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CHAPTER IV

CASE STUDY: GEORGIA TECH INDUSTRIAL EXTENSION SERVICE

Unlike the agricultural services, the industrial extension programs in different states have been created and developed differently due to the absence of federal legislation to set the programs' scale and scope. As a result, the linkage between the agricultural model described before and the state industrial assistance programs, as described in Table 1., is not consistent among the states and many more recent (i.e., 1980s) programs do not claim influence from the agricultural model. For example, the Maryland Technology Extension Service was patterned after existing state industrial extension services, which had much earlier origins that were related to the agricultural model. In general, states created industrial extension services that are similar to agricultural extension because, at the time of the enabling legislation, legislators were familiar with the mission and significance of the agricultural service. The familiarity with agricultural extension in states with economies largely dependent on agriculture served as a guiding policy for creating industrial extension programs.

In order to evaluate the validity of the link between industrial and agricultural extension, three programs which have apparent links with the agricultural model will be examined. The IES in Georgia will be discussed in detail, and the programs in North Carolina and Tennessee will be compared to that in Georgia to identify similarities and differences. Since all three programs are located in the Southeast, the state-level policy environment that related to both agricultural extension and industrial assistance will first be examined. Then a case study of the Georgia IES will be presented. Finally, the comparison with similar programs in other states will be made.

Agricultural Extension in the South

The post-Civil War South was a region that had a long way to go to catch up with the economies of the industrialized northeast U.S. Before the war, the region's economy was dominated by plantation agriculture that was dependent on slave labor. With the abolition of slavery, agriculture was transformed from large acreage plantations where slaves were perhaps the most significant

investment for the owner, to smaller plots of land farmed by sharecroppers, tenant farmers, and small farm owners. There was a shift from an economic paradigm where owned labor was the most significant source of capital, to one where land was the most significant source.[1]

With the number of farmers increasing in the region, the state agricultural experiment stations created by the 1890 Hatch Act helped address the perceived needs of the southern farmer to improve productivity. However, the small, low-capital farms in the South were slower than those in other parts of the nation to adopt new technology, in spite of the efforts of land-grant agricultural colleges and agricultural experiment stations to advance the technical skills and practices of farmers.

During the period 1865 to 1914, southern agriculture struggled with structural changes (i.e., downsizing of farms) and large fluctuations in markets for farm products. Horse-powered farming predominated, and many families practiced subsistence farming. Experimentation and technology transfer were primarily accomplished under programs established and operated by the U.S. Department of Agriculture, and one of these, a program to teach farmers how to eradicate the boll weevil, is considered to be the forerunner to the federal agricultural extension effort.[2] It is significant, because of the South's rural character and the dependence of the regional economy on agriculture, that the principal sponsors of the federal legislation creating the Cooperative Extension Service were southern. Senator Hoke Smith of Georgia, and Congressman Asbury Lever of South Carolina introduced the bill in 1913. The bill had been revised and extensively debated due to differing models of whether to fund state programs, several of which were already in existence, or to support USDA field efforts, such as were being carried out in the South. The Smith-Lever Act, passed in 1914, was a compromise that provided for "cooperative agricultural extension work between the agricultural colleges in the several States.....and the United States Department of Agriculture."[3]

World War I, following soon after the creation of the agricultural extension services, boosted the program because the state networks of county agents were able to effect unprecedented communication to rural areas and help administer federal programs. (The ability to turn these far-

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[1] Wright, G. 1986. *Old South, New South: Revolutions in the Southern Economy Since the Civil War*. New York: Basic Books.

[2] Wayne D. Rasmussen, *Taking the University to the People: Seventy-five Years of Cooperative Extension*, Iowa State University Press, 1989.

[3] *Ibid.*, p. 45.

reaching networks to work on various tasks and concerns of federal programs has helped institutionalize the CES, particularly during WW I, WW II, and the New Deal era.) After the war, farm production levels were buoyed by good markets and war-time demand. However, starting in 1920 and lasting until 1932, farm product prices trended downward, creating tremendous economic hardship for the nation, but particularly for the agrarian South. In 1938, President Franklin Roosevelt called the South "the nation's number one economic problem."

With the inception of the New Deal, the role and scope of the CES was expanded greatly due to the large number of federal initiatives aimed at improving the economic lot of the largely rural populace. County extension agents helped administer and implement programs such as the Tennessee Valley Authority, the Soil Conservation Service, the Rural Electrification Administration, and the Works Progress Administration. The federal focus on the plight of rural Americans presented opportunities for extension to demonstrate its usefulness and efficacy.

It would seem that the first thirty years of operation of the CES (i.e., through the end of World War II) were times when the concept and the model were proven successful. The character of the service was also formed by the constant dynamism of the scope and range of activities it undertook. The mode of changing the focus and goals of extension to assist other federal initiatives set a precedent which established a de facto interpretation of the legislative charge of the Smith-Lever Act. This interpretation was and is broad and apparently subject primarily to the discretion of the CES administrators. Even at the local level county agents have a great deal of latitude in what their job is, and most agents are keenly aware of the political value of delivering resources wherever the host county might need them.

Industrial Development in the South

Industrial history shows that, for most of the nation's history, the South was a poor relation to the northeast, with respect to developing and diversifying the industrial base. Before the Civil War the South had little manufacturing and a poor transportation infrastructure (canals, railroads, roads), compared to the northeast. Much of the South's industries were tied to agriculture or extractive resources.

With the economic upheaval of the war and its aftermath, new opportunities for creating a manufacturing economy in the South arose. One of the most widely recognized and documented southern industries which has come to characterize the region's industrial development environment

during the period 1900 - 1935 is textile manufacturing. Textile mills, as established in the rural South, created an industrial culture that was typically exploitative of poor workers, who were often displaced from small farms by economic hardship, mechanization, or low farm productivity. The poverty of these workers was perpetuated, sometimes for generations, by mill work, helping create the perception of the South as the "nation's number one economic problem." In general, state and federal economic development policies during the time between the Civil War and the New Deal were geared to helping farmers, not industrialists. At the same time, industrialists were relatively free to pursue practices that stifled union activity, kept wages low, enforced segregation in the work force, and had workers routinely working 60 hours per week.

In the context of the New Deal, southern industries, such as textile mills, were seen as using unfair labor practices. The National Recovery Act, passed in 1935, sought to redress worker needs by setting minimum wages and allowable working hours. As a result, the paternalistic (a holdover of plantation culture) industries were transformed into firms that were regulated by federal workplace standards. This change effectively represented another transformation in industrial culture, one that suggested that primary reliance on low-wage, low-skill industries would not support the kind of economic growth that was needed in the region. In addition, World War II brought new opportunities to expand the South's manufacturing base through the establishment of defense contractor plants throughout the region, such as the Bell bomber plant in Marietta, Georgia, which has become the Lockheed-Georgia Corporation.

During the 1920s and 1930s, there were multiple forces bearing on the economies of the southern states, including the decline of family-based agriculture; a stagnation in the existing manufacturing base due to the Depression; and a net out-migration of workers from the region. Starting in the 1930's with the creation of state programs like the Balance Agriculture With Industry (BAWI) program in Mississippi, states began to warm to the concept of recruiting new industry from outside the region in order to create desperately needed new jobs. The BAWI program provided state funding for new industrial facilities, providing that the industries for whom they were built would maintain a minimum level of jobs and payroll at the facility. The BAWI is considered by some scholars of southern industrial development to signal the beginning of a regional enthusiasm for recruiting industry from outside the region as a means of economic development. This enthusiasm continues today.

Industrial recruiting is a major element in the history of southern states' government programs that assist industry. The low-wage industry which dominated the region's industrial base until World War II continued to be prominent after the war. However, the industrial growth envisioned by state policy-makers was dependent on attracting "better-paying, faster-growing industries whose managers and executives expected more from a plant location than access to cheap labor."[4]

Starting in the early 1940s, southern states created new agencies or boards to plan industrial development, such as the Georgia Department of Commerce (established in 1944). The industrial development field became professionalized through the growth and development of the staff of these agencies, development staff in utilities (electric utilities, railroads), and scholars in southern universities who researched the underlying reasons for the South's economic plight and possible solutions to it. At the same time, the region's political environment dictated that state and local elected officials become spokespersons for their states as desirable locations for new industry. This "boosterism" was fueled by the reasoning that industrial development would bring much-needed new jobs to the states and their communities, increasing the tax base and raising the overall standard of living. Thus, the highest level elected officials and the newly professional "industrial developers" teamed to develop and implement powerful industrial recruiting strategies.

One of the best known modern examples of the new state thinking was the creation of the Research Triangle Park in the Raleigh-Durham-Chapel Hill area of North Carolina. In the late 1950s, North Carolina Governor Luther Hodges expanded on a suggestion by Howard Odum, a noted sociologist at the University of North Carolina, and proposed an industrial park which would attract new industrial research facilities. Hodges, who had been a highly successful textile executive, then pushed his proposal to reality through the state legislature and became the biggest booster for the initiative, enlisting the aid of prominent administrators and faculty from Duke University, University of North Carolina and North Carolina State University.[5]

While most states were not as progressive or ambitious in their strategies as North Carolina, most southern governors since the late 1950s have been actively involved in being ambassadors for

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[4] James Cobb, *Industrialization and Southern Society 1877-1984*, University of Kentucky Press, 1984, p. 99.

[5] *Ibid.*, pp. 107-108.

their states to recruit industrial prospects. James Cobb has suggested that the state policy needs identified during the campaign to recruit industry had a significant effect on political and social changes that ultimately took place in the South. The negative impacts of Arkansas Governor Orval Faubus' and Alabama Governor Wallace's stands against school desegregation proved to be lessons on how industrial location decisions might be influenced by controversial politics. In many of the southern states, it became a sound economic development policy to try to quietly achieve reform in areas where the region was perceived to be generally out of the national mainstream.[6]

The competitive drive that developed within the region to recruit industry resulted in states looking to attract new industrial operations from other regions of the country, as well as states competing with neighboring southern states for the same prospect. To gain a competitive edge, states created novel new industrial development programs. In several southern states the administrations and legislatures looked to the agricultural extension model and set up analogous industrial extension services. In Georgia the mission defined by enabling legislation broadly focused the IES on both industrial development and assistance to existing industries. Georgia has been a state representative of growth and development initiatives in the South, and the next two sections discuss the policy-making environment that led to the creation of the IES.

Industrial Development in Georgia

Georgia was typical of southern states after the Civil War, with a heavily agricultural economy that relied on a rural population willing to work land that was only moderately productive, using little modern technology. During the 1930's, Georgia policy-makers came to believe that increased manufacturing in the state was essential to realize growth in income and jobs. One of the most tangible indicators that was used to support the push for creating new jobs was the out-migration of workers from the state. During the decades of the 1920s, 1930s and 1940s, Georgia suffered a net loss of population[7] as a response to the economic near-collapse occurring in the 1920s when Georgia's

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[6] *Ibid.,* pp. 111-112.

[7] From "Another Road Story: Net Migration in Georgia," by Marie McGrath Libbey, published in *Georgia Business and Economic Conditions,* Volume 51, No. 5, September-October, 1991, by the Selig Center for Economic Growth, University of Georgia.

economy slid into a depression nearly a decade before the rest of the nation.[8] The perception of loss of able workers to other regions that offered better economic opportunities provided powerful motivation for Georgia political leaders to find solutions.

In 1938 Governor E.D. Rivers established a state planning board, "the first post-Reconstruction effort to provide leadership for private economic progress."[9] In 1943 Governor Ellis Arnall created the Agricultural and Industrial Development Board to advertise economic opportunities in Georgia and to assist new factories and firms to locate in the state.[10] Then in 1944 the state legislature created the Georgia Department of Commerce, which has since evolved into two modern state agencies, the Department of Industry, Trade and Tourism, and the Department of Community Affairs. Through the years, these agencies have devoted the major part of their budgets to recruiting new industry to the state.

There were several prominent drivers in the private sector for the industrial development theme in Georgia. Since the days of Henry Grady, the city of Atlanta has provided progressive business leadership in setting the state's agenda for industrial development. The State Chamber of Commerce was also a major force for political influence in development issues, drawing on the participation of major businesses, banks, and utilities, as well as local Chambers of Commerce established at the community level. However, until the mid-1950s gubernatorial initiatives were directed primarily at support for rural Georgians, their lifestyles and their conservative political agendas, with little public acknowledgement of the value of recruiting new industry. In 1955 Marvin Griffin was elected governor and, although pursuing a populist agenda to a large extent, he used large state budget surpluses to finance massive expansions of Georgia's school and university systems; new university technical research complexes (e.g., a research nuclear reactor at Georgia Tech); new rural road systems; and new port facilities. Ernest Vandiver, elected Governor in 1959, continued to develop a strong leadership role in economic development, a role that has prevailed with most Georgia governors since that time.

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[8] The depression was brought on by the post-war collapse of the market for textile products at the same time the boll weevil was destroying the state's cotton economy.

[9] See Numan Bartley, *The Creation of Modern Georgia*, University of Georgia Press, 1983, p.181.

[10] *Ibid.*, p. 185

A good example of the collaboration of various development groups within the state to recruit industry is the annual Red Carpet Tour. Starting in 1958, the State Chamber of Commerce and the Department of Commerce have jointly sponsored a one-week tour of invited business executives to selected industrial sites throughout the state. The first stop on the Tour is always the Governor's mansion, where the group of 35-45 executives (typically from out of state businesses) are wined and dined by the Governor, state business leaders, and state agencies' staff. After getting well-prepared promotional pitches at four or five Georgia communities seeking to recruit the industries represented, the Tour always ends up in Augusta, Georgia, and the visitors are hosted at the prestigious Masters Tournament. This single event helps attract many of the nation's top business prospects to the Tour. Similar events are conducted in other states, representing a large investment in industrial recruiting.

As with other southern states, Georgia has always considered its public universities to be assets for supporting the industrial development efforts. The 1919 legislation which established the State Engineering Experiment Station at Georgia Tech was one of the earliest efforts to involve the engineering university in areas of the state's development other than preparing students to be industrialists.

Georgia Tech's Contributions to Industrial Development

The Georgia School of Technology, later the Georgia Institute of Technology, was formally established by the Georgia legislature in 1885, and first opened to students in 1888. The idea of a technological school in Georgia grew out of the "New South Creed," a concept that came to be widely accepted by the Atlanta business community, and whose most famous spokesman was Henry Grady, editor of the *Atlanta Constitution* during the 1880s. The New South thinking suggested that the region could effectively enlist the aid of Northern industrialists and financing to build the industrial base. The International Cotton States Exposition, an industrial trade show held in Atlanta in 1881, has been identified as a possible source of the idea of linkage between technological education and industrial development, an idea that led to Atlanta's bid to the state for establishing a technological school four years later.[11] Georgia Tech was conceived in the model of a shop-based, practical engineering school that would offer students a "hands-on" education in mechanical engineering. Such a model was considered to be most appropriate for the characteristics and technical education needs of

[11] McMath, et al., pp. 13-14.

Georgia's mostly rural population. The school's origins are strongly steeped in the mission of southern industrial development.

Since its opening in 1888, the state of Georgia has supported Georgia Tech as the only public engineering school in the state. However, the level of direct state funding, together with student tuition has generally been considered inadequate by the school's administration to achieve the school's full potential for contribution to Georgia's economic development (an opinion likely held by most public university administrators). Other than educating Georgians to be successful industrialists, there was little state initiative to define a broader industrial development role for Tech until 1919. In that year, in a move related to the ongoing federal debate on establishing engineering experiment stations with legislation similar to the Hatch Act, the Georgia General Assembly passed an act, "Establishing State Engineering Experiment Station at the Georgia School of Technology," included as Appendix B. The act set up the station for, among other purposes, the "encouragement of industries and commerce." Because the federal legislative initiative failed to create engineering experiment stations and because the state did not appropriate funds for start-up or operations, the station at Georgia Tech remained only a paper organization until 1934. As was discussed in Chapter 3, a number of states started engineering experiment stations at public engineering universities intending for them to help industry through relevant research and technology transfer, just as the agricultural experiment stations had done for agriculture since 1888.

In 1929 an informal research group composed of Georgia Tech faculty conducted a study of some forty engineering experiments established at universities around the nation. The group's report was used in 1933 by Tech's administration to design and establish a station, using the authority of the 1919 legislation. The Georgia Tech Engineering Experiment Station was officially opened in April, 1934 with a part-time director and a state budget of $5,000, which was administered directly through the Board of Regents of Georgia's University System.[12] In describing the new station to the faculty in 1934, Acting Director W. Harry Vaughan wrote,

> With the operation of the Station, the University System in placing in service Georgia's first agency designed to aid in a comprehensive development of industry. At present we have no

[12] *Ibid.*, pp. 186-187.

> industrial service analogous to that afforded agriculture.....Tech can aid in the attraction of new industries and the improvement of those existing.[13]

The EES has grown steadily for over 57 years and today, as the Georgia Tech Research Institute (GTRI), its total annual funding is $100 million, of which about $11 million comes from the state. During that period the primary source of funds for EES/GTRI operations has been contracts with government agencies and industries.

In 1938, recognizing that the EES was developing useful technology through its research projects and that there needed to be a mechanism outside of the state budget to conduct contract research at the station, the Industrial Development Council (IDC) was formed. The IDC was set up by the Chancellor of the University System and the president of Georgia Power Company, the largest electric utility in the state. The EES Director also served on the Council. It later became the Georgia Tech Research Corporation, a not-for-profit corporation which today is the exclusive agent for all research contracts with Georgia Tech faculty and departments, including GTRI.

Although the model of agricultural experiment stations suggests that there is a single constituency for research, the EES has not focused its research only on industry, but rather has developed technology specialization, notably in radar, microelectronics, advanced materials, and computer hardware and software. Industrial development research, which has been an explicit goal for the EES since it was formally started in 1934, has actually been a minor part of the overall research program. Starting in 1946, some of the EES' state funds were matched with funds from Georgia communities to conduct comprehensive economic analyses of multi-county regions. State funds were also used to conduct several resource utilization studies designed to identify opportunities for new industries in Georgia.[14] These and later studies were used to support industrial developers throughout the state who were recruiting industries. Based on some of the EES publications of 1946, there is a recognition of a need for "fact-based" data to prepare the state to answer questions from industrial prospects visiting the state. In 1946, Joseph B. Hosmer, EES Fellow in Industrial Economics wrote:

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[13] Extracted from a document titled "Orientation of the State Engineering Experiment Station at the Georgia School of Technology," offered to the Georgia Tech faculty by W. Harry Vaughan, April 16, 1934.

[14] Starting in 1946 and ending in 1964, EES published bi-monthly "The Research Engineer," a periodical that presented short summaries of research and activities of EES.

> Sound (industrial) development requires facts, not theories, and facts are not always at hand or of obvious meaning. It is for these reasons that the Area Economic Studies are of value to their sponsors, to industry as a whole, and thus to Georgia and the nation.[15]

Not until 1956, when the Industrial Development Branch of the EES was created, was there a specific budget for industrial development research at the EES.

The Industrial Development Branch

Earlier in this chapter the "New South" industrial development policy environment that developed after World War II was described. In 1956 Georgia Tech's role as an "agency to aid in the comprehensive development of industry" took form with the creation of the IDB. The idea and motivating force behind this initiative are credited to Dr. Kenneth C. Wagner, a member of the Georgia Tech faculty, who approached then-Georgia Governor Marvin Griffin in 1955 and secured $50,000 from the state to start an industrial development research program. Wagner came to Georgia Tech in 1954 as an Assistant Professor of Sociology after earning his doctoral degree from the University of North Carolina. By 1956, he had transferred to the Engineering Experiment Station as head of the newly created Industrial Development Branch. He set up a staff of full- and part-time researchers within the EES, some of whom had excellent academic credentials[16], and proceeded to identify opportunities throughout the state to assist communities in attracting new industry.

Wagner's vision of an effective research program included using analytical methods to investigate opportunities for matching the needs of certain target industries with the available resources (natural resources, labor, location) of specific industrial sites, and compiling copious but orderly statistics and information which would help developers in Georgia answer questions posed by industrial prospects.[17] The purpose of such a program was to support the individuals and organizations, both

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[15] J.B. Hosmer, "Area Economic Studies," *The Research Engineer*, May, 1946.

[16] Dr. Ernst Swanson was a noted scholar in industrial development research in the South who was a Senior Research Economist at the EES. Also, Dr. John Fulmer, a member of the faculty of the School of Industrial Management at Georgia Tech, was affiliated with IDB in the late 1950s, contributing to regional analysis research.

[17] Kenneth C. Wagner, "Georgia's Need for Industrial Development Research," *The Engineer*, Vol. 19, No. 6, March, 1958.

state and local, that were on the "front line" of the competition for new industrial facilities. The program proved to be very timely and ultimately successful due to several factors:

1) Communities and even state development agencies did not otherwise have access to the sophisticated and professional staff that were available in the IDB.

2) The affiliation with Georgia Tech lent the IDB program instant credibility with people throughout the state and with industrial agents from outside the state.

3) Dr. Wagner was an effective recruiter of professional staff who were interested in conducting studies which, while not scholarly, required high quality analytical skills and a thorough understanding of the needs of industry.

The IDB grew from a staff of three full-time research faculty in 1956 to 33 full-time staff in 1960. During that time, Wagner and several other IDB researchers established themselves as key players in the state's industrial development community, which, like that in other southern states, included Chamber of Commerce executives; Area Planning and Development Commission (these were established in the early 1960s with grants from the Economic Development Administration) directors and staff; developers employed by utilities and railroads; and other university faculty who were often sociologists or economists.

The IDB continued to grow and in 1965 became the Industrial Development Division, and later (1979) the Economic Development Laboratory (EDL). Today EDL is one of twenty units of the GTRI, and it continues to conduct analytical industrial development research, such as surveys, target industry studies, resource utilization studies, and economic impact evaluations of specific industrial sectors. The thirty-five years of continuous involvement in Georgia's industrial development has earned the IDB/EDL and GTRI a position of credibility within the development community and state government.

The IDB model developed at Georgia Tech was influenced by the long-standing concept that an engineering university and an engineering experiment station could help meet a state's industrial development needs through research, as the land-grant university and agricultural experiment station had met the development needs of agriculture. Thirty-six years after the Georgia General Assembly established a State Engineering Experiment Station to "...solve many important problems for the State and to become a leader in its industrial development," the IDB was created to meet the state's need for quality information and analysis to help "sell" the state as a location for industry.

Creating the Industrial Extension Service

In 1959, four years after the IDB had been conceived, the Branch was thriving. The funding from the state had enabled IDB staff to establish a research and service programs that grew more than ten-fold, from three to thirty-one, and by 1959 funding from outside sources, primarily contracts with community-level industrial development groups, had surpassed the state funds. In addition, the political presence of Ken Wagner and other IDB researchers was developed to the point that the organization had an excellent reputation for delivering studies and support that lent a new level of sophistication to the state's industrial recruitment efforts.

In this environment of growth and good will, Dr. Wagner was asked by Governor Ernest Vandiver to develop a comprehensive plan for future industrial development in Georgia. The result was a treatise *A Preliminary Blueprint for Industrial Development in Georgia*, originally written by Wagner in November, 1959, but not formally published, in an expanded version, until April, 1962. The *Blueprint* was a candid assessment of the state's industrial development efforts at the time, identifying weaknesses and needs relative to what Wagner espoused as the elements of a successful development program.

Wagner's plan called for the creation of an industrial extension service "to supply needed technical assistance to local development groups, to expedite the collection of resource data, and to provide technical assistance to established business and industry."[18] In order to provide needed development assistance to communities Wagner proposed "the establishment of an `Industrial Extension Service,' administered at the local level through a network of field offices of the Engineering Experiment Station (at Georgia Tech)."[19]

The *Blueprint* was used as the basis for enabling legislation passed by the Georgia General Assembly in the 1960 session. The bill had support from both Governor Vandiver and the state legislators, who saw potential benefits from EES field offices for their rural communities. The bill not only addressed the formal creation of an industrial extension service, but also more completely (than

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[18] Kenneth C. Wagner, "A Preliminary Blueprint for Industrial Development in Georgia," April 1963 (second printing), p. v.

[19] *Ibid.*, p. 24.

the 1919 act) spelled out the mission of Georgia Tech's EES relative to its contributions to the economic development of the state. Thus, the 1960 bill accomplished two purposes:

1) It replaced the 1919 legislation which created the EES, re-establishing and specifying more completely the legislative mission of the Station.

2) It created the Industrial Extension Service as part of the EES, authorizing the creation of a network of field offices to provide "technical advice and assistance to local development groups and to establish(ed) business and industry...."[20]

At the time Wagner was writing the *Blueprint* another significant study was being conducted by IDD staffer Jerry Lewis to identify problems and needs of small manufacturers. The study was funded in 1959 by the Small Business Administration (SBA) of the U.S. Department of Commerce and is documented in the report "Identification and Evaluation of Problems and Needs of Small Manufacturing Management," published in January 1961. Its findings were significant to IDD's initiative to focus on delivering technical assistance to small industrial firms. In the Preface to the second edition of the report, printed in July 1973, Lewis wrote:

> Having identified the fact that small businessmen critically need direct, personal guidance in resolving problems affecting their survival and growth, the (Industrial Development) Division started in early 1961 a limited program of management and technical assistance to small business and industry in Georgia. Response to this service in the ensuing months led to the formation of a new branch in the Division to deal exclusively with the task of providing direct assistance to small businessmen in the state.

Thus using concepts embodied in the *Blueprint* and the SBA report, an industrial extension service (IES) was created within the IDB largely because of Wagner's political involvement and his role in conceptualizing the service. The IES program of technical assistance to existing Georgia industries was formally started in January 1961, with the creation of the Industrial Services Branch of IDD. The first IES field office opened in Rome, Georgia that same year. In 1962, after more than a year of IES operation, Wagner wrote:

> The preventative aspects of this program are one of its most important contributions. Assistance with the preparation of adequate cost systems can help keep solvent firms which would otherwise go bankrupt because they are not aware of critical financial leaks. Others may succumb for lack of guidance with distribution and sales problems. Still others urgently need information on new market opportunities, on machine design problems, and other production

[20] Georgia Code Chapter 32-3 Amended, Section 32-303, *Georgia Laws 1960 Session*.

difficulties. The type of assistance being provided and proposed is similar to that available to farmers for many years through the University's (of Georgia) Agricultural Extension Service.[21]

Early Development of the Industrial Extension Service

The first IES field office in Rome, Georgia was initially funded with a $30,000 grant from Governor Vandiver and $75,000 from the Coosa Valley Area Planning and Development Commission, an industrial development group located in Rome. By 1966, IES offices were opened in Carrollton, Albany, Brunswick, Savannah, Augusta, and Macon. In 1967 the Brunswick office was moved to Douglas. The network of offices was later expanded in 1979, adding an office in Gainesville, and again in 1984, with new offices opened in Brunswick, Columbus, Dublin and Madison. These twelve offices comprise the current IES field office system.

The initial work conducted in IES offices was a continuation of IDB research and assistance to local development groups. Using the Rome office as a model, Wagner and other IDB staff visited Georgia communities and promoted the establishment of the additional field offices. Little additional state funding was appropriated to establish the new field offices. Rather, they were typically funded through contracts with the communities in which they were located, and the IES staff in those offices essentially worked as industrial developers for their localities. For example, the Savannah field office was almost fully funded during the early 1960s with contracts from the Savannah Port Authority, an industrial development organization.

Funding for the IDB in Fiscal Year 1961 was approximately $330,000 of which $180,000 was from the state and $150,000 was from contracts, primarily with local development groups. By FY 1966 the funding had increased to over $500,000. While the industrial development work remained fairly constant and even declined from 1961 to 1966, a significant new source of funding from federal agencies was developed during that period.

The 1959 SBA study involved a survey of over 800 Georgia small manufacturers; twenty of those surveyed were selected for subsequent case studies. The findings of the study were significant because they indicated a need for technical assistance to small firms. Wagner emphasizes two of the study's findings in the 1959-1960 EES *Annual Report of the Director*: 1) expansion of **existing** industry is a vital and neglected part of state development programs, and 2) a limited amount of

[21] Wagner, page 28.

technical assistance to a small firm can be the difference between business failure and successful operation. These points were prominent in Wagner's *Blueprint* which, in addition to an industrial extension network of field offices, proposed an ambitious industrial development research center. The center was proposed to be state funded and administered by the EES, and the 1960 Georgia legislation provided for establishment of such a center. Wagner envisioned the center conducting research for the benefit of existing industries, as well as maintaining an extensive collection of data on the state's industries and resources, and doing more development studies. It appears that the concept for an industrial development research center became a controversial issue at Georgia Tech, and that Wagner did not have the support of the EES Director's office for his plan.[22] Wagner defended his concept in 1962 by writing:

> Research which focuses on opportunities for upgrading existing industrial operations through the design of new equipment and machinery, the modification, redesign or reworking of old equipment and plant layouts, and research in such fields as human engineering also are necessary for a full-scale industrial development program. Such programs are also essential if Georgia Tech is ever to discharge its obligations to the State to build the programs of research and technical assistance with which it was charged in the statute which established the Station in 1919.[23]

Wagner was not successful in seeing the full extent of the recommendations he made in the *Blueprint* accepted by the EES's and Tech's administration. When he left EES in 1965, it was to head a new industrial development research center, the Mississippi Research and Development Center, in Jackson, Mississippi, taking five key IDD managers with him.[24]

The industrial extension and technical assistance concepts promoted by Wagner and the IDB were refined and formalized with contracts from federal agencies. State funding for the fledgling IES

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[22] In the 1961-1962 EES *Report of the Director*, acting Director Robert Steimke wrote, "I am opposed to Georgia Tech's participating in the promotion of an off-campus, industrial research center at this time..." Also, in the 1963 Arthur D. Little, Inc., report *Georgia Tech: Impetus to Economic Growth*, which had been commissioned by the Georgia Tech Alumni Association to evaluate Tech's economic contributions to Georgia, the consultant recommends against the creation of an industrial development research center separate from EES.

[23] Report on IDB written by Ken Wagner for the 1961-1962 EES *Report of the Director*.

[24] Reported by Ross Hammond in the IDD section of the 1965-1966 EES *Annual Report of the Director*.

was only about 10% of the IDD budget when it was started in 1961. Wagner had successfully built a funding base from local community-level industrial development agencies, but there was no similar means of generating new funding for an industrial extension service that assisted private firms that needed help but could not afford to pay for it. The 1959 SBA study had gotten widespread national attention and Wagner and other IDD staff were well known nationally for their industrial development work. Thus, when the IES was started in 1961, Wagner sought opportunities in the larger arena of federal agencies to secure funding for the new IES. In 1964 the Area Redevelopment Administration (ARA), U.S. Department of Commerce, funded an IDD pilot program in Carrollton, Georgia which helped establish a new IES field office and local technical assistance program. In 1965 the ARA became the Economic Development Administration (EDA), part of the Great Society program of President Lyndon Johnson. The ARA/EDA funded numerous state and local economic development projects, and Georgia Tech's on-going industrial development programs and experience in identifying and meeting industry needs put the IDD in a good position to secure funding from the agency. The first significant federal support for the IES efforts was through an ARA contract in 1965 to provide technical assistance to existing industries located in economically depressed Georgia counties selected by the ARA. This contract was administered by the newly formed Industrial Services Branch of IDD. Georgia Tech received continued funding for this program of as much as $200,000 per year, representing a significant boost to technical assistance activity for Georgia Tech. When the EDA was created, the ARA-funded effort became an EDA University Center, one of a number of such centers established by EDA in a number of states. The Georgia Tech University Center used the newly established field office network to provide management and technical assistance to rural businesses, and the Center still exists today, although funded at a low level.

Another significant federal program which brought new support for industrial extension to the IDD was the State Technical Services (STS) program, also administered by the U.S. Department of Commerce. The STS program provided technical services, including assistance in identifying and applying new technology, providing technical information, and training industrial personnel, to help small and medium-sized manufacturing firms become more competitive.[25] Ken Wagner reported in 1965 that

[25] Arthur D. Little, Inc., "Program Evaluation of the Office of State Technical Services," report to U.S. Dept. of Commerce, October 1969.

> The Industrial Services Branch's program of management and technical assistance to Georgia industry was used as a prime model for the State Technical Services Act of 1965, through which the U.S. Department of Commerce is attempting to establish a national `industrial extension service.'[26]

The STS program made available grants to the separate states, with state cost-sharing, to establish and operate programs of technical assistance to industry. In Georgia, Georgia Tech was the primary recipient of the STS funds coming to the state because of its established IES program. Thus, even though prior to 1965 the focus of activities within the IES field office network had been industrial development research, the IDD promoted its ability to effectively work with industry in order to transfer technology and solve technical problems.

In 1966, Mr. Ben James, a manufacturing engineer with General Electric, was hired as the first field engineer for Georgia's STS program. Working out of the Savannah field office, Mr. James developed a model for providing technical assistance to industrial plants which is still used today.

In the period 1964-1966, there were three significant factors influencing the early development of the IES program of technical assistance to existing Georgia industries:

1) The IES field office network was primarily created during this period. Although the first office opened in Rome in 1961, the next six offices were opened between 1964-1966. These new operations brought the problem-solving skills of IES much closer to the communities and industries they served.

2) The U.S. Department of Commerce established several programs to support state industrial extension efforts, including the EDA University Centers and the STS program. Georgia Tech's industrial extension model was receiving much recognition at the time these programs were planned, offering an excellent opportunity for IDD personnel to influence the design of the programs at both the state and federal levels.

3) IDD made a policy decision, based on the organization's experience in dealing with industry and identifying industry needs, to hire experienced engineers from industry to staff the new technical assistance programs. This decision was influenced by the change of leadership in 1965 from Ken Wagner, a social scientist, to Ross Hammond, an industrial engineer.

Thus the concept of a field office network, based on the same reasoning used by the designers of the agricultural extension model and first suggested by Ken Wagner in his 1959 *Blueprint*, became a reality in Georgia just at the time that significant new federal funding became available. The EES and

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[26] Extracted from Wagner's report on IDD in the *Annual Report of the Director*, Georgia Tech Engineering Experiment Station, 1964-1965.

IDD were very familiar with the federal funding environment and were able to pursue federal support for IES because of their level of sophistication in dealing with federal agencies.[27] The decision to hire engineers to staff the new industrial extension efforts was significant because there were few engineers in IDD at the time, yet the staff's understanding of the nature of industrial problems was such that it was clear that a credible technical assistance program must have competent engineers who could diagnose and solve difficult industrial problems.

Changes and Change Agents in the IES Operations

For purposes of analysis, the starting point of the IES as it exists today is assumed to be 1965, when the EDA University Center and STS programs were created. As recounted earlier, there were influential forces which molded first the EES and then the IDB/IDD so that the IES was initially configured as it was. To recapitulate, these molding forces included:

1) The agricultural extension model, including the agricultural experiment stations created by the Hatch Act and the county agent model created under the Smith-Lever Act.

2) The New South credo, as espoused by Henry Grady, which helped shape the political thinking in Atlanta and in Georgia about industrial development and the role of a technological university in that development.

3) The creation of the Engineering Experiment Station at Georgia Tech in 1919 as a response to federal policy debate about creating an industrial analog to the agricultural experiment stations.

4) The actual startup of the EES in 1934, a time when the southern states were experimenting with new models for industrial development and New Deal policies explicitly supported the concept of regional industrial development.

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[27] IDD was not alone in its pursuit of federal STS funds. Dr. George Simpson, newly appointed Chancellor of the University System of Georgia in 1965, personally worked to secure the STS grant for Georgia. The grant was administered through the University System, and several universities besides Georgia Tech received portions of the STS funds, although Tech was the primary recipient. Simpson was convinced of the value of the STS program, having been involved with the startup of the Research Triangle Park in North Carolina. There he served as Executive Director of the Research Triangle Committee, which represented faculty at the three North Carolina universities involved in the startup of the project. At the time, he was a Professor at the University of North Carolina. (Sources: Interview with R.L. Yobs, 8/27/91; *High Hopes for High Tech: Microelectronics Policy in North Carolina*, edited by Dale Whittington, University of North Carolina Press, 1985.)

5) The creation of the IDB in 1956 through a grant from Georgia's governor, in recognition of the need to support the state's industry recruiting efforts with a sophisticated industrial development research organization.

6) The development of the industrial extension model, starting with the concepts defined by Ken Wagner in 1959 of EES field offices and delivery of technical assistance to small firms; supported by the findings of the 1959-1960 SBA-sponsored survey of small Georgia manufacturers; and continuing with IDD's involvement in federal industrial extension programs started in 1964-1965.

By 1965, the basis for delivering technical assistance to small industrial firms in Georgia was well defined. In that year Ken Wagner left Georgia Tech for his new job in Mississippi, and Mr. Ross Hammond, an industrial engineer who had earlier served as the Executive Vice President of the American Institute of Industrial Engineers, a professional engineering society, succeeded him as Chief of the IDD. It was Hammond who hired Ben James and supported an engineering-oriented approach to industrial extension. By July, 1966, the IDD professional staff was predominately engineers and scientists, having been transformed from a staff that was primarily economists in 1961.[28]

While a growing emphasis on technical assistance programs conducted by IDD was evident in the period 1961 - 1966, the Division's industrial development research was still prevalent. However, the development studies and assistance for recruiting industry to local areas which Ken Wagner had promoted so successfully were increasingly being conducted by Area Planning and Development Commissions, the Georgia Department of Industry and Trade, and local agencies, such as Chambers of Commerce. Industrial development research aimed at recruiting industry was the primary focus of the IDB/IDD for the first ten years of its existence, and such research is still conducted by the Economic Development Laboratory under the sponsorship of state or local agencies, but it has become a minor part of the industrial extension activities.

In 1967, Ben James was put in charge of the STS industrial extension activities, and in 1972 he became the head of the unit that became the Industrial Extension Division, part of the Economic Development Laboratory, the successor unit to IDD. During the period 1966-1980, James was in

[28] Titles for IDB/IDD staff were taken from EES *Annual Report of the Director* for years 1961-1962 and 1965-1966. One reason for more technical staff in 1966 is that there were 19 resignations of professional staff during that year (including Ken Wagner and others he took to Mississippi), and Ross Hammond, the new Chief of IDD, hired 18 new professionals, most of whom were engineers or scientist titles.

charge of the management and technical assistance services delivered through the IDD field offices. James brought industrial problem-solving skills to his assignments, and as he recruited new engineers to staff the IDD/EDD field offices, he guided the industrial extension model into its present configuration. The combination of James' industrial experience was married with the university extension model already in place in IDD, resulting in an extension agent approach with many similarities to the agricultural extension model. (see Table 3.) Beginning in 1970, Hammond and James also managed EDD contracts with several international agencies to transfer the industrial extension model practiced at Georgia Tech to less developed countries that were seeking to stimulate industrial development, including South Korea, Venezuela, Indonesia, and the Philippines.

Federal Influence in IES Development

As explained earlier, several programs in the U.S. Department of Commerce were influential in moving the Industrial Extension Service towards the technical assistance model it now uses. These and other federal programs aimed at providing technical assistance, of either a general or specific nature, are described in Table 4. The role of federal programs seems to have been one of providing specific target industry groups for the IES to assist, and the significant level of funding (from DoC and the required state match) involved made these programs high-priority activities. On the other hand, the IES had been successful in winning these federal programs because the service had stable and sustained state funding, providing an effective program base from which to operate federal initiatives. The net effect

Table 3.

Comparison of the Georgia Tech Industrial Extension Model with the Agricultural Extension Model

	Extension Agent	How Accessed	Client/ Contact	Problem -solving Methodology	Source of Specialized Assistance
Ga. Tech Model	Engineer in field office	Call-in, referral[29]	Small industry/ Decision-maker (owner/manager)	Initial diagnostic, problem definition, find expertise to solve, deliver solution.	Georgia Tech faculty
Co-op Ext. Model	Agent in county office	Call-in, referral[30]	Farm operation/ Decision-maker (farmer/owner)	Initial diagnostic, problem definition, deliver standard[31] solution or involve specialist.	Land-grant university ag-ricultural specialists

[29] Referral can come from local business assistance networks (e.g., Chamber of Commerce) or "word of mouth" from other businessmen.

[30] The Cooperative Extension Service has an office in every county, numerous publications which are delivered to farmers, and promotional advertisements in newspapers, radio and television. Other sources of referrals are Agricultural Experiment Stations, land-grant universities, and ancillary organizations such as 4-H clubs and home economics programs.

[31] The CES regularly produces bulletins on solution to prevalent farm problems and on new farming techniques or technology. These bulletins are used widely to disseminate information through the county agents.

Table 4.

Federal Programs Utilizing Georgia Tech's Industrial Extension Service

Federal Program	Federal Sponsor	Dates of IES Involvement	Program Activities
1. EDA University Center	Dept. of Commerce	1965 to Present	Technical assistance to industry in rural Georgia counties selected by sponsor.
2. State Technical Services	Dept. of Commerce	1966 to 1971	Technology transfer, industrial problem-solving for Ga. firms.
3. Industrial Energy Extension Service	Dept. of Energy	1977 to Present	Energy conservation audits for Ga. industry.
4. Energy Analysis and Diagnostic Center	Dept. of Energy	1978 to Present	Energy conservation audits for regional small industries.
5. Trade Adjustment Assistance Center competition.	Dept. of Commerce	1978 to Present	Technical assistance for trade-impacted firms.
6. Industrial Safety and Health Audits	OSHA (Dept. of Labor)	1979 to Present	Safety and health audits for Georgia industries.
7. Technology Utilization and Commercialization Center	Minority Business Development Agency	1976 to 1986	Technology assistance to minority inventors and entrepreneurs.
8. Rural Assistance Program	Minority Business Development Agency	1983 to 1987	Technical assistance to rural, minority-owned firms.
9. Advanced Apparel Manufacturing Technology Center	Defense Logistics Agency (DoD)	1987 to Present	Transfer/demonstration of advanced apparel manufacturing technology.

is that the IES was a vehicle with which to operate cooperative state and federal programs for assistance to industry.

One significant characteristic of Federal programs which supported state-level industrial extension was their instability. Once the participating states had mustered the means (i.e., matching funds, other commitments of state resources) to participate, the success of the programs became more dependent on the federal will to continue them. In the case of DoC programs, including the EDA University Center, the STS program, the Trade Adjustment Assistance Center, and the Rural Assistance Program, federal funding has been eliminated or cut because of changes in Administration industrial assistance policies. As a result, the state-level programs either do not survive or continue to operate at significantly reduced activity levels.

Thus, while federal initiatives have been significant in establishing state industrial extension programs and guiding their design, the lack of federal staying power has also been significant. As suggested previously, the longevity of the Cooperative Extension Service as a joint federal-state program is due in large part to the continuing federal commitment. In almost all cases, the federal policies which undergird joint extension programs represent abroader perspective than any one state's initiative. This casts the federal role as potentially the most influential one of all the government players.

Comparison of the IES to Other State Programs

Economic conditions and interest in industrial development were common factors shaping policy in southern states during the period 1935-1965. At least two other southern states, North Carolina and Tennessee, established industrial extension services using models similar to that used for the Georgia program. Since these programs were established at about the same time as Georgia's and since they have also operated continuously since their start, they are discussed here and compared to the Georgia service.

North Carolina Industrial Extension Service (IES)

In 1955, the North Carolina legislature created the Industrial Experimental Program in the School of Engineering at the North Carolina State College of Agriculture and Engineering (now North Carolina State University).[32] The legislation authorized $50,000 per year (the same amount Georgia dedicated to start the IDB in 1955) to be used by North Carolina State College "in the furtherance of its industrial experiment program." In 1961, the name of the program was changed by administrative action to the Industrial Extension Service, with program emphasis being changed to industry technical assistance. With the passage of the federal State Technical Services Act (P.L. 89-192), North Carolina developed a five year plan for participating in the STS program, and in 1967 the State of North Carolina appropriated additional funds for the IES under the budget category "State Technical Services."[33]

Table 5. is a comparison of the state appropriations funding history for the North Carolina IES with funding of the Georgia's IDB, which illustrates the similarities in scope of the two programs. The growth of state funding in both states was relatively rapid during the period 1955 - 1970, in part because of the STS program, which required substantial state funds to match the federal funds a state received. During the same period, funding from private sources also grew rapidly.

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[32] Reference Chapter 1318, *1955-Session Laws*, North Carolina State Code. The preamble to the enabling act indicates that the School of Engineering had been conducting a "limited research and development program" cooperatively with industry for over seven years, i.e., dating to 1948.

[33] Draft dated 11/29/78, "Charter of the Industrial Extension Service, School of Engineering, North Carolina State University," obtained from Mr. Tom Stephenson, Director, North Carolina Industrial Extension Service.

Table 5.
Comparison of State Funding for Georgia and North Carolina Programs[*]

Year	Georgia IDB/EDL	North Carolina IEP/IES
1955	$ 50,000 - State funds	$ 50,000 - State funds
1961	$ 180,000 - State funds	
1969		$ 287,000 - State funds
1975		$ 405,000 - State funds
1978		$ 574,000 - State funds
1983	$ 563,000 - State funds	
1988	$2,727,000 - State funds	$1,205,000 - State funds
1990	$2,900,000 - State funds	$1,240,000 - State funds

[*] Other sources of funding not shown include contracts with federal, state and local governments, industry, and revenues from short courses and publications.

The origins of the North Carolina program are somewhat different than those of Georgia's IES because it was created within the university's Engineering College and, from the beginning, it focused primarily on technical assistance to industry.[34] Industrial development research, such as was advocated by Ken Wagner, was not part of the North Carolina program. However, as the Georgia Tech program moved towards a technical assistance role, it used the North Carolina IES as a model.[35] Since it operated under the Dean of Engineering, the North Carolina IES had always used an engineering approach to industrial problem-solving via engineering faculty or full-time engineering extension

[34] There is an analogy between the Engineering Experiment Station's industrial research and the earlier-named Industrial Experiment Program at NC State. However, by the time that this program was started in North Carolina, the Georgia Tech EES was a $7,000,000 per year contract research organization, and only a fraction of that budget was dedicated to research with Georgia's industries.

[35] Interview with Rudy Yobs, 8/27/91.

agents. Also, the North Carolina concept of engineering extension was conceived at a land-grant university which had been practicing agricultural extension for over 40 years by the time the IES was created. An example of the linkages between the industrial extension efforts at Georgia Tech and North Carolina State is a 1969 pilot project funded by the STS program whereby technical assistance was delivered to specific industry groups in both states. Because of the engineering expertise in the respective industrial extension programs, Georgia Tech agents provided technical assistance to mobile home manufacturing firms and North Carolina agents worked with furniture manufacturing firms, in both states. This attempt at regional cooperation in industrial extension was short-lived because the STS program was not renewed after its initial five year authorization.[36]

Today, both IES's are comparable in size and are similarly staffed with engineers and technical professionals with industrial experience. The model for delivering technical services to industry in their states is basically the same. However, whereas Georgia's IES has successfully built a network of field offices, North Carolina has consolidated its industrial extension staff at the NCSU campus in Raleigh. The North Carolina program tried maintaining field offices for several years, but found the administration of these to be more difficult than operating from the campus. Another difference between the two is that Georgia's IES has, since 1965, been closely associated with a number of federal technical and management assistance programs conducted by the EES, while, with the exception of the STS program, North Carolina's IES support has relied more on revenues from short courses and industrial services. This may be due to the fact that Georgia's program is administered by a contract research institute whose primary sponsor is the federal government, while North Carolina's program is administered by the Dean of Engineering at North Carolina State University.

Tennessee Center for Industrial Services

The Center for Industrial Services (CIS) is part of the Institute for Public Service at the University of Tennessee. Established in 1963 as the Tennessee Industrial Research Advisory Service (TIRAS), the CIS is similar to the IES in both North Carolina and Georgia in that it provides technical and management assistance to existing industry in Tennessee. However, while the CIS maintains a staff of industrial consultants in Nashville to respond to industrial requests for service, the model for

[36] The STS program ended before any results were implemented. Ref: "A demonstration of the applications of technology transfer techniques to two contrasting regional industries," Charles I. Poole, IDD report of a joint project with the IES at North Carolina State University, 1970.

delivery of services is somewhat different in the Tennessee program. The CIS staff uses the faculty of multiple state colleges and universities as the pool of technical experts/specialists that can be accessed to solve industrial problems. In contrast, the Georgia and North Carolina programs utilize the faculty at the administering universities as problem-solving experts. Tennessee is a state with a number of engineering colleges, and the CIS model effects geographic coverage of the state's industries, as well as valuable political support, by involving faculty other than those at the program's administering university.

The history of the CIS somewhat parallels the development of the IES in Georgia. Like Georgia and other southern states, Tennessee was intent on developing industry in the state to improve its economy. In support of development, the University of Tennessee had been conducting research on industrial products and helping industry solve technical problems since the 1930's. A 1941 bulletin summarized the industrial development activities of the University as follows:

> The broad activities of the University in this field (industrial development) may be grouped under: (1) training of students for industrial and commercial positions, (2) technical advice on industrial problems, (3) industrial and commercial research, and (4) public information.[37]

This same bulletin recognized the role that the University, as the state's land-grant university, played in agricultural research and extension. It also presented detailed proposals for new state-wide agencies that would coordinate the University's industrial development activities with those of other state agencies.[38]

Policy-makers in Tennessee were convinced that high quality research and data were needed to support the state's efforts to recruit new industry. Recognizing the types of contributions the public university system could make in conducting industrial development research, Tennessee nevertheless

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[37] Extracted from "Industrial Development in Tennessee: Present Status and Suggested Program," by Paul Barnett, published as *The University of Tennessee Record*, Volume 44, No. 4, July 1941.

[38] One of the agencies proposed was an Industrial Development Division of the State Planning Commission, which was created in the late 1940s. Dr. George Whitlach was the Director of this Division from 1949 to 1958, when he was recruited by Ken Wagner to work with the IDD at Georgia Tech, and many of the industrial development programs instituted by Whitlach in Tennessee became a part of the IDD services in Georgia. Whitlach described the Tennessee IDD services in a paper presented to the Institute on Regional Development of the Southeast, held July 28-29, 1949. The paper, "State and Local Industrial Development Programs," by Dr. George Whitlach, was published in the May 1950 issue of *The University of Tennessee Record*.

did not put the university in a leadership role, as was done in Georgia. Rather, a state economic development agency, the Industrial Development Division, was tasked with accumulating and maintaining the data needed by developers, and the University played only a support role. However, at the same time the Georgia Tech IDD changed its focus from industrial recruiting to industrial assistance in the early 1960s, the University of Tennessee helped conceive the TIRAS as a management and technical assistance initiative that provides similar services to those offered by the Georgia and North Carolina IES programs. Like the Georgia Tech program, the CIS was conceived as a program by an individual at the University, Dr. Andy Holt, working with Governor Frank Clement. The TIRAS was created within a larger organization, the Government, Industry and Law Center (now the Institute of Public Service), which has administered a number of programs that extend university resources to government and industry sectors.

The TIRAS was legislatively established in 1963 with an initial budget from state appropriation of $24,900. In 1969, the program was the agency that received federal STS funds and it participated in the STS program until its demise in 1971. In 1970, the name was changed to the Center for Industrial Services. By 1984, the annual state funding was about $500,000, and this has grown to over $1,000,000 today. Additional funding has come from conducting in-plant training courses, which are paid for by the participating industries, and from a few federal contracts, such as the STS funding.

The technical assistance model used in the CIS is essentially the same as is used in Georgia's and North Carolina's programs. Industries contact the CIS office in Nashville and a CIS staff member arranges a visit to evaluate the nature of the firm's problem. The CIS will then use their network of experts, which reside either at the CIS or at technical schools throughout the state, to identify an appropriate consultant to involve on the project. CIS arranges for and finances up to 5 man-days of effort to be expended by the consultant to solve the firm's problem. Additional CIS resources are available to provide training courses for managers and supervisors, either in the plant or at a convenient site in the state.

It is perhaps significant to note that the CIS extension model, like the North Carolina IES, does not advocate the use of field offices remotely located from the campus. The contention is that having extension agents residing in the field presents a significant management problem, and that the preferable alternative is to have agents that travel to assisted firms from the central CIS offices in Nashville.