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INFORMATION SYSTEMS EDUCATION JOURNAL

Editors

A Tribute to Bart Longenecker:
An IS Education Maverick and Visionary

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Abstract

Bart Longenecker was one of the most influential Information Systems (IS) educators ever. Renowned for his decades of work on IS model curricula, Bart died in 2016 after a 44-year career. This paper traces the life's work of this EDSIG Fellow and Professor Emeritus to capture his IS education legacy.

Keywords: EDSIG, IS model curriculum, interpersonal skills, systems analysis and design

0. PREFACE

Following his death in December 2016, Bart Longenecker was memorialized by those who loved him.

"In August 1980 I was working to start the School of Computer and Information Sciences at the very young University of South Alabama. In walks this big guy—my future best friend and colleague, Herbert E. Longenecker, Jr. We spent the next three hours talking about plans, and the next thing we knew we had co-chaired the IS Curriculum Models for 1990, 1995, 1997 and 2002. We spent 35 years together. What a ride!

Bart will always live on in the hearts and heads of all the people he touched."

– David Feinstein, EDSIG Fellow

Then in February, he was remembered in a different way at a special service at University of South Alabama School of Computing. A presentation and poster session brought together old friends, alumni, colleagues, and family. Far from a sad occasion, the service promoted Bart's life's work, in what we hoped would be a fitting way to honor him and inspire others to follow his path. Written as part biography and part scholarship, this paper is a follow-on from the memorial service, as we wish to share Bart's legacy with the IS education community he loved.

– The Authors

1. INTRODUCTION

Bart Longenecker, EDSIG Fellow, IS Educator of the Year, and Professor Emeritus of the University of South Alabama (USA) School of Computing (SoC), was a revered figure in the Information

Systems (IS) education community. His professorial career spanned 44 years. He was known nationally for his work in the IS model curriculum, and he was a popular figure at ISECON and EDSIG meetings. In this paper the authors intend to pay tribute to their colleague by synthesizing his life's work and highlighting his legacy.

The approach taken is to write a biography of this IS education giant, highlighting his many accomplishments. There is coverage of his early years, his USA career, and his "retirement". The authors identify emergent themes and trace them from origin to apex. See Figure 2. Through the themes, the authors submit that Bart's work-related accomplishments and strategies reveal important contributions of value to IS Educators and their discipline.

Early Years
Herbert Eugene Longenecker, Jr., was born on May 17, 1943, in Pittsburgh, Pennsylvania. He was influenced heavily by his father who was president of Tulane University, where Bart earned a BS in Chemistry. In 1965 he married Gesina L. Lizana. Bart earned a PhD in Neuroscience from Rockefeller University in 1970 and did post-graduate work in Pharmacology at Cornell University Medical College. Bart and Gesina studied together, investigating neural networks, computing, and the action of drugs on the nervous system. Bart's post-graduate study on the effects of black widow spider venom on the nervous system of cats (Okamoto, Longenecker, Riker, & Song, 1971) was his most-cited pre-computing paper.

In 1972 the couple moved to Mobile, Alabama, where they both worked in the health sciences, Bart as an Assistant Professor. He worked in the areas of neuroscience, neurobiology, and pharmacology. During this time in the mainframe era of computing, Bart developed and administered real-time computer software and hardware as Computing Director for the College of Medicine (Mobile Press Register Online, 2016).

Founding Faculty of Computing at USA
In 1976, Apple's first personal computer was invented in a garage. Four years later, the SoC's roots were planted in a basement at the USA Bookstore. Bart, along with fellow EDSIG Fellow David Feinstein, and V. Gordon Moulton (later Dean of the School of Computing and President of the University of South Alabama) co-founded a new degree program in Computer and Information Sciences (CIS), housed in the free-standing Department of CIS. The program was

unique among all other computing programs in that students were offered several choices of computing specializations, including computer science, information science, computer engineering, numerical methods, and education. Bart is generally credited with proposing the design of specializations. The following year they were joined by EDSIG Fellow Roy Daigle.

2. EMERGENT THEMES

In the early 1980s, Bart published the results of his first major systems development project. The project, funded by an NIH grant, developed a tool called FEDIT (Ward, Longenecker, & Abee, 1982). An acronym for *fielded data file editor*, FEDIT was innovative for its time. While dBase (1981) and WordStar (1978) were in their infancy as standalone apps, Bart's FEDIT integrated multiple tools. Documents were stored as hierarchical files. There were CRUD operations, sorting, statistical computations, and word processing features. The system ran on a multi-user operating system called MUSIC/SP (Wikipedia Contributors, 2016). That he worked on this project with students, and published with them, was significant. He would continue this collaborative approach.

Systems Development Projects
Thus, the first of the emergent themes is *systems development projects*. Bart always worked on systems development projects with students, using his classroom as a laboratory for invention. The systems he built mirrored elements of existing products found in industry, but were integrated in innovative ways. The building blocks were always found in the curriculum, and included databases, editors, and control-break reports. Bart filled the role of project champion and relied on collaborators to finish.

Bart continued to develop these systems with students and with colleagues. They published them throughout the years. He developed a learning management system for designing and administering an exit exam for IS students (Reynolds, Longenecker, Landry, Pardue, & Applegate, 2004). He led the development of a user-interface for multi-taxonomic hierarchy representation of curriculum mapping (Presley, Longenecker, Pardue, & Landry, 2006). This system implemented human-computer interaction principles and techniques such as anchoring, overview and zoom, information classification, and dynamic query. He mentored a series of graduate students to develop the Project Meeting Management System (Hussain, 2004) that combined a team meeting tool with project

tracking and document preparation, all tailored for coordinated curriculum modeling. A subsequent evolution of this system (Lusk, 2009) was designed and fitted with organizational mission, vision and other features to support a virtual community of practice (Pardue, Landry, Longenecker, & McKell, 2006).

Bart designed integrative systems for industry on a consulting basis. He partnered with fellow CIS faculty, computing professionals, and students. Often the customers were government entities in and around Mobile, Alabama. One of Bart's most enduring consulting projects was the work he did for the Board of Water and Sewer Commissioners of the City of Mobile from 1984-86. The system replaced manual billing and tracked customers. An innovation, in that time period, that Bart and colleague Roy Daigle designed for that system was a dynamically generated individualized system access based on job title. At Bart's memorial service, Mahir Butt, the current IT Director for Mobile Area Water & Sewer System (MAWSS), attended. He shared with Bart's family that the system was in place for more than 20 years and is still used for historical data lookup when needed (M. Butt, personal communication, April 25, 2017). At this time, IS was into the end-user computing era, and Bart was formulating his user-driven development methods.

While Bart always championed these projects with visionary leadership, he rarely if ever saw them through to completion. Bart may have viewed projects as opportunities for experimenting with new ideas, and this sometimes frustrated collaborators who wanted or needed to complete and deliver a final product. Bart was all-too-happy to cede the role of "closer" to collaborators, and through their efforts they, too, shared in Bart's successes.

Systems Analysis Methods
Bart had succeeded in building integrative systems, but by the 1990s he had invented his own systems analysis and design (SAD) methodology for doing so. He called his methodology RAPID, as he envisioned it for short life cycles. Systems analysis methods were the tool of the IS Analyst, and the second emergent theme of Bart's career. RAPID is characterized as having four qualities:
 a-Be easily learnable by students and clients
 b-Provide end-user satisfaction
 c-Be well specified
 d-Have stepwise transaction closure
Bart's belief was that IS as a discipline was wholly about the mission of helping organizations and individuals achieve their goals. So, Bart designed

information systems in a project setting that was oriented around people and their organizational goals. His SAD methods had to be easy to apply, end-user oriented, and tie together various systems elements. Bart created templates for designers that linked business analysis (SWOT), project management (scope document, status reports), and SDLC (workflow, top down conceptual relational model) methods. Bart's approach to design was concurrent with industry efforts to create a unified object-oriented analysis and design (Booch, 1994) methodology and with trends like joint application development (JAD), agile development, design patterns, and enterprise systems.

Bart was encouraged by colleagues for many years to publish RAPID. Not doing so fueled skepticism about his methods. "How is RAPID better than such-and-such?" Bart would be asked by a faculty member who taught a published or popular method. Rather than write about RAPID or get defensive, Bart evangelized the listener with a Socratic dialogue.

RAPID was first published in a master's thesis (Yarbrough, 2005) which defined RAPID as an approach that integrated "business process reengineering with project management practices and IS analysis and design tasks" (p. 4). He wrote about how RAPID was the backbone of the two-course practicum in the master's program, a course sequence designed to implement the MSIS curriculum model's call for an integrative capstone sequence (Gorgone, Gray, Stohr, Valacich, & Wigand, 2006).
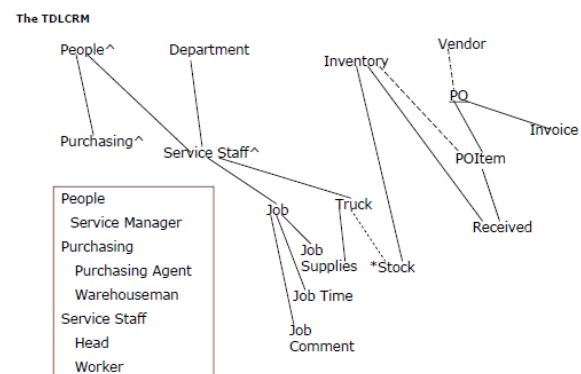

Figure 1 - Example of TDLCRM diagram (Source: Longenecker et al., 2013)

Bart continued to refine RAPID for professional and educational use. He used it in his consulting projects and taught students to use it. Bart believed that his methods, taught in the two-

semester, model-curriculum compliant integration and implementation course sequence, embodied what an Information Systems Analyst (ISA) should know and do. The ISA was what Bart was training students to become. Through his work with the Center for Computing Education Research (CCER) and the Institute for Certification of Computing Professionals (ICCP) Bart would eventually certify these skills of the ISA using a certification exam given to IS students across the country (McKell, Reynolds, Longenecker, Landry, & Pardue, 2005).

A comprehensive manuscript on RAPID was published later (Longenecker, Baugh, Feinstein, & Purawat, 2013). This publication illustrated many of the interrelated design templates. See Figure 1 for an example of the Top Down Levelized Conceptual Relational Model (TDLCRM), which is perhaps the RAPID design artifact most well-known by students and clients.

In the last edition of Bart's curriculum vita, Bart lists "IS Rapid Life Cycle Methodologies" as one of his two major research areas (with the other being IS curriculum development). He states that "my research in life cycle concepts has yielded a consistent methodology for the successful implementation of information systems" (Longenecker and Landry, 2016).

Despite early criticisms of Bart's proprietary SAD methods, respect from his colleagues started to grow. Even the more popular or highly touted methods like UML get questioned. "I don't design systems that way," said a professor who was asked to teach a UML course. Bart taught SAD methods that he believed in, used, and could defend, and that was disseminated with peer review.

Mastering Interpersonal and Team Skills
Bart cherished the interpersonal interaction afforded him by his role as educator. He bonded with many students and colleagues over the years. He was referred to by one colleague respectfully as the Master of Interpersonal Skills. His powerful and effective mentorship was affectionately called Wizardry, and his followers,

Disciples. Bart was an advocate and strong practitioner of interpersonal and team skills, the third emergent theme.

Curiously, he spent more time away from campus collaborating as on. By the early 2000s Bart was holding meetings off-campus at McDonald's, Satori's Coffee House, or a Chinese buffet. According to Baumeister and Leary (1995), human beings have a need to belong, and shared experiences, such as sports, concerts, meals, and traumatic experiences, create lasting bonds. Bart believed that the shared experience of eating with someone, combined with the release of pleasurable endorphins induced by food, created a lasting social bond. Bart probably learned this because of his background in pharmacology or perhaps because of his wide interests in self-help and social psychology.

Typically, when you met at Satori's with Bart, another student, faculty, or friend would come by and say hello. Then, you would realize that it was not a chance restaurant meeting, but that they too were there for an appointment. Bart kept these off-campus appointments at his regular table or booth between 2 PM and 10 PM on a frequent basis, often working past midnight.

Bart's style of collaboration was unique and became known simply as "Bart Meetings." They were engaging, had no definite ending time or condition, and sometimes covered the same ground as prior meetings. These get-togethers nevertheless created lasting memories in the participants that their work done together mattered, if for no other reason than they cared about each other. As social bonding is often the primary objective, Bart meetings were ingenious and successful.

Beyond emotional bonding, Bart used meeting tactics to achieve project goals. He designed them to engage productive SAD teams and incorporate Bostrom's meeting rules (Bostrom, Kinney, & Watson, 1992).
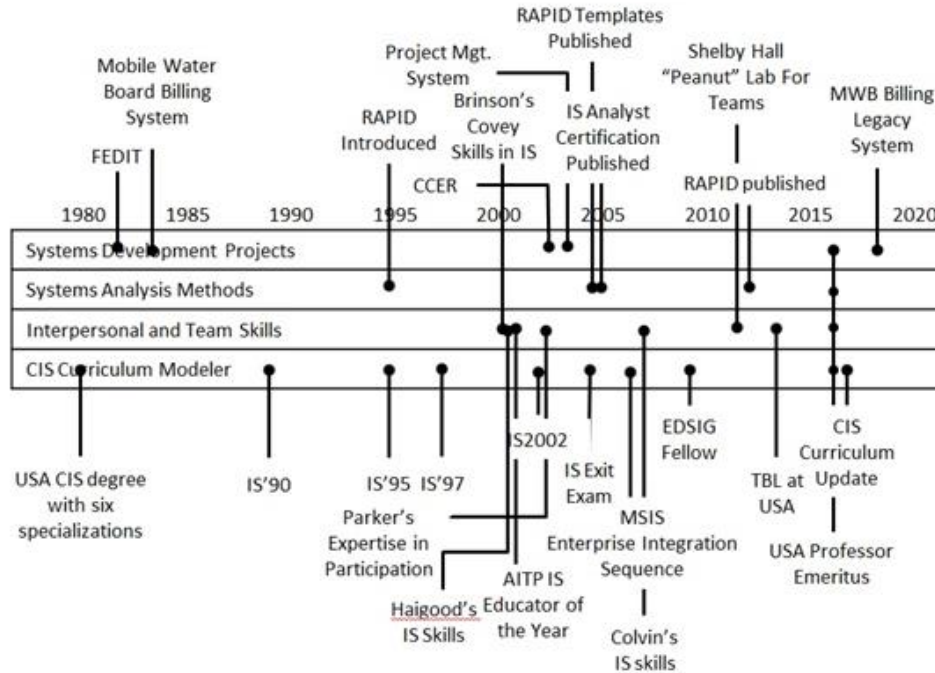
Figure 2 – Bart's Career Timeline by IS Education Theme

Bart's interpersonal mastery emanated from multiple sources. Bart was gifted with a charismatic personality. His father was a powerful influence, as he was also an educator and rose to become president of Tulane University. Bart once related a story on how people around his father would gravitate to him. Bart studied and practiced these skills and encouraged students to develop them behaviorally. He practiced the Socratic method in and out of class, integrating material from both popular outlets as well as academic sources. He was a strong advocate of Covey's seven habits (Covey, 1989). He would quote Covey on his fifth habit—*Seek First To Understand, and Then To Be Understood*, saying "most people don't listen with the intent to understand; they listen with the intent to reply." He gave every student a CD recording of Steve Shapiro's listening skills (Shapiro, 1999), and engaged them on the use of the skills on their project teams.

Building on Bart's practice of facilitated meetings, listening, and Covey's work, Master's student Bonnie Brinson, now Bonnie McNamee, worked with Bart on a thesis. Her field experiment compared a control group team against a team facilitated using the Covey Habits on system resistance/acceptance. She used multiple methods including questionnaires and surveys, and the work was longitudinal. She followed the progress of teams throughout the project, collecting data. Her appendices with instruments,

tables, and graphs were as equally lengthy as the prose section of the 100+ page thesis, which was typical for a Bart manuscript. And yes, her results supported the hypothesis and the work was published at a conference (Brinson, Longenecker, & Landry, 2000).

He integrated principles of user participation and involvement from the IS literature (Hunton & Beeler 1997) and co-mentored a thesis on this topic (Parker, 2002). Parker tied user involvement together with Davis' Technology Acceptance Model (Davis, 1989). She found support for several hypotheses, including her thesis of the moderating influence of user expertise on the effects of participation and usefulness on user acceptance. He mentored students to design systems with good listening and involvement among the members of the System Trinity of developers, users, and management.

Bart was a strong believer that interpersonal and team skills were critical to professional success. From his work on the IS model curriculum and with professional organizations, Bart developed a set of work-related skills, and then surveyed IS faculty members nationally on the depth required by IS undergraduate students (Landry, Longenecker, Haigood, and Feinstein, 2000). Two theses resulted, first by Haigood (2001) and then by Colvin (2007). The eight skill areas are as follows:
- individual and team interpersonal

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- systems analysis and design
- software development
- web development
- project management
- business fundamentals
- database
- systems integration / platform & networking

Employers today regard these skills as important. According to the National Association of Colleges and Employers (NACE), the top two skills employers most want when they decide on which college graduate to hire are leadership, and the ability to work on a team (NACE, 2015).

Bart's longitudinal work on IS skills is cited in the current revision of the CIS model curriculum (Longenecker, Babb, Waguespack, Tastle, & Feinstein, 2016), which includes a current list of team and interpersonal skills. He was recently reading a book on emotional intelligence.

With unbounded confidence in his students' abilities, he took on large, real-world development projects. His approach to dealing with the complexity of large projects was to create teams within teams through an integrated two-course sequence. The first course, a required graduate capstone practicum, had students working in coordinated teams. The team leaders came from the second course, an elective made up of students who had taken the first course. Both classes met at the same time.

When the School of Computing moved to Shelby Hall in 2012, most of the classrooms were either large lecture halls or small technology-enabled lecture rooms. Bart's unique structure resulted in the only team-based room, which is called the Peanut Room today. It features six semi-circular tables mounted against the walls, and a peanut-shaped table in the center of the room. The peanut table was used for confabs with the team leaders, who would wheel themselves from their team station to the center. Bart managed the class using this two-level nesting of classes.

He believed in the power of interpersonal influence to such a degree that he advocated the Holland College Model as a curriculum design. The model was heavy on the use of cohorts where the upper-class cohort mentored the lower class. Had Bart been accommodated, he would undoubtedly have expanded this collaborative cohort model to the entire curriculum. Despite its radicalness, Bart's capstone course sequence is still successful at USA today, as is the specially designed classroom he used. USA has adopted team-based learning (TBL, Michaelson, Knight, & Fink, 2004) as its campus-wide educational strategy for improving learning.

CIS Curriculum Modeler
CIS curriculum modeler is the fourth and final emergent theme. Bart was a curriculum designer, and he was passionate about it. This stream of scholarship may have begun at USA back in the early 1980's when the future SoC was still part of the Math Department. Bart, according to sources (Pardue, 2016), was instrumental in early curriculum design. His vision was of a single CIS degree program with multiple specializations. Computer science, information science, computer engineering, numerical methods, and computing education were among the first implemented.

By the end of the 1980s, Bart was taking his curriculum modeling paradigm to the national level, collaborating on a model for four-year undergraduate degree programs in information systems, IS'90 (Longenecker, Feinstein, Fournier, Doran, & Reaugh, 1991). He subsequently worked on several more, including IS'95 (Couger, Davis, Dologite, Feinstein, Gorgone, Jenkins, Kasper, Currie Little, Longenecker, & Valacich, 1995; Longnecker, Feinstein, Couger, Davis, & Gorgone, 1994), IS'97 (Davis, Gorgone, Couger, Feinstein, & Longenecker, 1997), and IS2002 (Gorgone, Davis, Valacich, Top, Feinstein, & Longenecker, 2003). These papers were Bart's most-cited, led by the IS2002 paper (468 cites). He was working on a new model curriculum for CIS programs up until his death last December (Longenecker et al., 2016). Each of these projects were large collaborative efforts encompassing months or years, many meetings and presentations, surveys and data analysis, creative mapping of knowledge units to skills across multiple disciplines, the involvement of multiple professional societies, and occasional political battles, such as compromising between the needs and interests of business versus computing schools.

Bart thought of computing holistically, and the integrative nature of his modeling would be a theme throughout his career. Bart's early "basement-built" model at USA is what led to USA being the first university to accredit three computing programs (information systems, information technology, and computer science) at one institution, achieved in 2002.

In 2004, Bart examined the nature of the similarities and differences among computing programs. He surveyed member institutions of the IT Deans Council on the IS2002 knowledge areas. The 26 respondents were from computer

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science, information technology, information systems, or information science programs. Bart and colleagues (Landry, Pardue, Longnecker, & Feinstein, 2003) found a theme—*systems development process*—from the IS2002 knowledge areas that clustered together on knowledge depth and inter-rater agreement:

- Systems development tools and techniques
- Interpersonal skills/communication
- Systems implementation and testing strategies
- Systems development concepts and
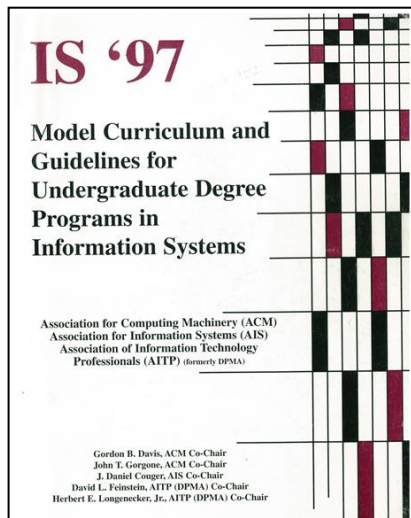- methodologies
- Approaches to systems development

Figure 3 - IS'97 Model Curriculum

Beyond the model curriculum efforts themselves, Bart extended the work to related areas. He published on curriculum mapping (Daigle, Longnecker, Landry, & Pardue 2004), model curriculum and accreditation (Landry, Daigle, Longenecker, & Pardue, 2009), learner-centered education (Saulnier, Landry, Longenecker, & Wagner, 2008), student success (White, Longenecker, McKell, & Harris, 2008) and student success in the programming sequence (Babb, Longenecker, Baugh, & Feinstein, 2014). That did not surprise his colleagues, as they remembered that Bart once conducted an oral comprehensive examination in his hospital room.

The model curriculum work made Bart a prominent figure in IS education. It is probably for these projects, mostly, that he received awards such as the IS Educator of the Year and EDSIG Fellow.

3. POST RETIREMENT WORK

Bart's health steadily declined, but not his will to continue working. With his mobility severely limited, Bart, with great difficulty, decided to retire officially from the University of South Alabama in May 2014. Bart really did not retire, however. For a semester, he stayed involved with his graduate capstone sequence, working with his replacement protégé in a client role. He continued to write and work on the model curriculum, too. Confined to a hospital bed, Bart worked via Skype with other task force members and penned his final publication, an update on the CIS model curriculum project (Longenecker et al., 2016). See Table 1 of draft exit objectives.

#	Exit Objective for IS Programs
1	Accurate business plan developed by end users, management, and developers
2	Translation of requirements into viable software
3	Exceptional requirements analysis
4	Deployment of software product
5	Project management based on established formal written methodology

Table 1 - Exit Objectives for IS Programs (Longenecker et al., 2016)

He was named Professor Emeritus of Information Systems at the University of South Alabama at about the same time. Bart Longenecker died on December 11, 2016, in Atlanta, Georgia, in the presence of his children.

4. BART'S LEGACY

Bart was a true champion of the IS model curricula. While many people and organizations contributed to the sponsorship, development and dissemination of IS model curricula over the years, Bart was perhaps its greatest champion. He spoke passionately about the subject at every ISECON and EDSIG meeting he could, every year. He kept copies of the IS'97 in his USA office (see Figure 3) and handed them out to students and colleagues. Bart also mastered the intricate details of the model curriculum. He demonstrated that IS knowledge units could be mapped along with related computing disciplines to a common body of computing knowledge. He demonstrated how Bloom-like exit skill characteristics could promote industry-readiness. Rather than settling for a simplistic set of standards or model courses, Bart created complex maps that combined technical knowledge, organizational competencies, and interpersonal and team skills that defined the IS analyst. He would want this work to continue, and it should continue,

according to his daughter Lani, speaking at his memorial service. If they are to continue in Bart's legacy, these efforts should be large, that is, inclusive of multiple viewpoints.

Bart was dedicated to the IS model curricula, but his dedication to the IS rapid life cycle methodology as the tool of the IS analyst was a close second. RAPID provided a vehicle for Bart's professorial journey. He invented his own life cycle methodology, used it confidently to educate and train others, and then disseminated it through scholarship. Moreover, Bart's invention was true to the discipline of IS. His system analysis methods led to the design of systems that aligned organizational mission, business process, and users/clients. Engaged teams translated requirements into an effective database design and software implementation that supports organizational goals. Bart would recommend that to be IS, one's use of SAD methods should be reflective of this IS vision.

Bart was the idealistic professor's professor, an idealist to the very end. Bart was passionate about and driven by his vision of what it means to be an IS discipline, an IS professor, an IS student, and a good human being. His vision aligned with McNurlin and Sprague's statement of the *mission of IS* as "improving the performance and innovativeness of people in organizations through the use of IT" (McNurlin et al., 2009, p. 19). As such, everything he did could be viewed through the lens of helping people improve themselves and reach their potential. Bart influenced people through caring, listening, his warm charismatic style, and the Socratic Method. Bart integrated his vision and passion into all three aspects of a professors' life: teaching, research, and service. He taught what he researched, he researched what he taught, and the goal of both was service to others.

Bart was never iconoclastic, but his idealism and unwavering focus on the mission of IS education frequently brought him at odds with the sometimes rigid expectations, policies, and constraints of a public university. Bart's unconventional approaches, his steadfast belief in the underdog, his untiring efforts to build large real-world systems with his students, his big ideas often ahead of their time, and his underdeveloped sense of risk, were often difficult to reconcile with convention. And so Bart didn't. Bart was Socrates, expressing his views and beliefs honestly, openly, and irrespective of the consequences. He was a visionary, a maverick, and a beloved professor.

5. LIMITATIONS

This biographical tribute to Bart has two major limitations. The first is that this work is incomplete, as Bart's career spanned 44 years. Numerous papers were omitted, as well as some grants, a variety of consulting projects, other model curriculum efforts, student individual/team projects, and awards.

This paper focused on Bart's scholarship and career, as represented by the tools and methods created, papers written, courses and curricula designed, and theses directed. Such a focus resulted in the second major limitation in that Bart's personal impact was severely underrepresented. Bart the man had a presence, a charisma. He listened, led, and mentored tirelessly. Spending time with Bart left a deep imprint on his students and colleagues that this paper could not capture.

6. FUTURE WORK

Bart's eldest daughter Lani Paxton spoke at his memorial service in Mobile, Alabama, last February. She remembered her visits to South Alabama as a child and several of Bart's major projects. Recognizing her father's greatest passion, she declared that the model curriculum efforts should continue. She also knew of her father's maverick nature. "I bet he drove administrator's crazy," she said. He may have driven many of his contemporaries crazy. But many followed him and collaborated effectively with him. Were they crazy, too? Future work should include studying how to collaborate effectively with the best of the mavericks among us, like Bart.

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