A BRIEF HISTORY OF THE COLLEGE OF COMPUTING

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The first digital, stored-program computer was installed on campus in 1954. In late 1957 Librarian Dorothy Crosland saw the opportunity of putting Georgia Tech (GT) at the forefront of an emerging discipline and set about to ensure that would happen. Vladimir Slamecka was chosen by her to be the Founding Director of the School of Information Science (IS) in 1964 with the first degree in computing at GT, an M.S., awarded to Joanne Butterworth in 1965. By 1987 when John Patrick "Pat" Crecine came to Tech as president with the vision of a college that would lead the campus in the coming digital revolution of our society, the environment was ripe for the formal birth of the College of Computing in 1990 – twenty-five years after the first academic unit on campus started.

The Slamecka Years (1964-1978)

Slamecka was a remarkable individual, having survived WW2 and refugee camps as a young man in Czechoslovakia and eventually receiving his Ph.D. in Library Science from Columbia University. He had read the seminal paper "As We May Think" by Vannevar Bush and he used that as a blueprint for the new School's curriculum. The new courses developed and faculty hired in the early years clearly illustrated the breadth of the vision he was implementing. This was modified in time by two pressures: Student demand at all levels for more computer-oriented courses increased dramatically and information science as a field began to wane globally as computer science (CS) increased in its importance, resulting in renaming the School to Information and Computer Science (ICS) in 1970.

In his almost fifteen years as Director, Slamecka built IS/ICS from almost nothing to a respected and active group of computer and information science faculty, grew the student population from 1 to over 500, oversaw and helped in the development of a full suite of undergraduate and graduate courses, hired a number of faculty who were (or later became) nationally recognized in their fields, and established the ethos of teaching and research for faculty in the School – a practice not widely employed at GT in those days. A number of the graduates from that time have gone on to prominent leadership roles in research, academia, and industry. As with Crosland, Slamecka's contributions have not been fully recognized.

The Miller Years (1980-1987)

Ray Miller, a noted mathematician/computer scientist at IBM Research who also had administrative experience, became Director in August 1980. Miller had edited the premier Journal of the ACM, which meant that he knew many of the top computer

scientists in the country. That and his long-time tenure at IBM Research focused his successful hiring in the core disciplines of CS that were prominent at the time.

The Ph.D. program grew substantially during this period from 25 to over 75 active students, most with assistantships, and the average quality and preparation of applicants improved. Under his leadership, the ICS faculty grew, became more CS-centric, and research expenditures grew to between $2-3M/year. Many of the faculty he hired later became the leaders in the College of Computing. The total number of students in ICS also grew, a number of whom have gone on to important careers. When he stepped down in 1987, plans for a new building were ready for construction and ICS was a stronger, more focused unit.

Transition (1987-1990)

Alton P. "Pete" Jensen was called out of retirement to be Acting Director of ICS. Jensen joined Tech as a Research Engineer in 1954 and taught part-time in ICS almost from its start. From 1967 until 1991 he was a regular member of the faculty, teaching and guiding thousands of students, as well as people beyond campus – many of them later famous.

In his 1987 inauguration speech, Crecine announced his intention to build a "21st Century Technical University." One of the committees set up was to "investigate having a computing college." The committee, co-chaired by Jensen and composed of faculty from all areas of campus, discussed a number of alternative ideas and decided on a broad charter and to call the new unit the College of Computing (CoC).

Jensen in his low-key way was very influential in the creation of CoC and set the tone for what followed. A Transition Committee, co-chaired by Rich LeBlanc, was set up to plan the organization and substantive focus of the new college. LeBlanc knew of the thinking and activities nationally that were discussing a broad definition of computer science. Jensen's and LeBlanc's work and the others participating in the transition provided a bridge to the College of Computing. In 1989-90 several people were interviewed and an offer was made to Peter A. Freeman to be the Founding Dean and Professor.

On July 1, 1990, the College of Computing officially came into existence, comprised of faculty of the former ICS. At that point, the vision and efforts of Crosland and Slamecka, the focused leadership of Miller, the prescient visions of Crecine and Jensen, and the efforts of dozens of faculty and staff were realized in an academic unit with a mission from Crecine "to lead, not own, computing at GT."

The Freeman Years (1990-2002)

Freeman came from a background that was commensurate with those who had come before him at Georgia Tech. As the Founding Dean, he enjoyed strong support from the campus administration including funding for new faculty and the objective of the

President that computing should “be at the table when resource decisions are made, not just be represented by a dean whose personal background might not be in computing.”

The implementation of that objective provided unparalleled opportunity for the faculty of the CoC, and they stepped up to the challenge with energy and imagination. The result for the next twelve years is a story of bottom-up ideas and work from the faculty and staff coupled with top-down leadership of senior faculty leaders and the Dean and senior staff. This was done in the context of evolving strategic and operational frameworks, developed and supported by faculty and leadership working together as a community.

In the 1991 CoC strategic plan, it is noted that *"In a world where computer science is very closely blended with a variety of other disciplines in the context of challenging strategic applications, our research activity must push forward the frontiers of basic computer science and selected computing areas in which computer science is a key, but not exclusive, component. Our real specialty, however, will be in knowing how to effectively mix computer science and other areas."* These initial efforts of the dean and the faculty to formulate a realizable vision coupled with evolving strategic plans were key to the early and continuing successes of the College and its members.

The first six years were largely consumed with building infrastructure, establishing new processes and expectations, hiring a few new faculty and staff to replace several who retired or departed, and developing a cohesive, action-oriented community focused on a collective goal that agreed with and supported most individual objectives. Notable activities included the start of innovative educational efforts, focusing and expansion of research activities in theory, robotics, graphics, and HCI, expansion of continuing education offerings, and creation/staffing of student, communications/outreach, financial, and technical services operations.

Externally, a major Convocation held in 1991 announced to the campus and beyond that a broad and high-quality computing college that would be a leader was being developed. The emergence in 1992 of the inter-disciplinary GVU Center led by Jim Foley attracted broad participation and added further substance to the vision. Similarly, in 1993 a gift of $3 million for support of educational and multi-media efforts to the campus, 90% of which came to the College, led to the establishment of the EduTech Institute under Janet Kolodner. This added yet more substance and broad campus participation, this time in educational technology and cognitive science.

Starting in 1991 and rapidly increasing, preparations for hosting the 1996 Olympic Village on campus became an obvious, but interesting, distraction to campus life. At the same time two internal leadership changes took place, with Jensen retiring as first Associate Dean and LeBlanc assuming that position. Campus leadership was also changing with all new deans and several top administrators within a few years, as well as the resignation of Crecine in 1994. The summer of 1996 imposed a hiatus on most normal activity on campus and provided a welcome respite.

The next six years saw effective leveraging of the programmatic beginnings/expansions and the infrastructure, relationships, and culture building during the first six years. Undergraduate student expansion was fueled by the dotcom boom and the experimental offering of an introductory course sequence for all majors on campus. Students increasingly were sought out by the best tech companies (e.g. Cisco, Intel, Microsoft, IBM), won prestigious awards (e.g. the British Marshal Award), went to the very best graduate schools (e.g. MIT, CMU, Stanford), and started companies.

Graduate enrollment (M.S. & Ph.D.) expanded rapidly due to growing interest in computing and the rapidly increasing reputation of the College. Enrollment expanded in highly popular fields such as networking, HCI, and robotics; new M.S. degree programs were developed in HCI and Information Security; and further specializations created in the Ph.D. program. The number of highly qualified applicants from the best undergraduate schools here and abroad increased. Some graduates found positions at top schools and the best industrial labs while others went to industry, joined startups or even started them. All had bright prospects.

Strategic buildups in robotics, new media, educational technology, telecom, information security, and systems expanded the faculty significantly. In addition to promising junior people and mid-level faculty with strong records, several senior people with significant research reputations were hired. Among those were John Limb, senior networking researcher at Hewlett-Packard, and Dick Lipton, a widely respected researcher in CS theory, security, and related subjects at Princeton.

Research outreach to industry was increased in a variety of ways. Centers in computer systems and high-performance computing (CERCS, led by Karsten Schwan) and cybersecurity (GTISC, led by Freeman) were formed and involved faculty and students from other units from the start. Faculty participated in the research and educational aspects of the Yamacraw economic development program funded by the State, and led campus-wide coalitions in high-performance computing and cognitive science. Overseas relationships, very active under Slamecka, had atrophied but two new programs were started in Spain in 1997 (by Larry Hodges) and 1998 (by Norberto Ezquerra).

The first endowed dean's chair on campus was donated and Freeman became the first John P. Imlay, Jr. Dean of Computing. A faculty chair was donated by Frederick B. Storey, with Lipton being the first holder. The Georgia Research Alliance and Stephen Fleming donated a second chair, originally held by Limb and later by Foley. Development Director at the time, Molly Ford Croft led all three fund-raising efforts.

The College grew to occupy space in three main locations, with a few offices/labs in other buildings, but most importantly, approval for a new building was obtained. Through the efforts of Mary Alice Isele, new Development Director, and alumnus Tom Noonan, a cash donation of $15M was made by Tech alumnus Chris Klaus in 2000 to augment State funds made available for a new building. Design work began in January 2002 on the Klaus Advanced Computing Building, which opened in 2006.

In early 2002, Freeman announced he was stepping down as dean, returning to the faculty, and taking leave to accept a position in Washington as Assistant Director of the National Science Foundation.

Ellen Zegura was appointed to serve as Interim Dean until a new dean was in place. She continued her expert guiding of the Klaus Building construction.

The DeMillo Years (2002-2008)

Rich DeMillo, the second Ph.D. graduate of ICS and an early ICS faculty member before moving to Purdue and later Hewlett Packard as CTO, was recruited to return to GT as Director of GTISC. Arriving on campus during the summer of 2002, he was nominated for consideration as dean and in December 2002 he was chosen, becoming the second John P. Imlay, Jr. Dean of Computing.

DeMillo began with a faculty retreat to discuss changes to the structure of the College and appointed a working group to investigate possible new models. DeMillo and his senior staff developed an implementation plan based on their report, which was approved by the faculty and went into effect in Summer 2003. Two new, formal divisions, the Core Computing Division (CCD) and the Interactive Computing Division (ICD) were created—both of which would later be approved as Schools in 2007. Aaron Bobick was first chair of ICD and Kishore Ramachandran of CCD.

Research activity in almost all areas added additional, strong faculty who won highly competitive research grants. GVU continued to expand in size and extent, for example helping launch the Music Technology programs on campus and providing funding for collaboration between GT and the Atlanta Symphony Orchestra.

Academically, a number of new courses were given, notably a course in Computational Media by Mark Guzdial that was highly popular and soon spawned a new BS degree of the same name. The innovative Threads™ curriculum was introduced, providing more options for all CoC students, further strengthening the popularity of a computing major. It was a new approach among computer science departments and attracted national attention. Another activity was the beginning of the Georgia Computes! Project led by Guzdial and Barbara Ericson. It continued for six years (2012) and was a great success in helping other schools in Georgia to modernize their basic instruction in computer science.

Santosh Vempala founded the Georgia Tech Algorithms and Randomness Center (ARC) to serve as an active center of campus interest in and development of algorithms that are central to so much of modern research and development. Bolstered by the efforts of the sizeable robotics faculty and in conjunction with the College of Engineering, a Robotics Research Center was started by the newly hired Henrik Christensen, holder of the KUKA Chair of Robotics.

Beginning in 2005 with the creation of the Division of Computational Science and Engineering (CSE), with Richard Fujimoto as first chair, and Ellen Zegura being named chair of CCD, the process of conversion of divisions into schools (the GT term for departments) began. This culminated in 2007 with Chairs Bobick and Zegura continuing as chairs of the School of Interactive Computing (IC) and the School of Computer Science (CS).

The next academic year, AY 2007-2008, saw the approval by the Regents of the M.S. and Ph.D. degrees in CSE and approval of the M.S. in CSE as an online offering. A new Ph.D. in Robotics, only the second in the country, was also announced.

In June 2008 DeMillo announced his resignation as dean and intention to return to the faculty as a professor effective January 2009. Two important legacies of DeMillo's time as dean were the successful establishment of an award-winning communications group to advance the public visibility and the academic reputation of the College and its members, and serious efforts to improve student diversity. The latter included hiring professional staff trained in counseling and diversity efforts, and has established a strong tradition in the College. A sign of the increasing reputation of the College of Computing came in early 2008 with GT ranked at number 9 in the list of graduate programs in computing by the *U.S. News & World Report*, breaking into the Top-Ten list for the first time, a position it has held since.

Foley was named Interim Dean on July 1, 2008 and served in that capacity until June 30, 2010. Efforts stretching back for almost 40 years continued to prosper and grow during these two years. The truly interdisciplinary "Computing for Good" (C4G) program was launched in 2008 by Santosh Vempala (CS theory), Zegura (networking), and Mike Best (international affairs). It combines technology and activism to solve urgent social, political, environmental and health problems around the world. By 2015 over 250 students had completed 70 projects for partners including the Carter Center, the CDC, and CARE. A major NSF High Performance Computing award was made to the GT project led by Jeffrey Vetter in 2009 and in early 2010 the CSE Division officially became the School of CSE with Fujimoto continuing as chair.

The Galil Years (2010 – present)

On July 1, 2010, Professor Zvi Galil, a well-known theoretician and member of the National Academy of Engineering, became the third John P. Imlay, Jr. Dean of the College of Computing. He previously had been Chair of Computer Science, long-time Dean of Engineering at Columbia and, most recently, President of Tel Aviv University.

Faculty-led efforts resulted in strong leadership in high-performance computing (HPC), including large, highly-competitive grants. Georgia Tech created the Institute for Data & HPC to advance and coordinate research and education activities across campus in this area. President Obama announced the National Robotics Initiative in the fall of 2011 in a

speech in which he mentioned Georgia Tech's involvement. Christensen had been the technical lead in the national computer science community to develop a future vision of robotics and a roadmap to achieve it.

May 2013 was a watershed moment for the College with the announcement of an Online Master of Science in Computer Science (OMS CS), to be offered in collaboration with Udacity and the initial support of AT&T. It is the world's first graduate degree program from a top-tier university based completely on the massive-online model of course delivery (MOOCS). OMS CS is indistinguishable from the on-campus MS CS, but at a highly discounted price. The announcement garnered tremendous worldwide media attention as a pioneering step. By 2015, almost 3000 were enrolled and the first graduates are expected before 2016.

The final academic year of this narrative, 2014-2015, saw continued change, growth, and innovation on a number of fronts. One of GT's initial "super," interdisciplinary centers set up in 2011, the Institute for People and Technology (IPaT) headed by Beth Mynatt, continued to expand in number of faculty, research, and impact. It was joined by the already large Center headed by Christensen as the Interdisciplinary Institute for Robotics and Intelligent Machines (IRIM). A third CoC center, GTISC was slated to become an Institute in late 2015, again delivering on the original mission of the College to lead a broad spectrum of computing research and education on campus.

Conclusion

The Georgia Tech College of Computing story is one of a rare confluence of fortunate circumstances, visionaries in a position to implement their visions, and leaders willing to invest the hard work and additional vision to build on what had come before them. Paramount has been the formulation of and adherence to a coherent strategic vision coupled with well-thought out plans and faculty and staff efforts to bring about the innovations for successful realization.

As a College, we have stood on the shoulders of those that preceded us and added new visions, innovations, and hard work to deliver on the strategic vision of the early years. Throughout there has been a sense of community, desire to do better, and wish to participate in an activity larger than any of one us.

Primary Sources for This Article

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Compiled in 2014-15, it is based on previous timelines, interviews, videos, contributions, and numerous original sources. It contains entries from 1945-2015, many of which are validated. It is intended to serve as a basis for a continuously updated historical record and source for anyone wishing to dig more deeply into the history of the College of Computing and its predecessors.

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This is a more complete narrative of the years preceding the formation of the College of Computing. The early years were rich and filled with accomplishments that deserve more description than this "Brief History" has room for. Available at: http://gtcomputing25-50.gatech.edu/timeline.

Video Interview with Vladimir Slamecka, http://tinyurl.com/q32eqsb, 1998.
This interview of almost two hours provides a fascinating account of a personal history that began in Czechoslovakia before WW2, played out in five countries on three continents as a refugee, student, researcher in a very early software company, and founding director of what later became the College of Computing.