

ECONOMIC DEVELOPMENT AND THE UNIVERSITY: A Case Study of a Failed Program

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This paper summarizes the basis of university attempts in the United States to stimulate economic development. Next, the paper describes the background of a particular university's economic development program. The projects and especially the problems of that university's economic development program are enumerated in detail. The problems include financial losses in particular projects large enough to cause the university to terminate the program, corruption, widespread public criticism of the program and of the university, and criminal convictions of two top officers of the program. Perspectives from the study of university-business relationships as well as from the study of public finance and budgeting and of deviance and white-collar crime help interpret the problems of the program. Possible solutions to such problems are offered. These suggestions include budgeting and reporting requirements, as well as a variety of structural features that need to be part of university economic development programs.

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A state's universities, both public and private, are increasingly involved in programs to foster economic development, often through commercializing science and technology. The effectiveness of such programs has been uneven (Senter, 1994). These programs are likely to continue, however, in part because universities have a strong interest in undertaking them. In an era of budgetary stringency for universities, such schemes offer universities the hope of additional revenues. The occasional spectacular successes include a patent on a gene-splicing technique that may eventually net Stanford University and the University of California \$200 million (Gupta, 1994). Such windfalls have stimulated many universities to explore commercialization. More mundane efforts, such as land development schemes and business-assistance ventures, are also undertaken, not only for public-relations reasons, but for their potential economic returns.

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Furthermore, American state governments have their own reasons for encouraging universities within their borders to pursue economic development. Historically, state governments have worked, often in competition with each other, to promote their own economies (Peterson, 1981; Judd, 1988; Robertson and Judd, 1989). This competition and these efforts have increased in the last two decades and continue to escalate. Contemporary causes of the efforts seem located in part in the financial dilemmas state governments have faced in recent years. In particular, federal aid to state governments has been sharply reduced. Additionally, the decade of the 1980s began with a very serious recession and ended with another sharp recession; the recovery between these recessions was long but rather soft. These events decreased state revenues while creating needs for social spending programs. The resulting budgetary pressures have spurred state governments to try to assist their economies.

The forms that economic development programs have taken are quite varied. (See Eisinger, 1988, for an excellent review of all kinds of state programs.) This paper considers a university program that began with an emphasis on commercializing science and technology, but that evolved into a diverse economic development scheme. One goal of such programs is to generate economic expansion in a state through sales of products and processes. An additional goal is to create new jobs by involving state residents in manufacturing that uses such processes or creates such products. A state's universities have often been perceived as an appropriate vehicle; state governments have tried to achieve both goals by encouraging and admonishing universities to become more active in economic development.

Failures in these programs do occur, though they have received little scholarly attention (Feller, 1990, p. 315). This paper uses a case study of one university to explore the causes and possible remedies of failure in university economic development efforts. The paper begins with a brief review of literature on promoting economic development and with a summary of some perspectives that can aid in understanding the failures of a university's program. Next, the paper describes "State Polytechnical University," a pseudonym for an American public university that is the focus of this case study, and the program of economic development the university established. Then this program's problems are interpreted with perspectives from the study of university-business relationships, public finance and budgeting, and deviance and white-collar crime. Solutions to such problems are suggested.

LITERATURE

There is by now a vast literature on economic development, and a substantial literature on relationships between economic development and science and technology. Important books on the latter topic include Dasgupta and Stoneman

(1987) and Mowery and Rosenberg (1989); Inkster (1991) provides a thorough historical review. This literature raises major questions of public policy: How can government stimulate the economy? How can government shape science and technology programs to generate economic growth and development? Attempts at answering the second question for the federal level can be found in Averch (1985), Barke (1986), and Smith (1990). For the state and local level, useful books include Schmandt and Wilson (1987, 1990), Smilor, Kozmetsky, and Gibson (1988), Fosler (1988), and Osborne (1990a). A recent anthology that speaks to both the first and second questions for the local level is Bingham and Mier (1993). There is also a growing literature in the journals on this question.¹ The place of universities in these relationships is receiving increasing analysis, as Feller's (1990) chapter demonstrates.

These materials, however, have tended to neglect some issues that merit more inquiry. These include the reasons why such economic development programs sometimes fail, and how the programs, once initiated, can be managed to prevent failures. The more enthusiastic literature on government-sponsored programs neglects these nagging problems. For example, Osborne and Gaebler (1992) discuss corruption and accountability, but underestimate the difficulties of correcting corruption and providing accountability. This paper attempts to provide some answers to these questions of the causes of failure and the precluding of failure.

These answers are based on several distinct perspectives; the three major ones include university-business relationships, public finance and budgeting, and deviance and white-collar crime. It is appropriate to discuss the foundations of these perspectives at this point.

The burgeoning number of university-business partnerships has led to increased reflection on these relationships; see Feller (1990), Klausner (1992), and Bowie (1994). Although the university program examined here was initially presented as involving the commercialization of science and technology, the program eventually included many business initiatives that had nothing to do with such commercialization. Both for these initiatives and for the original science and technology-based ones, however, the literature on university-business partnerships could have provided guidance.

Feller (1990) stresses the importance of several features of such arrangements if they are to succeed. These include approximately equal power between the university agency and the external business it links up with, as inequality may lead the stronger partner to exploit the weaker one. Also, the university agency needs the experience and the will to provide enough resources for initiatives, and to terminate support when particular initiatives do fail. Related to the point previously mentioned, a university agency involved in a partnership with a business will be advantaged if its own personnel have experience in risk-laden for-profit undertakings. Furthermore, such partnerships depend on the availabil-

ity of certain resources in the immediate area, in particular, adequate supplies of specialized skilled labor. Finally, universities, which in some cases are prone to continuing reorganizations, need to develop straightforward organizational models for their partnerships, and need to keep costs of administrative overhead within bounds.

Another perspective on universities' economic development programs can be gained from the literature on public finance and budgeting; see Hyde (1992) for an overview. New organizational entities such as university-business partnerships require not only financial resources but budgets and financial controls; models for these can be found in the principles used by public or government organizations. What this perspective provides are an emphasis on the importance of reasonable budgets, including specifics on constructing such budgets, and an emphasis on lines of reporting and responsibility, in order to provide control and legitimation.

A final perspective on universities' economic development programs can be found in the sociological literature on deviance and, in particular, white-collar crime. A classic statement on white-collar crime is in Sutherland (1983); a contemporary set of papers on the phenomenon is Schlegel and Weisburd (1992). This perspective has emphasized the large proportion of all crime in industrial societies that consists of actions, often of theft or embezzlement, taken by persons against their employing organizations, with resulting vast financial losses. Such organizations may include universities. This perspective helps explain the limited effectiveness of criminal penalties as deterrents to this activity. Thus, it reinforces the need for good financial controls and for workable organizational models if university economic development programs are to succeed.

Analytically, the use of these three perspectives is grounded in the following considerations. Economic development programs, especially those premised on commercializing science and technology, are often trumpeted as bold new initiatives. Nonetheless, such programs do fall prey to a variety of problems. Furthermore, given the somewhat limited repertoire of organizational forms available to a particular nation at a given period in its history, the structures of such programs are likely to have strong similarities to preexisting types of organizations. Thus, it is argued here that three perspectives that have demonstrated usefulness in understanding such entities as corporations and nonprofit groups can be extended to a supposedly new form, the economic development program. The perspective on university-business relationships grows out of studies of organizations. This perspective's development parallels the expansion of connections between universities and businesses that has occurred since the Second World War. The perspective of public finance and budgeting, based on political science and economics, has proven itself in studies of public-sector agencies and departments. The perspective on deviance and white-collar crime, organat-

ing in sociology, is of increasing importance as ever-larger proportions of the labor force are employed by large organizations and as an increasing proportion of criminal acts consist of illegal behavior by employees directed against their employing organizations.

METHOD

This paper employs a case study approach to investigate an economic development program at a single university. While no claim can be made that the difficulties encountered in this program will be likely in all universities that attempt such programs, nonetheless, the case study approach seems useful here. The literature on universities' failed programs to generate economic development is limited. An in-depth study is likely to aid in discovering some guideposts to what can go wrong in such programs.

The research began with a brief visit to the campus of the university in question, study of promotional literature produced by its economic development program, review of newspaper articles describing the program as well as describing its difficulties, study of the state auditor general's audit report of the university, and interviews with close observers of the program. The research subsequently has included two lengthier visits to the campus, additional interviews with university employees and other local informants, and examination of many internal documents generated during the years the program was in place. The university is identified with a pseudonym, as are various organizations within it; individuals associated with the university have also been given pseudonyms. The state in which the university is located has been disguised.

STATE POLYTECHNICAL UNIVERSITY

State Polytechnical University, also known as SPU and as "Tech," is located in an urban area of about 17,000. Tech is a public university, over a century old, and has always had an engineering emphasis. Tech now provides a diversified curriculum, but one that is strongest in scientific and engineering specialties. Today, the university enrolls close to 6,000 undergraduates and between 500 and 600 graduate students. Tech is not one of the limited number of America's leading research-oriented universities. However, it has similarities to the considerably larger number of "good" or "competitive" universities. For example, Tech's admission standards are such that the average ACT score of its undergraduates is 25. The university has enjoyed a favorable reputation for rigorous courses, good job placement for its graduates, and high-quality faculty research. The university employs a little over a thousand people on a full-time basis plus many students in part-time positions. The university's total yearly budget is around \$100 million, about 40% from state appropriations.

Tech is located in a thinly populated, economically depressed region. Government employment and government spending, by default, are important to the local economy. Thus, in Tech's region, there is intense interest in Tech's economic impact: how it attracts paying students, how it spends on local contracts, and what role it has in economic development. Such interest, of course, is common to many American college and university communities; at Tech, it is highlighted because of the relatively great size of the university in its small urban area.

There has for some time been a degree of uneasiness between Tech and the communities surrounding it. Tension in town-gown relationships is frequent in university histories, but the particulars of Tech's situation deserve mention. As Tech's reputation grew, it increasingly recruited both students and faculty from well beyond the local area. Thus, some local citizens are at least mildly critical of Tech for not being more attentive to the educational and service needs of the counties close to Tech.

THE FORWARD GROUP AND THE STATE'S ECONOMIC ENVIRONMENT

The economic impact of public universities in Tech's home state is a matter of ongoing public concern, in part because their spending has a sizable impact in their communities. The state government now appropriates about \$1.3 billion per year for these universities; their total budgets would add up to close to \$4 billion.

In addition, in the state, most of the university regents or trustees are appointed by the governor, albeit with legislative consent. Political service to the governor and his party is the overriding requirement for appointment to these unpaid positions. A few of the trustees live in their university's community. As they often have a financial stake in the well-being of their communities, these trustees tend to be alert to the short-term economic consequences of the university they serve.

Furthermore, a recent governor took great interest in the economic effects of the public universities. Believing that his administration was rather generous to the universities, he wanted them in return to engage in economic development efforts. He had various political reasons for this stance, but his feelings on this matter were also grounded in some policy statements. In the 1980s, the governor's task force on the state's economic future produced a major report that stressed attempts to improve the state's manufacturing capacity, particularly through high-tech manufacturing. In addition, the governor's higher education commission issued a voluminous set of staff reports that included a 60-page chapter on the connections between higher education and state economic growth. Thus, there was gubernatorial pressure, premised on some task force

and commission reports, for the state's public universities to engage in economic development activities.

Historical Background of the Forward Group

Early in the 1980s, SPU created State Polytech Forward, Inc., and in the mid-1980s created the Polytechnical Activity Corporation. Both these entities were put on a financial footing by having the university purchase all the stock in them. Sometimes the purchases took the form of the university receiving stock in these corporations in return for land, patents, or mineral rights that the university transferred to the corporations. In other instances the purchases were straightforward cash transactions. Later in the 1980s, a more complex organizational form was established; Tech created the Forward Group, Inc. (or, simply, Forward). State Polytech Forward and the Polytechnical Activity Corporation were both subsumed under the Forward Group. At the same time, SPU set up its Research Activity Institute (hereafter, RAI), a nonprofit, tax-exempt company. RAI was responsible for the Forward Group, a for-profit business; it took ownership of all of the Forward Group's stock. After RAI was established, assets ultimately destined for the Forward Group were first channeled through RAI. Forward ended up as the recipient of considerable resources: cash, land, buildings, mineral rights, patents, and existing companies, for example, with a value by some estimates of over \$40 million. Forward eventually included within itself a considerable number of companies.

The glossy brochures produced on behalf of the Forward Group describe a series of activities that seems well within the mainstream of science and technology—related economic development. The premise of the operation was the transfer of technology from a knowledge-creating institution, the university, to private businesses. The particular emphases in technology centered on waste management and resource utilization, the latter deriving from Tech's historic position in an area of mining and lumbering.

The Forward Group acquired or merged with various business enterprises. Then the Forward Group supposedly concentrated on providing financial, legal, marketing, and management services and skills to such entities. In addition, the Forward Group was intended to serve as a bridge, bringing together university researchers with companies capable of commercializing their ideas.

In practice, however, the Forward Group got involved in enterprises far removed from technology transfer in the areas of waste management and resource utilization. In effect, Forward became an all-purpose economic development arm of SPU.

Two of the leading creators and executives of the Forward Group were Peter T. Grundig and Robert S. Johnson. Grundig was chairman of Forward for a number of years and Johnson worked as president of Forward for a period of

time. Grundig in particular had long been associated with the university as a vice president; presumably, this gave him substantial managerial experience. He was well known in the local community and had a quite favorable reputation there until the Forward Group experienced major difficulties. Johnson had also worked for SPU in the area of accounting. In addition to these two people, mention should be made of James Wellmann. Dr. Wellmann was employed at SPU for many years. He became SPU's president, and was president during Forward's heyday and during part of its decline.

The Forward Group did grow over a number of years. Nonetheless, as of this writing, many of the assets have been dissipated. Estimates from various informants suggest that when the books are finally closed, of all the assets the Forward Group originally had, only \$2–3 million dollars will be left. SPU is in the process of disposing of many of Forward's enterprises, although for liability reasons, the Forward Group itself may be maintained as an organizational shell for a number of years. In addition, James Wellmann resigned the presidency of SPU and took a position at an out-of-state university. And both Grundig and Johnson have been convicted in criminal trials. Finally, some of the real assets of the Forward Group (land, in particular) have been auctioned off without further development in an effort to raise cash.

In any extensive program of commercializing technology, there are bound to be at least some losses, of course, because new, high-risk small businesses will experience some failures. More broadly based economic development programs are also likely to experience at least some setbacks. What happened at Tech, however, far exceeded the proportion of failures such programs might expect. In the following section, attention is given to four sets of specific problems the Forward Group encountered, and to some adverse factors in the community and state that affected it.

PROBLEMS WITH THE PROGRAM

Problems in SPU's economic development program included, first, the Forward Group acquiring or founding a considerable variety of holdings, some with no relationship to the goal of technology transfer. These included a hotel franchise in the local community and, for a short time, a small aviation company that was to be an air charter service. The latter, established originally by the Forward Group, lasted only five months. These holdings also included three land development companies based in the area that collectively owned a number of residential, commercial, and industrial buildings, as well as hundreds of undeveloped residential lots and thousands of acres of undeveloped land. The large number of diverse enterprises not only strained the capacity of the management but also opened the Forward Group and, by implication, SPU to public criticism that the program was straying far from its initial premises.

Second, a number of spending decisions made by the Forward Group were poorly conceived, if not corrupt. In particular, Forward selected some of its top managers from recently retired university administrators. For example, Grundig had retired from a Tech position that paid him close to \$100,000 per year. At about the same time, Ronald Colignon retired from a Tech post that paid him almost \$90,000 per year. Each man received a substantial early retirement incentive of not quite twice his annual salary. Grundig promptly began working for Forward as an executive on a contract that would have paid him about \$200,000 plus expenses for 18 months' work. Colignon established a consulting firm and was paid \$500 for each day of consulting he provided for Forward. Over a period of about one year, for example, this amounted to over \$60,000.²

Diligent people at SPU and diligent employees of the local newspaper have dug out yet more instances of questionable financial practices and decisions. For example, Wolf Smith, the majority stockholder in Wolf Smith, Inc., a construction company that had in the past received a number of building contracts at Tech, transferred his company to RAI. He did this by accepting \$300,000 in cash from RAI. For tax purposes, he claimed that the company was worth considerably more than \$300,000, and that in turning over the stock of the company to RAI, he was in addition making a donation worth \$1 million. At the time, the company consisted of a collection of construction machinery and the company's good name; it had no backlog of contracts when RAI got it.

From RAI, the stock went to the Forward Group. Subsequently, Forward sold that stock to a business called Best Buildings, Inc., another area construction company. The latter company was owned by Paul Adabo, an area resident who had been one of Tech's trustees and had also been on the board of RAI. Adabo was no longer a trustee at the time of the sale of stock to Best Buildings, but discussions of such a sale had taken place prior to his leaving his position as a trustee. Adabo was compelled to leave that position because of public criticism of the fact that while he was still a trustee, he was bidding on a very major construction project at Tech.

As the previous example indicates, conflict-of-interest situations were endemic to Forward. Such situations often serve as a breeding ground for poor or corrupt financial decisions. Underneath the conflicts of interest and the bad decisions lurked these questions: Who was exercising effective control over SPU? For what purposes was that control being deployed?

These questions lead to the third major problem SPU encountered: nontraditional gifts to the university. This problem affected the disposition of the Smith corporation, described above, but is even more strikingly seen in the case of Product Recycling, Inc.

The largest single financial endeavor of the Forward Group was a friendly takeover of Product Recycling, Inc., a subsidiary of a chemical corporation. That latter corporation was being purchased by a very large consumer products

corporation, which preferred that the chemical company divest itself of Product Recycling. This was accomplished through the following maneuvers: The Forward Group paid about \$5 million to buy Product Recycling; the money to do this was lent by the chemical company, and the Forward Group has since paid back the loan. At the same time, the chemical company claimed Product Recycling to be worth considerably more than \$5 million, so the chemical company also donated the stock in Product Recycling. The chemical company valued this at \$16,800,000.

It is not clear how realistic that stock valuation really was. The Forward Group has since disposed of Product Recycling. It is not evident that the sale netted the nearly \$22 million that Product Recycling was ostensibly worth. Nevertheless, the chemical corporation did realize a very substantial charitable deduction, which would have been extremely helpful in reducing federal taxes. The Internal Revenue Service (IRS) apparently did not challenge the deduction, though the IRS was alerted to its questionable status.

The Forward Group did not necessarily lose money on transactions involving Product Recycling, as its total investment was about \$5 million. There is no evidence that it sold Product Recycling for less than that. Nevertheless, the Forward Group was involved as an acquiescent partner in what appears to be a scheme that may have cost the IRS substantial tax revenue.³

Some university faculty were upset by this situation, in part because it offended their sense of morality, but in part because faculty tend to take the long view: they were worried that such transactions might come back to haunt the university with damage not only to its reputation but also to its financial stability.

What brought these particular examples into the spotlight was another, more long-term issue: the continuing overall erosion of the cash position of the Forward Group. This was in part evidenced by an embarrassing, though not illegal, situation in which the Forward Group found itself: it accumulated a number of large, overdue tax bills on real property it owned. This in turn helped arouse the community, as the unpaid taxes put serious pressures on the budgets of local schools districts. Another cause of the erosion was extreme overspending on "perks" or expenses. For example, the hotel that Forward acquired was the scene of many costly meals for Forward executives and their guests; these were charged off as expenses to the Forward Group. A further cause of the erosion was that some of the assets donated to Forward, such as goodwill in various companies, were inflated in value and earned little income. Still other causes of the erosion were lodged in enterprises that did not succeed, but that Forward continued to shower with money.

The unraveling of the Forward Group was due as well to two other adverse factors. One of these was negative publicity in student publications at SPU and in the local daily newspaper. These succeeded in creating an atmosphere in

which the growing fiscal problems of the Forward Group were attributed *not* to the inevitable difficulties associated with beginning new, high-risk small businesses *but* instead to mismanagement and corruption. This negative publicity occurred in an environment receptive to criticisms of business initiatives undertaken by Tech. Public opinion in the region is probably quite favorable to technology transfer schemes, but is much more mixed regarding general business start-ups of SPU or its subsidiaries. The combination of some failures in the Forward Group's portfolio of projects with the fact that some of the projects were unrelated to technology transfer led to increasingly negative public views of *all* of Forward.

The other adverse factor was the official attention and investigations that the Forward Group received. The initial reviews of the performance of Forward were internal and were criticized for glossing over the depth of the problems. But another review was done by the office of the state's Auditor General. The audit covered the period from mid-1987 to about mid-1992. The audit's prose was even and careful, but the findings were highly critical of a number of aspects of university administration. In addition, the criminal prosecutions by the state government of Grundig and Johnson brought yet more official, and negative, attention to the Forward Group.

INTERPRETATION

University Land Development

This section offers several lines of interpretation of what happened at Tech. First, the fact that the Forward Group got heavily involved in land is not surprising. Much theorizing in sociology, for example, assumes the preeminence of finance capital in contemporary society. But as Harvey Molotch (1976) has persuasively argued, at the local level, land is a key factor of wealth. Disputes revolve around ownership and use of land; vast effort is expended to control and develop land. While universities with large endowments usually invest heavily in bonds and stocks, frequently they also possess good-sized tracts of land. A considerable part of the assets transferred from Tech to RAI and from RAI to the Forward Group consisted of land. Developing this acreage could have produced substantial profits. Thus, it was not unreasonable for the Forward Group to retain ownership and plan to develop it, rather than to sell it and use the proceeds to assist business development. This is particularly the case in the SPU's region; the fact that both agriculture and manufacturing are limited means that land itself, as a basis for recreational and leisure development activity, is a very major form of wealth.

Nevertheless, the Forward Group was not successful in its real estate activities, and much of the land was eventually sold at a large auction. The lessons here include the conclusion that universities are not necessarily highly skilled at

land development; not only was the Forward Group's management spread a little thin, but it apparently lacked expertise in land development. An additional lesson, of course, is that universities' commercial thrusts will always be viewed with an inquiring and possibly hostile eye by the private sector. In the local area, businesspeople became critical of the Forward Group, in part because of its failings, in part because it was not operating on a level playing field. Potentially, Forward's activities had the competitive advantage of being undertaken, ultimately, by a nonprofit institution, the university, which generously bank-rolled Forward, even though Forward itself was organized as a for-profit entity. A qualification deserves mention: there was probably more community opposition to those parts of SPU's economic development program (e.g., land development) that posed a direct competitive threat to local businesses than to the parts of the program (e.g., technology transfer) that did not constitute such a threat.

University-Business Relationships

The foregoing remarks lead to an analysis of Tech's problems in terms of one of the perspectives mentioned in the literature section, the perspective on university-business relationships. (The following draws on Feller, 1990.) First, such relationships commonly involve entities that are more equal in size and strength. At Tech, the university's arm, Forward, was usually a much more powerful partner than the businesses it made arrangements with, and Forward often ended up directing rather than assisting these firms. A consequence was that the partnerships often lacked leadership that had entrepreneurial experience in risk-laden for-profit undertakings.

Second, it is not clear how thoroughly the principals of RAI, Forward, and Tech itself thought through what they were doing prior to staking a major share of the university's resources on these activities. In particular, it is not evident that Tech officials had a clear sense or a good model of how technology transfer works, and what can be expected of it, and what its limitations are. (See Feller, 1990, pp. 316–18, for a short but trenchant discussion of technology transfer.) Lacking that foundation, it would be difficult to make reasonable budget decisions about when to commit additional resources to a project and when to terminate that project. By contrast, successful university-business partnerships in the technology area are based on a shared and adequate model of technology transfer.

Indeed, it is not obvious if technology transfer was in part a palatable cover for other economic activities that the Forward Group wanted to develop from its origin, or if Forward got into these other economic activities by happenstance. In either case, it seems that a cornucopia of resources became available to Forward in a short time. Only some of these could be absorbed by local

technology transfer projects. The rest of the resources were willingly accepted and placed in other kinds of enterprises.

Evidence for the proposition that Forward officials lacked an overall plan can be seen in the elaborate organizational model of all the entities in the Forward Group at the time of its maximum size. This contrasts very sharply with the functional typology of university-business linkage models presented by Baba (1985, p. 224).⁴ Forward's baroque organization drove up costs; it required large sums to administer.

Additional evidence for the proposition that there was no overall plan can be seen in the the Forward Group's underestimation of the labor requirements of technology transfer programs. The SPU's immediate area does not have a large number of high-technology firms, and hence lacks a sizable pool of skilled technicians who might be enticed from their present employers to take jobs on new projects. In this respect, Silicon Valley, Route 128, and the Research Triangle area are misleading exemplars for those who envision grafting successful technology transfer initiatives on to their universities. These three locales have very large numbers of highly skilled workers who reside nearby and who are open to competitive job offers. Universities sited in regions lacking such ample and talented labor supplies would be wise to be cautious about calls to fund generously any new technology transfer programs.

Third, absent an adequate model of technology transfer, officials at Tech failed to appreciate two requirements of university-business relationships. One is that to benefit from such relationships, businesses have to be able to absorb and use new knowledge generated by their university affiliations. Forward did not choose partners able to do this. As Feller points out (1990, p. 334), smaller firms may have more difficulty using new knowledge than bigger firms—yet Forward was primarily involved with small firms. The other requirement is that university faculty must be linked to such relationships by rewarding their efforts. Money is not the only point; for faculty, promotions and tenure are crucial. At SPU, the incentive structure did not work well to bring faculty into collaboration with the firms that Forward encompassed. Thus, it is no surprise that very few faculty did become engaged with Forward's firms.

Public Finance and Budgeting

Another line of interpretation is based on the perspective of public finance and budgeting.⁵ The Forward Group made some unusual claims regarding reporting responsibilities. These claims created a veil of secrecy that hid both poor management and corrupt financial practices from public view. As a corporation, the Forward Group had to file with the state government an annual report. Although such annual reports are in principle open to the public, they are not widely distributed. It is up to the curious or enterprising citizen or

reporter to get copies of them. Furthermore, the document itself need not be very detailed, and hence may not reveal much about a corporation's activities. The Forward Group also had to report to its single stockholder. That stockholder, RAI, initially chose not to reveal much about the Forward Group's finances. At the same time, as the Forward Group was two steps removed from the university, it claimed that it was not subject to the normal reporting requirements that public entities must satisfy.⁶

As the findings of the Auditor General indicate, the Forward Group did not formulate annual budgets in the manner usually expected of either for-profit companies or public entities. That is, there did not seem to be annual plans that made reasonable estimates of revenue and allocations of expected revenue among various programs. This of course is a basic principle of finance, either in the private or the public sector. Granted, it may be hard to forecast revenues from start-up companies in the field of technology transfer. Nonetheless, why were new obligations undertaken when the Forward Group was failing to make tax payments on the large amount of land and buildings it owned?

In addition, the lines of responsibility that should be present in any enterprise, private or public, were lacking. The Forward Group claimed that, as a for-profit organization, it was exempt from the authority of the state government to audit it. Meanwhile, the university itself seemed unable to supervise the Forward Group. Thus, public control broke down. At the same time, there was hardly any private control. As RAI exercised a very light hand, there was little to prevent the Forward Group from squandering its initial capital until, conceivably, such capital was entirely exhausted. Here is a second major principle of finance and budgeting: budgeting decisions must be open to inspection, by stockholders in the case of a corporation, or by legislative review bodies and, ultimately, by voters in the case of public organizations.

Thus, the same painful lessons about budget responsibility that come up repeatedly in the history of local, state, and federal government in this nation are relevant to university programs as well. Unless universities insist on reasonable budgets and clear lines of authority for reporting on revenues and expenditures when technology-transfer programs are established, the possibility exists that capital transferred to such programs may simply be run down with nothing to show for it.

Related to these lessons are additional comments on the organizational structure of university-business relationships. Baba (1985) has remarked that one method of implementing such relationships while avoiding damage to the university would be to keep such relationships at a little distance from the "core" of the university, presumably by marking them off a bit from the academic departments. Baba also recommends "institutionalizing" such relationships by subjecting them to centralized university control, rather than having them entangling a variety of individual faculty and particular departments. More re-

cently, Klausner (1992), while forcefully making a case that universities should not engage in contract research, argued for a similar arrangement: if universities are to conduct contract research at all, he believes, it should be through an entity that is administratively distinct from faculty and academic departments.

The experience at Tech contradicts this belief to a degree. The decentralized structure of an American university, while occasionally maddening to university presidents, and a source of puzzlement to administrators of other kinds of organizations, tends to prevent corruption on a massive scale. This situation exists because in a strongly decentralized university so many individuals get to sign off before significant financial commitments are made. Walling off RAI and Forward from the rest of Tech's normal system of checks and balances made it possible for Forward's projects to run so deeply into the red. At the same time, the fact that Forward was an organizational structure separate from the academic departments meant that it would be harder to involve faculty in its entities and projects.

The advantages of centralized control are more likely to be evident at the level of the state government than at the level of the individual university. It can be added that in states with a strong, centralized agency that oversees public higher education, the problems that occurred at Tech might be less common. And it is the case that while many states have such an agency, SPU's state does not. Decentralization of a state's system of higher education probably is double-edged. It probably makes it harder for a governor to impose his or her will (or pet projects) uniformly on all public universities within the state's boundaries. However, decentralization of a state's system may create a greater likelihood that an individual public university may go ahead with a program, such as this one, that is flawed and wasteful. The structural arrangement most likely to inhibit corrupt programs may well be decentralization within public universities, combined with a public agency that supervises higher education and that is powerful enough to compel accountability for funds within each public university.

Deviance and White-Collar Crime

A final line of interpretation draws upon the perspective on deviance and white-collar crime. Although debate continues regarding the exact definition of such white-collar crime, several characteristics, taken together, seem important: illegal activities that are committed by high-status individuals in the course of their work, that victimize organizations rather than individuals, that do not involve the use or threat of force, that do involve deceit, fraud, and secrecy, and whose motivation is largely financial. Broadly speaking, the activities involve an employee's abuse of trust in order to further his or her own economic ends.

A classic example of white-collar crime is embezzlement of funds from a corporation by a ranking officer of that corporation.

These elements were arguably present in the activities of some of the executives of the Forward Group. And no matter how hard universities try to avoid such problems with firm budgetary controls, the likelihood of such problems remains.

Typically, the penalties for such activity are relatively light, compared to the penalties meted out by the courts for crimes involving money or property committed by individuals of humbler social background. (In the latter cases, the element of force is often present, and the victim is usually a person, rather than an organization.) What is remarkable about the situation at Tech is that a couple of the principal officers of the Forward Group actually did get entangled in the criminal justice system, to the point where they received convictions and indeed jail sentences.

The implication is that universities cannot always rely on the deterrent effect of criminal penalties to prevent major financial losses. The fact that Peter Grundig served six months in jail may assuage the feelings of embittered students, faculty, and alumni at SPU, but it does nothing to restore the sizable financial losses that occurred during his leadership of the Forward Group.

This is not to dismiss the potential use of criminal prosecutions. Nor is it to suggest that iron-clad budgeting requirements are pointless. It is, however, to suggest additional remedies. Two such remedies are mentioned here. The first is a reemphasis on the shared governance structure that universities classically have had. There has been a movement away from this sharing, in part because university presidents and vice presidents have decried decentralized authority, on the grounds that at best it leads to slow decision making, and at worst it leads to the protection of outmoded programs and the blocking of new and worthwhile programs. Nonetheless, the shared governance system has the advantage of making certain that important issues are widely publicized throughout a university, and ensures that thoughtful input, positive as well as negative, will be possible prior to decision making. Second, the role of university trustees or regents needs reemphasizing. This need is fraught with difficulty: overly active board members may ride their own hobby-horses, in terms of program choices; in addition, overly active board members may become involved in conflict-of-interest situations. At the same time, board members need to be very aware of major financial commitments and decisions of university administrators. Furthermore, the board members' reactions to administrators' recommendations and commitments need to be open to public inspection. At a minimum, open meetings of a university's board of trustees meetings, both general meetings and committee meetings, are necessary. Such a practice is advisable in private universities, as well as public ones.⁷

That such remedies may be needed seems increasingly clear. The nationally

ranked, research-based universities in the United States at least have the advantage of substantial experience with university-business relationships, and thus may be able to avoid, in many instances, the sort of debacle that occurred at Tech. Nevertheless, increasing numbers of universities, including the sizable contingent of universities like Tech (reasonably good, with respectable if not outstanding research capacities), are hurrying to establish relationships with businesses. The more modest base of experience of such universities in these endeavors, in addition to the inherent difficulties of these programs, portends trouble (Gupta, 1994). In addition, the fact that universities are often the suitors means that businesses in many instances have the advantage of picking and choosing among academic potential partners. The best-capitalized and strongest businesses will probably continue to affiliate with the strongest universities. Thus, the mid-range and the local universities, already exposed because of less experience in such partnerships, will be left to compete for linkages with a set of enterprises, some of which are quite problem-laden.

CLOSING REMARKS

To offer remedies and recommendations is cold comfort to many people at SPU: much of the resources invested in the Forward Group are gone, the university's reputation has suffered damage, and SPU's efforts to raise money through its development activities have experienced setbacks. But such remedies and recommendations may do other universities little good unless those universities' environments are taken into account. Given those environments, how realistic are the proposals advanced above? Would they have worked at Tech?

Some general features of the potential and the real opposition to Forward are presented here. First, the faculty at Tech was somewhat apolitical and less likely to challenge the administration than a faculty more heavily weighted with professors in the social sciences and in the humanities might have been. Second, and related to the previous factor, the absence of a faculty union at SPU meant that faculty lacked one kind of organizational base from which to stage opposition to Forward. Third, the academic senate at Tech was slow to act regarding the Forward Group because it had a tradition of limited initiative, even weakness. Fourth, and related to the the third factor, a considerable number of the most senior administrators at Tech had been working at the university for many years and knew it and the community quite well. They used this "insider" tradition effectively to develop a tradition of powerful, top-down leadership. Fifth, many of the trustees at Tech acted quite passively. They seemed content to participate in the ceremonial aspects of their appointments and relied almost exclusively on the administration for information and advice. They did not cultivate alternative sources from the community or from the faculty, staff,

or students. Indeed, many, though not all, of them came from distant parts of the state, and thus did not have extensive knowledge of SPU's area. Sixth, the local community, at the time questions about the Forward Group began to emerge, supported only one local newspaper; the local economy was arguably too small to justify additional print media. This newspaper was initially hesitant to undertake critical, investigative reporting of the Forward Group. (By early 1990, however, the paper had warmed to the task.) Finally, local business groups were reluctant to voice criticisms in the early years, probably because in some cases they had benefited from financial favors of the Forward Group, and in some cases were intimidated by this powerful financial player in the area.

This is not to claim that a political faculty, or an active academic senate, or a heavily engaged board, or a more competitive newspaper situation, will guarantee better results than the Forward Group produced in technology transfer or in economic development more generally. Indeed, one of Gupta's (1994) points is that in universities with powerful and engaged faculties, technology transfer programs sometimes die because of opposition over issues such as conflict of interest or because of criticism of the potential for faculty to be distracted from basic research by entrepreneurial activity. Nevertheless, the particular concatenation of factors at SPU described above provided an opportunity for corruption and failure. By contrast, such factors as a strong academic senate, an engaged board, and a more active faculty provide an environment in which corruption is less likely in the first instance. Furthermore, such an environment is more likely to be receptive to, indeed, to insist on, the various specific remedies and preventive measures described in the preceding section.⁸

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NOTES

1. See, for example, Lambright and Teich (1989), Crow, Emmert, and Jacobson (1990), Osborne (1990b), Atkinson (1991), and Bingham and Bowen (1994). For a catalog of state government programs to foster technology, see Minnesota Office of Science and Technology (1988). A recent anthology of articles emphasizing the conversion of inventions developed in the public domain into processes and products in the private sector is Kasscieh and Radosevich (1994).
2. An additional example of dubious financial decisions concerns transportation services contracted by Forward. Grundig and Johnson invested in a car dealership in the region that had been started by yet another retired Tech administrator. That dealership leased space in a building owned by the Forward Group. Furthermore, the Forward Group leased cars from the dealership.

Another example of such decisions concerns Grundig's practice of hiring some of his relatives to fill positions in various Forward entities. Given the very low population density of the region, some of this hiring was inevitable. Suspicions grew, however, regarding the extent to which some of the jobs given to relatives were sinecures, and were filled without any real competitive search.

3. Other distressing examples of the Forward Group's activities abound. In some cases where local banks with ties to Tech faced potential losses because of loans to failing real estate developments, Forward stepped in as a financial "angel" with assistance of various kinds; that assistance helped erode the Forward Group's capital. It also helped mute, at least initially, potential criticism of Forward by such local banks.
4. The influence of any other research on what projects Forward might undertake (or on the point at which it would make sense for Forward to terminate given projects) seems negligible. Yet the evaluation research literature grows apace. Feller and Anderson (1994) recently published an article evaluating New York State's Centers for Advanced Technology, and an entire special issue of *Evaluation Review* (Kostoff, 1994) was devoted to research impact assessment. Neither of these sources was available when the Forward Group was a going concern, of course, but *Evaluation Review* is now in its eighteenth year; that journal and some other materials, such as *Research Management Review*, were available earlier in Forward's history.
5. For extended discussion of the principles of public finance and budgeting, see Hyde (1992), especially the articles in Part I, "The Development of Budgeting and Budget Theory: The Threads of Budget Reform," and Part IV, "Budgeting Systems and Management: An Instrument for Securing Administrative Efficiency and Economy."
6. There was an above-board rationale for this organizational format, if not for the penchant for secrecy. It was anticipated that some of the businesses that the Forward Group owned or affiliated with could conceivably be defendants at some point in product-liability lawsuits. Some of the businesses would not have particularly deep pockets. University executives, however, had good cause to be concerned that the university's assets, in terms of endowments or revenue streams (such as state appropriations) might be at risk in such lawsuits. It was anticipated that establishing the Forward Group two legal steps away from the university would protect Tech from such lawsuits. It remains to be seen whether this strategy will succeed.
7. For additional discussion of these structural problems (without, admittedly, a lot of possible solutions), see in particular the essays by Feller and by Paget in Schmandt and Wilson (1990). Feldman's (1994) article is also useful here. She discusses the relationship of Johns Hopkins to Baltimore, points to a history of a lack of economic development impact by the university on the city and provides an explanation for that lack, and discusses current efforts by the university and the city to increase Johns Hopkins' local economic impact. Additional ideas for remedies can be gleaned from materials on economic development programs and policies of the states. Although these programs are much more varied than what universities attempt, and though their records tend to be more available than the documents of the Forward Group, the problems they face and also develop have some similarities to the difficulties Forward encountered. Analysis of some of these difficulties and obstacles is well treated in a recent article by Portz (1993). Another useful and recent study of economic development at the local level is Reese (1993).
8. This paper began with a citation to Robertson and Judd (1989) and will close with another citation to the same work. The concluding chapter of their book contains a detailed and politely worded case against "The Conservative Argument for Enhancing State Policymaking Control." The conservative argument, much touted in the heyday of the Reagan presidency, sought to provide a theoretical underpinning for the transfer of responsibilities from the federal government to the states. In fact, the transfer did assist Reagan's political allies, in particular, large business enterprises. As responsibilities devolved to the states, national corporations could have more room to play off one state government (or regulatory agency) against another state government. At the same time, such corporations would be less regulated by single, federal agencies in Washington.

The experience at SPU demonstrates the downside of such a shift in governmental responsibilities. In a locale distant from national media spotlights and removed from federal congressmen with their penchant for self-dramatization through investigatory hearings, a set of money-

losing operations played out, at substantial cost to the Internal Revenue Service and to Tech. This is not to suggest that the federal government is free from such problems. But it is to point out that historically some of the most open and serious abuses of public funds have occurred at the local and state level. Preventing such abuses will take some of the same measures that are in place at the federal level.

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