period. As a result, the graduate course delivered materials in larger "chunks," often addressing more than one IVK case in a class, and asking students to read more for each class.

We also discovered an important difference between IVK class discussions and more traditional case discussions. In the usual case approach, closure is reached within a short interval, usually a single class session. The cumulative nature of the IVK experience means that there is less closure in early discussions, because some of the early discussions set up issues that will continue to be followed throughout the course. For instructors accustomed to traditional case discussion, this was uncomfortable; early discussions seemed too open-ended and it took time for momentum to build. However, "plot reversals" also unfolded over a longer period than in traditional case teaching, and this ultimately contributed to the power of the pedagogical experience and was very satisfying for students. Unfolding the series over time allowed students to see consequences of earlier case decisions and framework applications play out in successive cases to sometimes surprising and framework-revising effect.

Another possible concern arises from the "fictional" nature of the case series. One person commenting on our project expressed a concern that students might not take fictional cases, or the learning derived from them, seriously. We acknowledge this as an issue that must be addressed in some contexts; we have found, however, that the "based on real events" nature of these officially fictional cases tends to overcome doubts. Except for one comment expressing doubts about the "fairy tale" ending of the series, seasoned executives have been very quick to vouch for the realism of the series. Comments such as "This is my life" have been very common among experienced managers who have encountered the narrative.

As experienced case teachers and writers, we note too that cases used in teaching almost always contain fiction. Financial figures and other numerical information are routinely adjusted in teaching cases to protect subject companies' proprietary interests. Not infrequently, the identities of companies are concealed, and many popular cases contain overtly simplified or entirely fictional elements constructed in the service of pedagogical objectives (this is why Harvard Business School cases routinely state in a page one footer that they are not intended to be used as sources of primary data). Moreover, we note that there is precedent for using fiction in the form of a "novel" for teaching technology-related subjects: Goldratt's *The Goal: A Process of Ongoing Improvement* [1984] is widely used in operations management courses.

V. CONCLUSION

In teaching with the IVK series, we have seen the power of a storytelling structure to enrich the learning experience in several ways. First, the plot of a story sets up expectations, which compel the reader to grow curious, to anticipate and to become invested in what might happen, and to keep reading. Several students reported staying up late the previous night, because they were eager to know what happened next.

Second, the story acts as a leveler in the classroom. Regardless of age or level of IS knowledge and experience, each student has equal opportunity to engage in the story and interpret character behaviors, actions, and motivations. As they follow the plot, they can express opinions about the characters' choices, and make recommendations for what the characters should do next. Learning happens when they are asked to defend their recommendations and consider other perspectives.

Third, the IVK story unfolds in a corporate context based on real-world situations as experienced by the authors. Students with limited professional experience can grow knowledgeable about the particular circumstances of the IVK corporation and consider their recommendations in a realistic context. As a story, the events of these 18 cases occur within a consistent setting and population of characters with which the readers can become increasingly familiar. This enables students to debate management decisions in a holistic way informed by their analysis of industry dynamics, company strategy, business objectives, management personalities, and employee relationships.

Finally, the narrative structure unfolds over 18 cases instead of one, giving students the opportunity to experience the cause-and-effect based consequences of certain management decisions taken early. This provides the opportunity to see how certain choices play out, to re-evaluate recommendations in light of new information, and to consider the necessity of adapting leadership frameworks to specific situations.

Overall, the early returns from our teaching over the past two years from offering the IVK series have been very favorable. However, we must acknowledge some limitation in our findings. Because of the educational settings and objectives at work in the contexts in which we have used this approach, we have been unable to conduct a formally controlled experiment with before and after measures that "prove" that this approach results in better learning. Nevertheless, the feedback mechanisms that we do have in place, and from which we have reported in this paper, do give us reason to believe that we are succeeding in at least some of our specific objectives, such as providing opportunity for students to cumulatively develop frameworks they believe they can usefully apply. Our experiences suggest to us that there is wisdom in continuing and expanding this "experiment" conceived to confront the difficulties of IS management education, that a "novel" approach to IS management education holds considerable promise.

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