

**RISK, REFORM AND ORGANIZATIONAL
CULTURE:
THE CASE OF IRS TAX SYSTEMS
MODERNIZATION**

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***ABSTRACT:** The public management reform literature admonishes public managers to take risks. As is so often the case with prescriptions for public management reform, there is much more advice about risk-taking, its merits and demerits, than there is research on the incidence, causes, and effects of public management risk-taking. In an attempt to understand the role of risk culture in public management reform, the Internal Revenue Service's (IRS) experience implementing the largest information technology (IT) reform ever undertaken by a U.S. civilian agency is examined. IRS work in IT reform has been ongoing at least since 1989, but we focus specifically on the period 1990-1996 under the phase known as Tax Systems Modernization (TSM). This period is especially interesting inasmuch as it involved one of the greatest investments in federal agency IT ever undertaken, because it was generally viewed as a signal failure, and because one of the chief factors in this failed reform was the agency's risk culture.*

One of the most familiar nostrums of the public management reform literature is that public managers must be risk-takers (e.g., Gore 1993). As is so often the case with prescriptions for public management reform, there is much more advice about risk-taking, its merits and demerits, than there is research on the incidence, causes, and effects of public management risk-taking. Only a handful of studies have actually provided systematic evidence about public agencies' risk-taking (e.g., Berman and West 1998; Bellante and Link 1981; Bozeman and Kingsley 1998) and some of these studies point to the complexities of conceptualizing and measuring public management risk.

Despite the fact that organizational risk-taking remains a surprisingly uncommon focus for empirical researchers, conventional wisdom about its significance seems well

warranted. Even if risk-taking is not always an unleavened blessing (Berman and West 1998; Schneider, Teske, and Mintrom 1995; Osborn and Jackson 1988) the organization's and the public manager's approach to risk often seems a powerful determinant of policy and administrative outcomes. Anecdotal evidence abounds.

Perhaps the most dramatic recent episode underscoring the importance of public agency risk-taking is the case of the Federal Bureau of Investigation (FBI) and the war on terrorism. While the vulnerability of the U.S. to terrorism is clearly a complex issue that goes well beyond the domain of any particular agency or its problems, one former senior official cites a risk-averse organizational culture as a major factor (Van Natta and Johnston 2002): "Twenty-five years ago, the thought was you had to tame down the FBI... (b)ut in the last 15 years, we have become a very docile, don't take any risks agency, particularly at headquarters. And if you make a mistake and it blows up in your face, then your career is shot, because basically it's one strike and you are out of the FBI. All that has to change."

Some have blamed the FBI's risk-averse culture, its "paralytic fear of risk-taking" (Van Natta and Johnston 2002), as a chief culprit in FBI headquarters' failure to respond to the memorandum written in July 2001 by Phoenix agent Kenneth J. Williams—a memo urging an investigation of U.S. aviation schools' training of possible terrorists. While this analysis is, perhaps, a bit pat, it is certainly the case that any agency hoping to respond quickly to diverse information cannot succeed with an organizational culture hobbled by a fear of the negative career ramifications attendant to well-reasoned risk-taking.

If the case of the FBI and its approach to risk is a recent and particularly dramatic one, there are many well-known instances where the organization's risk culture (Bozeman and Kingsley 1998) seems to have played a major role, either for good or ill, in vitally important organizational outcomes. If we define risk culture as managers' perceptions of the organization's propensity to take risks, and of the organizational leadership's propensity to either reward or punish risk-taking (see Bozeman and Kingsley 1998), we can understand how these perceptions serve as powerful antecedents to managerial behavior. In many instances, there is some dispute about the positive and negative effects of risk and risk culture, even as there is agreement about their importance. For example, the tragedy of the space shuttle *Challenger* has been interpreted variously as a case of too much risk, not enough risk, and the wrong sort of risk (Romzek and Dubnick 1989; Bell and Esch 1989; Marshall 1986; Kovach and Render 1988; Vaughan 1996; Presidential Commission on the Space Shuttle *Challenger* Accident 1986). But even if there is no agreement about the particular role of risk in the *Challenger* disaster, there is a consensus about its importance.

A WINDOW INTO ORGANIZATION RISK CULTURE: THE IRS AND TAX SYSTEMS MODERNIZATION

This article focuses on a public management disaster not nearly as familiar or as heart-wrenching but one that nonetheless cost nearly \$8 billion, occupied the time of literally thousands of public managers and consultants, and, most important, directly affected nearly every adult living in the United States. In an attempt to understand the role of risk culture in public management reform, I examine the Internal Revenue Service's (IRS)

experience implementing the largest information technology (IT) reform ever undertaken by a U.S. civilian agency. IRS work in IT reform has been ongoing at least since 1989, but I focus specifically on the period 1990-1996 under the phase known as Tax Systems Modernization (TSM). This period is especially interesting inasmuch as it involved one of the greatest investments in federal agency IT ever undertaken, because it was generally viewed as a signal failure, and because one of the chief factors in this failed reform was the agency's risk culture (Bozeman and Kingsley 1998).

In 1989, Tax Systems Modernization began with considerable fanfare. Congress had been told that TSM was likely to cost \$4 billion and would not be fully operational until about 2000, and Congress did not blink. By 1996, the program was essentially dismantled and IRS was instructed to go back to the drawing boards. Critics of TSM differ only in the degree of severity of their criticism. Representative Jim Lightfoot, the Iowa Republican who was then chairman of the House appropriations subcommittee overseeing IRS, characterized TSM as "a \$4 billion fiasco" in an article by R. Hershey entitled "A Technological Overhaul of IRS is Called a Fiasco" published in the *New York Times*, 15 April 1996. Senator Bob Kerrey, co-chair of the National Commission on Restructuring the IRS, observed that "while the world has moved into the wireless age with home banking, ATMs on every corner and stock investing over the Internet, IRS technology has remained stagnant" (Stengel 1997, 60). But political officials were certainly not alone in their criticism. A National Research Council study committee on Tax Systems Modernization (established at the behest of the IRS) concluded its five-year study saying, "technical lapses appear symptomatic of a fundamental management problem plaguing TSM" (1996, 7). Perhaps most damning, a long string of GAO reports (see Bozeman 2002 for summary), ground out year after year, specified scores of technical and managerial shortcomings of IRS' modernization effort.

With so many talented people, both in the IRS and in private-sector partner organizations, using so many resources, for so long a time, on so vital a project, how could this happen? Was it the enormity of the task? Was the level of technology renewal simply beyond human ability to manage complexity? Was it because IT is inherently more difficult in government settings? Or was it something about the IRS and its organizational culture and, particularly, its approach to risk? In fact, it seems to have been due to all these factors and more (Bozeman 2002; National Research Council 1996), but for one interested in organizational culture and risk-taking this case is interesting because it is so overdetermined. The TSM case provides insights into the ways that risk culture interacts were a congeries of organizational, technological, and external political variables to conduce outcomes.

If multiple factors contributed to the demise of TSM, by most accounts organizational risk culture was front and center. In particular, the circa 1996 IRS culture was well adapted to a legally dominated view of the world and driven by paper processing, but was not well suited to a technologically dominated world view driven by electronic information processing. The IRS failures with IT modernization are of great interest because IRS has talented managers and, in many respects, excellent resources. As we see in this analysis as well as a more detailed companion study (Bozeman 2002), IRS managers failed by not adapting—by using approaches successful in an environment that no longer existed. A previously effective organizational culture had, by virtue of new technological demands, become an ineffective one. A culture in which risk was

reasonably eschewed was not effective for tasks in which risk was an inherent part of effective management performance. Moreover, the TSM case is instructive, among other reasons, because it suggests that the value of managerial risk-taking is contingent. Few of us pine for an IRS that has a swash-buckling, risk-be-damned orientation, but, at the same time, the agency cannot succeed in its technological missions without cultivating certain types and levels of risk.

Research Approach and Organization of this Study

This study is a case study—a single case, at least if a project as large in its scope as the IRS technology reform effort can be viewed as a single case. The research draws from the interviews and documents developed in a much larger monograph (Bozeman 2002). In addition to review of documents and reports, the study is based on interviews with more than one hundred key respondents including, among others, several former IRS commissioners, current and former IRS managers, consultants, Congressional staff, and officials of oversight agencies. With few exceptions (including IRS commissioner Charles Rossotti, who agreed to have his comments in the public domain) I have chosen not to list the individuals interviewed for the study. While I made no promises of confidentiality and anonymity and, perhaps surprisingly, none of the interviewees asked for anonymity, it seemed to me that very little would be gained by identifying interviewees. Thus, while the report includes ample quotations and paraphrases, they are not attributed except, in most instances, by the respondent's role. In the few cases where quotations are attributed to individuals, the source is not my transcripts but quotations from public domain resources.

The interviewing approach I employed is best described as tailored, semistructured interviewing. While a few themes were common to all interviewees, particular care was given to identifying the particular role, perspective, and historical vantage of the interviewee and tailoring questions to the individual.

The organization of this report is as follows: in the next section I consider relevant theory and research pertaining to organizational risk and risk culture, with a view to using the literature to help interpret the finding of the case analysis. Then I provide an historical background for IRS efforts in IT reform. With this backdrop I provide a description of the TSM experience. In a following section I analyze the failures of TSM, focusing particularly but not exclusively on risk culture. In a concluding section I provide a postscript, detailing the IRS' largely successful strategy employed post-TSM, and seek to draw conclusions about IRS IT modernization (including post-TSM activities), about the role of risk culture and, finally, some more general implications for technological change and organizational reform.

ORGANIZATIONAL RISK AND RISK CULTURE

Public managers are often alleged to be more risk-averse than private managers. One argument is that the choice to take employment in the public sector is itself an indicator of risk aversion (Bellante and Link 1981) and, indeed, there is some evidence (Rainey 1983; Bozeman and Rainey 1998) that public employees are somewhat more motivated by security concerns than their private-sector counterparts; they are also somewhat more

motivated by public-service values and somewhat less motivated by pecuniary reward (see Rainey 1996 for an overview). Other arguments for the risk aversion of public managers relate to the lack of a profit motive and entrepreneurial oversight (Alchian and Demsetz 1972), structural barriers to risk-taking due to checks and balances built into the federal system (Wilson 1989), alleged goal ambiguity experienced by public-sector managers (Brown 1970; Nutt and Backoff 1992) (but see Lan and Rainey 1992 for an alternative interpretation), and the dampening effects of the public sectors' higher levels of red tape in public organizations (Bozeman 1993, 2000; Pandey and Scott 2002). In general, the incentive structure one finds in many public agencies is believed to encourage public managers to avoid situations in which they might be blamed for a failure to follow prescribed procedure (Davies 1981; Wilson 1989). Taken together these arguments, some better supported than others, present a view of risk-averse public managers and, thus, gives rise to the prescription that greater risk-taking can improve public management performance.

Not everyone is convinced that risk-taking is just what is needed to improve public management. The best known popularizers of public management theory, Osborne and Gaebler (1993, xx), argue that public managers need to be more entrepreneurial but this does not necessarily require risk-taking. Berman and West (1998) discuss responsible risk-taking, risk tempered by responsiveness and accountability. Some researchers suggest that risk-taking and managerial ethics should be closely linked (Wittmer and Coursey 1996).

The effort to distinguish entrepreneurship from risk-taking reflects, in part, the negative connotation of public bureaucracy in the United States. Indeed, much of the criticism of reform proposals is based upon concerns that unleashing public managers with entrepreneurial values would damage important democratic (Terry 1993), legal, and structural controls upon managerial behavior (Goodsell 1993; Moe 1994).

Studies of public sector entrepreneurs clearly demonstrate patterns of behavior that can only be described as calculated risk-taking (Lewis 1980; Doig and Hargrove 1987; Roberts and King 1996). These studies tend to note the heroic effort required of public-sector entrepreneurs in identifying opportunities and forging alliances in an effort to achieve self-identified goals. Efforts to reduce the uncertainty in the environment can resemble campaigns of conquest toward the goal of organizational autonomy (Lewis 1980). Other studies of reform accept that risk-taking is a part of public entrepreneurship, but argue that this can be tempered. For example, Bellone and Goerl (1992) suggest that public entrepreneurial behavior should be accompanied by a civic-regarding ethic that encourages citizen participation.

Private sector research on risk-taking has a different tone and thrust, often having a more situational or contingency approach and focusing as often on perceptions as concrete behaviors (e.g., Fischhoff, Watson, and Hope 1984; Hansson 1989; MacCrimmon and Wehrung 1986; Yates and Stone 1992). Several components of risk-related behaviors have been empirically investigated by psychologists and managers concerned with business organizations. Some of these topics include risk perception and propensity (Sitkin and Weingart 1995; Bettman 1973), risk and decision making (Figenbaum and Thomas 1988; Janis 1972; Libby and Fishburn 1977), and personal characteristics of risk-takers (McClelland 1961; Jackson and Dutton 1988; Vlek and Stallen 1980; MacCrimmon and Wehrung 1990). While empirical research on risk-taking

has grown markedly in the past two decades, none of the best-known studies differentiate systematically between public and private organizations. Those that do exist are somewhat dated (Brown 1970) and do not directly measure risk-taking associated with a managers work life (Bellante and Link 1981).

The paucity of empirical research on public managers' risk-taking is somewhat surprising in light of the growth of public management literature and, in particular, the recent interest in empirical studies comparing public and private organizations. For example, Knott's (1993) findings that organizations respond to similar internal and external factors rather than simple sector differences may have important implications for our understanding of risk-taking that are, as yet, unexplored.

The chief conceptualization considered in this article is not risk-taking but risk culture (Bozeman and Kingsley 1998). I am less interested in particular behaviors of public managers, agency heads, and public officials than the ways in which perceptions of risk permeate organizational culture.

Risk-taking and Organizations' Risk Culture

Two concurrent developments in organization research and theory are an interest in the concept of organization culture (e.g., Schein 1985) and organizations' propensity to take risk (e.g., MacCrimmon and Wehrung 1986). While there are many streams in these respective research topics that do not converge, the intersection is considerable. In particular, Deal and Kennedy's (1982) typology of organizational cultures takes organizations' risk-taking propensity as a starting point and, for example, their notion of a process culture depicts a highly formal, bureaucratized organization that is too entangled in its procedures, internal controls, and processes to sustain risk. Several other scholars (Hofstede 1980; Bowman 1980), including some dealing with public organizations (Nutt and Backoff 1992), developed theories or typologies of organizational culture or strategy in which risk is among the most significant cultural elements.

I define risk culture as the organizations' propensity to take risks as perceived by the managers in the organization. Often it is the perception that creates the culture, even more than any tangible and documented set of decisions or actions taken by organizational actors, because it is the perceptions that provide the cues to acceptable behavior. As Sitkin and Pablo (1992, 21) note, organizational members come to view their world through the lens of their organization's culture, which can distort their perceptions of situational risk, sometimes by over- or underemphasizing risk. Top managers and organizational leaders play a particularly important role in influencing perceptions that risk is or is not legitimate, and even subtle cues from leaders about their preferences regarding risk can powerfully affect the risk perceptions of other decision makers (Sitkin and Pablo 1992, 22). Thus, if we have knowledge of perceptions of top managers' risk behavior we have insight into perceptions of acceptable behavior concerning risk. It is these perceptions, taken in aggregate, which comprise risk culture.

With this background, I turn next to the case of IRS Tax Systems Modernization and the role organizational culture, especially risk culture, seems to have played in determining outcomes. Before analyzing TSM, its outcomes, and the relation of risk culture, I provide a brief history of IRS' information technology.

THE EARLY HISTORY OF IT AT THE IRS

The automation of tax returns processing has long been a dream of IRS officials. In 1918, IRS Commissioner Dan Roper, using Frederick Taylor-style task measurement and design, found that the name, address, and amount of tax from each taxpayer needed to be recorded at seven different points in processing procedures. He set out to acquire the latest efficiency-promoting technology: mechanical stencils. Similarly, in 1927, David Blair, IRS Commissioner during Calvin Coolidge's administration, purchased sixteen automated folding and sorting machines. One of a long line of IRS technophiles, Blair bragged that his new machines were capable of doing the work of three human processors (Davis 1997, 57).

The Bureau of Revenue, as the IRS was known before 1953, was not in its early years an organizational behemoth, not even by standards of the day. Before 1800, the U.S. relied chiefly on customs duty for its revenue. In 1850, customs duties yielded \$25.6 million whereas the internal revenue produced less than \$50,000. This changed dramatically as an income tax helped finance the Civil War. In 1862, the Office of the Commissioner of Internal Revenue included only three clerks in the Treasury Building, but after the passage of the Revenue Act of 1862 their number was closer to 4,000. This was about the size of the Bureau of Revenue for the next fifty years, with growth spurts occurring predictably during World War I and II. Even as late as fiscal year 1939, the 6.5 million citizens who paid income tax provided only \$1 billion in revenue, about the same amount as excise taxes yielded. But by the peak war year of 1945, 48 million taxpayers were paying \$19 billion in income tax revenue. Unlike previous wartime spikes, the income tax did not recede after World War II (Chommie 1970, 22-30). In 1952, the Bureau of Revenue underwent a massive reorganization, creating the modern IRS as a geographically distributed organization that was to change relatively little in its structure until the IRS Restructuring and Reform Act of 1998—an act that not only fundamentally changed the organization structure of the IRS, but its mission as well.¹

It was in 1961 that the IRS took its first giant step into the computer age, opening its National Computer Center in Martinsburg, West Virginia, the county seat of Berkeley County, Virginia. The Martinsburg center is the home of the IRS Masterfile on taxpayers, a system vital to the functioning of the IRS—one including information on virtually every taxpayer. In 1961 the computers and software of the Martinsburg center were near state-of-the-art. By 1989, the beginning of TSM, the Martinsburg computers were antiquated and more at home in the Smithsonian than in one of the most complex information processing organizations in the world. For years, a major challenge to the IRS has been to find ways to improve the Masterfile while at the same time ensuring that the most vital part of the system does not come crashing down.

There is a prodigious gap between today's IRS operational requirements and its information technology resources. Few organizations, public or private, have a more daunting operational mission than the IRS. The agency's activities are the lifeblood of the federal government. The IRS is responsible for collecting more than \$2 trillion in gross revenue each year, more than 95 percent of the federal government's total revenue. The IRS employs more than 100,000 people to accomplish its mission.

Perhaps unsurprising for an agency employing so many accountants and statisticians, the IRS provides a wealth of statistical information about itself. In reviewing the statistical reports issued by the IRS, one cannot help but be impressed by the magnitude of IRS operations. One study projects that more than 232.5 million tax returns (of all types) were filed in calendar year 2001, and estimates that by 2007 the figure should reach 258 million (Zaffino 2001, 146-152). The individual income tax form (1040, 1040A, 1040EZ, 1040PC) constitutes the bulk of returns, 130 million in 2001, but not necessarily the bulk of content (since single corporate income tax forms 1120 and 1120S can run to book length).

Pre-TSM Information Technology Renewal Efforts

The need for technology renewal at the IRS seems clear. Today's IRS is perhaps one of the largest organizational information technology users in the world. Of the more than 100,000 full-time and seasonal IRS employees, over 70,000 use computers to deliver services to taxpayers. The IRS installed base (IRS officials no longer use the out-of-favor term "legacy systems") includes a network of 40 mainframe computers, 871 midrange computers, over 100,000 personal computers (desktop, laptop, and PDA), 2,779 vendor supplied software products, and over 50 million lines of IRS-maintained computer code (IRS 2000b, 8).

Despite the magnitude of the IRS information technology operation, it has not, even today, managed sweeping IT reforms. Despite the important IT progress the IRS has made in the past decade or so (reviewed subsequently and often overlooked amidst the storm of modernization criticism), the IRS still has not achieved many of its most important IT goals. Even today the IRS continues to have relatively limited interoperability, insufficient integration, and relatively few modernization project successes. Most important, the IRS remains (as we all do) at the mercy of the Martinsburg Masterfile, its computer tapes and its near-retirement (or retired) COBOL programmers. So we return to the question advanced at the beginning: How could something so important go so wrong for so long? Much of the answer to this question requires an understanding not only of recent modernization efforts, but also pre-1990 failures.

Since the implementation of the 1961 Martinsburg Center, the IRS has known that regular technology change and renewal would be imperative to its success. But nearly all its renewal programs have, for various reasons, been flawed. The most important thing to know about IRS' early modernization requests is that they largely fell on deaf ears. Computer-based processing went nationwide in 1967, and the IRS computer system was widely viewed as leading the world in automation of tax collection. IT renewal plans were developing at the same time as the system was being brought online throughout the nation. The System of the Seventies was developed in 1969 and, since the chronology-

based title was not so exciting once the 1970s arrived, was soon renamed the Tax Administration System (TAS). This system, the IRS' first major renewal effort, was also the first to fail.

Interestingly, the IRS' early modernization efforts were to some extent a casualty of Watergate. In the early 1970s the IRS spent six years developing a sweeping plan, called the Tax Administration System, projected to cost \$649 million and be rolled out in the early 1980s. The proposal went to Congress in September 1976. The timing could hardly have been worse. With Congress still reeling from Watergate, including President Nixon's political use of the IRS to snoop for information about those on his infamous enemies list, Congress was not eager to enhance the IRS' ability to gather and manage information on taxpayers. When in 1977 the Office of Technology Assessment provided a report raising many questions about the privacy and security protections under TAS, the initiative was essentially dead (U.S. Office of Technology Assessment 1977). Congress simply advised the IRS to replace worn out computers, nothing more.

The next IRS attempt to develop a sweeping IT renewal was the innocuously titled Equipment Replacement and Enhancement Program, later the Equipment Replacement Program (ERP). Congress found this sweeping plan indigestible, but provided a modest technology upgrade increment for the IRS budget for a program labeled Service Center Replacement System. In 1983, a comprehensive technology improvement plan was presented to Congress, under the name Tax Systems Redesign (TSR). With a price tag of \$225 million, TSR was to be rolled out in 1985. Part of the strategy to get approval for the comprehensive change under TSR was to show gains from the Service Center Replacement System. IRS' haste to introduce new technology for the 1985 tax season was in large measure responsible for the infamous 1985 service center meltdown. This system collapse was an event that lives in infamy but was, at the same time, the chief impetus for congressional support of Tax Systems Modernization (Davis 1997).

The systems replaced under Service Center Replacement Systems led to the well-publicized episode often labeled the Philadelphia Service Center calamity. Actually, it was even worse than usually portrayed. The story broke in April 1985, after a janitor reported finding unopened and often mangled returns in the bathroom and in wastebaskets outside the Philadelphia Service Center. Of the 109 envelopes recovered, 94 had checks made out to the government, totaling more than \$300,000.

What most people did not know at the time is that the other service centers were experiencing delays and Ludditism equaling the Philadelphia experience. The new systems simply did not work. The result of implementing a poorly tested system was that tax processors could not do their jobs, and often panicked. This, in turn, resulted in postponement of return processing at a cost \$15.5 million in interest payments on delayed refunds (Dolan 1993). After receiving angry mail and phone calls from constituents, members of Congress quickly agreed that a technologically inept or backward IRS was not in the nation's interest or their own political self-interest. The response to the service center meltdown was an unusually lavish reward for failure. In 1989, Tax Systems Redesign became Tax Systems Modernization, replete with an open checkbook and broad latitude about the design, acquisition, and implementation of new IT technology.

Information Technology at IRS: From Prehistory to Tax Systems Modernization

The Tax Systems Modernization Saga

After the 1985 service center technology meltdown, Lawrence Gibbs, a Washington tax attorney, was appointed IRS commissioner and given a mandate to make the IT systems work. Mr. Gibbs began by soliciting the ideas, opinions, and experience of government and corporate executives who had designed or implemented large IT systems. In an article by John Broder in the *New York Times* entitled “How an Agency Was Left Behind on the Road Ahead” on February 10, 1997, Mr. Gibbs remarked, “We knew we didn’t have all the procurement and technical capability in information systems we needed... (w)e were not a bunch of bumbling bureaucrats who just started off not knowing what we were doing.” One of the lessons learned from consulting the experts was that it was not sensible to just let a contract and have an industrial group or consortium design and implement the system. According to Mr. Gibbs in the same *New York Times* article, the received wisdom was that agency officials should be deeply involved in every aspect of IT renewal, not only because of the unique experience of the IRS in collecting the nation’s revenue but also because, “[Y]ou can’t just throw this to the outside and have people within the agency buy into it. Even if you bring in state-of-the-art systems, you’re going to have difficulty making them work unless people inside accept them.”

New Commissioner Fred Goldberg, a tax attorney by training, appointed the first IRS Chief Information Officer, Hank Philcox, an IRS insider who had risen from the ranks after beginning as a revenue agent. In 1990, Commissioner Goldberg approached the National Research Council, asking that the NRC set up a study committee to provide technical and management advice about TSM. The NRC’s Computer Science and Telecommunication Board appointed a committee that included, among others, academic researchers from a variety of backgrounds ranging from computer science to public administration, CEOs who had helped design and implement large IT systems, a privacy lawyer and privacy advocate, a high-level union official, a former IRS commissioner, and IT officers from other government agencies.² The committee was chaired by Robert Clagett, a member of the National Academy of Engineering, and a retired AT&T technology manager.

The committee began its operations August 27, 1990, in Washington, D.C. at the National Academy’s Wisconsin Avenue offices. Commissioner Goldberg and Philcox began by introducing the key IRS players and assuring the committee of the IRS’ interest in and receptivity to independent criticism. Among those key players were Mark Cox and Wally Hutton. Cox was the TSM executive in charge of all new projects and Hutton was the person who was to keep the train running, making sure that the existing systems functioned even as they were phased out over a ten-year period. In early meetings, the IRS provided drafts of its Design Master Plan, the overall operational plan for developing, integrating, and implementing the many projects envisioned under TSM.

In November 1990 Philcox shared the early TSM vision with one of the IRS’ major stakeholder groups, professional accountants. In a paper published in *The CPA Journal Online*, he noted that TSM operated under a “double imperative—first, that we be clear in our own minds about where we are headed and, second, that we articulate our plans to

stakeholders and prove we are serious about incorporating their ideas” (Philcox 1990). He went on to emphasize the careful planning behind TSM, noting that while most of TSM would not be implemented until about 2000, “specific milestones and clear objectives already direct us every step along the way. Already, more than 40 major modernization projects have been identified.” What is especially interesting about that early article, especially in light of the failure of much of TSM and the dismantling of most of the more than 40 major modernization projects, is Philcox’ assessment of the risks. Under a section entitled “What Can Go Wrong?” he began by dismissing some possible threats. Executive turnover was not a problem because TSM “is not the brainchild of any individual IRS Commissioner or Chief Information Officer” and because the approach also “represents the accumulated wisdom of outside experts—private sector information technology specialists, members of Congress with IRS oversight responsibility, General Accounting Office government-wide directives, and an independent review by the National Academy of Sciences.” (Mr. Philcox may have had his rose-colored glasses on here since the private-sector information technology specialists were not formally represented at the time, the Congress certainly had no ability to design or evaluate the technical detail of an information system, the GAO at that time had very few relevant government-wide IT directives, and the NRC system is to appoint [pro bono] persons who have their own full-time jobs and who meet irregularly and work episodically with NRC staff to craft a usually brief report.)

Philcox perceived factors external to IRS as the chief threats to TMS. One threat was the red tape-bound, legalistic federal procurement system of 1990—a system designed to procure standard commodities and a system permitting endless challenges from disappointed bidders. A second perceived threat was the annual federal budget cycle and the lack of a multiyear capital budget. Finally, Philcox viewed federal personnel constraints as a possible Achilles heel, including the difficulty of paying competitive salaries to persons with technical skills. The 1990 federal personnel system generally based pay rates on the number of people supervised rather than technical qualifications for technical jobs.

Once TSM was fully underway, project ideas were developed at a staggering rate. Perhaps even more than the Department of Defense, the IRS has always been enamored of acronyms, so much so that even persons directly involved with system development often do not know the title of the project the acronym represents. During 1990-1992 the acronym machine was well oiled as new TSM projects were stacked one upon the other. Table 1 provides a list of TSM projects and acronyms, not only to suggest the proliferation of projects but also as a glossary for some of the projects that are described below only by their acronym.

As the projects proliferated, so too did the sense that not all was as it should be. One of the first highly public TSM embarrassments occurred with a 1993 General Accounting Office report finding that the IRS could not account for \$301 million of TSM expenditures (USGAO 1993). But the most important problems with TSM had less to do with financial management than technology management.

By 1996, the list of cancelled and endangered projects was piling higher and higher. Cyberfile, an experiment to permit submission of tax returns over the Internet, was canceled at a cost of \$17.1 million. As the primary plan for moving from paper to elec-

TABLE 1
TSM Projects and Acronyms

<i>Project Acronym</i>	<i>Project Title</i>
ACI	Automated Criminal Investigation
AICS	Automated Inventory Control System
AUR	Automated Underreporter
CHEX	Check Handling Enhancement Expert System
CASE	Counsel Automated Systems Environment
CFOL	Corporate Files on Line
ELF	Electronic Filing (test project for Cyberfile)
ICS	Integrated Collection System
SCRIPS	Service Center Recognition/Image Processing System
SERP	Service Electronic Research Project
TSIS	Taxpayer Service Integrated System
TIES	Totally Integrated Exam System
CPS	Case Processing System
CSM	Corporate Systems Modernization
CAPS	Corporate Account Processing System
DPS	Document Processing System
EMS	Electronic Management System
WMS	Worldwide Management System
EF	Electronic Filing
MIA	Mirror Image Acquisition
ALSS	Automated Litigation Support System
OCRSR	Optical Character Reader System Replacement
TSAW	Taxpayer Service Advanced Workstation

tronic forms, the Service Center Recognition/Image Processing Systems (SCRIPS) was one of the cornerstones of TSM. But the technology never came up to standard. After noting that it was not possible to determine exactly how much the IRS had spent on SCRIPS due to the fact that the IRS did not have an accurate cost accounting system, the U.S. General Accounting Office estimated in its report that SCRIPS had already cost \$145 million despite no sign of technological viability, and was on track to cost another \$140 million. The Corporate Accounts Processing System (CAPS) was meant to create a single, integrated database of taxpayer account information. The idea was to resolve corporate issues immediately via access to the CAPS database. The system was terminated after spending \$179 million. The Integrated Case Processing (ICP) system was supposed to permit customer-service representatives to access in one step all the data needed to answer taxpayer questions or resolve problems. It was terminated after spending \$44.8 million.

RISK CULTURE AND TSM

One of the most interesting theoretical questions about the IRS case is how an organization can attempt to promote openness and even risk-taking when people think

they will get shot if they say their project has a problem. The IRS case shows the ways in which notions of risk are embedded in organizational culture and the importance of one to the other.

Every organization has a culture that is in some respects unique, but the IRS organization culture is unique in many ways and understandably so. Nearly everyone who works for the IRS understands that their neighbors are likely to be either curious about them, revile them, or fear them, sometimes all at the same time. Those working at managerial levels in IRS understand that their life will resemble career military personnel—brief assignments, rotating to a new duty. The mission of the IRS shapes its culture. Dealing with money, secrets, and incredible legal complexities requires an unusual set of work skills and perhaps breeds a unique worker. The selection effects for working in IRS surely must be strong. There is no reason to believe that the IRS would attract persons who are strong nonconformists, whose life is governed by creative opportunity, who rebel against authority, or who cannot live within a hierarchy. At the same time, the IRS has never been a sinecure. The jobs are challenging, and the fact that managers typically circulate from one functional area to another means that those who want to play it safe have difficulty succeeding. It is a strange mix. Layer on top of this mix a new mandate to become technologically adept, or at least to engage technology, and it is clear that the organization culture is a demanding one where, if we can engage in a bit of dime psychology, people are likely to have cross-cutting demands, to be job-focused and tightly wound. It is not easy to succeed in the IRS.

Not everyone agrees on the nature of the IRS organizational culture, but all the interviewees seem to be acutely aware of the impacts of organizational culture and felt that the IRS culture is like no other. One point of widespread agreement is that IRS management-level employees tend to be insular and distrustful of outsiders. If so, this may be a good starting place to look for ways in which organizational culture can undermine efforts at IT renewal and, generally, organizational change.

One interviewee (no longer with the IRS), who came to IRS from another agency but who had worked with IRS for years and who knew many people in IRS before joining the agency, said he felt like a “stranger in a strange land.” When asked if he felt like an outsider when he tried to work closely with others on a particular IT project, he responded: “I’m one of the poster children for that [feeling like an outsider]. I ended up staying there [IRS] for six years and had a really good experience. But there were days when I felt I was in this club where I didn’t know the secret handshake. I had some credibility coming in the door and I was given some good people to work with and though I was hard on them, they thought I was fair. I don’t think IRS is as insular as it used to be but I still had to prove myself. The question is whether someone who was not known to IRS would have to prove themselves more than I.”

Why the historical insularity and distrust of outsiders? As one senior executive put it: “For years we didn’t recruit outside the service. I’m a 20-year vet [of the IRS] and only recently really one of the family. There’s a very military career path. Now we’re bringing in people from the outside... but there is still a lot of suspicion of people recruited from the outside.” In many respects the insularity is not difficult to understand. In the first place, working at IRS is a truly thankless task. Very few outside of IRS appreciate its work and many are hostile. Second, the past two decades of experience with outsiders involved in criticizing IRS reforms, including TSM, has not been pleasant. Many have

been scapegoated. Interviewees spoke of more than one high-level IRS official as “falling on his [her] sword for the Service.” The news media have often portrayed the IRS and its employees as incompetent or malevolent. It is not difficult to understand how such an environment can foment distrust and insularity.

Other aspects of IRS organizational culture have reinforced insularity and distrust, pitting one geographical or functional group against another. (Changes in the 1998 IRS reorganization address both these factors.) As is the case with many agencies, there is a long-standing animosity between headquarters and field. It is commonplace for IRS managers to scorn the Washington, D.C. national office while, at the same time, angling to get a plum job there, knowing that it is generally a prerequisite to continued advancement. To some extent, headquarters-field relations are strained, typically with the “Washington doesn’t know what it’s like here out in the field” point of view (and the corresponding “why can’t those out in the field understand national priorities” point of view). But in some cases problems in communicating management priorities may be owed to dysfunction not obviously related to culture.

An employee who remains with the IRS and who has been with the agency for many years was asked if he thought there was less insularity and distrust than in the past. His response indicated that this issue was mixed up with communication issues inside IRS: “Are we less insular? Yes and no. Sure, there are many new faces, many from the outside. But if you go down a little into the organization [i.e., below the top management levels] you still find pretty strong resistance to any kind of change. Not much happened in TSM that changes day-to-day life. Modernization hasn’t penetrated down. The commissioner has made calls for changes in the grass roots, especially changes in values.”

Another IRS IT project member explained how much care his team had taken in developing an IT architecture and physical design for a project to be deployed in the Austin Service Center. The response: “That’s nice. Now here is what we are really going to do.” IT modernization has taken so long and delivered so little in the way of fully functional technologies that many in the field have, essentially, given up on solutions coming from Washington. It is not clear whether this is organizational culture or simply the triumph of experience over optimism.

Many aspects of IRS culture have, at the same time, bad and good sides to them. Sometimes a strength can be turned into a weakness. One conspicuous example is the long-standing can-do attitude that emphasizes local problem solving and performing assigned tasks rather than complaining about them. This attribute often leads to accomplishment and pride in work. The bad side of this is a tendency to suppress dissent and a failure to deliver bad news even when it is clear that this may have disastrous results. As mentioned above, this is one of the primary explanations of the 1985 service center meltdown.

In an atmosphere of distrust and poor vertical communication, one would predict risk-averse behavior (Bozeman and Kingsley 1998). The IRS culture does, indeed, seem to inhibit risk-taking. It is easy enough to identify some individuals who have taken enormous risks, but usually at great cost and at considerable personal sacrifice. It seems to be the case that the organizational culture does not reward risk. Consider the following: “I remember a conversation with Larry Westfall [TSM-era CIO]. He felt no one really took a chance with their best systems on modernization, they were always

hedging the bets. The key is to understand what the Philadelphia Service Center disaster meant. It was the genesis for TSM, but it also left an indelible mark on IRS' ability to take a risk with change. It made it very hard for people to take leap of faith to really commit to modernization. But Larry did."

Another former IRS employee, one who worked on IT projects in IRS and other government agencies, felt that risk aversion was, in part, due to the atmosphere created by the nature of congressional oversight: "The Hill bears some of the responsibility; with their legitimate desire for oversight they exacerbated the risk aversion that already exists at IRS. I really think it's unintentional."

One wonders, of course, whether the IRS is any more risk averse than other public agencies or even private firms. With a few notable exceptions, the interviewees describing the risk aversion of the IRS have not worked in other organizations. One consultant interviewed, an individual who has worked on IT projects with the IRS as well as many other federal agencies, described working with the Federal Aviation Administration on a roughly comparable IT megatechnology project: "At FAA the culture was so risk averse that it was better to do nothing except what is safe. Operations were too risky. Like IRS, they were working with mission critical systems, not much different than the IRS Masterfile. But IRS feels that necessity [to make critical systems work] in their bones. I have so much respect for those folks."

Anatomy of IT Management Failure: Risk Culture and the Document Processing System

One way to get an idea of the ways in which risk culture affected TSM is to focus on a specific TSM project, one of the most important ones. The project that sounded the death knell for TSM was the Document Processing System, a \$1.3 billion system to digitize paper tax returns. After spending \$284 million of the total cost of the project, the DPS was scrapped. The trial runs indicated that the system was not functioning at an acceptable level and had little promise of accurately capturing sufficient digital image to allow replacement of paper processes.

Like SCRIPS, the Document Processing System was meant to create optical images from paper returns, converting them to a readable format for the agency's computers. DPS was central to the TSM development plan. The idea was that TSM would be an integrated system and that DPS would be one of the chief links. Thus, tax returns would be processed by DPS, by electronic filing (ELF, later Cyberfile) and by telephone filing (TeleFile), and each of these would result in the same form of electronic tax return that would be routed to a central computer. In this format, data could be retrieved according to IRS business needs. The vast majority of IRS forms were to be channeled through the DPS system.

The DPS system included high-speed, nonimpact printers, document processing equipment, and forms conversion software. The intention was for DPS to read data from 1040 forms and, ultimately, all of the 285 IRS forms. The chief DPS contractor was Lockheed Martin Corporation, but a stable of software and hardware vendors lined up behind the Lockheed Martin prime contractor, including IBM/Pennant and Elixir Technologies Corporation, among others.

The target date for IRS-wide rollout of DPS was 1996. Instead, that was the year the project was terminated. When DPS was closed down in 1996, IRS Commissioner Margaret Richardson said “given the revised priorities and budget realities for the next several years, the IRS has decided not to invest additional resources in DPS” (Dorobek 1996, 1). The contract with Lockheed Martin was cancelled as a partial cancellation for convenience, which is another way of saying that considerable negotiations occurred to enable the cancellation, with all parties agreeing that contractor performance was not a factor and that the option remained of reopening the contract (which, of course, no one contemplated doing).

The chief problem was not changing priorities or cost overruns but the simple fact that DPS did not work. The scanning state-of-the-art did not seem to be up to the IRS need to examine forms that included both handwritten and typewritten information, not to mention notes taped or stuck on. In an Associated Press article entitled “IRS Struggling to Bring Agency into Digital Age” in the *Lubbock Avalanche-Journal* on 12 April 1997, GAO’s Rona Stillman, chief computer scientist, noted, “At the time they were closing it (the DPS project) down, they were asking ‘Which forms should be read? How much of the data should be read?’—those are questions that should be asked at the beginning, not \$280 million into it.”

According to one former IRS official who was intimately involved with DPS, there were two sorts of failures, one technical, the other a failure of managers to recognize the inevitability of technical failure: “The technology simply wasn’t ready. The character recognition was around 50 percent, so you miss one number you miss them all. For it to be worth the money, it had to have downstream benefits such as seeing the image of tax reforms rather than pulling it. You need to see all the return—margin notes, post-its, etc. If you capture all the data, you can store, generate cases, and have a way to get images distributed. You can have workstations and tools in hands of customer service reps so they can use it.” I asked how this project got so far along if only 50 percent of the forms’ material could be read. Answer:

Right in the middle of DPS [one of the project managers] said we would actually have more keystrokes with DPS than we did before. He even showed us. The big problem was moving paper through the system, just like a paper jams in a Xerox machine. [A project manager] went to see a demo and said they have nice pristine returns with no post-it notes or paper clips. They had returns in stacks of eight at a time, and they did it because the machine jams and the block of a hundred has to be rerun, so they were done eight at a time. But there was so much pressure keeping the thing going, tacit pressure but still there, people sometimes said they can do it in six months. They couldn’t do it but they felt so much pressure. People were not going up the line and airing their bad experiences. It was not a good atmosphere for saying, “my project isn’t working.”

The same thing happens in my shop. We go overboard to tell people we expect them to have problems, create an open atmosphere, but that’s tough to people to believe. They think they will get shot if they say their project has a problem. That’s what happened in 1985 [with the Service Center breakdown]—they were

trying to be good soldiers, got to have that can-do attitude, got to make it work myself. They say, “We are going to fix it, we are going to fix it, we can’t fix it.”

The DPS case encapsulates many of the problems IRS has had with IT renewal, especially under the TSM regime. Many factors contributed to failures. The causes are multiple. The nature of the technological task was (and remains) very difficult, as in DPS. The operational benchmarks are not entirely clear, as in DPS. The organizational culture undermines communication, as in DPS. But many of these problems have been resolved and others diminished.

The DPS case is in many ways a touchstone for IRS problems in implementing technological change. The quotation immediately above speaks volumes. This is a statement about risk culture. This is a mismatch between intent (“We go overboard to tell people we expect them to have problems, create an open atmosphere . . .”) and perceptions (“They think they will get shot if they say their project has a problem . . .”).

The IRS organization culture is a double-edged sword, but one that cut deeply into its ability to succeed with TSM. The very aspects of IRS that had allowed it to solve problems effectively for years—can-do, don’t complain, rotating management personnel so they get the big picture rather than develop management specialization, promoting through the ranks, emphasis on the field, and regional decentralization—turned against the IRS with TSM.

POST-TSM (1997-2002): CULTURAL CHANGE, ORGANIZATIONAL REFORM, AND TECHNOLOGICAL RENEWAL

The IRS experience with TSM has been a force for revolutionizing the agency. As is so often the case, disaster has chipped away at old assumptions. Since 1997, the IRS has adopted a new, sweeping strategic plan, undergone its most significant reorganization since the early 1950s, and even changed its mission from one focused chiefly on revenue collection to one elevating taxpayer service to the highest of priorities. It has its first IT-savvy commissioner, Charles Rossotti, and has had a succession of CIO’s with significant, high-level IT experience in government or industry. From positive findings in a GAO report (USGAO 1998) on the IRS’ modernization blueprint, one infers that not only is the revolution well under way but that it has a good chance of victory. The IRS now has more technical expertise on top and on tap, it has a prime contract to help IT development and implementation, and it has the confidence of its external political overseers.

What IRS does not yet have is a new, high-performing, integrated IT system. Instead, the IRS has undertaken two extreme challenges in place of one. In the words of a GAO report, “[T]he sheer magnitude of undertaking both business and systems modernization will strain IRS’ management and staff. Such an ambitious undertaking, along with the need to ‘stay in business,’ makes the restructuring initiative a high-risk venture that will take years to fully implement” (USGAO 1999, 2). Indeed, it will take years, probably at least another five or six, to implement fully the restructuring and, in tandem, IT

modernization (and both Commissioner Rossotti and GAO officials agree that the two must be undertaken simultaneously). What this implies for the task at hand, the task of analyzing the development, implementation, and management of IT megatechnology, is that lessons must be distilled not from a completed episode but from a never-ending story. This is perhaps fitting in one sense—IT renewal in any large organization is never completed, but evolving. In another sense the IRS story is not only never ending, but still writing its early chapters. Even today, more than twelve years after the term Tax Systems Modernization was developed, very little new, integrated IT technology or systems have been implemented by IRS. Thus, rather than providing an evaluation of post-TSM efforts, this section provides a brief overview of major post-TSM activities. While there have been several important changes during the post-TSM period (1997-present), the ones most important for IT modernization are: 1) the Modernization Blueprint and statutory change; 2) the award of the prime contract; and, 3) changes in IT management.

Modernization, Blueprints, and Statutory Change

The IRS mission was changed not by agency introspection and self-assessment, but by statute. The IRS Restructuring and Reform Act of 1998 (RRA) (U.S. Congress 1998) changed the IRS mission from a major focus on compliance to providing quality service and promoting fairness in the application of tax law. The IRS has gone from Tax Systems Modernization to Modernization (IRS 2000c), implying a from-the-ground-up overhaul, starting with the mission statement but reaching nearly every aspect of IRS. According to the RRA, “the Internal Revenue Service shall review and restate its mission to place a greater emphasis on serving the public and meeting taxpayer needs” (Sec. 1002, 112).

One means of achieving the new taxpayer service mission is through a mandated reorganization focusing on taxpayers with similar needs rather than the traditional regional and functional organization. In 1998, the IRS organizational structure was based chiefly on districts (thirty-three) and service centers (ten), with each taxpayer being served by one of each. These offices were divided into functional units including Examination, Collection, Criminal Investigation, Submissions Processing and Customer Service. These district offices and service centers reported to one of four regional offices and the national office, which also operated three computing centers. The hierarchy included eight levels between the first-line managers and the deputy commissioner. Under the new structure, first proposed in 1998 and implemented in 1999, there are four divisions, based on taxpayer type and serving integrated functions. These operating divisions include Tax Exempt and Government Entities, Large and Mid-Size Business, Small Business and Self-Employed, and Wage and Investment Income. Two agencywide divisions include Shared Services, focused on facilities and procurement, and Information Systems Services, the new home of IT and directed by the IRS CIO. Interestingly, the Information Systems Services unit includes 7,000 employees, making it larger than the Shared Services unit, larger than any of the remaining functional units (Appeals, Taxpayer Advocate Services, Criminal Investigation), and larger than one of the four operating divisions.

While it is too early to judge the impacts of the reorganization, it is certain that there will be important impacts on information technology. One result is that the IRS 1997 blueprint for IT modernization was rendered obsolete. In May 1997 the IRS (1997) released its *Blueprint for Technology Modernization*, the chief legacy of then-CIO Arthur Gross (who resigned shortly thereafter and was replaced by Paul Cosgrove). This first blueprint included the following principles, based in large measure on recommendations of a 1995 GAO report (USGAO 1995):

1. Ensure that the modernized computer system maximizes IRS employees' ability to serve taxpayers.
2. Develop a centralized, mainframe computer system that guarantees taxpayer privacy and minimizes cost.
3. Fully integrate the central computer with the existing computers and enable all systems to communicate.
4. Require that technological improvements be implemented incrementally, that new stages be installed only when previous stages have been proven successful.
5. Provide credible estimates of potential cost and deliverables before implementation.

This version of the blueprint included the following requirements:

- a centralized and flexible system that is capable of adapting to constant changes in tax law;
- a computer system that is easy to use and enables IRS employees—customer service representatives and compliance personnel—to access accurate and timely information from one terminal in order to be more productive and offer better service;
- a centralized database that better analyzes taxpayer records to improve compliance; and,
- an interactive computer system that will move the IRS to a paperless system, decrease operating costs, and expedite processing of taxpayer returns and refunds.

While there is little in the RRA that explicitly invalidates the earlier blueprint, there are several important differences of emphasis and, as the GAO noted, the fact that the first blueprint was completed eight months before the commissioner announced the reorganization “raises questions about the modernization blueprint’s validity” (USGAO 1999, 7).

In *Modernizing America’s Tax Agency*, the document that plots a new course for the agency, IT is featured prominently, both as a cause of past problems and as a solution in progress. The current approach is described as follows: “The approach that the IRS is taking to deal with this monumental task [IT modernization] is to establish an overall architecture for a set of new systems that will accommodate all essential tax administration functions according to modern standards of technology and financial management. Achieving this new system architecture must then be accomplished by defining a sequence of targeted and manageable size projects that meet important and specific needs while, at the same time, working to complete the overall architecture” (IRS 2000c, 43).

This approach is, indeed, different from that employed in TSM and is more incremental than holistic. It remains to be seen whether the approach will be effective but it certainly seems to fit better with new realities, including an appropriations process that entails more scrutiny. This additional scrutiny is not confined to the IRS. The Information Technology Management Reform Act of 1996 (the Clinger-Cohen Act, S. 1124. Sec. 5126) requires corporate-style capital planning for IT projects.

While the financial accountability for IRS IT development seems clearly to have improved, the question of IRS architecture remains controversial. During a personal interview conducted on 12 October 2001, Dr. Richard Wexelblat, former high-level IT specialist at the IRS, quoted Lincoln:

It is said that Abraham Lincoln once pointed to his dog asleep on the porch and asked his companions, "Gentlemen, if we call a tail a leg, how many legs does a dog have?"

"Five," they said.

"No, Gentlemen," he replied, "you are wrong. Calling a tail a leg does not make it one. The dog has but four legs."

And, despite the best of intentions, calling someone who is not an architect an architect does not make him or her one. One becomes an architect through years of training and experience. It takes the ability to extract the general from the specific. It takes the skill to cut through complexity to abstract the essence. It takes the experience to know how to describe the architecture of a complex system in a handful of pages of picture and text, the will to do so, and, most importantly, understanding why you must do so. It also takes the artistry to describe all of this clearly.

It is clear that the IRS has an IT architecture and, indeed, it has had several—of a sort. Whether the plans are now ones that can be implemented and will lead to meeting operational requirements remains to be seen. Presently, relatively little new technology being introduced and the effectiveness of IT implementation cannot be determined until there is additional technology in the field.

Whether or not there is an architecture (an issue that seems to depend on the visual perspective of the beholder), there is an IT blueprint. While the blueprint was developed by PRIME contractor Computer Science Corporation (see next section), it draws upon the one developed in 1997 by then-CIO Arthur Gross. The blueprint takes into account the reorganization of IRS but also new developments in IT technology and needs. The blueprint, unveiled in January 2001, is to serve as a guide, albeit one often readjusted, for the next fifteen years of IT modernization. The components of the revised blueprint include:

- creating three portals on the IRS website to give taxpayers, businesses, and internal employees access to tax information;
- converting tape-based master files to a different database, beginning with the simplest tax returns for the past five years—about six million files;
- giving taxpayers the option of communicating with the IRS via e-mail when there are questions about a tax return; and,

- giving taxpayers the authority to give someone power of attorney to communicate with the IRS electronically.

Even now the IT development is at the beginning stages, but the reorganization has been implemented. While the jury is still out, most of those interviewed for this study felt the Rossotti-led reorganization would prove successful and some felt that it had already led to some positive changes. According to a knowledgeable and experienced consultant to the IRS, "some of the changes developed under TSM actually got implemented with Rossotti's reorganization. The strength now is better management and people, but also better process." Another well informed outsider provided a related view: "If you don't look at Masterfile [where there has been little progress], they have done an incredible amount of modernization, very creative and persistent. But they do it in a stovepipe way and its about projects they can manage, not about more fundamental change. You get a sense of competition between incremental change and modernization, and incremental change always wins." Is this a criticism? Perhaps it depends upon one's value for incremental change. The TSM approach was certainly not incremental change, but wholesale change. With current assets and expectations, incremental change may be the most feasible and realistic.

Has (or will) the reorganization and new approach to modernization changed the IRS culture? Opinions differ. Speaking to one of the hard and fast organizational culture attributes of the IRS, hostility between the national office and the field, one long-time IRS veteran, who has served extensively in district offices, the national office and service centers, was reasonably optimistic: "Cultures die hard. There will always be headquarters chatter, but the way we do business now is different. All the business units are business focused, large and midsize on large and midsize, wage and investment on wage and investment. From an IT perspective we centralized all resources and so there are no funds to run differently. We have one big organization for IT. It's nice to have core team in one place."

RISK CULTURE AND IT MODERNIZATION: CONCLUSIONS

During the TSM era, the IRS was still laboring with a circa-1950s organization culture that was almost as out of date as the same era's computer technology. What IRS needed (and is now undergoing) was a cultural revolution, or at least a cultural evolution. If that cultural change does not succeed it seems likely that IT renewal will continue to stall. How important is IT renewal? In 2001 the estimated number of electronic filings was 42.3 million, with the expectation that this number should grow by an average rate of about 12 percent per year to the year 2007 (Balkvic 2000, 191-201). This means that among the 143 million individual tax returns expected to be filed in 2007, 73 million (51 percent) are expected to be filed electronically. Some of the most important statistics about IRS' tax operations do not relate to time series projections but to big policy changes that render each filing season unique (and, thus, limit the programmed aspects of IRS work). For example, just in the 1999 tax season alone, new changes in the tax code changed the expected yield by tens of billions as relatively minor changes were made in the deductibility of student loans, child tax credits, earned income tax credit, and capital gains tax (191-201). Similarly, the 2001 Bush administration tax cut and its tax rebate of

\$500-600 for most taxpayers required a prodigious and not entirely predictable commitment of human and information resources. IRS operations are anything but static.

If it has information systems that are unresponsive and poorly integrated, the IRS could collapse under the weight of its contemporary demands. As Commissioner Rossotti notes (after reviewing progress made on several fronts), “[E]ven now we still have outmoded technology in Martinsburg; we have no systemwide data administration function, no systemwide database” (Bozeman 2002, 24).

The IRS’ current cultural evolution, one carefully managed and planned with their new blueprint (IRS 2000a), has initiated changes that cannot be fully assessed at this time but which are likely to have major impacts. The shift from region-based management to functional management is extremely important and will have far-reaching consequences. The increased emphasis on service, as compared to revenue collection, is less likely to take hold because it has been imposed by Congress (though through willing top managers) and because the change will be difficult to sustain. The IRS does not yet seem to have made a major dent in its insularity, though it is well aware of the problem and is taking some steps to address it.

While there are many definitions of organizational culture available in the management literature, one that is both simple and to the point is Trice and Beyer’s definition of organizational culture as patterns of shared meaning within an organization (1993). Edgar Schein (1992), who provides a much more detailed definition of organizational culture, distinguishes among three levels: 1) the most basic assumptions of the organization (e.g., the ways in which one should respond to hierarchical authority); 2) the basic values of the organization (for example, shared ideas about how to interact with persons outside the organization); and, 3) the artifacts and creations of the organization (such as administrative handbooks, rituals, and ceremonies). While, as Schein points out, there are many different aspects of organizational culture, usually when one uses the term it is just another way of saying “the distinctive or unique features of the organization.” If this is what we mean by culture, then the IRS is a particularly cultured organization—there are many unique aspects of the IRS that frame its management. I conclude with a set of propositions, or lessons learned, from the IRS experience with IT reform. Each of these relates to issues of risk and organizational culture as they have been enacted at the IRS.

Proposition: Multi-organization management and interdependence requires soft boundaries.

The inability to deal with persons perceived to be at the boundary made it nearly impossible for TSM leaders to quickly integrate needed technical talent, even talent hired by the IRS.

Some of the most fundamental aspects of IRS culture are, at the same time, a blessing and a curse. Moreover, many of the features that have been strengths in the past have worked against the IRS’ ability to develop and implement IT, especially during the TSM period. Consider the case of the insularity of the IRS. In some respects, the insularity is the dark side of cohesion. The fact that the IRS tends to view employees as (in the words of interviewees) family, part of the fraternity, the secret society, also implies a strong

bond among those viewed as insiders. The question often is one of balance. Arguably, the insularity-cohesion dimension of the IRS has not been in balance, certainly not during the TSM years, and this undermines the ability of IRS to work with contractors or even with new employees. Interestingly, it does not seem to play a similar role in the IRS' ability to work with outside oversight groups. The GAO, OMB, and NRC review committee interviewees all underscored the accessibility of IRS employees and their willingness to engage. The IRS interviewees, by the same token, seemed to have little antipathy to oversight groups, often respecting their contributions.

This seeming inconsistency—the difficulty of accepting new employees and contractors but relative ease of accepting outside groups—is not as strange as it seems. The key is the boundary-setting rules. The oversight groups are outside the boundary and the IRS culture has developed appropriate norms for working with those outside the boundary. But the new employees and contractors are neither outsiders nor insiders, they are on the boundary, and the IRS culture does not seem to have developed consensual norms about the role of persons on the boundary. Since the boundary lines are not particularly permeable (that is, it is difficult to move from outsider to insider), the problem is especially acute.

Information technology is not the same as other technologies: it may require a different culture than other technical functions. Information technology rewards specialization, adaptability, renewal, and project management skills.

Any organization launching megaprojects while failing to assess (or improve) the project management skills of the persons in charge would have a low probability of success.

Proposition: IRS must become a technology culture.

IT megatechnology makes its own cultural demands. Until comparatively recently, no one would have described IRS as a high-tech organization. But the proportion of de facto high-tech organizations in the federal government is likely to increase every year as functionality and even organizational survival depend on effective deployment of technology. Moreover, most organizations in the federal government are already technical, but with a different set of technologies—the technicalities of tax law, human service delivery, or contracting, budgeting, and procurement. Most agencies have rewarded general management and functional management skills and have flourished digging in and mastering a domain rather than by constant renewal and adaptation. This is no longer a good strategy for an organization whose success depends on IT competence.

NOTES

1. Earlier versions of the IRS mission simply emphasized the efficient collection of revenue. The new mission: “Provide America’s taxpayers top quality service by helping them understand and meet their tax responsibilities and by applying the tax law with integrity and fairness to all” (IRS 2000a).

2. The author was a member of the NRC committee on Tax Systems Modernization, both the first committee and a reappointed committee, serving from 1990-1995.

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