Computers on Campus:

Early Computer Technology at Georgia State University

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Arthur C. Clarke said, "Any sufficiently advanced technology is indistinguishable from magic."[1] It may not have quite appeared to be "magic" but for some of the young visitors to Georgia State College in 1961, seeing a computer in action may have been close. A volunteer gave Professor William Wells, the Georgia State Computer Center director, her birthdate. He then typed that date onto an IBM punchcard. Wells loaded the punch card along with a stack of cards that contained the actual program, and all were loaded into a card reader bay on one side of the room. The IBM 305 RAMAC read the information and initiated the program. Lights flashed. Two minutes later the sixth graders from Douglasville Elementary heard a loud printer ribbon screeching across some paper being fed into a printer across the room. On the paper was the day of the week that the young girl was born. Shirley Akers, remembers seeing the "gigantic" computer — the first she had ever seen. Shirley recalled, "As soon as I got home that day I couldn't wait to ask my Mom what day of the week I was born." RAMAC calculated a Thursday birth, and her mom confirmed that the computer was right.[2] Wells mentioned the event in a report the Dean of the School of Business Administration, Dr. George E. Manners, later that year; Wells reported that the group "was very deeply impressed and seemed to have gained a very favorable impression of Georgia State College."[3] This sentiment was very important for the administrators of the newly independent college which spent large sums of money and promoted their new computer center in an attempt to establish a strong reputation amongst two older and more established public research universities in the state of Georgia.

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[1] Arthur C. Clarke, *Profiles of the Future: An Inquiry Into the Limits of the Possible* (New York: Holt, Rinehart & Wilson).
[2] Shirley Akers, email message to the author, October 24, 2018.
[3] William H. Wells, "Annual Report to the Dean from the Director of the Computer and Data Processing Center" in George E. Manners, "Dean's Annual Report to the President of Georgia State College" in *President's Report: Georgia State College 1960-1961*, (Atlanta: Georgia State College) Georgia State University Archives, p. BA 239.

In the 1960s, when Georgia State College — later Georgia State University (Georgia State) — established its first computer center, the college rapidly grew but also struggled to define its place within the higher education landscape of Georgia. Professors used the Computer Center as a teaching tool; students and faculty used it as a research tool; administrators used it as a recruiting tool. This was all in an effort to educate, establish credibility, and distinguish the identity of the college. By the end of the decade top research universities, or those striving to be one, considered computers and a university computing center a "must have."[4] Many Liberal Arts colleges also used computers — either owning their own or arranging for computer time at neighboring universities or other institutions.[5] Vassar College, for example, made arrangements with IBM's offices and the IBM assembly plant down the road.[6] A short 1966 survey reported that the size and type of college made no difference — small and large colleges, exclusively male, female, or coeducational, all sought computer technology.[7] Therefore, it is no surprise that Georgia State also desired to incorporate computer technology into its college curriculum. However, with an IBM office in Atlanta and the Georgia Institute of Technology (Georgia Tech) in the same city, it is a bit surprising that Georgia State put so much emphasis on establishing their own computer center. Yet, while the faculty, the administration, the state Board of Regents, and the student body needed a little encouragement, a little prodding, and a little showcasing of the benefits of computer technology as a growing tool in education, business, and other research fields, the Georgia State Computer Center became a focal point for research, management, and recruitment for the growing college and its unique student body.

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[4] Winifred Asprey, "Computers on the Campus: A Survey of Computer Activities in the Liberal Arts College" *Journal of Higher Education*, Vol. 36, No. 9 (December 1965), p. 500.
[5] Asprey, 506.
[6] Asprey, 505.
[7] Asprey, 501.

Georgia State's early computing history is a history of technological integration rather than innovation. While Stanford University conceived the future of personal computing and the Massachusetts Institute of Technology (MIT) developed critical hardware computer technologies in the 1960s, the story of early computers at Georgia State is different.[8] It is not a history of technological innovation such as at Stanford or MIT or in "cities of knowledge" where government-funded Cold War efforts drove scientific research and development and the creation of new computer technology.[9] Georgia State introduced computing technology developed elsewhere to a unique segment of society — the working businessman-turned-student — who, after a little encouragement, vigorously embraced the computer as a tool.

A development in technology is a singular point within the historical matrix. There is neither an inevitable direction that technology will move, nor an assured acceptance of new technology. As Historian of Computing Michael Sean Mahoney once said, "[Historians] want to know what the choices and possibilities were at a given time, why a particular one was adopted, and why others were not."[10] By studying the intersection of technological innovation and the social history of Georgia State College, another dimension to the history of computing becomes evident: the way those particular students, faculty, and administrators at a growing, developing, urban, commuter-based business school operating only few miles from an "Institute of Technology" responded to the technological innovation that was the computer. The Computer Center prompted faculty from departments all over the college to utilize the computer.

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[8] For Stanford and MIT's contribution see John Markoff, *What the Dormouse Said: How the Sixties Counterculture Shaped the Personal Computer Industry*, (USA: Viking Press).
[9] Margaret Pugh O'Mara, *Cities of Knowledge: Cold War Science and the Search for the Next Silicon Valley* (Princeton: Princeton University Press, 2005), 21.
[10] Michael Sean Mahoney, *Histories of Computing*, edited and with an introduction by Thomas Haigh (Cambridge, Massachusetts: Harvard University Press, 2011) 40.

Furthermore, and perhaps more importantly, Georgia State strove to support a unique type of student body — the non-traditional, working businessman. However, at the same time, Georgia State sought growth, expansion, and recognition. Georgia State used the Computer Center as a recruiting tool for prospective faculty and students.[11] By establishing a computer center on campus, Georgia State introduced the new tool of computer technology to those outside of the traditional college student body illuminating the introduction, interaction, and incorporation of computer technology by this unique segment of society.

The collegiate experience itself is another form of intersectionality. The university setting connects faculty and students, the town and the gown, and various administrative bureaucracies. Traditional college students are caught between childhood and adulthood. They prepare to join the workforce, but are not yet part of it. Georgia State College in the 1950s and early 1960s catered to another group of college students — the nontraditional, commuting, slightly-older-than-usual, predominantly male business student. As a result, the unique clientele to which the school catered and the administration's need to establish the university's future in an uncertain educational and political landscape directed the choice of which computer technologies to accept and which to reject as well as the timing of those choices. Although more powerful computers were available, Georgia State chose an IBM 305 RAMAC as their first computer, not only because of a smaller price tag, but also because Georgia State's business school background prompted the purchase of a computer designed more as an accounting tool than one for scientific research. The Computer Center became a focal point of faculty, student, business, and inter-departmental intersectionality.

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[11] "Georgia State College Today" Brochure of Georgia State College 1961, Georgia State University Archives, p. 6.

Along with the turbulent transitions involving racial strife and court-ordered integration in Southern schools, women's right's movements, civil right's protests, opposing views of war, and Cold War tension, a new wave of technological integration appeared on the horizon. On the Georgia State campus the computer became the focal point of administrative attempts to establish and solidify the reputation of Georgia State. The faculty and student body initially viewed the computer with a sense of awe and wonder, but then they began to use it as a tool. Administrators, faculty, and students gradually utilized the Computer Center and tested the limits of the new tool. Computer programs to calculate grade point averages, set course schedules, sort data sets for research projects, and automate the process of library loans — all time-consuming tasks — replaced repetitive manual labor. Eventually, administrators reconsidered and campus construction in light of growing computer utilization. The Georgia State College campus was a microcosm representing a cross section of society and their introduction to, influence by, and integration of, computer technology into everyday lives. Once computer technology became a small part of educational life at Georgia State, it rapidly expanded, spread out, and became intrinsically tied to the experiences and decision making process of the student body, faculty, and administrators. The Computer Center showcased computer technology to businessmen and student groups that otherwise may not have had the opportunity. The faculty and students became users of the new technology rather than bystanders in awe of the *near-magical* machines.

Before the Computer: A History of Georgia State College of Business Administration and Struggles with the Parent Universities.

Thomas Haigh suggested that historians of computing technology focus less on the computer itself and more on the uses of the machine. To understand the way in which people used the machines, one must first dive into the setting. Haigh noted, "The use of computer technology in a particular social setting (such as a laboratory, office, or factory) cannot be addressed without also studying the earlier history of this setting, the people in it, and the objectives to which the machine is put."[12] Haigh referred specifically to computer integration in the business world which makes his advice all the more relevant when studying the integration of the computer into the collegiate experience at a commerce school turned school of business administration.[13] In fact, the particular setting of Georgia State between two established public institutes of higher education, both with defined purposes, a rivalry, and political agendas also steered Georgia State's choice of computing technology and the uses of that technology.

About half of the forty-four students enrolled in the inaugural class of 1913 at the Evening Commerce School of the Georgia Institute of Technology were local Atlanta businessmen. They were enthusiastic and sparked Georgia Tech administrators to open a downtown location in heart of the business district the following year. When Georgia Tech began the evening commerce school, it became only the third in the South, following Louisiana State University (1898) and Washington and Lee (1906).[14] Throughout the rest of the twentieth century Atlanta grew to become a thriving metropolis, and with it, Georgia Tech, and what would

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[12] Thomas Haigh, "Chromium-Plated Tabulator" *IEEE Annals of the History of Computing* Vol. 23, Iss. 4 (October 2001) p. 75.
[13] Mahoney, 64.
[14] Merl E. Reed, *Educating the Urban New South: Atlanta and the Rise of Georgia State University* (Macon, Georgia: Mercer University Press, 2009), 1, 5.

become Georgia State University, became the first Southern equivalents to the city colleges found in the North.[15]

Atlanta was ripe for growth, but lacked education. Fifteen railroads linked Atlanta to the North and the Midwest, which provided the backbone for commodity exchange and banking. Between 1910 and 1920, $5,000,000 (approximately $125,000,000 in 2018 dollars) bought nine new buildings mostly around downtown, north of the railroad along six miles of Peachtree Street, and the population of Atlanta topped 200,000.[16] Unfortunately, education in the segregated South was, according to a Columbia University study in 1922, "woefully lacking." There was no high school for African-American students until 1924, and only four white high schools for the children of the middle and upper class.[17] Lack of education but growing business potential drove Georgia Tech commerce lectures of 1912 into an evening commerce school operated out of the Lyman Hall Chemistry building on the Georgia Tech campus in 1913.[18] Sparked by the enthusiasm of the new college clientele — young, energetic, working businessmen — and transportation difficulties from the downtown business district to the Georgia Tech campus, the evening school opened up a downtown location on Walton Street in 1914.[19] However, the 368 female clerks working in Atlanta businesses as well as all other women and all African-Americans were not allowed into the new college.[20] But despite the prejudice, the stage was set for the new school to begin to make its mark on the growing business community and on general Atlantan society.

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[15] Reed, 2.
[16] Reed, 2.
[17] Reed, 2.
[18] David Smith Jr., *Georgia State University: An Institutional History, 1913 - 2002* (USA: Higher Education Publication, 2010), 6.
[19] Bertran Holland Flanders, *A New Frontier in* Education (Atlanta: Atlanta Division of the University of Georgia, 1955), 20-21; Reed, 5-6.
[20] Reed, 5-6.

The Georgia Tech Evening School of Commerce fulfilled a growing need in the business community of Atlanta. Following the University of Georgia (UGA), which opened graduate programs to women in 1916 as the United States entered the war and college-age men were pulled away from the campus, women began to take classes at the Georgia Tech Evening School in 1917 making up about 30 of the 158 total student body.[21] In an uncertain time for the young institution, the enthusiastic female students helped keep the doors open. After the war, returning soldiers, along with the businesswomen now taking classes, created an attendance explosion and proved that the commerce school supported a true need in the community. The downtown evening school saw 310 sign up for classes in 1919 and another 190 on the Georgia Tech campus.[22] The University of Georgia's business classes, by comparison, only had 101.[23] The downtown location really supported an educational need for Atlanta businessmen who could not make their way to Athens for classes or take off work during the daytime to attend classes at Georgia Tech.

However, while enrollment grew in the 1920s, the Great Depression highlighted the need for educational efficiency and restructuring and laid the foundation for a struggle between Georgia State and the University of Georgia. In 1932, the Georgia legislature established the University System of Georgia to act as an umbrella agency governing all public colleges in the state under the watchful eye of a Board of Regents in order to "save money and streamline higher education."[24] The University System removed the Evening School of Commerce from the purview of Georgia Tech. The college became the University System of Georgia Evening School

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[21] Reed, 8.
[22] Flanders, 22. Reed, 8.
[23] Reed, 8.
[24] Reed, 27.

(Georgia State) and operated as an independent institution directly under the authority of the Chancellor.[25] The rivalry between UGA and Georgia Tech made the board of regent's job of restructuring Georgia's higher education a bit difficult and the newly independent evening school found itself in the middle of this institutional tug-of-war. Protests developed from Atlanta businessmen many of whom were alumni. Several Georgia Tech athletes were taking commerce classes, and alumni feared that the restructuring could hurt the sports programs at Georgia Tech and, by extension, help UGA.[26]

Furthermore, Georgia State was caught in-between the rivalry a few years later when, in 1947, the Regents made the college an Atlanta Division of the University of Georgia.[27] The latter had an established economics department which the Regents felt could support the adult education of Atlanta businessmen. Discussion ensued regarding the rivalry between the two established universities and the possibility of returning the commerce school to Georgia Tech, but the state decided that Georgia Tech should keep "focus narrowly on engineering and the sciences" while UGA was better suited to support business and social sciences.[28] Meanwhile, the Atlanta Division of the University of Georgia focused on providing business education to mostly non-traditional urban businessmen but still struggled to define its place between the two established rivals.

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[25] Reed, 30, 32; in 1935 the name was changed to the University System of Georgia's Atlanta Extension Center and was made up of the Georgia Evening College and the daytime unit, the Atlanta Junior College
[26] Reed, 33.
[27] Flanders, 48.
[28] Reed, 33.

Early Uses of Machinery on Georgia State's Campus and the Struggle for Independence and Recognition.

During the late 1940s and early 1950s, enrollment at the Atlanta Division of the University of Georgia (Georgia State), thanks in large part to the G.I. Bill, rapidly increased much like it did in the rest of the country. The growing numbers, the tedium of record keeping, and new technology sparked a push to create more efficiency through mechanization. The Registrar's office began the process of incorporating machinery to accumulate student information including grade reports and class schedules. An "impressive array of grey colored devices, swiftly clicking through stacks of punched cards," transformed the Registrar's office, according to a 1951 student-produced newspaper article. The devices, it went on to say, would "in the future hold the key to all the information about the students past and present at the Atlanta Division."[29]

Mechanization was not automatically accepted; students needed some convincing on the usefulness of the new machines with large price tags. The article that announced the "Mechanization to Aid School Office Records" extolled how the efficiency of mechanized processes would save time and money and benefit the students as well as the faculty and staff. John Shuptrine, the Assistant to the Registrar at the time, proclaimed that the wait for grades would be cut down to a mere "18 hours after grades are received from the teachers."[30] Shuptrine further stated, "it also possesses 'mark sensing' which makes it capable of interpreting penciled information such as grade reports from the professors."[31] The unnamed machine was more than

[29] "Mechanization to Aid School Office Records" *University SIGNAL* (Atlanta, GA), May 9, 1951, p 1.
[30] "Mechanization to Aid School Office Records" p.1; "IBM Office: No Two Alike" *University SIGNAL* (Atlanta, GA), October 23 1953, p. 3.
[31] "Mechanization to Aid School Office Records" p. 6.

likely an IBM 604. The IBM 604 was a key component that aided both IBM and IBM customers "in the transition from calculating machines to computers."[32] The system contained a calculating device, a card sorter that could arrange 650 cards through 26 slots per minute, an interpreter that could print over the punched holes for human recognition, a collator that could compare cards and files and select a certain one, and a reproducing punch capable of copying information from one punch card to another at a rate of 6,000 cards per hour.[33] Georgia State rented the machine from IBM at a price unspecified by the article, but one that officials expected "to be overcome by the extension of services and reduction of time involved" as well as the decreased cost of labor associated with mechanization.[34] The IBM 604 illustrated to purchasers, like Georgia State, the benefits of more advanced accounting machines compared to earlier calculating devices. When the time came, familiarity with machines like the IBM 604 made the movement to a computer a smaller step.

However, at this early stage, students', faculties', and staff members' opinions about the the virtues of the machinery varied. Some faculties at other universities openly rebelled against mechanization. A faculty group in the Midwest "attempted to sabotage a newly installed computer system by punching random holes in the IBM cards used to report grades."[35] A Registrar at another university fought the introduction of computer technology by arguing that his traditional methods were more efficient.[36] *University SIGNAL* newspaper articles at Georgia State from this period (and even a bit later) often overly expressed the importance of

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[32] Charles A. Bash, Lyle R. Johnson, John H. Palmer, and Emerson W. Pugh, *IBM's Early Computers: A Technical History* (Cambridge, MIT Press, 1986), p. 68.
[33] "Mechanization to Aid School Office Records" p. 6.
[34] "Mechanization to Aid School Office Records" p. 6.
[35] Francis E. Rourke and Glen E. Brooks, " Computers and University Administration" *Administrative Science Quarterly* vol. 11 no. 4, Special Issues on Universities as Organizations (March 1967), 575-600, 575-576.
[36] Rourke and Brooks, 576.

mechanization in an attempt to persuade readers of the value these machines brought.[37] But Georgia State registrars "extoll[ed] the virtues of the new mechanical assistants."[38] Some students and faculties may have needed convincing, but it appears Georgia State registrars not only accepted but also praised and argued for further mechanization.

The mechanization of record keeping quickly became part of the collegiate experience at Georgia State, but students in the early 1950s may not have realized just how much their educational lives were already being impacted by it. All over the country pre-computer machines appeared on college campuses as part of the "new managerial science."[39] By 1953, every student at Georgia State had on file a "work card," which contained student information used by teachers and college deans, and a "class card," which contained the student's schedule. The Registrar also kept a third card for grade reporting.[40] The International Business Machines office on campus "play[ed] a very important part of the school life of every student and teacher at the Atlanta Division," according to a *SIGNAL* article which went on to say, "Many students have heard of this office, but know little about it."[41]

Women became heavily involved in aggregating and filing records using the new machinery. At Georgia State in the early 1950s, women made up less than about five percent of students in non-secretarial courses offered in the School of Business Administration. Long-time Dean of the Business School, Dr. George E. Manners, recalling the events decades later, commented, "the business school was [effectively] a 'man's only' school" at that time.[42]

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[37] "Mechanization to Aid School Office Records" p. 6.; "IBM Office: No Two Alike" p. 3; "Electronic Data Processing will be Offered in Winter" *Georgia State SIGNAL* (Atlanta, GA), December 4, 1959, p. 1.
[38] "Mechanization to Aid School Office Records" p. 6
[39] Rourke and Brooks, 578.
[40] "IBM Office: No Two Alike" p. 3.
[41] "IBM Office: No Two Alike" p. 3.
[42] George Manners in an interview conducted by Joe Constance and Les Hough, March 7, 1986- April 11, 1986, Atlanta, Georgia G1987-05, University Archives. Special Collections and Archives, Georgia State University, p. 67.

However, women performed secretarial and payroll work, both of which included more and more electronic equipment throughout the 1950s. Encouraging women in the secretarial field, Georgia State offered courses for typists in conjunction with the Atlanta office of IBM in May of 1953. As a special guest, Dr. Marion Wood, the Chairman of the Office Machines Division of Boston University instructed "a class composed of teachers of commercial subjects in the Atlanta area." The Director of the Atlanta Division, Dr. George M. Sparks, and the chair of the Department of Business Education, Loyd E. Baugham, stood at either side of the room and were "obviously quite interested," according to the *SIGNAL*'s caption, as they observed the seemingly all-female class sitting with their hands properly placed on the typewriter keyboards as Dr. Woods taught.[43] A few years later, newly-hired president of the college Noah Langdale Jr. suggested instituting a typing class for business students, but Dean Manners rejected the idea for the male business students saying, "Computer, yes. Typewriter, no."[44] Females performed secretarial duties while men dominated business management, but through mechanized secretarial work, women in the early 1950s at Georgia State still became deeply involved with machinery.

Both pictures and the text of company literature throughout the 1950s portrayed the easiness of computer literacy by showing how *even* women could handle the machines.[45] Women were once the programmers of the early computers, but throughout the computing world, men relegated women to secretarial work, and computing became more masculine.[46] The electromechanical machines used for accounting were "the logical progression from the era of

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[43] "Hunt and Peck" *University SIGNAL* (Atlanta, GA) May 8 1953, p. 2.
[44] Manners Interview, 185.
[45] Marie Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge: Massachusetts Institute of Technology Press, 2017) iBook edition with 930 pages, 224-225 of 930.
[46] Hicks, 212 of 930.; Mahoney, chapter 106-107.

the typewriter and the adding machine as separate entities."[47] Thus, women were part of the computer world, including at Georgia State, but held secondary roles. Georgia State similarly portrayed the 1950s woman capable of operating the machine as a sign of the machine's ease of use rather than women's ability to interact with technology. In a somewhat condescending tone, the *SIGNAL* portrayed two young ladies using the new machines with a caption that read "THE MASS OF MACHINERY seems to prove no problem for Nancy Collier and Gertie Tomkins as John T. Shuptine shows them how it's done."[48]

The 1950s was a defining decade for Georgia State. Not only because mechanization began to appear on campus, but also because soldiers returning from Korea, like those returning from war in the previous decade, enrolled in the Atlanta Division of the University of Georgia and caused the student body to swell. Administrators sought independence from UGA as the growing student body and rising commercial scene in the urban capital prompted unique opportunities for business collaboration.[49] The integration of computer technology became a showcase of educational stature. The fight for funding and even the justification for Georgia State College's existence increasingly revolved around computer technology which, by extension, impacted the collegiate experience of the students, faculty, administration, and the city in general.

Georgia State began to recruit "young faculty with new ideas who were flexible" in order to "grow together [with the student body] and build the reputation of the school by being future

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[47] *Office Machinery* magazine photographs found in Marie Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge: Massachusetts Institute of Technology Press, 2017) iBook edition with 930 p. 225 of 930.
[48] "Mechanization to Aid School Office Records" p. 1.
[49] Smith, 197.

oriented."[50] Georgia State administrators considered the old guard in Athens, as well as other parts of the country with established business programs — places like the Northwestern University or the Wharton School at The University of Pennsylvania — as "out of date" in the things that they were doing and the way in which they saw the world. Georgia State administrators felt the world had changed dramatically since the 1920s and that the texts that many used did not consider the effects of depression and war.[51] In Athens, a rumor surfaced that there was "sorry work being accomplished at the Atlanta Division" causing Dean Briscoe of the University of Georgia to say that he had "heard enough and want[ed] it brought to a halt." Briscoe proposed the establishment of an examination for freshmen, sophomores, and juniors at both schools, written by both faculties, in order to compare relative strengths and weaknesses. The Atlanta Division jumped at the chance to showcase that the eager urban businessmen that made up the student body at the Atlanta Division were equal, or even superior, in some respects to the school in Athens.[52] Difficulties and misunderstandings between the two faculties halted the joint assessment process, but the Atlanta Division continued to grow adult education in Atlanta through the "forward looking" younger faculty.[53]

With the schism between the University of Georgia and the Atlanta Division expanding, Chancellor Caldwell sent a report to the Regents' Education Committee that recommended separating the two institutions. He stated that the Atlanta Division and the University of Georgia never achieved "a happy and really effective working relationship," and that the University of Georgia "failed to understand the basic problems of adult education."[54] The Board of Regents

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[50] Manners Interview, 59.
[51] Manners Interview, 58-59.
[52] Manners Interview, 59.
[53] Manners Interview, 60-62.
[54] Smith 197-198.

approved the separation of the two institutions on 13 July 1955. The Atlanta Division of the University of Georgia became the Georgia State College of Business Administration and set out to establish its own reputation independent of the State's flagship university and distinct from the technology institute also located in Atlanta.

The First Computer at Georgia State: The IBM 305 RAMAC and the Establishment of a Computer Center

The Computer Center became a focal point of business education at the newly named Georgia State College of Business Administration with a mission that stated, "the best educated businessman is not an economic animal only; he is a social, aesthetic, scientific, and moral being as well."[55] Over the next several decades the businessmen, and later the diverse student body as a whole, would have more social opportunity, artistic opportunity, and moral opportunity. But the school addressed the scientific part of the businessman first. The eager students and "forward oriented" faculty benefited from the administration's acknowledgement that new technology was paramount to the continued establishment of a top-notch business school.

Electronic data processing and computer programming became fundamental in establishing a growing, internationally competitive research institution, which at the time Georgia State was not. Looking back on the events of the late 1950s with hindsight, George Manners said of his position as Dean of the Business School at the newly independent university, "I felt the need to internationalize." Regarding emerging technology, he continued, "I sensed the total impact of the computer [and] the vast changes which [were] going to take place from the

[55] Smith, 200.

technological developments."[56] Indeed, writing in a 1957 report to the president of the college, Dr. Manners extolled the virtues and possibilities of computer technology.

> Standing in the path of progress to a "quality" or great institution is the mastery of the electronic data processing equipment, or electronic computer. Internal accounting, business research, management development (through an application of the theory of games to decision making and through introducing the concepts and techniques of operations research, as well as in teaching future managers the role of this equipment), marketing research, statistical training, actuarial training — all these fields are increasingly going to revolve around a mastery of this amazing equipment.
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> Faculty training in this areas has already begun in the School of Business Administration. The problem revolves around developing faculty competence in this field, embedding of the EDP (Electronic Data Processing) into each major field, and the development of high competence of our students in the operation of EDP.
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> Such equipment at this institution will have many practical immediate, and beneficial effects: (a) many Southern firms, becoming convinced of the availability of a steady supply of competent technicians, will improve their competitive positions by installing EDP in their organizations; (b) the training of highly competent technicians from other regions in home offices of companies to be sent to the State, at handsome salaries will be replaced by a flow of equally trained Georgia youth; (c) research contracts will be attracted for projects which cannot now be touched, and through this medium, the operation costs will be cut considerably.[57]

Manners continued by lamenting abut uncompetitive salaries at Georgia State and the lack of funding for another piece of 1950s technology he felt underutilized — television.

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[56] Manners Interview, 58.
[57] George E. Manners, "Dean's Annual Report to the President of Georgia State College" *President's Report: Georgia State College 1956-1957*, (Atlanta: Georgia State College), Georgia State College University Archives, p. BA 133-134.

The following year no computer had been purchased. Salaries improved but had been virtually wiped out by inflation.[58] But budgetary concerns meant the computer issue had to be revisited. Dr. Manners again articulated the benefit of the computer for the growing institution.

> In terms of equipment, the writer feels keenly the need for bringing into the business school the use of an electronic computer. This equipment is at the center of many new concepts and methods becoming useful to business. It means much to the faculty in research and teaching, to students in terms of careers, and to business in terms of availability of pools of skilled programmers to operate and adapt this equipment to the needs of companies, thus making them competitive.[59]

Perhaps the Board of Regents felt that funding was better spent elsewhere. Georgia Tech, the Atlanta-based university focused on engineering and technology, already established a computer center in 1953 (although only a numerical calculator was initially housed) and purchased an ERA 1101 computer in 1954.[60] Yet, as business required more computer technology, Manners and Georgia State felt the business school's unique student body and faculty also needed computer access.[61]

Perhaps in a purposeful connection, Manners proposed the purchase of an electronic computer just after describing the immediate need to increase faculty support in order to continue to "meet the new challenge of the communist world." Manners said, "A college faculty is the most basic of all long term capital investments." He continued by elucidating how limitations on the faculty hindered the economic environment and "military effectiveness." To fight the communist world, he suggested, "the first place to begin is by increasing the numbers, quality,

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[58] George E. Manners, "Dean's Annual Report to the President of Georgia State College" *President's Report: Georgia State College 1957-1958*, (Atlanta: Georgia State College), Georgia State College University Archives, p. BA 144.
[59] Manners, *1957-1958*, p. BA 152.
[60] "College of Computing: Timeline of Significant Events (1945-2014)" *History of GT Computing* last modified July 27, 2015, https://www.cc.gatech.edu/sites/default/files/documents/master-tl-07-27-15.pdf, accessed December 1, 2018.
[61] Manners, *1957-1958*, p. BA 152.

and effectiveness of faculties."[62] Effectiveness could be increased through competency in computer technology which the college could and should, from Manners's perspective, introduce to its own faculty and its unique student body. Faculty turnover in the university system, he hypothesized, happened because business and government solved their own problems by "raiding faculties."[63] Manners equated salary increases and new technology availability to "our capabilities of meeting the communist threat in science and world economic penetration"[64] While, Manners placed "first emphasis" on the "expansion of faculties" the computer placed a close second when Manners brought up the virtues of computer technology for a second time in the 1958 report just after a sentence that equated acquiring new faculty to nothing less than the Cold War struggle with communism and the "survival of our civilization under today's conditions."[65]

Of course Manners knew that communist threats had been a major concern for administrators and the Board of Regents. In 1952, Manners returned from a major recruiting trip that brought several competent faculty members to the then-Atlanta Division. Charlie Bloch, a member of the hiring committee of the Board of Regents, chastised Manners stating, "Here is a graduate of Harvard. Harvard is a nest of communists. How dare you get someone from Harvard." Manners responded by championing his option that both Harvard and MIT were great universities and were not housing nests of Communists. Manners acknowledged, "There are Communists there obviously. My job is to be sure a Communist does not come on our faculty." He continued, "This man is not a Communist." When questioned on how he could know for sure,

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[62] Manners, *1957-1958*, p. BA 152.
[63] Manners, *1957-1958*, p. BA 152.
[64] Manners, *1957-1958*, p. BA 152.
[65] Manners, *1957-1958*, p. BA 152.

Manners stated, "He fought them in the Civil War in Greece, and as a good capitalist he made a half million dollars in his spare time in real estate in Miami."[66] The Board of Regents authorized the new hires. The threat of losing an ideological or technological war to the Communists in the 1950s was certainly a motivating factor which Manners either purposefully, or unwittingly, exploited.

In May of the following year, 1959, the Board of Regents allocated funds for Georgia State to begin to rent electronic data processing equipment from IBM and establish a computer center on campus. Officials from Georgia State reaffirmed to the Board of Regents, "the objectives of the college can not be fulfilled without having electronic data-processing equipment available for instruction purposes at the institution."[67] The Board of Regents unanimously voted to allow an initial $22,000 (approximately $190,000 in 2018 dollars) for the fiscal year of 1959-1960 to be set aside for the "rental of an IBM 305 RAMAC" (Random Access Method of Accounting and Control) and an additional $15,360 per year for continued rental fees thereafter. The committee noted that the figures contained a 60% education discount offered by IBM.[68] William H. Wells, a statistician of the Bureau of Business and Economic Research and editor of *The Atlanta Economic Review,* who had been at Georgia State since 1952, accepted a posting as Director of the new Computer Center to be located in the lower level of the Gilmer Street building (now Sparks Hall).[69] Georgia State expected the Computer Center to

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[66] Manners, *1957-1958*, p. BA 81.
[67] "Selected minutes from the Board of Regents within letters to and from the Board of Regents and Dr. Noah Langdale Jr." (Langdale Letters), Georgia State University Archives.
[68] The 60% discount seems a bit high. Earlier, in the 1957 annual report, Dean Manners indicated a 20% education discount had been offered by IBM after Associate Dean W. Rogers Hammond and Dr. Fritz A. McCameron worked with IBM and the faculty to establish that the RAMAC was the best option for Georgia State at that time. 20% seems a bit more reasonable. Although, Manners proposed a $30,000 "conservative" figure as the future price. $15,360 would be 60% of a $25,600 price tag which is closer to Manner's 1957 estimate. See Langdale Letters; "Wells to head New Computer Center" *Georgia State SIGNAL October 10, 1959* p. 1.; Manners Interview, 209; Manners, *1956-1957* p. 134.
[69] "Wells to Head New Computer Center Here" p. 1; Manners, *1959-1960,* p. BA 169.

"return this investment to the state many times" through business contracts and research.[70] Georgia State's RAMAC became only the 10th such computer in Atlanta at that time.[71]

Despite becoming independent of the University of Georgia and being recognized as a top business school, Georgia State remained a lesser institution. While the school began to offer a new graduate level business degree in 1960 (a Master's of Business Administration with a major in Business Education), and a new computer programming course working directly on the 305 RAMAC, appropriated funds by the Board of Regents remained much less-favorable for the urban business school compared to the university in Athens and the engineering programs at Georgia Tech. The Board of Regents approved a $2.5 million budget for a multipurpose building in 1958, but as of June 1959, students were still unaware of any progress and became restless.[72] Indeed, the more traditional students at UGA and Georgia Tech required dormitories, and since Georgia State's "concrete campus"[73] benefitted from the city of Atlanta's roadways and parks, the college did not need as much funding for dormitories or green space upkeep. Additionally, the research being done at UGA and Georgia Tech far outpaced what Georgia State was doing at the time.[74] None-the-less, the students at Georgia State felt overlooked. After questioning the minutes of monthly Board of Regents meetings, the *SIGNAL* posted a series of comments on their findings after the annual meeting in May of 1959 — the same meeting that approved the

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[70] George E. Manners, "Dean's Annual Report to the President of Georgia State College" *President's Report: Georgia State College 1958-1959*, (Atlanta: Georgia State College), Georgia State University Archives, p. 218.
[71] "Super Computer Works Hard at Georgia State" *Georgia State SIGNAL,* (Atlanta, GA), October 11, 1960, p. 1.
[72] "Comments on Board of Regents Annual Report" *Georgia State SIGNAL*, June 3, 1959, p. 4.
[73] "Concrete Campus" was a term used somewhat negatively and commented on the lack of a campus for Georgia State, it has since become a term used to reflect Georgia State's relationship with Atlanta as "a part of the city rather than apart from the city." See Laura Stone, "Come and Go" *Georgia State University SIGNAL,* March 26, 1979, p. 10; "Main Street Master Plan Update 2005-2015: Goal Formation: Planning Principles," Georgia State University: 2006, http://www2.gsu.edu/~wwwmsp/2006/goalformulation/4.htm#a accessed December 1, 2018.
[74] For an example of Georgia Tech research at the time see *1955-1956 Annual Report: Engineering Experiment Station* (Atlanta: Georgia Institute of Technology, 1956) online, https://history.gtri.gatech.edu/history/files/media/AR_1955_56.pdf accessed December 5, 2018; For University of Georgia research art the time see "John L. Green Papers" Hargrett Rare Books and Manuscript Library, University of Georgia Libraries, UGA 92-256.; and for Georgia State research see, *President's Report: Georgia State College 1958-1959*, (Atlanta: Georgia State College), Georgia State University Archives.

rental of the 305 RAMAC. The Regents appropriated $4 million for Georgia State. However, they allocated over $18 million for the University of Georgia and $13.8 million for Georgia Tech.[75] Even the $22,000 appropriated for the 305 RAMAC was to be taken from already budgeted monies and was not a new allotment.[76] The Board of Regents, in no-uncertain terms, authorized the Computer Center "on the condition that it will be financed from available funds at that institution."[77] The *SIGNAL* reported that Georgia State faculty were comparatively overworked and underpaid.[78] From the students' perspective, state officials treated Georgia State as a class of school much lower than the actual number of students serviced.[79] Despite the discrepancy of funds and faculty workloads, Georgia State attempted to elevate itself out of its perceived lesser-position in the education landscape, and the computer became a key component of that effort.

As computer centers emerged throughout the country, schools like Georgia State entered into the curriculum of computer programming for the first time and attempted to keep up with the ever-changing technological advancements through connections with other universities and the corporations that built and advocated the expensive investment and use of the large machines. William Wells, newly appointed Director of the Georgia State Computer Center, may have felt both excited and overwhelmed at the opportunity to implement computer programming into the Georgia State curriculum. In the eight months prior to the arrival of the 305 RAMAC, he sought out opportunities to gain familiarity with the new machine. The Georgia State School of Business

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[75] "Comments on the Board of Regents Annual Report" p. 4.
[76] "New Masters Program to be Offered in 1960" *Georgia State SIGNAL,* June 3, 1959 p. 1.
[77] Letter to President Noah Langdale Jr. from L.R. Seibert, Executive Secretary to the Chancellor , May 15, 1969, Georgia State University Archives; Board of Regents meeting minutes May 13, 1959, Georgia State University Archives.
[78] "Comments on the Board of Regents Annual Report" p. 4.
[79] "Comments on the Board of Regents Annual Report" p. 4.

Administration sent Wells to a 305 RAMAC programming course offered by IBM's Education Center in Atlanta. He then headed North to Poughkeepsie, New York to meet with directors of university computer centers from around the country.[80] As a result, Wells brought "curriculum, course planning, and teaching methods" as well as programming methods and general tips about the administration of a college computing center back to Georgia State. He prepared for the daunting task of integrating computer technology into the curriculum, the administrative tasks, and faculty research of a growing, business-focused college with its unique student body.[81]

While administrators like George Manners, Dean of the Business School, and Professor Wells may have seen the potential of computers, the students and the faculty needed some convincing or guidance in the reasoning behind the large expenditure. Manner's told the student body via an interview with the *SIGNAL*, "In my opinion the computer represents a major step in the process of the industrial revolution."[82] Dean Manners felt the school of Business Administration owed it to the student body to prepare them for the growing use of computers in industry and the growing amount of research in "economics, statistics, management and many other business disciplines, to say nothing of the physical and social sciences."[83] When reporting to President Langdale and the faculty on the benefits of the Computer Center, Manners pointed toward research analysis already being done by the faculty. He argued that researchers generalized due to the "magnitude of data" and large number of computations needed for

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[80] George E. Manners, "Dean's Annual Report to the President of Georgia State College" in *President's Report: Georgia State College 1959-1960*, (Atlanta: Georgia State College) Georgia State University Archives, p.170.
[81] Manners, *1959-1960*, p. BA 170.
[82] "Electronic Data Processing will be Offered in Winter" p. 1.
[83] Manners, *1959-1960*, p. BA 169-170.

"precise evaluation." Manners reiterated, "an electronic computer is the obvious and usually only answer."[84]

Until 1966 Georgia State did not have a computer science program and did not focus on technological development. Rather, Georgia State used the computer as a tool. The school wanted to introduce its students to the latest in cutting edge technology for business use.[85] This meant that no hardware innovations were being developed, but merely that the technological developments being pursued in other parts of the country, Stanford and MIT for example, were being applied at Georgia State. Innovation in other fields could, and later did emerge. But Georgia State students and faculty did not pursue computer hardware development in this early stage.

However, regarding the use of computer technology in business, the school began to set itself apart. In the Winter quarter of 1960, Georgia State offered its first Electronic Data Processing course.[86] Alluding to the fact that there was no computer science program at the time and the fact that the school was still primarily a school of business, the course was numbered with an accounting designation - AC 408.[87] Although initially estimated that the class would be limited to twenty-five students due to machine's capability and room constraints, the reality of the bulky computer, as well as the fact that is was the first time the course was taught at Georgia State, only fifteen were allowed to sign up; each had to be at least a junior and had to get permission from William Wells, who personally taught the class.[88] It was on a first-come-first-serve basis for those who met the requirements since actual "programming of business

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[84] Manners, *1959-1960*, p. BA 168.
[85] "New Masters Program to be Offered in 1960" p. 1.
[86] "Electronic Data Processing will be Offered in the Winter" p. 1.
[87] "Electronic Data Processing will be Offered in the Winter" p. 1..
[88] Manners, *1959-1960*, p. BA 162; "Electronic Data Processing will be Offered in the Winter" p. 1.

problems" would take place on the 305 RAMAC, which required time, and the Computer Center only had limited space.[89] The dean encouraged those students with an "aptitude for mathematics or accounting" to sign up. He noted, "of course programming is the first step," but computer technology, he reckoned even at this early stage, would open up new career pathways. Georgia State's Business School pushed its students to explore and develop the future skills needed for business employment.[90]

The road to integrating computers into collegiate studies at Georgia State began with a less-than-stellar performance. Director Wells and the AC 408 students dealt with the fickleness that occurred with those early mainframes. The unassembled 305 RAMAC arrived on campus on 16 December 1960. IBM engineers began assembly and instillation the following Monday. The installers found "the drum had been damaged in transit."[91] IBM flew in a replacement that arrived a few days later, but it was also damaged "almost exactly as the other."[92] Rather than request a third drum, an IBM engineer "made one serviceable drum from the two damaged ones."[93] Thus, Georgia State's first computer contained a magnet drum — the part of the 305 RAMAC that made it a "stored program" computer — pieced together from two defective parts.[94] IBM engineers officially handed the finished computer center to Georgia State College at 6:00pm on 31 December 1959. For the first few weeks after the initial instillation, the 305 RAMAC frequently broke down.[95] Jake Bius, the IBM engineer assigned to Georgia State, traced most of the difficulties to expected failures of electronic components. However, the pieced-

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[89] "Electronic Data Processing will be Offered in the Winter" p. 1.
[90] "Electronic Data Processing will be Offered in the Winter" p. 1.
[91] Manners, *1959-1960*, 170-171.
[92] Manners, *1959-1960*, 171.
[93] Manners, *1959-1960*, 171.
[94] For information on the magnetic drum see Bashe, et. al., p. 73, 283.
[95] Manners, *1959-1960*, 162.

together drum caused several hard-to-identify problems. When Bius eventually found the faulty drum to be the cause of many headaches, IBM sent a third drum, and Bius installed it at the end of January 1960.[96] Thus, a school that found itself struggling to realize its full potential between two established rivals entered the world of computer technology with a pieced-together storage drum that created unnecessary struggles accompanying the expected difficulties of operating a newly-installed university computer center in the early 1960s.

Georgia State officials chose a room for the new Computer Center which also caused early hardships. The rooms in the Gilmer Street building chosen to house the 305 RAMAC got too hot. The heat caused "thermal failure[s]" and "masked" what normally would have been easily identifiable and corrected electronic problems.[97]

The students of AC 408 completed assignments and projects despite these time-consuming setbacks; yet disappointment ensued during that first attempted course offering. Out of the fifteen students that signed up for the AC 408 course during the Winter quarter of 1960, only eleven "completed the course satisfactorily."[98] Dean Manners commented with an attempted upbeat tone, "All of these had achieved a reasonable degree of proficiency." He further stated that "a local government agency" had offered a position "of considerable responsibility" to one of the students, who accepted and was now "making use of his talents in data processing."[99] Manners's attempt to highlight the seemingly lone bright spot from the initial class is further illustrated when he discussed the Spring quarter. "The outlook for the group as a whole" he

[96] Manners, *1959-1960*, 172.
[97] Manners, *1959-1960*, 172.
[98] Manners, *1959-1960*, BA 162.
[99] Manners, *1959-1960*, BA 162.

stated when referring to the fifteen who were taking the course in the Spring, "was better than in the previous quarter."[100]

College administrators and Director Wells overestimated the ability of the student body regarding the integration of computer technology into the students' fields of study. Although the students in the Winter quarter "seemed adequately equipped" they struggled "considerably more…than could be considered normal."[101] Perhaps feeling an urgency to showcase the computer's usefulness, Spring quarter students entering AC 408 took a "Programmers Aptitude Test."[102] At the end of the quarter, Wells compared the classroom performance with the initial aptitude test result. There was a clear correlation, and satisfactory performance became a prerequisite to the course.[103]

However, Dean Manners quickly pointed out that the students' initial lack of ability was overcome by their desire. The AC 408 students wrote programs for the IBM 305 RAMAC, and they "showed a lively interest" in the abilities of the machine and their own programing and problem solving abilities.[104] As it turned out, a passerby could find at least one of the eleven students that eventually completed the AC 408 course utilizing the 305 RAMAC "every night of the week" to work on their assignments and develop programming solutions.[105]

Although the Computer Center was barely six months old, Dean Manners felt the Computer Center should be more engaged in research. He had initially crowed the benefits of Computer Center research by extolling how the budgetary strain would be overshadowed by

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[100] Manners, *1959-1960*, BA 162.
[101] Manners, *1959-1960*, BA 163.
[102] Manners, *1959-1960*, BA 163.
[103] Manners, *1959-1960*, BA 163; Wells, *1960-1961*, BA 234.
[104] Manners, *1959-1960*, BA 164.
[105] Manners, *1959-1960*, BA 164.

government contracts, business use, and faculty research.[106] The first six months saw a growing amount of interest in the computer, but Manners reluctantly reported, "while almost all of the Computing and Data Processing Center not directly concerned with teaching can be classified as 'service to research' none of these activities during the past year were definable as research in the sense required in the report."[107] Of course, this statement also reflected Georgia State's interest in the computer as a tool for business rather than the Department of Computer Science which it would later become.

While pure research may not have been utilized at that time, the faculty embraced the opportunity presented by having the 305 RAMAC on campus, and Manners touted the variety of computational problems that the Computer Center gradually received. Although, the faculty required some encouragement. During the 4 January 1960 class registration, Director Wells invited the faculty to see the newly installed IBM machine, and despite having duties at registration tables, several saw a demonstration of the capabilities of the computer. They left feeling "impressed and stimulated," according to Wells's assessment.[108] On 24 February, William Wells and IBM representative William Channing demonstrated the RAMAC to sixty-five faculty members who left with "enthusiasm exhibited."[109] Another IBM representative spoke to the faculty in late March of 1960. This time, James A. Kearns, a representative from IBM's University and Research Institute, spoke about the "growing complexity" of computers.[110] In April, Ken Whittle, manager of the IBM Education Center in Atlanta, addressed the Georgia State faculty where he "explained away most of the mysteries surrounding electronic

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[106] Manners, *1959-1960*, BA 143.
[107] Manners, *1959-1960*, BA 162.
[108] Manners, *1959-1960*, BA 164.
[109] Manners, *1959-1960*, BA 164.
[110] Manners, *1959-1960*, BA 167.

computers."[111] Dean Manners felt that after six months of a computer on campus the faculty showed a "growing awareness of the power of this tool which was being offered to them."[112] With interest in the the computer growing, William Wells offered the faculty of Georgia State a seven-week, two-hour per week, computer programming course, of which twenty-five faculty members and two administrative staffers attended.[113] After a few months of having a computer on campus, the Georgia State faculty started to show a growing interest in computer technology.

Dean Manners proudly illustrated examples of how the Computer Center quickly became "the focal point of one of the most enthusiastic total faculty participation programs in the history of Georgia State College."[114] Dr. Cameron Fincher, Director of the Testing and Counseling Office, requested a program to compute grade point averages for entering Freshmen of Fall 1960. The program's success sparked Wells to hold a third faculty demonstration to showcase the results of the request as an encouragement to others to utilize the new education tool. Encouraged by the success of Fincher's request, Assistant Registrar John Shuptrine requested software to automate "the most tedious" task of computing grade point averages.[115] Wells and the AC 408 students' resulting program, however, went far beyond the scope of the request. The program not only calculated grade point averages, but it also generated Dean's lists, printed a deficiency list, and punched the information onto punch cards so that the Deans would have a complete report of student grades in time for registration the following Monday.[116] Similar programs appeared at other universities around the country by the middle of the decade, but

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[111] Manners, *1959-1960*, BA 167.
[112] Manners, *1959-1960*, BA 164.
[113] "A wonder in Modern Scientific Achievement" *Georgia State College SIGANL,* November 8, 1960, p. 2.; Manners, *1959-1960*, BA 164.
[114] Manners, *1959-1960*, BA 164.
[115] Manners, *1959-1960*, BA 165.
[116] Manners, *1959-1960*, BA 165.

perhaps a little ahead of the curve, Georgia State wrote and utilized GPA calculation and Dean's list programs in 1960.[117] The faculty "more fully appreciated" the Computer Center and the computer in general after the faculty saw a fourth demonstration that showcased just how far above and beyond Shuptrine's expectations the AC 408 students and Director Wells had risen. Dr. Cameron Fincher began "a most ambitious project" to correlate the results of freshmen exam scores to freshmen course results. The resulting program, written by Wells, "contained some 450 program steps and used virtually the total computational capacity of the machine."[118] Fincher estimated that the reusable program would save "nearly 200 man hours of labor" for the Testing and Counseling office staff, and it gave Fincher access to information he otherwise would not have had.[119] Additionally, the Guidance Office requested a program to evaluate credit procedures.[120] By the end of the Spring quarter the faculty requested more programs than the Computer Center could handle.

Requests emerging from the growing popularity of the Computer Center engulfed Director Wells. Even before the Sumer break, Wells looked to hire an assistant programmer. James D. Metts attended evening classes and worked at the Fulton County Data Processing Unit where he learned to program a 305 RAMAC. Wanting to take day classes and work part time, Metts applied. Wells hired Metts, and Metts took over the Guidance Office's program and some of the grading of the AC 408 class to alleviate the work load of Director Wells.[121]

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[117] For GPA and Dean lists programs at the University of Washington as well as several Liberal Arts colleges see Rourke and Brooks, 582.
[118] Manners, *1959-1960*, BA 165.
[119] Manners, *1959-1960*, BA 165.
[120] Manners, *1959-1960*, BA 165.
[121] "A wonder in Modern Scientific Achievement" p. 2.; Manners, *1959-1960*, BA 166.

The Computer Center expanded, but men like Wells and Metts found it a bit easier to take advantage of the growing opportunities than women. However, the few women involved in the early years of the Georgia State Computer Center did quite well. Mrs. Bobbie Bramblet, the one women Dean Manners mentioned in the Computer Center section of his 1960 report to President Langdale, worked as the secretary to Director Wells from the first day of the Computer Center's operation. Wells sent Bramblet to an IBM Key Punch School in late January; she then began to study actual programming. Wells commented that he expected her to "obtain proficiency in this area, [and] thus materially increase her value to the center."[122] Later in 1963, a lady named Betty S. Cilsick — who held a Bachelor of Business Administration degree and previously worked with students at the Computer Center in a limited capacity — became an instructor. The University Director of Testing and Counseling wrote to Wells and commented that Cilsick was "of inestimable assistance" in programming several studies.[123] However, like elsewhere in the world, women in the Computer Center at Georgia State in the early 1960s mostly remained sidelined as the computer "became masculine."[124]

As the Freshmen class of 1960 strolled on campus in the Fall, the students were quickly introduced to the the new Computer Center and the new technological world in which they found themselves. "Don't become mechanized," chastised the author of a recurring advice article in the *Georgia State SIGNAL*. He continued,

> Too many of our students go to class, take their notes, get up after class and go straight home or to work. They stay up half the night memorizing notes. Then when the test comes they turn a crank and

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[122] Manners, *1959-1960*, BA 167
[123] William H. Wells, "Annual Report to the Dean from the Director of the Computer and Data Processing Center" in "Dean's Annual Report to the President of Georgia State College" in *President's Report: Georgia State College 1963-1964*, (Atlanta: Georgia State College) Georgia State University Archives, p. BA 189, 191.
[124] Mahoney, 107.; Hicks, p. 212 of 930.

> out comes the answers onto the paper. Year after year they do this.[125]

And then, with a desire for the student body to show their humanity in a world were jobs were being replaced by mechanization he pounded on his keyboard, and perhaps leaving his human-made typos in place, stated, "We've got a Ramac Computer rownstairs that wil do that work and . . . and faster [sic]."[126] The following month, page 1 of the *SIGNAL* displayed a headline that read "Super Computer Works Hard at Georgia State." William Wells "urge[d] all students and faculty members to come see and discuss their various problems which may be computed on the machine."[127] A month after that, another large write-up on the 305 RAMAC called the computer "a wonder in modern scientific achievement."[128] But an introduction to the computer was one thing, accepting the computer as a tool was another.

For the students of 1960 there was a little fear, a little uncertainty, and a little wonder and excitement surrounding the acquisition and integration of the new modern electronic marvel plugged into the campus and now part of their college life. A November issue of the *SIGNAL* reminded Georgia State students that technology "taken for granted" in their everyday lives was, a century earlier, "regarded as being ingenious."[129] The writer meant the message to inspire the student body to "marvel at the complexity" of the 305 RAMAC, but also to motivate them to "follow up on this curiosity by inquiring about its operations."[130] After proclaiming the many functions of the RAMAC — from its 30-millisecond addition of 10-digit numbers to its 5MB storage — the author explained the increasing need to understand computers and computer

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[125] "The Eyes of the Ivy" *Georgia State SIGNAL,* September 22, 1960, p. 5.
[126] "The Eyes of the Ivy" p. 5.
[127] "Super Computer Works Hard at Georgia State" *Georgia State SIGNAL,* October 11, 1960, p. 1.
[128] "A wonder in Modern Scientific Achievement" *Georgia State SIGNAL,* November 8, 1960, p. 2.
[129] "A wonder in Modern Scientific Achievement" p. 2.
[130] "A wonder in Modern Scientific Achievement" p. 2.

programming for a future businessman. He stated, "Electronic Data Processing has become an established fact in both the business world and in the world of the scientist."[131] The advice to the students was simple. Excitement over the possibilities of computer technology needed to trump the awe, wonder, and fear incited by computers.

Professors did their part to introduce students to the virtues of computer technology as well. Seniors from the class of 1961 in Professor John M. Champion's Management class in Policy and Decision Making competed against the RAMAC in a business simulation game. RAMAC won.[132] Champion again loaded a business game into the RAMAC for students in the Society for the Advancement of Management.[133] Since non-accounting majors found advanced accounting courses a bit intimidating and, therefore, the accounting-designated AC 408 course was "not reaching the optimum number of students," the Computer Center created and offered a new course designated EDP (Electronic Data Processing) 201: Introduction to Computer Programming and Logic in the Fall of 1961.[134] Dean Manners and Director Wells encouraged both the School of Business Administration and the School of Arts and Sciences to utilize the computer in their respective fields by offering EDP 201 as an elective.[135] Those "forward oriented" professors from both the School of Business Administration and from the School of Arts and Sciences helped their students witness and interact with the growing potential of computer technology in their respective fields first hand.

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[131] "A wonder in Modern Scientific Achievement" p. 2.
[132] "'Business Gaming' Draws Much Interest" *Georgia State SIGNAL,* February 14, 1961, p. 2.
[133] "S.A.M. Plays Business Game" *Georgia State SIGNAL,* November 23, 1961, p. 9.
[134] Wells, *1960-1961*, p. BA 235.
[135] Wells, *1960-1961*, BA 235; "Computer Center Offers Courses" *Georgia State SIGNAL*, October 10, 1962. p. 6.; William H. Wells, "Annual Report to the Dean from the Director of the Computer and Data Processing Center" in "Dean's Annual Report to the President of Georgia State College" in *President's Report: Georgia State College 1962-1963*, (Atlanta: Georgia State College) Georgia State University Archives, p. BA 255.

The number of faculty and students utilizing the Computer Center grew quickly and prompted Georgia State to seek more computing power and accessibility. Georgia State upgraded the vacuum-tubed RAMAC with an IBM 1620 in 1961. For Georgia State's unique business-minded student body, IBM "modified" the basic IBM 1620 unit so that in addition to its faster, more scientific purposes, it was "also a very good high speed business data processor," according to William Wells.[136] The IBM 1620 was also very practical because it was relatively inexpensive and "capable of carrying on many of the administrative chores of a university."[137]

The IBM 1620 also offered greater accessibility to computer programming. The 305 RAMAC could only be programmed using binary machine code. The 1620, on the other hand, could run programs written in FORTRAN and a simplified version of FORTRAN called GOTRAN.[138] Use of these algebraic programming languages meant computer programming was less tedious and more accessible to a variety of people. To introduce even more people to the new computer and its relative ease of programming, the Computer Center offered credit-free "short courses" in the afternoons and evenings.[139] Wells also offered fraternities and sororities the opportunity to set up classes for interested people from their organization.[140] The *SIGNAL* reported to students that more than ever before, "college graduates understand and appreciate the impact which these electronic marvels have, and will continue to have, upon their daily lives."[141]

Because of the vigor by which the students and faculty began integrating computer technology into their academic studies, business analysis, and everyday lives, the Georgia State Computer Center expanded dramatically throughout the rest of 1960s and introduced even more

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[136] "Georgia State to get New IBM Computer" *Georgia State SIGNAL*, October 26, 1961, p. 9.
[137] Rourke and Brooks, p. 589.
[138] "Georgia State to get New IBM Computer" p. 9.
[139] "Short Courses to Start Soon" *Georgia State SIGNAL*, January 18, 1962, p. 2.; Wells, *1960-1961*, BA 235.
[140] "Computer Course to be Offered" *Georgia State SIGNAL,* January 18, 1962, p. 10.
[141] "Georgia State to get New IBM Computer" p. 9.

people to the wonders of computer technology. In 1963, four female and eighteen male students chartered a Georgia State chapter of the Association for Accounting Machinery. It was only the fourteenth charter in the nation.[142] The following year, a new IBM 1620 Model II replaced the Model I. It was designed for "scientific and business use" and was the "first computer of its type in Atlanta."[143] In 1965, construction began on a new $6 million building complex for the School of Business Administration. Amongst other uses, the new construction provided the Georgia State Computer Center room to expand. Within two years the Computer Center replaced the IBM 1620 Model II with a $1,158,800 much-more-powerful IBM 7040 as the centerpiece for the College's new Computer Science division.[144] By the end of the decade the Registrar's office prepared for computer assisted course registration using a new RCA Spectra-70 in the Computer Center.[145] The Psychology Department installed an IBM 1800 Data Acquisition and Control System and tied several of the psychology labs into the computer for research. Georgia State's Psychology department boasted about being "among the first in the country to do this."[146] By the time Georgia State College became Georgia State University in 1969, the Computer Center had transitioned from a minor (though expensive) supplemental office that aided record keeping into a full-fledged Computer Science Department. Computer hardware and the usage of that hardware spread physically and metaphorically to several other departments on campus as well.

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[142] "State Gets A.C.M. Charter: Only 14 Chapters in Nation" *Georgia State SIGNAL*, November 8, 1963, p. 6.
[143] "New Model Computer Installed; Programming Study Introduced" *Georgia State SIGNAL*, January 17, 1964, p. 1
[144] "Six Story, $6 Million BA Building Planned for Occupancy by Next Fall" *Georgia State SIGNAL*, September 22, 1965, p. 11; William H. Wells, "Annual Report to the Dean from the Director of the Computer and Data Processing Center" in "Dean's Annual Report to the President of Georgia State College" in *President's Report: Georgia State College 1964-1965*, (Atlanta: Georgia State College) Georgia State University Archives, p. 198 B; William H. Wells, "Annual Report to the Dean from the Director of the Computer and Data Processing Center" in "Dean's Annual Report to the President of Georgia State College" in *President's Report: Georgia State College 1965-1966*, (Atlanta: Georgia State College) Georgia State University Archives, p.159 B.
[145] Janet Wells, "Mail Registration Good; More Changes Needed" *Georgia State SIGNAL*, March 31, 1966, p. 4.; "College News Brief" *Georgia State SIGNAL*, May 22, 1966 p. 3.; However, the planned electronic registration was not implemented for several years, possibly due to the need for a more powerful computer - the 1969 installed RCA Specra-70 - See "Computer Registration Plan Eyed" *Georgia State* SIGNAL, July 16 1970, p. 1.
[146] "Computers Invade Psychology Department" *Georgia State SIGNAL* (Atlanta, GA) November 21, 1968, page 14-A.

However, not everyone accepted the growing proliferation of new technology into their everyday lives. A 1968 *SIGNAL* article aired a subconscious fear of computer takeover when the author stated, "The electronic computer may not have *yet* taken over the world, but in Georgia State's Psychology Department it has gone a long way toward taking over the more tedious tasks involved in psychological experimentation" (emphasis mine).[147] The article positively endorsed the many uses of computer technology in experimentation but reflected some uneasiness. Director Wells tried to alleviate some of the uneasiness and continued bewilderment surrounding computers when he wrote a letter to the editor of the *SIGNAL* titled "Computers Not Wrong" in response to a front page story three weeks earlier headlined "Computer 'In Transition' Causes Student Clamor" and a followup article titled "The Computer Did It."[148] Wells assured readers that a computer was not at fault because the computer did exactly what it was programmed to do. The original articles stated that a new grade point average formula programmed into the computer created numerous errors for those who entered college before the policy took effect. However, when an angry group from the Student Government Association challenged the Dean's subcommittee on grades, the subcommittee quickly pointed to the computer and said "the computer did it."[149] Wells responded,

> Dear Editor,
> Please allow me to take exception to the implication in the headline in the *SIGNAL* of Jan. 21, 1971 that the computer was at fault in the grade averages computation error. The students are not "victims of a computer in transition," but rather they are simply victims of a human error in that someone instructed the computer to do exactly

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[147] "Computers Invade Psychology Department," p. 14-A.
[148] "Computer 'In Transition' Causes Student Clamor" *Georgia State University SIGNAL*, January 21, 1971, p. 1.; "The Computer Did It" *Georgia State University SIGNAL*, February 11, 1971, p. 4.; "Computers Not Wrong" *Georgia State University SIGNAL*, February 11, 1971, p. 5;
[149] "The Computer Did It" p. 4.

> what it did. That this resulted in some erroneous grade point averages can not be the fault of the computer.

Wells continued by explaining how popular misrepresentations created misconceptions about computer autonomy. He said,

> Despite the popularity of cartoons with messages to the contrary, computers can't think nor can they take offense at being wrongly blamed. We humans who work very hard to make the computer serve you, can and do take offense when the computer is wrongly blamed — and especially so when correct information is easily attainable.
>
> To your credit, the article did not further substantiate the idea that the computer "goofed," but how many people just read the headline?

In fact, computer centers around the country often had bulletin boards with newspaper cartoonists' portrayals of humans being outwitted by large self-directed computers.[150] Despite the growing "computerphobia,"[151] college computer centers continued to introduce people to ever-increasingly useful and necessary technological tools.

Across the country computer automation created structural unemployment, but also created opportunities for new jobs.[152] Samuel I. Bellman at California State Polytechnic College pointed out that all "faculties and students alike need[ed] orientation to the entire field of computer science" not just those in the sciences, because while "the computer age may actually

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[150] Rourke and Brooks, 589.
[151] The term "computerphobia" was used as early as 1970 in J.H. Gribbin, "Computerphobia and Other Problems: User Reactions to an Automated Circulation Operation in the Library of Tulane University. *Southeastern Librarian* Vol. 20 No. 2 (Summer 1970), 78-82. However, it was much more widely used in the 1980s with reference to attitudes about the personal computer. See Timothy B. Jay, "Computerphobia: What to Do About It" *Educational Technology* Vol. 21 No. 1 (January 1981) pp. 47-48; Francis Grundy with John Grundy, *Women and Computers* (Intellect Books, 1996); Adrienne LaFrance, "When People Feared Computers" TheAtlantic.com March 30, 2015, accessed 30 November 2018.
[152] Samuel I. Bellman "The Computer and the College Curriculum" *Improving College and University Teaching*, Vol. 16, No. 1 (Winter 1968), p. 53.

be putting increasingly large numbers out of work, … it also may really be creating respectable numbers of new jobs."[153] Bellman's 1968 report concluded,

> After a general orientation to the entire field of computer science… the general college population, professors and students, will be in a better position to appreciate the place of computers in modern society…and they will be able to begin exploring this technological development that is of genuine concern to them whether they are yet aware of it or not, and whatever their field of interest.

Georgia State Computer Center Director William Wells agreed. Professor Wells commented back in 1964, "A person leaving college today without at least a general understanding of the capabilities of the computer will find his lack of knowledge a severe handicap."[154] The introduction of computer technology and programming to that unique student body at Georgia State remained at the heart of the campus Computer Center just as it had been since the acquisition of the IBM 305 RAMAC.

Georgia State embraced the opportunity to introduce and integrate computer technology to those unique students outside of the traditional collegiate student body. In the early years at the Georgia Tech Evening Commerce School, engineers gained business knowledge and businessmen learned about the "Forces and Principles of the Science of Business."[155] The Atlanta Division of the University of Georgia, later named Georgia State College catered to the adult businessmen of the 1950s and early 1960s — a segment overlooked by the engineering programs at Georgia Tech and the more-traditional student body at UGA. The RAMAC may not have been the fastest or most powerful computer available at the time, but the unique needs of the

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[153] Bellman, 53.
[154] "GSC Gives Brain Class" *Georgia State SIGNAL*, February 21, 1964, p. 6.
[155] Bulletin of the Georgia School of Technology: General Announcements, 1913-1914 (Atlanta: Georgia Tech, University Archives), p. 159; Smith, 69.

institution and the student body it served directed the choice to use the IBM 305 RAMAC in the newly established Georgia State Computer Center and the programs written to run on it. By establishing a computer center on campus, Georgia State introduced the new tool of computer technology to those outside of the traditional college student body. Whether they were Atlanta businessmen, a few of the young ladies that were given an opportunity to work in the Computer Center, or a group of sixth graders from rural Douglasville on a field trip to see the State Capitol, the Georgia State Computer Center offered — for many who otherwise may have missed the opportunity — the first look at the awe and wonder-provoking world of 1960s computer technology.

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