



## Catalyzing Research Competitiveness: The Georgia Research Alliance<sup>1</sup>

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**ABSTRACT** *Virtually everywhere, there is governmental interest in developing and using science and technology as a tool for economic development and other public purposes. States within the United States look to advance vis-à-vis other states, just as nations seek to rise in competitiveness. What institutional mechanisms work? What research and other strategies are effective? The Georgia Research Alliance (GRA) represents an important model that appears successful. During the 1990s, key business executives, university presidents, and state government forged a research partnership—GRA. A non-profit entity, GRA played a catalytic role in getting state government, industry, and universities in a specific region to work in concert to hire scientific luminaries, attract federal research funds, and translate research into economic development. The dynamics of this catalytic entity are discussed using a life-cycle model of organizational development.*

**Keywords:** research alliance, competitiveness, government, university, industry relations.

Virtually everywhere, there is governmental interest in developing and using science and technology as a tool for economic development and other public purposes. This is especially true where gaps are perceived between ‘haves’ and ‘have-nots’ in science and technology. States within the United States look to advance vis-à-vis other states, just as nations seek to rise in competitiveness.

Those who wish to improve a society’s position look for mechanisms and strategies that are effective. There is certainly a need to find examples of ways that work, since there are many that do not. A particularly interesting example of recent advance is seen in the state of Georgia. There, a small organization called the Georgia Research Alliance (GRA) stimulated a surge in that state’s research-competitive position in the 1990s. Traditionally, Georgia lagged behind other southern states, especially its neighbor, North Carolina, much less Texas, New York, California and Michigan. But Georgia has gained new strength and capability. Its universities and economy have moved forward.

Behind the improvement in Georgia is a cooperative model of science and technology development catalyzed by GRA. A case history of this organization is useful in showing the conditions under which a new mechanism like GRA is invented and put to work, how universities, industry and state government are brought into concert behind a goal of improved research-based economic development. It also reveals how the political coalition behind GRA emphasizes some values at the expense of other considerations in pursuing enhanced competitiveness.

## Approach

Our approach in this study is through a life-cycle analysis of GRA.<sup>2</sup> Such an analysis looks at GRA as an organizational innovation that evolves over time in stages. GRA falls into a class of organizations created to stimulate science and technology-based economic development. There is considerable literature on such science and technology organizations. At the level of the nation-state, Johnson has described Japan's Ministry of International Trade and Industry (MITI), perhaps the most comprehensive and influential science and technology-based economic development organization in the world.<sup>3</sup> Nelson has also looked at institutional mechanisms at the national level in other countries.<sup>4</sup>

Within the United States, there has been interest in the subject at both federal and state levels.<sup>5</sup> While federal policy has been complicated by ideological disputes, the states have been quite active in their 'laboratory' roles, with great variation as to structure, size and location of science and technology organizations.<sup>6</sup> This literature points up strategies used to stimulate science and technology/economic growth—research and development, venture capital, incubators, and others. Feller, Lambright, Teich, O'Gorman, and others have written on the US state scene.<sup>7</sup> Raymond recently edited a book that brought studies of science and technology-based economic development at national and state levels together.<sup>8</sup>

This overall literature shows no one best way to organize for science and technology-based economic development. It underlines the criticality of political context. In his book on MITI, for example, Johnson stresses how the consensual nature of Japanese culture facilitated the symbiotic relation of government and business. The culture of North Carolina, the first state to consciously bring government, business and universities together to stimulate economic development, is characterized by a political context in which collaboration across sectors is encouraged.<sup>9</sup> Johnson wrote of the 'developmental state', meaning that some societies will emphasize their role in economic development at the expense of, say, their role as a 'regulatory' or 'welfare state'. This implicit ordering of priorities shows up in relative influence among agencies. He called powerful MITI a 'pilot organization'.

There are few science and technology organizations in the US context that are worthy of that appellation. Indeed, institutions generally—including MITI—have their ups and downs in organizational influence. GRA is small and not even—formally—governmental. That fact does not mean it is bereft of governmental power, as we shall show. It does indicate that in Georgia, and the US generally, pilot or steering roles are less acceptable for science and technology organizations than catalytic stances.<sup>10</sup> These less visible and obtrusive organizations make it possible for others to do their jobs in science and technology-based economic development.

Our focus, as noted, is the role of GRA, and to get at that role, we use an evolutionary approach. Thus, the initial stage, *conceptualization*, entails ideas and visions by founders of what this new entity is to do and how. It reflects their awareness of need, a policy gap requiring a novel organization to fill.

Some specific event or person *triggers* action, which results in the actual *birth* of a formal entity. The new body forms a policy board and staff, specifies its program, and moves into the *implementation* stage. It may go through a *growth* period during which it augments its mission. Eventually, the organization reaches a time of formal or informal *evaluation*. It may subsequently be *reoriented*. At the end, it moves to a final stage of *institutionalization*. *Termination* of the organization can occur at any point prior to institutionalization.

While these stages appear straightforward and linear, they may not be. The birth stage can be troubled, and once in being the organization must cope with a political environment that can be quite turbulent. As a consequence, how fast or how easily the organization moves from concept to birth to institutionalization (or death) is highly contingent on diverse forces over which it has varying control. To the extent that the organization can do so, it allies itself with supportive constituents who will provide it with resources to survive and carry out its program. While doing so gives the entity a measure of security, those forces will influence what the organization does and how. The organization succeeds to the degree that it accomplishes the goals for which it was established, or finds a way to change those goals in the process of implementation to match what it can accomplish.

While the literature on science and technology-based economic development is substantial, it deals generally with public organizations, rather than hybrids like GRA, a publicly oriented private organization. As the ensuing case indicates, such an organization can benefit both sectors.

## **Background**

The Georgia Research Alliance had an existing base of activity upon which to build. In the 1960s and 1970s, certain universities in Georgia advanced on their own. In 1965, George Simpson, who had served as director of the North Carolina Research Triangle and as a senior NASA administrator, was appointed Chancellor of the Georgia University System. Serving until 1979, he was determined to elevate research and graduate education in Georgia, which he found below national standards.<sup>11</sup>

In 1972, Joseph Pettit, Dean of Engineering at Stanford, became President of Georgia Tech and joined with Simpson in the attempt to advance higher education. Pettit created an Office of Vice President for Research in his university and expanded interdisciplinary programs with a strong applied bent aimed especially at the Department of Defense. This was in a period when many universities were limiting their ties with the DoD in the wake of the Vietnam War. By the time he retired in 1986, Georgia Tech had moved from 70th to 27th among universities in federal research funds.<sup>12</sup>

During the 1970s and 1980s, two other major universities—the University of Georgia and Emory, a richly-endowed private university in Atlanta—also improved. Nevertheless, Georgia remained in the shadow of North Carolina and other states. The Georgia universities were regarded as regional rather than national institutions. Moreover, they did not have particularly strong linkages with industry and state government insofar as their core research endeavors were concerned.

## **Conception**

Awareness that something had to be done to change the image and reality of Georgia research came in 1984. In that year, there was a national competition among states for the location of a new high technology enterprise regarded by many observers as pivotal for economic development and prestige, the Microelectronics and Computer Consortium (MCC). Business leaders in Atlanta joined with the Governor and university presidents in mounting an energetic campaign. When Georgia lost to Texas, many of those involved were quite dismayed and sought reasons for their failure. Failure was a trigger for action.<sup>13</sup>

Two men in particular came to the fore at this moment—Lawrence Gellerstedt and

Thomas Cousins. They were both wealthy, politically well-connected real estate developers who had wielded influence in the Atlanta region for years. While possessing civic values, they also had economic stakes in the economic growth of Georgia; Atlanta in particular.<sup>14</sup>

At their urging, the Governor put together a blue-ribbon committee of business executives. They in turn commissioned a leading management consultant, McKinsey and Company, to probe more deeply the Georgia problem and recommend a solution. The recommendations that ensued were that Georgia nurture a university-based research capability that would attract high technology industry, much as was the case in California's Silicon Valley, Massachusetts' Route 128, and North Carolina's Research Triangle. They called for state investment in research infrastructure, such as laboratories and equipment; acquiring a much stronger research faculty; and establishing a new organization to better link universities and industry.<sup>15</sup>

In the late 1980s, the Governor followed through on the first recommendation, through state funds to universities for certain 'centers'. He supported the second recommendation to a lesser extent, and essentially ignored the third. As far as Gellerstedt and Cousins were concerned, the state government response was inadequate. They saw little cooperation among universities, much less between universities and industry. State government was not really engaged. They decided the private sector had to take a greater initiative.

What was most needed—the biggest gap—was an organization that would focus solely on advancing science and technology-based economic development in Georgia. Such an entity should not compete with business or universities, but work with them toward the goal of enhancing Georgia's competitiveness in the new high-tech economy. That meant tying industrial development to cutting-edge academic research. This organization should be run like a business and not be a government agency. However, it would need public funds to do anything substantial.

In early 1990, they enlisted the presidents of Georgia's 'Big Three' universities (Georgia Tech, Georgia and Emory) in the plans. Since they served, respectively, on the Boards of Trustees of two of these institutions, and had had a hand in hiring (and supervising) two of the presidents, they had little difficulty in this respect.<sup>16</sup>

The existing group then decided it would be prudent to add Georgia State, the Medical College of Georgia in Augusta, and Clark Atlanta, a predominantly Black school. This second tier of universities meant that the alliance included virtually all the schools in Georgia that could be called 'research universities'. These institutions did not have a tradition of cooperating, but they were located in the same general region of the state, with Atlanta clearly the focal point of the majority.

## **Birth**

In June 1990, the Georgia Research Alliance was officially born. Established as a non-profit organization, GRA could receive funds from public and private sources. It was formed with a board consisting of 12 leading Atlanta businessmen (all chief executive officers) and the six university presidents. The first chair was Gellerstedt. The locus of power in the board was thus with business executives.

The man selected to run GRA as Executive Director was Bill Todd, who had been the assistant to the President of Emory University. Age 42, Todd was a Georgia Tech graduate in industrial management. He had been at Emory for 20 years. Persistent, yet diplomatic, Todd had demonstrated a skill regarded as crucial for GRA, namely the

capacity to get high-level people with large egos to cooperate. The businessmen on the board arranged for a local foundation established by Coca-Cola, an Atlanta-based firm, to pay the salary of Todd and his secretary, GRA's first employees. The foundation also supplied some operating funds to GRA to get started. That it did, with headquarters in downtown Atlanta.<sup>17</sup>

Still uncertain at this juncture was the relation between GRA and state government. The incumbent governor had not gone along with the idea of a new organization. However, this governor was leaving office and a new one would soon be elected. It seemed a propitious moment for GRA to speak with the two men running for office.

Gellerstedt, Cousins and Todd paid visits to the two candidates, explained the GRA concept, and got both republican and democrat candidates to state their endorsement of GRA, in principle. What helped make them persuasive was the fact that the two businessmen were potential contributors to the candidates' campaigns and they made it clear that their financial backing was contingent on the politicians' support of GRA.<sup>18</sup>

Zell Miller, the democrat, won the election in November. He soon received a second visit from the same GRA contingent. They reminded him of his promise to back GRA. 'How much?' asked Miller. Todd had been studying the North Carolina experience and declared, '\$100 million'. This meant \$100 million over the Governor's 4-year term. The Governor replied, 'all right'.<sup>19</sup>

That was that! The Governor was made an ex-officio member of GRA's board. At least symbolically, GRA embodied an alliance among business, the universities, and state government.

## Implementation Begins

### *Selecting a Strategy*

GRA was alive, but what exactly would it do? In the spring of 1991, GRA asked McKinsey and Company for more advice.

The answer was that GRA give priority to attracting to Georgia 'leading edge' researchers. There was no substitute for brainpower in science and technology, said McKinsey and Company. The message was that if Georgia wished to move from regional to national research and development status, it had to compete nationally. Moreover, if the purpose was science and technology for economic development, then the brainpower had to be targeted to fields with economic potential. There had to be a critical mass of researchers and equipment built in selected fields around the luminaries.

McKinsey suggested three fields where Georgia might have a comparative advantage. Telecommunications was a natural given the location in Atlanta of Bell South, Cable News Network and media tycoon Ted Turner's many other telecommunications enterprises. Another was biotechnology. Atlanta had not only Emory, with its medical school, but also the US Center for Disease Control (CDC), a huge federal facility. The third area it suggested was less obvious: environmental technology. It saw this as a growth area where Georgia had a chance to excel, if it could get top researchers.<sup>20</sup>

The GRA board discussed the recommendations and agreed with them. The group decided to expand their deliberations via a luncheon to which were invited several high-level guests with relevant experience in higher education and industrial development. The discussion was lively. There came a critical moment when one prominent guest, a former chancellor from a Georgia university, challenged the 'superstars' strategy.

'We tried it', he said. 'You can't recruit these guys. They won't come from Yale or Harvard or wherever else.'

'We came close to not getting this [superstar] strategy off the ground', Todd later recalled. He remembered that the remarks sent a chill through the gathering. However, the Chairman of Georgia Pacific Corporation, who had previously been President of Virginia Tech, spoke up. He declared that Georgia *had* to try this strategy. 'My experience', he remarked, 'is that if you can attract brilliant researchers, that is the quickest way to turn around an institution'. His opinion carried the day and GRA left the meeting encouraged to establish an 'Eminent Scholars Program', which would be 'the cornerstone of our strategy'.<sup>21</sup>

### *Securing State Funding*

In January, 1991, Zell Miller assumed the office of Governor. GRA wondered if he would deliver.

Although he was a college professor's son, had a master's degree in history, and had once taught courses at Emory and the University of Georgia, Miller had never been viewed as especially interested in science, higher education, or high-tech economic development. Now in his early 60s, he was a career politician. For the past 16 years, he had been Lt. Governor.

Moreover, Miller was immediately confronted with a recession. His first act as Governor was to cut the state budget, including spending for universities. In the summer, seeing little improvement in the state economy, Miller convened a special session to deal with what he regarded as a fiscal emergency. He vowed to make further cuts.

How could, in this environment, GRA propose to establish its Eminent Scholars Program, with an initial \$15 million from the state? The Governor wound up cutting a total of \$750 million from the state budget, and reducing public employment by 2000 jobs. The university system did not escape cutbacks, but he also added to the higher education budget \$15 million in new money expressly for GRA. These were funds that were protected for a new start, not to be used to offset decreases in other university expenditures.<sup>22</sup>

This was a conscious decision by the Governor. Frustrated by his negative image as a man who only cut programs, Miller was anxious to have a statement for progress. 'We must move forward', he told his principal budget aide. He needed something new and positive he could back and GRA's proposal was on his desk.<sup>23</sup>

Helping Miller make his decision was the fact that GRA's board included some of the elite of Georgia's business and academic establishment, men Georgians called 'the Big Mules'. If he was cutting 2000 jobs from Georgia's payroll, while simultaneously adding \$15 million to bring new people to Georgia, then he would take political heat from the legislature. He wanted backing from men with economic and political power, and GRA's board included such individuals.

By January 1992, when he gave his State of the State message, Miller made GRA central to his 'Georgia Rebound' strategy. In a speech that reverberated with optimism and a 'come-back' rhetoric, the Governor also revealed a strong personal sense of competition. He had long chafed at the widespread perception of North Carolina as Georgia's economic and intellectual superior. His home was but 6 miles from the North Carolina border, and North Carolina's Governor, Jim Hunt, was a friend—but also a rival.<sup>24</sup>

Calling GRA a 'long-term focus', he specifically noted that Georgia had everything

North Carolina had with one important difference. North Carolina had a coordinated program linking government, universities, and industry. Well, he said, Georgia was going to move in the same direction. It was going to shift from its dependence on the old industries of textiles, food processing and forest products, to high technology.

North Carolina, he pointed out, built its resurgence around three research universities. Georgia would base its 'rebound' on six, 'public and private—in a unique partnership with each other and with the private sector as well'. GRA would get top researchers to come to Georgia universities and they would help the state become a 'center of expertise' in three high-technology fields, thereby attracting and building industry, 'adding 5000 high-tech, high-wage jobs over the next ten years'. He issued a challenge, '... look out North Carolina, here comes the Georgia Research Alliance'.<sup>25</sup>

The Governor was publicly committed. He needed GRA as much as GRA needed him.

## **Growth**

Assured that GRA had a future, Todd hired a deputy, Mike Cassidy, along with another secretary, building the staff up to four. Cassidy had a BA in marketing from Georgia State and an MA in technology and science policy from Georgia Tech. That was the formal, core organization.

GRA was not designed to 'run' anything, at least not on a permanent basis. Its role was to help plan, get enacted, and implemented, activities other institutions would run. The formal organization would be expanded through personnel lent by the participating entities on the board, as needed. For example, the President of Georgia Tech made his Vice President for Research an extension of GRA, and other academic and business leaders cooperated in similar ways, depending upon the issue at hand.

GRA was intended as a 'virtual organization'. GRA was to make happen what ordinarily did not occur on its own, namely institutional cooperation. Salaries of GRA staff were paid by private foundation funds, with programs supported by the state and private sector. Not a state science and technology agency, it nevertheless filled a governmental vacuum by advising the Governor on science and technology policy. However, GRA and the Governor believed that GRA would do better politically by not being 'his' agency. A certain independence was good, since it could more easily work with the legislature and be bipartisan. GRA used its autonomy to advantage in its role as a 'public entrepreneur'.

The operating budget of GRA was miniscule relative to its mission—\$500,000. That money was used to leverage more money for other institutions in Georgia. What the universities wanted were additional federal research and development dollars and greater national prestige. Business executives wanted to see economic growth tied to high tech. The Governor's interest was more and better jobs for Georgia. There had to be consensus, forged among these somewhat diverse orientations, and Todd's job was to engineer that agreement. It helped Todd enormously that the GRA board members operated on the principle of no proxies. This meant that the CEOs and university presidents had to come to the quarterly meetings or their institutions would have no votes. The GRA staff thus worked directly with executives who could commit their organization and its human and financial resources.<sup>26</sup>

Gellerstedt set a fast pace as the first chair of GRA. He was succeeded in 1992 by Cousins, who had been co-founding father of the organization.

*Courting Superstars*

GRA set as its prime strategy the recruitment of academic superstars. The name of the program was 'Eminent Scholar'. It entailed funds (public and private) to recruit leading-edge researchers and then build an infrastructure of work around them. This strategy entailed not just salaries, but also equipment, lab space, assistants, etc. It was using superstars to build 'niches'. Competing for top talent was not going to be easy, and GRA knew it. It would be extremely expensive. The eminent scholar chairs (which included non-salaried items) were priced at approximately \$3.5 million each.

At the financial level discussed, the superstars strategy involved considerable stakes for all concerned, especially the universities. Within GRA, it was decided that particular universities would have 'lead' status among the fields. However, to the extent possible, cooperation across campuses in research as well as with industry would be strongly encouraged, in many cases required. The fact that business executives outnumbered university presidents on the board was important in influencing cooperation and agreement among the university presidents. Competition among institutions continued, but GRA found ways they could also work together.

Thus, the University of Georgia was designated lead university for environmental technology. Georgia Tech was lead university for telecommunications, and Emory, with its medical school, was lead in biotechnology. It was up to a university to come up with a potential individual for an eminent scholar position. GRA would indicate whether the individual was right from its collective point of view—the perspective embracing multiple interests. If endorsed by GRA, the researcher would then be the object of a considerable recruitment effort by the university and GRA.

Recruitment strategies reached not only to the researcher, but his or her spouse. For example, if the wife of a candidate liked classical music, she might be the guest at lunch of the conductor of the Atlanta symphony. A tour of museums in Atlanta would be arranged for someone whose interests ran in that direction. Atlanta was made part of the recruitment strategy, with GRA's help.

GRA climaxed the recruiting effort with a visit with the Governor. Miller had asked GRA to suggest strategies he could undertake, in addition to funds, to help the overall effort, and GRA took him up on his offer. Miller would typically put the candidate at ease with his southern charm and banter. Then he would use his baseball analogy, 'I need you to come to Georgia. You will be our Greg Maddux', referring to the Atlanta Braves' star pitcher. He saw academic luminaries as 'free agents', and brainpower as akin to athletic prowess. He would emphasize the importance of the candidate to the high tech future of Georgia. In closing, he would often declare that this conversation was 'the most important thing I do today'.<sup>27</sup>

In 1993, when the first superstar said 'yes' to the University of Georgia, GRA happily let the Governor make the initial announcement, and get public credit. The field was environmental technology, and Bruce Beck was a renowned water quality environmental systems researcher, enticed from the University of London. Bringing Beck, said the Governor, 'wins national recognition for the university and countless opportunities to attract new grant funds and research projects'. GRA Chair Cousins followed up by linking Beck with Georgia's interest in technology development and transfer in the water treatment field. The choice of Beck was related to Georgia's dependence on industries that were heavy water users and potential polluters, such as pulp and paper mills and agriculture.<sup>28</sup>

The Beck appointment was followed by two others at different universities. The same combination of factors entered in as seen with Beck—academic eminence, potential for



bringing federal research and development dollars into the state, and spinning-off technologies to regional economic development.

### *Expanding GRA's Reach*

GRA thought of itself as having a primary strategy, which was to build up university intellectual capacity to be used as an engine of economic growth. In 1993, it obtained funds from state and business sources for another three eminent scholar chairs and related infrastructure. It found ways to spread the benefits among all the participant universities. Meanwhile, it looked to ways it could fill other gaps in science and technology-related economic development. What was needed, GRA decided, was a venture capital fund.

GRA called a meeting in 1993 of prominent business and financial executives. The Governor came and stressed the importance of the activity. GRA raised \$15 million on the spot with one CEO taking out his business card and writing on the back, 'We're in for 5', meaning \$5 million. With an additional push, GRA raised subsequently \$35 million. It then spun off the venture capital operation to a separate organization.<sup>29</sup>

In 1994, GRA asked for, and received another three eminent scholar chairs for member universities, bringing the total up to nine. It pressed the universities, accustomed to moving slowly, to accelerate the recruiting process. It felt that the times were favorable and the state had to move while it could.

Indeed, the political situation was optimal. Georgia had recovered from its economic doldrums and the Governor received much credit for the turnaround. In 1993, Miller had pushed through a lottery, which proved a new source of state revenue. Miller steered much of this in the direction of education, including what became known as the HOPE Scholarship. It provided scholarships to meritorious high school students in Georgia to attend state universities. It complemented the policies associated with GRA and was part of the 'Georgia Rebound' vision of the Governor. Named 'Man of the Year' in 1993 by *Georgia Trend*, a magazine of Georgia business, the Governor declared he had always flinched 'when I read that Georgia was last in the nation in this and last in that. I always dreamed of becoming governor and correcting that'.<sup>30</sup> GRA made maximum use of having a governor with that kind of attitude.

When Miller won re-election in 1994, GRA knew it had another 4 years, and thus the needed time, to build its record and cement support with the legislature and other influential forces in the state.

### *Launching a Telecommunications Center*

An important target for support, in every way, was Ted Turner. In 1994 and 1995, private and public decisions were made that led to the establishment of a Georgia Center for Advanced Telecommunications Technology (GCATT), and in 1996, GCATT opened near Georgia Tech.<sup>31</sup>

GCATT's dedication was timed to coincide with the onset of the Olympics, which were being held in Atlanta. The aim was public visibility so all parties could glean credit. The Governor said that GCATT would position Georgia 'to build on' its existing strength 'and continue to run out on the cutting edge' of the technology. He declared that 'collaborative research and incubator programs' would be 'the engine that will power our telecommunications industry to world prominence'.<sup>32</sup> The events of 1996

underlined to many in and outside Georgia that something good was underway in Georgia—and the publicity was itself important.

## **Evaluation**

There was no official evaluation of GRA. There was a widespread favorable view that GRA was an effective organization. However, critics noted that GRA concentrated resources in a certain region, i.e. the greater Atlanta area. This was a 'trickle down' strategy in the view of universities elsewhere in the state. Georgia Southern, for example, sought membership on the board and was rebuffed.<sup>33</sup>

In 1995, there was a significant fight in the legislature over GRA—not its continuance, but its alleged Atlanta focus. It was an urban/rural conflict, big versus small, haves versus have-nots. It was the kind of distributive political struggle seen in virtually all states where public money was involved—and, indeed, in the nation. GRA argued that 'quality' was needed for Georgia to enter the 'big time' of science, technology, and economic development. North Carolina had adhered to a concentrated strategy with its Research Triangle. 'To have quality, you need critical mass', GRA argued. Expanding to all the academic institutions of Georgia (possibly 25) would dilute the program, GRA warned.<sup>34</sup> The GRA board lobbied hard for retaining the existing model to give it a chance to succeed. The Governor, no doubt, did so also, behind the scenes. GRA beat back the attempt to 'broaden' the program, emphasizing its economic, rather than social orientation, but the pressure continued.<sup>35</sup>

In 1996, Jim Blanchard, a business executive from Columbus, a mid-sized city in a rural section of the state, became chair of GRA. He brought credibility to the notion that—in time—benefits would flow. GRA preached patience, but knew the issue would continue.

There was also muffled unhappiness in the higher reaches of university-system circles. GRA worked with specific universities rather than the state's higher education coordinating body. GRA money was 'fenced', meaning protected from reprogramming by central university bureaucratic interests having other priorities.<sup>36</sup> Nevertheless, the critics paled before GRA's supporters, especially the Governor. GRA continued, building on what it had already done.

## *Building on Success*

The original impetus for GRA went back to the failure of Georgia to win MCC in the national competition. It was that failure that persuaded key business executives that 'something' was needed to bring about a coordinated response to large opportunities in the high tech world.

Individual universities in Georgia also understood that if they wanted to compete with leading institutions in more established states for the large 'center' awards possible from the National Science Foundation or National Institutes of Health, they had better find ways to augment their resources. Increasingly, the federal government was demanding 'matching funds' from those receiving large grants.

Matching was not necessarily always a formal requirement (sometimes it was), but in competition, universities were obligated to show real commitment to an enterprise. Money was a way to show commitment.

GRA could help Georgia universities get state and private funds to help them match federal awards. Thus, in 1994, Georgia Tech won an Engineering Research Center

award from NSF in electronics packaging. In 1998, Georgia Tech in alliance with Emory won an ERC on living tissues. In 1999, a coalition of universities led by Emory and Georgia State won an NSF Science and Technology Center grant in neuropharmacology. The grants reflected not only GRA's strategy in augmenting institutional funds ('matching'), but also inducing alliances across campuses. Moreover, the large grants were evidence that the superstar strategy worked. As the program evolved, it was the GRA-supported eminent scholars who usually were the intellectual leaders behind the center-scale proposals.

### *The Governor's Final Boost*

GRA could not have done what it did, especially where money was concerned, without Governor Miller's help. In 1997, Blanchard and Todd met with the Governor. Miller was going to finish his second term in 1999 and retire to private life. GRA pointed out to Miller that he could give the program a final push, thereby creating an extra momentum into the term of the new governor. The state had been investing \$30 million a year recently. They recommended that he raise this to \$40 million in his final budget submission. The Governor readily agreed. Moreover, the legislature raised the total to \$42 million.

In 1990, when GRA's leadership had met with the governor, and he had asked, 'How much', Todd had replied, '\$100 million' over 4 years. As it turned out, over an 8-year period in office, the governor provided well over \$200 million in his budgets. 'He delivered', Todd subsequently observed.<sup>37</sup>

### **Toward Institutionalization**

Miller was phasing out, but GRA believed it had garnered enough support in the legislature that it could survive a change in the statehouse. However, it also wanted the new governor's support.<sup>38</sup>

GRA leadership—Todd and selected board members—approached both candidates prior to the election, much as they had in 1990. They got promises of continued support for GRA. Elected was Roy Barnes, a democrat. When he became Governor in January, he made clear his continued support, and appointed three individuals to the GRA board to replace those leaving.

The new legislature also evidenced continued backing. The most immediate issue was that after 10 years, Todd moved on to another challenge. Among various tasks, he would oversee the management of GRA founding father Cousins' financial and foundation interests. When he departed, he was hailed as having left a 'legacy of success'. His associate, Cassidy, succeeded him and Todd declared, GRA's 'best days are yet to come'.<sup>39</sup>

### **Conclusion**

By 2000, funds had been made available to support 32 Eminent Scholars in Georgia at six universities, with specialties in telecommunications, biotechnology, and environmental technology. Two hundred and forty-two million dollars in state money had been spent, and business had contributed another \$65 million. GRA calculated that the state/private investment had leveraged a further \$600 million in federal research funds. In addition,

**Table 1.** Different types of R&D expenditures at doctorate-granting institutions in Georgia

Type of R&D	Fiscal years 1991–1998 (dollars in thousands)							
	1998	1997	1996	1995	1994	1993	1992	1991
R&D expenditures at doctorate-granting institutions	794,691	766,346	712,188	669,507	606,212	546,960	514,809	484,019
Federally-financed R&D expenditures	363,140	347,407	335,769	306,745	287,139	373,079	256,701	238,664
State and local government-financed R&D expenditures	69,604	68,844	61,862	55,663	44,663	39,325	39,835	43,222
Industry-financed R&D expenditures	85,820	73,284	63,791	55,129	53,469	51,968	42,067	40,010
Institutionally-financed R&D expenditures	246,047	252,398	223,909	227,244	200,733	167,509	161,049	149,645

Source: National Science Foundation, 1998.

new venture capital investment in Georgia had climbed well over \$700 million.<sup>40</sup> A book on the Miller years boasted that the state investment in science and technology had moved Georgia from 19th place in the nation in state research and development spending in 1992 to third place in 1996, and first place in 1999.<sup>41</sup> Table 1 summarizes various indicators of science and technology growth in the 1990s.

While many circumstances contributed to the surge in science and technology, GRA was no doubt critical. GRA was advertised as a catalyst, an advocacy/coordination organization, and that it had been in the 1990s, as it advanced from birth to maturity. Wayne Clough, President of Georgia Tech, declared, ‘We are leading the nation in growth of high-tech jobs, and there’s no question in my mind that GRA had a lot to do with that’.<sup>42</sup>

Among the factors that made GRA an effective catalyst were: (1) leadership; (2) structure; (3) strategy; (4) context; and (5) competitive spirit.

The *leadership* of GRA was ‘patrician’ in the word of Todd. GRA’s board consisted of an elite of CEOs and university presidents, top executives with power to commit their organization and its resources. In Todd, GRA had an astute executive capable of initiative, consensus building, and execution. Critical also was Governor Miller, who soon after taking office looked for a vehicle he could back to give his state a ‘jump-start’ and symbolize the technological front of his ‘Georgia Rebound’ philosophy. The literature on state science and technology-based economic development organizations shows that support from the Governor is critical to organizational influence.<sup>43</sup> Miller was consistent in his support because GRA helped him. Also important was that there was stability in the GRA leadership over a full decade. Those in all command positions got to know one another and developed easy working relationships.

The fact that GRA was nongovernmental in *structure*, however, gave it autonomy and buffering from overt political pressures that would have been inevitable had it been a state science and technology agency. It was a nongovernmental interest group that had privileged access to governmental power. Moreover, it was a virtual organization in the sense that the staff of GRA was the tip of an iceberg of personnel. The participating institutions contributed people as necessary and in their interest. GRA did not ‘run’ programs, but it did coordinate efforts to get them started. In Georgia, not being a government agency was regarded as a plus, given the conservative political culture. In

other states and certainly other countries, formal governmental status can be an asset. In Japan, where bureaucrats rule, according to Johnson, MITI's governmental status works in its favor.<sup>44</sup>

The GRA primary *strategy* was to invest in cutting edge science in three targeted areas where Georgia had a comparative advantage. It was to attract 'the brightest and the best' researchers in these areas and use public and private funds to build strength around them. It was a free-agent strategy geared to superstars. A corollary was that the money had to be concentrated so that it would have critical mass. The idea was to focus money on top people in top universities. 'This is where the spark of creativity is', as one CEO put it.<sup>45</sup>

It was expected that eminent scholars would leverage state and private funds with federal funds, and that they did. GRA helped greatly, because federal programs that involved multi-year, multi-million dollar awards in national research center competitions looked kindly on universities that promised state and industry matching funds. GRA was active in getting matching money, likely giving the Georgia universities submitting proposals a competitive edge.

GRA strategy also emphasized cooperation among the universities. GRA stressed cooperation, with business CEOs leaning on the university presidents on the board. For GRA to approve funding for various university requests, there usually had to be evidence of cooperation among at least two universities. Todd believed that GRA thereby had helped change the 'culture' of the universities involved with GRA. 'The notion of collaboration was foreign in 1990, and now it's part of the culture', he said at the end of the decade.<sup>46</sup>

The GRA bent was clearly a 'strategic' approach, in contrast to letting the economic market or scientific peer review process determine how resources were deployed. There is debate in academic and policy circles over how much 'targeting' and concentration of resources are desirable in forwarding science and technology-based economic development generally, and how much overt pressure to collaborate across institutions and sectors is appropriate.<sup>47</sup> GRA took an unequivocal position in its work: targeting, concentration, collaboration.

The *context* of Georgia was such that it was possible to launch and implement an enterprise with a somewhat controversial strategy run by an elite. Economic and political power in Georgia coalesce in the Atlanta region. The 'Big Mules' of Atlanta, as the business and financial interests are called, have long worked with politicians to forge a power locus. In the 1950s, sociologist Floyd Hunter wrote of a 'Power Elite' governing Atlanta.<sup>48</sup> The elite may not be as distinctive as it was then, or as influential as he claimed, even then; but there is indeed a cluster of wealthy, politically connected executives who are behind GRA, people who have stakes in Atlanta and its future. What this group did through GRA was bring university presidents into the business-political alliance.

There has been a lot of complaining in rural Georgia about the 'non-representativeness' of GRA. Critics say activity is concentrated in a particular region of which Atlanta is the core. This is a reality for which GRA does not apologize. The CEOs of GRA regard this organization as having economic goals, not social ones. Their aim is to use universities to upgrade Georgia's economy, beginning in the place where progress is most possible. The 'trickle down' or 'diffusion' theory of science and technology-based economic development applies in their view. By having an organization that is small, light on its feet, non-governmental, but well-connected politically, Georgia has had an entity that has implemented a strategy based on technocratic efficiency criteria.

The counter to this argument, raised by critics, is that GRA *is* a social program,

whether those in charge admit it or not. The critics have pointed out that in the original expansion from the 'Big Three' universities to the second three, at the time of GRA birth, social criteria were implicit—since those added were of a different level of research intensiveness.<sup>49</sup> Whatever the case, the likelihood is that debate over efficiency/equity will continue. As long as GRA's board is driven primarily by CEOs and the existing set of university presidents, and the GRA's own staff funded from non-governmental sources, GRA can be expected to emphasize the model it has chosen. That model resembles the original North Carolina approach (focused on the Research Triangle). Over time, North Carolina's effort has expanded to include, to some degree, a larger network of universities and regions of the state. That may be the longer-term future for Georgia.

The fifth factor was *competitive spirit*. This was seen most notably in Governor Miller. Also, Todd evinced this spirit, saying in 1999, 'When we began this in 1990, we asked for patience, saying it's a 20-year process to move Georgia to the top ranks of technology-based states. We have moved from the middle of the pack to the top 10 in high-tech employment. We need to keep up the momentum and keep our eye on the ball. The top states are not standing still, and our peer states are launching aggressive new programs. A loss of focus is our greatest challenge'.<sup>50</sup>

Because of its visibility and perceived success, GRA is expected to continue under the new governor and very likely institutionalize. It has passed through the various stages of organizational evolution, accruing a record that has won friends, as well as detractors. Evidence suggests more influential allies than adversaries after a decade of activity.

Critical to GRA continuance is Georgia's further shifting from what might be called a traditional to what Johnson termed a developmental culture. This economic development-oriented entrepreneurial culture is what is widely perceived as having taken hold in certain places, most vividly in Silicon Valley, California and Route 128, Massachusetts. It is unlikely that such a transition can be accomplished in a decade or even two, but perhaps it has begun in Georgia in the 1990s, at least in the Atlanta region. If so, GRA can claim a measure of credit.

Whether GRA can continue with the momentum it had in the 1990s is a challenge for the new century. As organizations mature, they typically lose their founders and some of their vitality. Complacency can set in. Politicians especially like to associate themselves with 'new' initiatives. Nevertheless, GRA's support in the legislature has solidified, a key factor in its security under a different governor than Miller. Its success includes the considerable publicity it has received locally and nationally, including a *Wall Street Journal* article glowing in tone.<sup>51</sup>

Meanwhile, a number of other states have looked at Georgia with an eye to importing the Georgia model. Hopefully, those states will take account of the context of that model. GRA reflects the relative concentration of political, economic, and academic power in Georgia. Where that concentration of power is not present, distributive political pressures will undermine a critical mass strategy.

## Notes and References

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